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===*_Quiz_*===
<quiz display=simple>
{<!--a02_1Dkinem_definitions_1-->A car traveling at 35.3 miles/hour stops in 4.3 seconds. What is the average acceleration?}
-a) 2.06 x 10⁰ m/s²
+b) 3.67 x 10⁰ m/s²
-c) 6.53 x 10⁰ m/s²
-d) 1.16 x 10¹ m/s²
-e) 2.06 x 10¹ m/s²

{<!--a02_1Dkinem_definitions_2-->A car completes a complete circle of radius 3.1 miles at a speed of 51 miles per hour. How many minutes does it take?}
-a) 7.25 x 10⁰ minutes
-b) 9.66 x 10⁰ minutes
-c) 1.29 x 10¹ minutes
-d) 1.72 x 10¹ minutes
+e) 2.29 x 10¹ minutes

{<!--a02_1Dkinem_definitions_3-->A car traveling at 21.3 mph increases its speed to 24.2 mph in 1.4seconds. What is the average acceleration?}
+a) 9.26 x 10⁻¹ m/s²
-b) 1.65 x 10⁰ m/s²
-c) 2.93 x 10⁰ m/s²
-d) 5.21 x 10⁰ m/s²
-e) 9.26 x 10⁰ m/s²

{<!--a02_1Dkinem_definitions_4-->Mr. Smith is backing his car at a speed of 3.28 mph when he hits a cornfield (seed corn). In the course of 1.92 seconds he stops, puts his car in forward drive, and exits the field at a speed of 5.66 mph. What was the ''magnitude'' (absolute

value) of his acceleration?}
-a) 2.94 x 10⁰ miles per hour per second
-b) 3.7 x 10⁰ miles per hour per second
+c) 4.66 x 10⁰ miles per hour per second
-d) 5.86 x 10⁰ miles per hour per second
-e) 7.38 x 10⁰ miles per hour per second

</quiz>

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Other renditions
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====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a02_1Dkinem_definitions_1-->A car traveling at 33.5 miles/hour stops in 7.9 seconds. What is the average acceleration?
-a) 3.37 x 10⁻¹ m/s²
-b) 5.99 x 10⁻¹ m/s²
-c) 1.07 x 10⁰ m/s²
+d) 1.9 x 10⁰ m/s²
-e) 3.37 x 10⁰ m/s²
=====*_Rendition_* 1-3=====
<!--a02_1Dkinem_definitions_1-->A car traveling at 75.4 miles/hour stops in 1.9 seconds. What is the average acceleration?
+a) 1.77 x 10¹ m/s²
-b) 3.15 x 10¹ m/s²
-c) 5.61 x 10¹ m/s²
-d) 9.98 x 10¹ m/s²
-e) 1.77 x 10² m/s²
=====*_Rendition_* 1-4=====
<!--a02_1Dkinem_definitions_1-->A car traveling at 77.8 miles/hour stops in 6.4 seconds. What is the average acceleration?
-a) 3.06 x 10⁰ m/s²
+b) 5.43 x 10⁰ m/s²
-c) 9.66 x 10⁰ m/s²
-d) 1.72 x 10¹ m/s²
-e) 3.06 x 10¹ m/s²
=====*_Rendition_* 1-5=====
<!--a02_1Dkinem_definitions_1-->A car traveling at 38.1 miles/hour stops in 2.1 seconds. What is the average acceleration?
-a) 4.56 x 10⁰ m/s²
+b) 8.11 x 10⁰ m/s²
-c) 1.44 x 10¹ m/s²
-d) 2.56 x 10¹ m/s²
-e) 4.56 x 10¹ m/s²
=====*_Rendition_* 1-6=====
<!--a02_1Dkinem_definitions_1-->A car traveling at 34.5 miles/hour stops in 1.7 seconds. What is the average acceleration?
-a) 9.07 x 10⁻¹ m/s²

-b) 1.61 x 10⁰ m/s²
-c) 2.87 x 10⁰ m/s²
-d) 5.1 x 10⁰ m/s²
+e) 9.07 x 10⁰ m/s²
=====*_Rendition_* 1-7=====
<!--a02_1Dkinem_definitions_1-->A car traveling at 54 miles/hour stops in 5.2 seconds. What is the average acceleration?
+a) 4.64 x 10⁰ m/s²
-b) 8.26 x 10⁰ m/s²
-c) 1.47 x 10¹ m/s²
-d) 2.61 x 10¹ m/s²
-e) 4.64 x 10¹ m/s²
=====*_Rendition_* 1-8=====
<!--a02_1Dkinem_definitions_1-->A car traveling at 42.8 miles/hour stops in 7.5 seconds. What is the average acceleration?
-a) 8.07 x 10⁻¹ m/s²
-b) 1.43 x 10⁰ m/s²
+c) 2.55 x 10⁰ m/s²
-d) 4.54 x 10⁰ m/s²
-e) 8.07 x 10⁰ m/s²
=====*_Rendition_* 1-9=====
<!--a02_1Dkinem_definitions_1-->A car traveling at 44.6 miles/hour stops in 1.8 seconds. What is the average acceleration?
-a) 1.11 x 10⁰ m/s²
-b) 1.97 x 10⁰ m/s²
-c) 3.5 x 10⁰ m/s²
-d) 6.23 x 10⁰ m/s²
+e) 1.11 x 10¹ m/s²
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a02_1Dkinem_definitions_2-->A car completes a complete circle of radius 2.9 miles at a speed of 42.2 miles per hour. How many minutes does it take?
+a) 2.59 x 10¹ minutes
-b) 3.45 x 10¹ minutes
-c) 4.61 x 10¹ minutes
-d) 6.14 x 10¹ minutes
-e) 8.19 x 10¹ minutes
=====*_Rendition_* 2-3=====
<!--a02_1Dkinem_definitions_2-->A car completes a complete circle of radius 3 miles at a speed of 62.1 miles per hour. How many minutes does it take?
-a) 1.37 x 10¹ minutes
+b) 1.82 x 10¹ minutes
-c) 2.43 x 10¹ minutes
-d) 3.24 x 10¹ minutes
-e) 4.32 x 10¹ minutes
=====*_Rendition_* 2-4=====
<!--a02_1Dkinem_definitions_2-->A car completes a complete circle of radius 1.2 miles at a speed of 66.2 miles per hour. How many minutes does it take?
-a) 3.84 x 10⁰ minutes

-b) 5.12 x 10⁰ minutes
+c) 6.83 x 10⁰ minutes
-d) 9.11 x 10⁰ minutes
-e) 1.22 x 10¹ minutes
=====*_Rendition_* 2-5=====
<!--a02_1Dkinem_definitions_2-->A car completes a complete circle of radius 2.2 miles at a speed of 63.6 miles per hour. How many minutes does it take?
-a) 9.78 x 10⁰ minutes
+b) 1.3 x 10¹ minutes
-c) 1.74 x 10¹ minutes
-d) 2.32 x 10¹ minutes
-e) 3.09 x 10¹ minutes
=====*_Rendition_* 2-6=====
<!--a02_1Dkinem_definitions_2-->A car completes a complete circle of radius 1.7 miles at a speed of 55.1 miles per hour. How many minutes does it take?
+a) 1.16 x 10¹ minutes
-b) 1.55 x 10¹ minutes
-c) 2.07 x 10¹ minutes
-d) 2.76 x 10¹ minutes
-e) 3.68 x 10¹ minutes
=====*_Rendition_* 2-7=====
<!--a02_1Dkinem_definitions_2-->A car completes a complete circle of radius 2.6 miles at a speed of 63.7 miles per hour. How many minutes does it take?
-a) 8.65 x 10⁰ minutes
-b) 1.15 x 10¹ minutes
+c) 1.54 x 10¹ minutes
-d) 2.05 x 10¹ minutes
-e) 2.74 x 10¹ minutes
=====*_Rendition_* 2-8=====
<!--a02_1Dkinem_definitions_2-->A car completes a complete circle of radius 1.2 miles at a speed of 42 miles per hour. How many minutes does it take?
-a) 3.41 x 10⁰ minutes
-b) 4.54 x 10⁰ minutes
-c) 6.06 x 10⁰ minutes
-d) 8.08 x 10⁰ minutes
+e) 1.08 x 10¹ minutes
=====*_Rendition_* 2-9=====
<!--a02_1Dkinem_definitions_2-->A car completes a complete circle of radius 3 miles at a speed of 67.5 miles per hour. How many minutes does it take?
-a) 5.3 x 10⁰ minutes
-b) 7.07 x 10⁰ minutes
-c) 9.42 x 10⁰ minutes
-d) 1.26 x 10¹ minutes
+e) 1.68 x 10¹ minutes
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a02_1Dkinem_definitions_3-->A car traveling at 33.8 mph increases

its speed to 38.3 mph in 6.7seconds. What is the average acceleration?
-a) 9.49 x 10⁻² m/s²
-b) 1.69 x 10⁻¹ m/s²
+c) 3 x 10⁻¹ m/s²
-d) 5.34 x 10⁻¹ m/s²
-e) 9.49 x 10⁻¹ m/s²
=====*_Rendition_* 3-3=====
<!--a02_1Dkinem_definitions_3-->A car traveling at 34.7 mph increases its speed to 37.7 mph in 1.2seconds. What is the average acceleration?
-a) 1.99 x 10⁻¹ m/s²
-b) 3.53 x 10⁻¹ m/s²
-c) 6.28 x 10⁻¹ m/s²
+d) 1.12 x 10⁰ m/s²
-e) 1.99 x 10⁰ m/s²
=====*_Rendition_* 3-4=====
<!--a02_1Dkinem_definitions_3-->A car traveling at 29.4 mph increases its speed to 32.7 mph in 5.3 seconds. What is the average acceleration?
-a) 8.8 x 10⁻² m/s²
-b) 1.57 x 10⁻¹ m/s²
+c) 2.78 x 10⁻¹ m/s²
-d) 4.95 x 10⁻¹ m/s²
-e) 8.8 x 10⁻¹ m/s²
=====*_Rendition_* 3-5=====
<!--a02_1Dkinem_definitions_3-->A car traveling at 33.2 mph increases its speed to 35.8 mph in 4.9 seconds. What is the average acceleration?
-a) 1.33 x 10⁻¹ m/s²
+b) 2.37 x 10⁻¹ m/s²
-c) 4.22 x 10⁻¹ m/s²
-d) 7.5 x 10⁻¹ m/s²
-e) 1.33 x 10⁰ m/s²
=====*_Rendition_* 3-6=====
<!--a02_1Dkinem_definitions_3-->A car traveling at 30.4 mph increases its speed to 32.9 mph in 6.9 seconds. What is the average acceleration?
-a) 5.12 x 10⁻² m/s²
-b) 9.11 x 10⁻² m/s²
+c) 1.62 x 10⁻¹ m/s²
-d) 2.88 x 10⁻¹ m/s²
-e) 5.12 x 10⁻¹ m/s²
=====*_Rendition_* 3-7=====
<!--a02_1Dkinem_definitions_3-->A car traveling at 32.9 mph increases its speed to 35.1 mph in 4.6 seconds. What is the average acceleration?
+a) 2.14 x 10⁻¹ m/s²
-b) 3.8 x 10⁻¹ m/s²
-c) 6.76 x 10⁻¹ m/s²
-d) 1.2 x 10⁰ m/s²
-e) 2.14 x 10⁰ m/s²

=====*_Rendition_* 3-8=====
<!--a02_1Dkinem_definitions_3-->A car traveling at 38.9 mph increases its speed to 43.7 mph in 3 seconds. What is the average acceleration?
-a) 2.26 x 10⁻¹ m/s²
-b) 4.02 x 10⁻¹ m/s²
+c) 7.15 x 10⁻¹ m/s²
-d) 1.27 x 10⁰ m/s²
-e) 2.26 x 10⁰ m/s²
=====*_Rendition_* 3-9=====
<!--a02_1Dkinem_definitions_3-->A car traveling at 27 mph increases its speed to 29.5 mph in 5.4 seconds. What is the average acceleration?
+a) 2.07 x 10⁻¹ m/s²
-b) 3.68 x 10⁻¹ m/s²
-c) 6.54 x 10⁻¹ m/s²
-d) 1.16 x 10⁰ m/s²
-e) 2.07 x 10⁰ m/s²
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a02_1Dkinem_definitions_4-->Mr. Smith is backing his car at a speed of 2.42 mph when he hits a cornfield (seed corn). In the course of 2.35 seconds he stops, puts his car in forward drive, and exits the field at a speed of 6.1 mph. What was the ''magnitude'' (absolute value) of his acceleration?
-a) 2.29 x 10⁰ miles per hour per second
-b) 2.88 x 10⁰ miles per hour per second
+c) 3.63 x 10⁰ miles per hour per second
-d) 4.56 x 10⁰ miles per hour per second
-e) 5.75 x 10⁰ miles per hour per second
=====*_Rendition_* 4-3=====
<!--a02_1Dkinem_definitions_4-->Mr. Smith is backing his car at a speed of 3.06 mph when he hits a cornfield (seed corn). In the course of 1.29 seconds he stops, puts his car in forward drive, and exits the field at a speed of 5.6 mph. What was the ''magnitude'' (absolute value) of his acceleration?
-a) 3.36 x 10⁰ miles per hour per second
-b) 4.24 x 10⁰ miles per hour per second
-c) 5.33 x 10⁰ miles per hour per second
+d) 6.71 x 10⁰ miles per hour per second
-e) 8.45 x 10⁰ miles per hour per second
=====*_Rendition_* 4-4=====
<!--a02_1Dkinem_definitions_4-->Mr. Smith is backing his car at a speed of 2.33 mph when he hits a cornfield (seed corn). In the course of 1.22 seconds he stops, puts his car in forward drive, and exits the field at a speed of 6.68 mph. What was the ''magnitude'' (absolute value) of his acceleration?
-a) 2.94 x 10⁰ miles per hour per second
-b) 3.7 x 10⁰ miles per hour per second
-c) 4.66 x 10⁰ miles per hour per second
-d) 5.87 x 10⁰ miles per hour per second
+e) 7.39 x 10⁰ miles per hour per second
=====*_Rendition_* 4-5=====

<!--a02_1Dkinem_definitions_4-->Mr. Smith is backing his car at a speed of 3.12 mph when he hits a cornfield (seed corn). In the course of 2.39 seconds he stops, puts his car in forward drive, and exits the field at a speed of 6.32 mph. What was the ''magnitude'' (absolute value) of his acceleration?
+a) 3.95 x 10⁰ miles per hour per second
-b) 4.97 x 10⁰ miles per hour per second
-c) 6.26 x 10⁰ miles per hour per second
-d) 7.88 x 10⁰ miles per hour per second
-e) 9.92 x 10⁰ miles per hour per second
=====*_Rendition_* 4-6=====
<!--a02_1Dkinem_definitions_4-->Mr. Smith is backing his car at a speed of 3.57 mph when he hits a cornfield (seed corn). In the course of 2.8 seconds he stops, puts his car in forward drive, and exits the field at a speed of 6.75 mph. What was the ''magnitude'' (absolute value) of his acceleration?
-a) 1.85 x 10⁰ miles per hour per second
-b) 2.33 x 10⁰ miles per hour per second
-c) 2.93 x 10⁰ miles per hour per second
+d) 3.69 x 10⁰ miles per hour per second
-e) 4.64 x 10⁰ miles per hour per second
=====*_Rendition_* 4-7=====
<!--a02_1Dkinem_definitions_4-->Mr. Smith is backing his car at a speed of 2.39 mph when he hits a cornfield (seed corn). In the course of 2.94 seconds he stops, puts his car in forward drive, and exits the field at a speed of 5.12 mph. What was the ''magnitude'' (absolute value) of his acceleration?
-a) 1.61 x 10⁰ miles per hour per second
-b) 2.03 x 10⁰ miles per hour per second
+c) 2.55 x 10⁰ miles per hour per second
-d) 3.22 x 10⁰ miles per hour per second
-e) 4.05 x 10⁰ miles per hour per second
=====*_Rendition_* 4-8=====
<!--a02_1Dkinem_definitions_4-->Mr. Smith is backing his car at a speed of 3.8 mph when he hits a cornfield (seed corn). In the course of 2.16 seconds he stops, puts his car in forward drive, and exits the field at a speed of 5.9 mph. What was the ''magnitude'' (absolute value) of his acceleration?
-a) 2.25 x 10⁰ miles per hour per second
-b) 2.83 x 10⁰ miles per hour per second
-c) 3.57 x 10⁰ miles per hour per second
+d) 4.49 x 10⁰ miles per hour per second
-e) 5.65 x 10⁰ miles per hour per second
=====*_Rendition_* 4-9=====
<!--a02_1Dkinem_definitions_4-->Mr. Smith is backing his car at a speed of 4.27 mph when he hits a cornfield (seed corn). In the course of 1.74 seconds he stops, puts his car in forward drive, and exits the field at a speed of 6.17 mph. What was the ''magnitude'' (absolute value) of his acceleration?
+a) 6 x 10⁰ miles per hour per second
-b) 7.55 x 10⁰ miles per hour per second
-c) 9.51 x 10⁰ miles per hour per second

-d) 1.2 x 10¹ miles per hour per second
-e) 1.51 x 10¹ miles per hour per second
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Instructions are forthcoming

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===*_Quiz_*===
<quiz display=simple>
{<!--a02_1Dkinem_equations_1-->A car is accelerating uniformly at an acceleration of 4.25m/s/s. At x = 7.25m, the speed is 3.7m/s. How fast is it moving at x = 12.25 m?}
+a) 7.5 m/s.
-b) 9 m/s.
-c) 10.79 m/s.
-d) 12.95 m/s.
-e) 15.54 m/s.

{<!--a02_1Dkinem_equations_2-->What is the acceleration if a car travelling at 10.8 m/s makes a skid mark that is 6.5 m long before coming to rest? (Assume uniform acceleration.)}
-a) 5.19m/s².
-b) 6.23m/s².
-c) 7.48m/s².
+d) 8.97m/s².
-e) 10.77m/s².

{<!--a02_1Dkinem_equations_3-->A train accelerates uniformly from 16 m/s to 33 m/s, while travelling a distance of 485 m. What is the

'average' acceleration?}
+a) 0.86m/s/s.
-b) 1.03m/s/s.
-c) 1.24m/s/s.
-d) 1.48m/s/s.
-e) 1.78m/s/s.

{<!--a02_1Dkinem_equations_4-->A particle accelerates uniformly at 11.25 m/s/s. How long does it take for the velocity to increase from 932 m/s to 1815 m/s?}
-a) 45.42 s
-b) 54.51 s
-c) 65.41 s
+d) 78.49 s
-e) 94.19 s

</quiz>

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Other renditions
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====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a02_1Dkinem_equations_1-->A car is accelerating uniformly at an acceleration of 3.75m/s/s. At x = 5.25m, the speed is 3.55m/s. How fast is it moving at x = 11.5 m?
-a) 3.72 m/s.
-b) 4.46 m/s.
-c) 5.36 m/s.
-d) 6.43 m/s.
+e) 7.71 m/s.
=====*_Rendition_* 1-3=====
<!--a02_1Dkinem_equations_1-->A car is accelerating uniformly at an acceleration of 4.05m/s/s. At x = 4m, the speed is 4.8m/s. How fast is it moving at x = 12.5 m?
-a) 6.66 m/s.
-b) 7.99 m/s.
+c) 9.59 m/s.
-d) 11.5 m/s.
-e) 13.8 m/s.
=====*_Rendition_* 1-4=====
<!--a02_1Dkinem_equations_1-->A car is accelerating uniformly at an acceleration of 3.6m/s/s. At x = 6m, the speed is 3.7m/s. How fast is it moving at x = 11.5 m?
-a) 6.08 m/s.
+b) 7.3 m/s.
-c) 8.76 m/s.
-d) 10.51 m/s.
-e) 12.61 m/s.

=====*_Rendition_* 1-5=====
<!--a02_1Dkinem_equations_1-->A car is accelerating uniformly at an acceleration of 3.6m/s/s. At x = 7.5m, the speed is 4.7m/s. How fast is it moving at x = 11.5 m?
-a) 4.95 m/s.
-b) 5.94 m/s.
+c) 7.13 m/s.
-d) 8.56 m/s.
-e) 10.27 m/s.
=====*_Rendition_* 1-6=====
<!--a02_1Dkinem_equations_1-->A car is accelerating uniformly at an acceleration of 3.8m/s/s. At x = 4.5m, the speed is 3.6m/s. How fast is it moving at x = 11.5 m?
+a) 8.13 m/s.
-b) 9.76 m/s.
-c) 11.71 m/s.
-d) 14.06 m/s.
-e) 16.87 m/s.
=====*_Rendition_* 1-7=====
<!--a02_1Dkinem_equations_1-->A car is accelerating uniformly at an acceleration of 3.3m/s/s. At x = 5.75m, the speed is 4.95m/s. How fast is it moving at x = 13.75 m?
-a) 5.09 m/s.
-b) 6.11 m/s.
-c) 7.33 m/s.
+d) 8.79 m/s.
-e) 10.55 m/s.
=====*_Rendition_* 1-8=====
<!--a02_1Dkinem_equations_1-->A car is accelerating uniformly at an acceleration of 3.95m/s/s. At x = 5.5m, the speed is 3.85m/s. How fast is it moving at x = 11.25 m?
-a) 5.39 m/s.
-b) 6.47 m/s.
+c) 7.76 m/s.
-d) 9.31 m/s.
-e) 11.18 m/s.
=====*_Rendition_* 1-9=====
<!--a02_1Dkinem_equations_1-->A car is accelerating uniformly at an acceleration of 3.2m/s/s. At x = 7.5m, the speed is 4m/s. How fast is it moving at x = 12 m?
-a) 4.65 m/s.
-b) 5.58 m/s.
+c) 6.69 m/s.
-d) 8.03 m/s.
-e) 9.64 m/s.
=====*_Rendition_* 1-10=====
<!--a02_1Dkinem_equations_1-->A car is accelerating uniformly at an acceleration of 2.6m/s/s. At x = 5.5m, the speed is 3.2m/s. How fast is it moving at x = 13.25 m?
+a) 7.11 m/s.
-b) 8.53 m/s.
-c) 10.24 m/s.

-d) 12.28 m/s.
-e) 14.74 m/s.
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a02_1Dkinem_equations_2-->What is the acceleration if a car travelling at 9.95 m/s makes a skid mark that is 7.5 m long before coming to rest? (Assume uniform acceleration.)
-a) 5.5m/s².
+b) 6.6m/s².
-c) 7.92m/s².
-d) 9.5m/s².
-e) 11.41m/s².
=====*_Rendition_* 2-3=====
<!--a02_1Dkinem_equations_2-->What is the acceleration if a car travelling at 7.7 m/s makes a skid mark that is 7 m long before coming to rest? (Assume uniform acceleration.)
+a) 4.24m/s².
-b) 5.08m/s².
-c) 6.1m/s².
-d) 7.32m/s².
-e) 8.78m/s².
=====*_Rendition_* 2-4=====
<!--a02_1Dkinem_equations_2-->What is the acceleration if a car travelling at 7.85 m/s makes a skid mark that is 6.25 m long before coming to rest? (Assume uniform acceleration.)
-a) 3.42m/s².
-b) 4.11m/s².
+c) 4.93m/s².
-d) 5.92m/s².
-e) 7.1m/s².
=====*_Rendition_* 2-5=====
<!--a02_1Dkinem_equations_2-->What is the acceleration if a car travelling at 9.75 m/s makes a skid mark that is 8 m long before coming to rest? (Assume uniform acceleration.)
-a) 2.87m/s².
-b) 3.44m/s².
-c) 4.13m/s².
-d) 4.95m/s².
+e) 5.94m/s².
=====*_Rendition_* 2-6=====
<!--a02_1Dkinem_equations_2-->What is the acceleration if a car travelling at 8.45 m/s makes a skid mark that is 8.5 m long before coming to rest? (Assume uniform acceleration.)
-a) 2.43m/s².
-b) 2.92m/s².
-c) 3.5m/s².
+d) 4.2m/s².
-e) 5.04m/s².
=====*_Rendition_* 2-7=====
<!--a02_1Dkinem_equations_2-->What is the acceleration if a car travelling at 10.95 m/s makes a skid mark that is 6.25 m long before coming to rest? (Assume uniform acceleration.)

-a) 6.66m/s².
-b) 7.99m/s².
+c) 9.59m/s².
-d) 11.51m/s².
-e) 13.81m/s².
=====*_Rendition_* 2-8=====
<!--a02_1Dkinem_equations_2-->What is the acceleration if a car travelling at 10.9 m/s makes a skid mark that is 6.25 m long before coming to rest? (Assume uniform acceleration.)
-a) 5.5m/s/2.
-b) 6.6m/s/2.
-c) 7.92m/s/2.
+d) 9.5m/s/2.
-e) 11.41m/s/2.
=====*_Rendition_* 2-9=====
<!--a02_1Dkinem_equations_2-->What is the acceleration if a car travelling at 9.8 m/s makes a skid mark that is 7.25 m long before coming to rest? (Assume uniform acceleration.)
-a) 3.83m/s/2.
-b) 4.6m/s/2.
-c) 5.52m/s/2.
+d) 6.62m/s/2.
-e) 7.95m/s/2.
=====*_Rendition_* 2-10=====
<!--a02_1Dkinem_equations_2-->What is the acceleration if a car travelling at 8.35 m/s makes a skid mark that is 8.5 m long before coming to rest? (Assume uniform acceleration.)
-a) 2.37m/s/2.
-b) 2.85m/s/2.
-c) 3.42m/s/2.
+d) 4.1m/s/2.
-e) 4.92m/s/2.
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a02_1Dkinem_equations_3-->A train accelerates uniformly from 14.25 m/s to 29.625 m/s, while travelling a distance of 490 m. What is the 'average' acceleration?
-a) 0.48m/s/s.
-b) 0.57m/s/s.
+c) 0.69m/s/s.
-d) 0.83m/s/s.
-e) 0.99m/s/s.
=====*_Rendition_* 3-3=====
<!--a02_1Dkinem_equations_3-->A train accelerates uniformly from 17 m/s to 35.25 m/s, while travelling a distance of 151 m. What is the 'average' acceleration?
-a) 1.83m/s/s.
-b) 2.19m/s/s.
-c) 2.63m/s/s.
+d) 3.16m/s/s.
-e) 3.79m/s/s.
=====*_Rendition_* 3-4=====

<!--a02_1Dkinem_equations_3-->A train accelerates uniformly from 17 m/s to 29.75 m/s, while travelling a distance of 285 m. What is the 'average' acceleration?
-a) 0.5m/s/s.
-b) 0.61m/s/s.
-c) 0.73m/s/s.
-d) 0.87m/s/s.
+e) 1.05m/s/s.
=====*_Rendition_* 3-5=====
<!--a02_1Dkinem_equations_3-->A train accelerates uniformly from 9.75 m/s to 26.875 m/s, while travelling a distance of 371 m. What is the 'average' acceleration?
+a) 0.85m/s/s.
-b) 1.01m/s/s.
-c) 1.22m/s/s.
-d) 1.46m/s/s.
-e) 1.75m/s/s.
=====*_Rendition_* 3-6=====
<!--a02_1Dkinem_equations_3-->A train accelerates uniformly from 15.75 m/s to 30.375 m/s, while travelling a distance of 357 m. What is the 'average' acceleration?
-a) 0.55m/s/s.
-b) 0.66m/s/s.
-c) 0.79m/s/s.
+d) 0.94m/s/s.
-e) 1.13m/s/s.
=====*_Rendition_* 3-7=====
<!--a02_1Dkinem_equations_3-->A train accelerates uniformly from 12.75 m/s to 33.125 m/s, while travelling a distance of 272 m. What is the 'average' acceleration?
-a) 0.99m/s/s.
-b) 1.19m/s/s.
-c) 1.43m/s/s.
+d) 1.72m/s/s.
-e) 2.06m/s/s.
=====*_Rendition_* 3-8=====
<!--a02_1Dkinem_equations_3-->A train accelerates uniformly from 9.5 m/s to 24.5 m/s, while travelling a distance of 256 m. What is the 'average' acceleration?
+a) 1m/s/s.
-b) 1.2m/s/s.
-c) 1.43m/s/s.
-d) 1.72m/s/s.
-e) 2.07m/s/s.
=====*_Rendition_* 3-9=====
<!--a02_1Dkinem_equations_3-->A train accelerates uniformly from 10 m/s to 18.75 m/s, while travelling a distance of 263 m. What is the 'average' acceleration?
-a) 0.28m/s/s.
-b) 0.33m/s/s.
-c) 0.4m/s/s.
+d) 0.48m/s/s.

-e) 0.57m/s/s.
=====*_Rendition_* 3-10=====
<!--a02_1Dkinem_equations_3-->A train accelerates uniformly from 17.75 m/s to 31.625 m/s, while travelling a distance of 372 m. What is the 'average' acceleration?
-a) 0.77m/s/s.
+b) 0.92m/s/s.
-c) 1.1m/s/s.
-d) 1.33m/s/s.
-e) 1.59m/s/s.
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a02_1Dkinem_equations_4-->A particle accelerates uniformly at 16.75 m/s/s. How long does it take for the velocity to increase from 957 m/s to 1935 m/s?
-a) 33.79 s
-b) 40.55 s
-c) 48.66 s
+d) 58.39 s
-e) 70.07 s
=====*_Rendition_* 4-3=====
<!--a02_1Dkinem_equations_4-->A particle accelerates uniformly at 10.75 m/s/s. How long does it take for the velocity to increase from 1184 m/s to 2001 m/s?
-a) 43.98 s
-b) 52.78 s
-c) 63.33 s
+d) 76 s
-e) 91.2 s
=====*_Rendition_* 4-4=====
<!--a02_1Dkinem_equations_4-->A particle accelerates uniformly at 17.25 m/s/s. How long does it take for the velocity to increase from 761 m/s to 1698 m/s?
-a) 45.27 s
+b) 54.32 s
-c) 65.18 s
-d) 78.22 s
-e) 93.86 s
=====*_Rendition_* 4-5=====
<!--a02_1Dkinem_equations_4-->A particle accelerates uniformly at 12.5 m/s/s. How long does it take for the velocity to increase from 968 m/s to 1883 m/s?
-a) 42.36 s
-b) 50.83 s
-c) 61 s
+d) 73.2 s
-e) 87.84 s
=====*_Rendition_* 4-6=====
<!--a02_1Dkinem_equations_4-->A particle accelerates uniformly at 12.5 m/s/s. How long does it take for the velocity to increase from 1173 m/s to 1878 m/s?
-a) 39.17 s

-b) 47 s
+c) 56.4 s
-d) 67.68 s
-e) 81.22 s
=====*_Rendition_* 4-7=====
<!--a02_1Dkinem_equations_4-->A particle accelerates uniformly at 11.5 m/s/s. How long does it take for the velocity to increase from 1164 m/s to 2020 m/s?
-a) 35.9 s
-b) 43.08 s
-c) 51.69 s
-d) 62.03 s
+e) 74.43 s
=====*_Rendition_* 4-8=====
<!--a02_1Dkinem_equations_4-->A particle accelerates uniformly at 16 m/s/s. How long does it take for the velocity to increase from 981 m/s to 1816 m/s?
-a) 30.2 s
-b) 36.24 s
-c) 43.49 s
+d) 52.19 s
-e) 62.63 s
=====*_Rendition_* 4-9=====
<!--a02_1Dkinem_equations_4-->A particle accelerates uniformly at 13 m/s/s. How long does it take for the velocity to increase from 1024 m/s to 1888 m/s?
-a) 46.15 s
-b) 55.38 s
+c) 66.46 s
-d) 79.75 s
-e) 95.7 s
=====*_Rendition_* 4-10=====
<!--a02_1Dkinem_equations_4-->A particle accelerates uniformly at 16.75 m/s/s. How long does it take for the velocity to increase from 1210 m/s to 2087 m/s?
+a) 52.36 s
-b) 62.83 s
-c) 75.4 s
-d) 90.47 s
-e) 108.57 s
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====*_Instructions_*====
Instructions are forthcoming

Transclusion from [[Quizbank/Instructions_0]]:
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===*_Quiz_*===
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{<!--a03_2Dkinem_2dmotion_1-->A ball is kicked horizontally from a height of 2.3 m, at a speed of   7.8m/s. How far does it travel before landing?}
-a) 3.09 m.
-b) 3.71 m.
-c) 4.45 m.
+d) 5.34 m.
-e) 6.41 m.

{<!--a03_2Dkinem_2dmotion_2-->A particle is initially at the origin and moving in the x direction at a speed of 3.7 m/s. It has an constant acceleration of 2.3 m/s² in the y direction, as well as an acceleration of 0.5 in the x direction. What angle does the velocity make with the x axis at time t = 2.8 s?}
+a) 51.62 degrees.
-b) 59.37 degrees.
-c) 68.27 degrees.
-d) 78.51 degrees.
-e) 90.29 degrees.

{<!--a03_2Dkinem_2dmotion_3-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 7.29 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.75 m, and moves at a constant speed of 2.98 m/s in the +y direction.   At what time do they meet?}
-a) 0.24 s.
-b) 0.29 s.
-c) 0.34 s.
+d) 0.41 s.
-e) 0.5 s.

{<!--a03_2Dkinem_2dmotion_4-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 7.17 m/s at an angle of θ above the x-axis.

Particle B is initially situated at x= 2.04 m, and moves at a constant speed of 2.52 m/s in the +y direction.   What is the value of θ (in radians)?}
-a) 0.27 radians.
-b) 0.31 radians.
+c) 0.36 radians.
-d) 0.41 radians.
-e) 0.47 radians.

</quiz>

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Other renditions
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====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a03_2Dkinem_2dmotion_1-->A ball is kicked horizontally from a height of 2.7 m, at a speed of   7.5m/s. How far does it travel before landing?
-a) 3.22 m.
-b) 3.87 m.
-c) 4.64 m.
+d) 5.57 m.
-e) 6.68 m.
=====*_Rendition_* 1-3=====
<!--a03_2Dkinem_2dmotion_1-->A ball is kicked horizontally from a height of 2.2 m, at a speed of   9.8m/s. How far does it travel before landing?
+a) 6.57 m.
-b) 7.88 m.
-c) 9.46 m.
-d) 11.35 m.
-e) 13.62 m.
=====*_Rendition_* 1-4=====
<!--a03_2Dkinem_2dmotion_1-->A ball is kicked horizontally from a height of 2.9 m, at a speed of   7.4m/s. How far does it travel before landing?
-a) 4.74 m.
+b) 5.69 m.
-c) 6.83 m.
-d) 8.2 m.
-e) 9.84 m.
=====*_Rendition_* 1-5=====
<!--a03_2Dkinem_2dmotion_1-->A ball is kicked horizontally from a height of 2.6 m, at a speed of   7.7m/s. How far does it travel before landing?
-a) 4.67 m.
+b) 5.61 m.
-c) 6.73 m.

-d) 8.08 m.
-e) 9.69 m.
=====*_Rendition_* 1-6=====
<!--a03_2Dkinem_2dmotion_1-->A ball is kicked horizontally from a height of 2.8 m, at a speed of   7.9m/s. How far does it travel before landing?
-a) 3.46 m.
-b) 4.15 m.
-c) 4.98 m.
+d) 5.97 m.
-e) 7.17 m.
=====*_Rendition_* 1-7=====
<!--a03_2Dkinem_2dmotion_1-->A ball is kicked horizontally from a height of 3 m, at a speed of   7.6m/s. How far does it travel before landing?
-a) 2.87 m.
-b) 3.44 m.
-c) 4.13 m.
-d) 4.96 m.
+e) 5.95 m.
=====*_Rendition_* 1-8=====
<!--a03_2Dkinem_2dmotion_1-->A ball is kicked horizontally from a height of 2.5 m, at a speed of   8.7m/s. How far does it travel before landing?
-a) 3.6 m.
-b) 4.32 m.
-c) 5.18 m.
+d) 6.21 m.
-e) 7.46 m.
=====*_Rendition_* 1-9=====
<!--a03_2Dkinem_2dmotion_1-->A ball is kicked horizontally from a height of 2 m, at a speed of   6.2m/s. How far does it travel before landing?
-a) 2.75 m.
-b) 3.3 m.
+c) 3.96 m.
-d) 4.75 m.
-e) 5.7 m.
=====*_Rendition_* 1-10=====
<!--a03_2Dkinem_2dmotion_1-->A ball is kicked horizontally from a height of 2 m, at a speed of   7.7m/s. How far does it travel before landing?
-a) 2.85 m.
-b) 3.42 m.
-c) 4.1 m.
+d) 4.92 m.
-e) 5.9 m.
=====*_Rendition_* 1-11=====
<!--a03_2Dkinem_2dmotion_1-->A ball is kicked horizontally from a height of 3 m, at a speed of   10m/s. How far does it travel before landing?
-a) 6.52 m.

+b) 7.82 m.
-c) 9.39 m.
-d) 11.27 m.
-e) 13.52 m.
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a03_2Dkinem_2dmotion_2-->A particle is initially at the origin and moving in the x direction at a speed of 4.3 m/s. It has an constant acceleration of 2.2 m/s² in the y direction, as well as an acceleration of 0.3 in the x direction. What angle does the velocity make with the x axis at time t = 2.8 s?
-a) 37.93 degrees.
-b) 43.62 degrees.
+c) 50.16 degrees.
-d) 57.68 degrees.
-e) 66.33 degrees.
=====*_Rendition_* 2-3=====
<!--a03_2Dkinem_2dmotion_2-->A particle is initially at the origin and moving in the x direction at a speed of 4.3 m/s. It has an constant acceleration of 1.8 m/s² in the y direction, as well as an acceleration of 0.3 in the x direction. What angle does the velocity make with the x axis at time t = 2.5 s?
-a) 36.26 degrees.
+b) 41.7 degrees.
-c) 47.96 degrees.
-d) 55.15 degrees.
-e) 63.43 degrees.
=====*_Rendition_* 2-4=====
<!--a03_2Dkinem_2dmotion_2-->A particle is initially at the origin and moving in the x direction at a speed of 4.1 m/s. It has an constant acceleration of 2.3 m/s² in the y direction, as well as an acceleration of 0.5 in the x direction. What angle does the velocity make with the x axis at time t = 2.7 s?
-a) 32.04 degrees.
-b) 36.85 degrees.
-c) 42.37 degrees.
+d) 48.73 degrees.
-e) 56.04 degrees.
=====*_Rendition_* 2-5=====
<!--a03_2Dkinem_2dmotion_2-->A particle is initially at the origin and moving in the x direction at a speed of 3.7 m/s. It has an constant acceleration of 1.5 m/s² in the y direction, as well as an acceleration of 0.6 in the x direction. What angle does the velocity make with the x axis at time t = 2.1 s?
-a) 21.32 degrees.
-b) 24.51 degrees.
-c) 28.19 degrees.
+d) 32.42 degrees.
-e) 37.28 degrees.
=====*_Rendition_* 2-6=====
<!--a03_2Dkinem_2dmotion_2-->A particle is initially at the origin and moving in the x direction at a speed of 4.1 m/s. It has an constant

acceleration of 1.9 m/s² in the y direction, as well as an acceleration of 0.9 in the x direction. What angle does the velocity make with the x axis at time t = 2.4 s?
-a) 27.27 degrees.
-b) 31.37 degrees.
+c) 36.07 degrees.
-d) 41.48 degrees.
-e) 47.7 degrees.
=====*_Rendition_* 2-7=====
<!--a03_2Dkinem_2dmotion_2-->A particle is initially at the origin and moving in the x direction at a speed of 3.9 m/s. It has an constant acceleration of 1.9 m/s² in the y direction, as well as an acceleration of 0.5 in the x direction. What angle does the velocity make with the x axis at time t = 2.5 s?
-a) 37.12 degrees.
+b) 42.69 degrees.
-c) 49.09 degrees.
-d) 56.45 degrees.
-e) 64.92 degrees.
=====*_Rendition_* 2-8=====
<!--a03_2Dkinem_2dmotion_2-->A particle is initially at the origin and moving in the x direction at a speed of 4 m/s. It has an constant acceleration of 1.8 m/s² in the y direction, as well as an acceleration of 0.6 in the x direction. What angle does the velocity make with the x axis at time t = 2.7 s?
+a) 40.85 degrees.
-b) 46.98 degrees.
-c) 54.03 degrees.
-d) 62.13 degrees.
-e) 71.45 degrees.
=====*_Rendition_* 2-9=====
<!--a03_2Dkinem_2dmotion_2-->A particle is initially at the origin and moving in the x direction at a speed of 3.8 m/s. It has an constant acceleration of 2.1 m/s² in the y direction, as well as an acceleration of 0.6 in the x direction. What angle does the velocity make with the x axis at time t = 2.9 s?
-a) 31.37 degrees.
-b) 36.07 degrees.
-c) 41.48 degrees.
+d) 47.71 degrees.
-e) 54.86 degrees.
=====*_Rendition_* 2-10=====
<!--a03_2Dkinem_2dmotion_2-->A particle is initially at the origin and moving in the x direction at a speed of 4.1 m/s. It has an constant acceleration of 1.5 m/s² in the y direction, as well as an acceleration of 0.7 in the x direction. What angle does the velocity make with the x axis at time t = 2.2 s?
-a) 17.34 degrees.
-b) 19.94 degrees.
-c) 22.94 degrees.
-d) 26.38 degrees.
+e) 30.33 degrees.

=====*_Rendition_* 2-11=====
<!--a03_2Dkinem_2dmotion_2-->A particle is initially at the origin and moving in the x direction at a speed of 3.9 m/s. It has an constant acceleration of 2.2 m/s² in the y direction, as well as an acceleration of 0.8 in the x direction. What angle does the velocity make with the x axis at time t = 2.9 s?
-a) 26.14 degrees.
-b) 30.07 degrees.
-c) 34.58 degrees.
-d) 39.76 degrees.
+e) 45.73 degrees.
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a03_2Dkinem_2dmotion_3-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 5.42 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.89 m, and moves at a constant speed of 2.26 m/s in the +y direction.   At what time do they meet?
-a) 0.49 s.
+b) 0.59 s.
-c) 0.7 s.
-d) 0.84 s.
-e) 1.01 s.
=====*_Rendition_* 3-3=====
<!--a03_2Dkinem_2dmotion_3-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 7.03 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.12 m, and moves at a constant speed of 2 m/s in the +y direction.   At what time do they meet?
-a) 0.15 s.
-b) 0.18 s.
-c) 0.22 s.
-d) 0.26 s.
+e) 0.31 s.
=====*_Rendition_* 3-4=====
<!--a03_2Dkinem_2dmotion_3-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 6.54 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.91 m, and moves at a constant speed of 2.42 m/s in the +y direction.   At what time do they meet?
+a) 0.48 s.
-b) 0.57 s.
-c) 0.69 s.
-d) 0.83 s.
-e) 0.99 s.
=====*_Rendition_* 3-5=====
<!--a03_2Dkinem_2dmotion_3-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 5.43 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.49 m, and moves at a constant speed of 2.75 m/s in the +y direction.   At what time do they meet?
-a) 0.26 s.

-b) 0.31 s.
-c) 0.37 s.
-d) 0.44 s.
+e) 0.53 s.
=====*_Rendition_* 3-6=====
<!--a03_2Dkinem_2dmotion_3-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 5.86 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.46 m, and moves at a constant speed of 2.23 m/s in the +y direction. At what time do they meet?
+a) 0.45 s.
-b) 0.54 s.
-c) 0.65 s.
-d) 0.78 s.
-e) 0.94 s.
=====*_Rendition_* 3-7=====
<!--a03_2Dkinem_2dmotion_3-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 6.76 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.65 m, and moves at a constant speed of 2.8 m/s in the +y direction. At what time do they meet?
-a) 0.21 s.
-b) 0.25 s.
-c) 0.3 s.
-d) 0.36 s.
+e) 0.43 s.
=====*_Rendition_* 3-8=====
<!--a03_2Dkinem_2dmotion_3-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 7.34 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.22 m, and moves at a constant speed of 2.91 m/s in the +y direction. At what time do they meet?
-a) 0.23 s.
-b) 0.27 s.
+c) 0.33 s.
-d) 0.4 s.
-e) 0.47 s.
=====*_Rendition_* 3-9=====
<!--a03_2Dkinem_2dmotion_3-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 5.49 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.35 m, and moves at a constant speed of 2.6 m/s in the +y direction. At what time do they meet?

-a) 0.41 s.
+b) 0.49 s.
-c) 0.58 s.
-d) 0.7 s.
-e) 0.84 s.
=====*_Rendition_* 3-10=====
<!--a03_2Dkinem_2dmotion_3-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a

constant speed of 5.94 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.92 m, and moves at a constant speed of 2.89 m/s in the +y direction.   At what time do they meet?
-a) 0.33 s.
-b) 0.39 s.
-c) 0.47 s.
+d) 0.56 s.
-e) 0.68 s.
=====*_Rendition_* 3-11=====
<!--a03_2Dkinem_2dmotion_3-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 6.1 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.79 m, and moves at a constant speed of 2.87 m/s in the +y direction.   At what time do they meet?
-a) 0.43 s.
+b) 0.52 s.
-c) 0.62 s.
-d) 0.75 s.
-e) 0.9 s.
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a03_2Dkinem_2dmotion_4-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 5.15 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.05 m, and moves at a constant speed of 2.94 m/s in the +y direction.   What is the value of θ (in radians)?
-a) 0.46 radians.
-b) 0.53 radians.
+c) 0.61 radians.
-d) 0.7 radians.
-e) 0.8 radians.
=====*_Rendition_* 4-3=====
<!--a03_2Dkinem_2dmotion_4-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 8.02 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.27 m, and moves at a constant speed of 2.5 m/s in the +y direction.   What is the value of θ (in radians)?
-a) 0.18 radians.
-b) 0.21 radians.
-c) 0.24 radians.
-d) 0.28 radians.
+e) 0.32 radians.
=====*_Rendition_* 4-4=====
<!--a03_2Dkinem_2dmotion_4-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 5.19 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.76 m, and moves at a constant speed of 2.86 m/s in the +y direction.   What is the value of θ (in radians)?
-a) 0.44 radians.

-b) 0.51 radians.
+c) 0.58 radians.
-d) 0.67 radians.
-e) 0.77 radians.
=====*_Rendition_* 4-5=====
<!--a03_2Dkinem_2dmotion_4-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 5.11 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.69 m, and moves at a constant speed of 2.23 m/s in the +y direction.   What is the value of θ (in radians)?
-a) 0.26 radians.
-b) 0.3 radians.
-c) 0.34 radians.
-d) 0.39 radians.
+e) 0.45 radians.
=====*_Rendition_* 4-6=====
<!--a03_2Dkinem_2dmotion_4-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 7.18 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.15 m, and moves at a constant speed of 2.88 m/s in the +y direction.   What is the value of θ (in radians)?
-a) 0.24 radians.
-b) 0.27 radians.
-c) 0.31 radians.
-d) 0.36 radians.
+e) 0.41 radians.
=====*_Rendition_* 4-7=====
<!--a03_2Dkinem_2dmotion_4-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 6.27 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.38 m, and moves at a constant speed of 2.94 m/s in the +y direction.   What is the value of θ (in radians)?
-a) 0.42 radians.
+b) 0.49 radians.
-c) 0.56 radians.
-d) 0.65 radians.
-e) 0.74 radians.
=====*_Rendition_* 4-8=====
<!--a03_2Dkinem_2dmotion_4-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 5.72 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2 m, and moves at a constant speed of 2.02 m/s in the +y direction.   What is the value of θ (in radians)?
-a) 0.21 radians.
-b) 0.24 radians.
-c) 0.27 radians.
-d) 0.31 radians.
+e) 0.36 radians.

=====*_Rendition_* 4-9=====
<!--a03_2Dkinem_2dmotion_4-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 5.42 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.27 m, and moves at a constant speed of 2.17 m/s in the +y direction.   What is the value of θ (in radians)?
-a) 0.27 radians.
-b) 0.31 radians.
-c) 0.36 radians.
+d) 0.41 radians.
-e) 0.47 radians.
=====*_Rendition_* 4-10=====
<!--a03_2Dkinem_2dmotion_4-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 8.61 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.5 m, and moves at a constant speed of 2.43 m/s in the +y direction.   What is the value of θ (in radians)?
-a) 0.16 radians.
-b) 0.19 radians.
-c) 0.22 radians.
-d) 0.25 radians.
+e) 0.29 radians.
=====*_Rendition_* 4-11=====
<!--a03_2Dkinem_2dmotion_4-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 8.49 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.73 m, and moves at a constant speed of 2.09 m/s in the +y direction.   What is the value of θ (in radians)?
-a) 0.14 radians.
-b) 0.16 radians.
-c) 0.19 radians.
-d) 0.22 radians.
+e) 0.25 radians.
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====*_Instructions_*====
Instructions are forthcoming

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{<!--a03_2Dkinem_smithtrain_1-->The Smith family is having fun on a high speed train travelling at 49.8 m/s. Mr. Smith is at the back of the train and fires a pellet gun with a muzzle speed of 22.4 m/s at Mrs. Smith who is at the front of the train. What is the speed of the bullet with respect to Earth?}
-a) 14.3 m/s.
-b) 21.4 m/s.
-c) 32.1 m/s.
-d) 48.1 m/s.
+e) 72.2 m/s.

{<!--a03_2Dkinem_smithtrain_2-->The Smith family is having fun on a high speed train travelling at 49.8 m/s. Mrs. Smith, who is at the front of the train, fires straight towards the back with a bullet that is going forward with respect to Earth at a speed of 26.4 m/s. What was the muzzle speed of her bullet?}
-a) 15.6 m/s.
+b) 23.4 m/s.
-c) 35.1 m/s.
-d) 52.7 m/s.
-e) 79 m/s.

{<!--a03_2Dkinem_smithtrain_3-->The Smith family is having fun on a high speed train travelling at 49.8 m/s. The daugher fires at Mr. Smith with a pellet gun whose muzzle speed is 29.2 m/s. She was situated across the isle, perpendicular to the length of the train. What is the speed of her bullet with respect to Earth?}
-a) 17.1 m/s.
-b) 25.7 m/s.
-c) 38.5 m/s.
+d) 57.7 m/s.
-e) 86.6 m/s.

{<!--a03_2Dkinem_smithtrain_4-->The Smith family got in trouble for having fun on a high speed train travelling at 49.8 m/s. Mr. Smith is charged with having fired a pellet gun at his daughter (directly across the isle) with a bullet that had a speed of 91.8 m/s with respect to Earth. How fast was the bullet going relative to the

daughter (i.e. train)?}
-a) 64.3 m/s.
+b) 77.1 m/s.
-c) 92.5 m/s.
-d) 111.1 m/s.
-e) 133.3 m/s.

</quiz>

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Other renditions
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====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a03_2Dkinem_smithtrain_1-->The Smith family is having fun on a high speed train travelling at 48.8 m/s. Mr. Smith is at the back of the train and fires a pellet gun with a muzzle speed of 25.7 m/s at Mrs. Smith who is at the front of the train. What is the speed of the bullet with respect to Earth?
-a) 22.1 m/s.
-b) 33.1 m/s.
-c) 49.7 m/s.
+d) 74.5 m/s.
-e) 111.8 m/s.
=====*_Rendition_* 1-3=====
<!--a03_2Dkinem_smithtrain_1-->The Smith family is having fun on a high speed train travelling at 48.1 m/s. Mr. Smith is at the back of the train and fires a pellet gun with a muzzle speed of 21.1 m/s at Mrs. Smith who is at the front of the train. What is the speed of the bullet with respect to Earth?
-a) 13.7 m/s.
-b) 20.5 m/s.
-c) 30.8 m/s.
-d) 46.1 m/s.
+e) 69.2 m/s.
=====*_Rendition_* 1-4=====
<!--a03_2Dkinem_smithtrain_1-->The Smith family is having fun on a high speed train travelling at 48.4 m/s. Mr. Smith is at the back of the train and fires a pellet gun with a muzzle speed of 20.7 m/s at Mrs. Smith who is at the front of the train. What is the speed of the bullet with respect to Earth?
-a) 20.5 m/s.
-b) 30.7 m/s.
-c) 46.1 m/s.
+d) 69.1 m/s.
-e) 103.7 m/s.
=====*_Rendition_* 1-5=====
<!--a03_2Dkinem_smithtrain_1-->The Smith family is having fun on a high speed train travelling at 47.5 m/s. Mr. Smith is at the back of

the train and fires a pellet gun with a muzzle speed of 22.5 m/s at Mrs. Smith who is at the front of the train. What is the speed of the bullet with respect to Earth?
-a) 46.7 m/s.
+b) 70 m/s.
-c) 105 m/s.
-d) 157.5 m/s.
-e) 236.3 m/s.
=====*_Rendition_* 1-6=====
<!--a03_2Dkinem_smithtrain_1-->The Smith family is having fun on a high speed train travelling at 42.3 m/s. Mr. Smith is at the back of the train and fires a pellet gun with a muzzle speed of 25.2 m/s at Mrs. Smith who is at the front of the train. What is the speed of the bullet with respect to Earth?
-a) 30 m/s.
-b) 45 m/s.
+c) 67.5 m/s.
-d) 101.3 m/s.
-e) 151.9 m/s.
=====*_Rendition_* 1-7=====
<!--a03_2Dkinem_smithtrain_1-->The Smith family is having fun on a high speed train travelling at 47.1 m/s. Mr. Smith is at the back of the train and fires a pellet gun with a muzzle speed of 22.9 m/s at Mrs. Smith who is at the front of the train. What is the speed of the bullet with respect to Earth?
-a) 31.1 m/s.
-b) 46.7 m/s.
+c) 70 m/s.
-d) 105 m/s.
-e) 157.5 m/s.
=====*_Rendition_* 1-8=====
<!--a03_2Dkinem_smithtrain_1-->The Smith family is having fun on a high speed train travelling at 47.6 m/s. Mr. Smith is at the back of the train and fires a pellet gun with a muzzle speed of 29.7 m/s at Mrs. Smith who is at the front of the train. What is the speed of the bullet with respect to Earth?
-a) 22.9 m/s.
-b) 34.4 m/s.
-c) 51.5 m/s.
+d) 77.3 m/s.
-e) 116 m/s.
=====*_Rendition_* 1-9=====
<!--a03_2Dkinem_smithtrain_1-->The Smith family is having fun on a high speed train travelling at 47.6 m/s. Mr. Smith is at the back of the train and fires a pellet gun with a muzzle speed of 28.1 m/s at Mrs. Smith who is at the front of the train. What is the speed of the bullet with respect to Earth?
-a) 15 m/s.
-b) 22.4 m/s.
-c) 33.6 m/s.
-d) 50.5 m/s.
+e) 75.7 m/s.

=====*_Rendition_* 1-10=====
<!--a03_2Dkinem_smithtrain_1-->The Smith family is having fun on a high speed train travelling at 47.6 m/s. Mr. Smith is at the back of the train and fires a pellet gun with a muzzle speed of 23.3 m/s at Mrs. Smith who is at the front of the train. What is the speed of the bullet with respect to Earth?
+a) 70.9 m/s.
-b) 106.4 m/s.
-c) 159.5 m/s.
-d) 239.3 m/s.
-e) 358.9 m/s.
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a03_2Dkinem_smithtrain_2-->The Smith family is having fun on a high speed train travelling at 48.8 m/s. Mrs. Smith, who is at the front of the train, fires straight towards the back with a bullet that is going forward with respect to Earth at a speed of 20.2 m/s. What was the muzzle speed of her bullet?
-a) 8.5 m/s.
-b) 12.7 m/s.
-c) 19.1 m/s.
+d) 28.6 m/s.
-e) 42.9 m/s.
=====*_Rendition_* 2-3=====
<!--a03_2Dkinem_smithtrain_2-->The Smith family is having fun on a high speed train travelling at 48.1 m/s. Mrs. Smith, who is at the front of the train, fires straight towards the back with a bullet that is going forward with respect to Earth at a speed of 23.9 m/s. What was the muzzle speed of her bullet?
-a) 16.1 m/s.
+b) 24.2 m/s.
-c) 36.3 m/s.
-d) 54.5 m/s.
-e) 81.7 m/s.
=====*_Rendition_* 2-4=====
<!--a03_2Dkinem_smithtrain_2-->The Smith family is having fun on a high speed train travelling at 48.4 m/s. Mrs. Smith, who is at the front of the train, fires straight towards the back with a bullet that is going forward with respect to Earth at a speed of 29 m/s. What was the muzzle speed of her bullet?
-a) 8.6 m/s.
-b) 12.9 m/s.
+c) 19.4 m/s.
-d) 29.1 m/s.
-e) 43.7 m/s.
=====*_Rendition_* 2-5=====
<!--a03_2Dkinem_smithtrain_2-->The Smith family is having fun on a high speed train travelling at 47.5 m/s. Mrs. Smith, who is at the front of the train, fires straight towards the back with a bullet that is going forward with respect to Earth at a speed of 25.5 m/s. What was the muzzle speed of her bullet?
-a) 9.8 m/s.

-b) 14.7 m/s.
+c) 22 m/s.
-d) 33 m/s.
-e) 49.5 m/s.
=====*_Rendition_* 2-6=====
<!--a03_2Dkinem_smithtrain_2-->The Smith family is having fun on a high speed train travelling at 42.3 m/s. Mrs. Smith, who is at the front of the train, fires straight towards the back with a bullet that is going forward with respect to Earth at a speed of 26.3 m/s. What was the muzzle speed of her bullet?
-a) 7.1 m/s.
-b) 10.7 m/s.
+c) 16 m/s.
-d) 24 m/s.
-e) 36 m/s.
=====*_Rendition_* 2-7=====
<!--a03_2Dkinem_smithtrain_2-->The Smith family is having fun on a high speed train travelling at 47.1 m/s. Mrs. Smith, who is at the front of the train, fires straight towards the back with a bullet that is going forward with respect to Earth at a speed of 24.4 m/s. What was the muzzle speed of her bullet?
-a) 6.7 m/s.
-b) 10.1 m/s.
-c) 15.1 m/s.
+d) 22.7 m/s.
-e) 34.1 m/s.
=====*_Rendition_* 2-8=====
<!--a03_2Dkinem_smithtrain_2-->The Smith family is having fun on a high speed train travelling at 47.6 m/s. Mrs. Smith, who is at the front of the train, fires straight towards the back with a bullet that is going forward with respect to Earth at a speed of 27.9 m/s. What was the muzzle speed of her bullet?
-a) 8.8 m/s.
-b) 13.1 m/s.
+c) 19.7 m/s.
-d) 29.6 m/s.
-e) 44.3 m/s.
=====*_Rendition_* 2-9=====
<!--a03_2Dkinem_smithtrain_2-->The Smith family is having fun on a high speed train travelling at 47.6 m/s. Mrs. Smith, who is at the front of the train, fires straight towards the back with a bullet that is going forward with respect to Earth at a speed of 24.1 m/s. What was the muzzle speed of her bullet?
-a) 7 m/s.
-b) 10.4 m/s.
-c) 15.7 m/s.
+d) 23.5 m/s.
-e) 35.3 m/s.
=====*_Rendition_* 2-10=====
<!--a03_2Dkinem_smithtrain_2-->The Smith family is having fun on a high speed train travelling at 47.6 m/s. Mrs. Smith, who is at the front of the train, fires straight towards the back with a bullet that

is going forward with respect to Earth at a speed of 23.7 m/s. What was the muzzle speed of her bullet?
-a) 15.9 m/s.
+b) 23.9 m/s.
-c) 35.9 m/s.
-d) 53.8 m/s.
-e) 80.7 m/s.
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a03_2Dkinem_smithtrain_3-->The Smith family is having fun on a high speed train travelling at 48.8 m/s. The daugher fires at Mr. Smith with a pellet gun whose muzzle speed is 21.6 m/s. She was situated across the isle, perpendicular to the length of the train. What is the speed of her bullet with respect to Earth?
-a) 15.8 m/s.
-b) 23.7 m/s.
-c) 35.6 m/s.
+d) 53.4 m/s.
-e) 80 m/s.
=====*_Rendition_* 3-3=====
<!--a03_2Dkinem_smithtrain_3-->The Smith family is having fun on a high speed train travelling at 48.1 m/s. The daugher fires at Mr. Smith with a pellet gun whose muzzle speed is 27.7 m/s. She was situated across the isle, perpendicular to the length of the train. What is the speed of her bullet with respect to Earth?
-a) 16.4 m/s.
-b) 24.7 m/s.
-c) 37 m/s.
+d) 55.5 m/s.
-e) 83.3 m/s.
=====*_Rendition_* 3-4=====
<!--a03_2Dkinem_smithtrain_3-->The Smith family is having fun on a high speed train travelling at 48.4 m/s. The daugher fires at Mr. Smith with a pellet gun whose muzzle speed is 26.1 m/s. She was situated across the isle, perpendicular to the length of the train. What is the speed of her bullet with respect to Earth?
-a) 24.4 m/s.
-b) 36.7 m/s.
+c) 55 m/s.
-d) 82.5 m/s.
-e) 123.7 m/s.
=====*_Rendition_* 3-5=====
<!--a03_2Dkinem_smithtrain_3-->The Smith family is having fun on a high speed train travelling at 47.5 m/s. The daugher fires at Mr. Smith with a pellet gun whose muzzle speed is 28.2 m/s. She was situated across the isle, perpendicular to the length of the train. What is the speed of her bullet with respect to Earth?
-a) 24.6 m/s.
-b) 36.8 m/s.
+c) 55.2 m/s.
-d) 82.9 m/s.
-e) 124.3 m/s.

=====*_Rendition_* 3-6=====
<!--a03_2Dkinem_smithtrain_3-->The Smith family is having fun on a high speed train travelling at 42.3 m/s. The daugher fires at Mr. Smith with a pellet gun whose muzzle speed is 29.1 m/s. She was situated across the isle, perpendicular to the length of the train. What is the speed of her bullet with respect to Earth?
-a) 34.2 m/s.
+b) 51.3 m/s.
-c) 77 m/s.
-d) 115.5 m/s.
-e) 173.3 m/s.
=====*_Rendition_* 3-7=====
<!--a03_2Dkinem_smithtrain_3-->The Smith family is having fun on a high speed train travelling at 47.1 m/s. The daugher fires at Mr. Smith with a pellet gun whose muzzle speed is 29.9 m/s. She was situated across the isle, perpendicular to the length of the train. What is the speed of her bullet with respect to Earth?
-a) 24.8 m/s.
-b) 37.2 m/s.
+c) 55.8 m/s.
-d) 83.7 m/s.
-e) 125.5 m/s.
=====*_Rendition_* 3-8=====
<!--a03_2Dkinem_smithtrain_3-->The Smith family is having fun on a high speed train travelling at 47.6 m/s. The daugher fires at Mr. Smith with a pellet gun whose muzzle speed is 25.5 m/s. She was situated across the isle, perpendicular to the length of the train. What is the speed of her bullet with respect to Earth?
-a) 10.7 m/s.
-b) 16 m/s.
-c) 24 m/s.
-d) 36 m/s.
+e) 54 m/s.
=====*_Rendition_* 3-9=====
<!--a03_2Dkinem_smithtrain_3-->The Smith family is having fun on a high speed train travelling at 47.6 m/s. The daugher fires at Mr. Smith with a pellet gun whose muzzle speed is 23.8 m/s. She was situated across the isle, perpendicular to the length of the train. What is the speed of her bullet with respect to Earth?
-a) 10.5 m/s.
-b) 15.8 m/s.
-c) 23.7 m/s.
-d) 35.5 m/s.
+e) 53.2 m/s.
=====*_Rendition_* 3-10=====
<!--a03_2Dkinem_smithtrain_3-->The Smith family is having fun on a high speed train travelling at 47.6 m/s. The daugher fires at Mr. Smith with a pellet gun whose muzzle speed is 21.1 m/s. She was situated across the isle, perpendicular to the length of the train. What is the speed of her bullet with respect to Earth?
+a) 52.1 m/s.
-b) 78.1 m/s.

-c) 117.2 m/s.
-d) 175.7 m/s.
-e) 263.6 m/s.
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a03_2Dkinem_smithtrain_4-->The Smith family got in trouble for having fun on a high speed train travelling at 48.8 m/s. Mr. Smith is charged with having fired a pellet gun at his daughter (directly across the isle) with a bullet that had a speed of 92.5 m/s with respect to Earth. How fast was the bullet going relative to the daughter (i.e. train)?
-a) 45.5 m/s.
-b) 54.6 m/s.
-c) 65.5 m/s.
+d) 78.6 m/s.
-e) 94.3 m/s.
=====*_Rendition_* 4-3=====
<!--a03_2Dkinem_smithtrain_4-->The Smith family got in trouble for having fun on a high speed train travelling at 48.1 m/s. Mr. Smith is charged with having fired a pellet gun at his daughter (directly across the isle) with a bullet that had a speed of 92.7 m/s with respect to Earth. How fast was the bullet going relative to the daughter (i.e. train)?
-a) 38.2 m/s.
-b) 45.9 m/s.
-c) 55 m/s.
-d) 66 m/s.
+e) 79.2 m/s.
=====*_Rendition_* 4-4=====
<!--a03_2Dkinem_smithtrain_4-->The Smith family got in trouble for having fun on a high speed train travelling at 48.4 m/s. Mr. Smith is charged with having fired a pellet gun at his daughter (directly across the isle) with a bullet that had a speed of 89.1 m/s with respect to Earth. How fast was the bullet going relative to the daughter (i.e. train)?
+a) 74.8 m/s.
-b) 89.8 m/s.
-c) 107.7 m/s.
-d) 129.3 m/s.
-e) 155.1 m/s.
=====*_Rendition_* 4-5=====
<!--a03_2Dkinem_smithtrain_4-->The Smith family got in trouble for having fun on a high speed train travelling at 47.5 m/s. Mr. Smith is charged with having fired a pellet gun at his daughter (directly across the isle) with a bullet that had a speed of 94.6 m/s with respect to Earth. How fast was the bullet going relative to the daughter (i.e. train)?
+a) 81.8 m/s.
-b) 98.2 m/s.
-c) 117.8 m/s.
-d) 141.4 m/s.
-e) 169.6 m/s.

=====*_Rendition_* 4-6=====
<!--a03_2Dkinem_smithtrain_4-->The Smith family got in trouble for having fun on a high speed train travelling at 42.3 m/s. Mr. Smith is charged with having fired a pellet gun at his daughter (directly across the isle) with a bullet that had a speed of 84.5 m/s with respect to Earth. How fast was the bullet going relative to the daughter (i.e. train)?
+a) 73.2 m/s.
-b) 87.8 m/s.
-c) 105.3 m/s.
-d) 126.4 m/s.
-e) 151.7 m/s.
=====*_Rendition_* 4-7=====
<!--a03_2Dkinem_smithtrain_4-->The Smith family got in trouble for having fun on a high speed train travelling at 47.1 m/s. Mr. Smith is charged with having fired a pellet gun at his daughter (directly across the isle) with a bullet that had a speed of 95.6 m/s with respect to Earth. How fast was the bullet going relative to the daughter (i.e. train)?
-a) 69.3 m/s.
+b) 83.2 m/s.
-c) 99.8 m/s.
-d) 119.8 m/s.
-e) 143.8 m/s.
=====*_Rendition_* 4-8=====
<!--a03_2Dkinem_smithtrain_4-->The Smith family got in trouble for having fun on a high speed train travelling at 47.6 m/s. Mr. Smith is charged with having fired a pellet gun at his daughter (directly across the isle) with a bullet that had a speed of 88.1 m/s with respect to Earth. How fast was the bullet going relative to the daughter (i.e. train)?
-a) 35.8 m/s.
-b) 42.9 m/s.
-c) 51.5 m/s.
-d) 61.8 m/s.
+e) 74.1 m/s.
=====*_Rendition_* 4-9=====
<!--a03_2Dkinem_smithtrain_4-->The Smith family got in trouble for having fun on a high speed train travelling at 47.6 m/s. Mr. Smith is charged with having fired a pellet gun at his daughter (directly across the isle) with a bullet that had a speed of 90.4 m/s with respect to Earth. How fast was the bullet going relative to the daughter (i.e. train)?
-a) 53.4 m/s.
-b) 64 m/s.
+c) 76.9 m/s.
-d) 92.2 m/s.
-e) 110.7 m/s.
=====*_Rendition_* 4-10=====
<!--a03_2Dkinem_smithtrain_4-->The Smith family got in trouble for having fun on a high speed train travelling at 47.6 m/s. Mr. Smith is charged with having fired a pellet gun at his daughter (directly

across the isle) with a bullet that had a speed of 97 m/s with respect to Earth. How fast was the bullet going relative to the daughter (i.e. train)?
-a) 40.8 m/s.
-b) 48.9 m/s.
-c) 58.7 m/s.
-d) 70.4 m/s.
+e) 84.5 m/s.
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{<!--a04DynForce Newton_forces_1-->A mass with weight (mg) of 44 newtons is suspended symmetrically from two strings. The angle between the two strings (i.e. where they are attached to the mass) is 60 degrees. What is the tension in the string?}
-a) 16.7 N.
-b) 19.2 N.
-c) 22.1 N.
+d) 25.4 N.
-e) 29.2 N.

{<!--a04DynForce Newton_forces_2-->A mass with weight (mg) equal to 25 newtons is suspended symmetrically from two strings. Each string makes the (same) angle of 69 degrees with respect to the horizontal. What is the tension in each string?}

-a) 10.1 N.
-b) 11.6 N.
+c) 13.4 N.
-d) 15.4 N.
-e) 17.7 N.

{<!--a04DynForce Newton_forces_3-->A 4.5 kg mass is sliding along a surface that has a kinetic coefficient of friction equal to 0.37 . In addition to the surface friction, there is also an air drag equal to 29 N. What is the magnitude (absolute value) of the acceleration?}
-a) 5.8 m/s².
-b) 6.6 m/s².
-c) 7.6 m/s².
-d) 8.8 m/s².
+e) 10.1 m/s².

{<!--a04DynForce Newton_forces_4-->A mass with weight (mg) 7.3 newtons is on a horzontal surface. It is being pulled on by a string at an angle of 30 degrees above the horizontal, with a force equal to 3.94 newtons. If this is the maximum force before the block starts to move, what is the static coefficient of friction? }
-a) 0.37
-b) 0.44
-c) 0.53
+d) 0.64
-e) 0.77

</quiz>

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Other renditions
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====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a04DynForce Newton_forces_1-->A mass with weight (mg) of 48 newtons is suspended symmetrically from two strings. The angle between the two strings (i.e. where they are attached to the mass) is 30 degrees. What is the tension in the string?
+a) 24.8 N.
-b) 28.6 N.
-c) 32.9 N.
-d) 37.8 N.
-e) 43.5 N.
=====*_Rendition_* 1-3=====
<!--a04DynForce Newton_forces_1-->A mass with weight (mg) of 37 newtons is suspended symmetrically from two strings. The angle between the two strings (i.e. where they are attached to the mass) is 44 degrees. What is the tension in the string?
-a) 11.4 N.

-b) 13.1 N.
-c) 15.1 N.
-d) 17.4 N.
+e) 20 N.
=====*_Rendition_* 1-4=====
<!--a04DynForce Newton_forces_1-->A mass with weight (mg) of 42 newtons is suspended symmetrically from two strings. The angle between the two strings (i.e. where they are attached to the mass) is 46 degrees. What is the tension in the string?
-a) 15 N.
-b) 17.3 N.
-c) 19.8 N.
+d) 22.8 N.
-e) 26.2 N.
=====*_Rendition_* 1-5=====
<!--a04DynForce Newton_forces_1-->A mass with weight (mg) of 27 newtons is suspended symmetrically from two strings. The angle between the two strings (i.e. where they are attached to the mass) is 70 degrees. What is the tension in the string?
-a) 12.5 N.
-b) 14.3 N.
+c) 16.5 N.
-d) 19 N.
-e) 21.8 N.
=====*_Rendition_* 1-6=====
<!--a04DynForce Newton_forces_1-->A mass with weight (mg) of 32 newtons is suspended symmetrically from two strings. The angle between the two strings (i.e. where they are attached to the mass) is 70 degrees. What is the tension in the string?
-a) 12.8 N.
-b) 14.8 N.
-c) 17 N.
+d) 19.5 N.
-e) 22.5 N.
=====*_Rendition_* 1-7=====
<!--a04DynForce Newton_forces_1-->A mass with weight (mg) of 39 newtons is suspended symmetrically from two strings. The angle between the two strings (i.e. where they are attached to the mass) is 56 degrees. What is the tension in the string?
+a) 22.1 N.
-b) 25.4 N.
-c) 29.2 N.
-d) 33.6 N.
-e) 38.6 N.
=====*_Rendition_* 1-8=====
<!--a04DynForce Newton_forces_1-->A mass with weight (mg) of 49 newtons is suspended symmetrically from two strings. The angle between the two strings (i.e. where they are attached to the mass) is 54 degrees. What is the tension in the string?
+a) 27.5 N.
-b) 31.6 N.
-c) 36.4 N.

-d) 41.8 N.
-e) 48.1 N.
=====*_Rendition_* 1-9=====
<!--a04DynForce Newton_forces_1-->A mass with weight (mg) of 48 newtons is suspended symmetrically from two strings. The angle between the two strings (i.e. where they are attached to the mass) is 46 degrees. What is the tension in the string?
-a) 22.7 N.
+b) 26.1 N.
-c) 30 N.
-d) 34.5 N.
-e) 39.7 N.
=====*_Rendition_* 1-10=====
<!--a04DynForce Newton_forces_1-->A mass with weight (mg) of 32 newtons is suspended symmetrically from two strings. The angle between the two strings (i.e. where they are attached to the mass) is 40 degrees. What is the tension in the string?
-a) 11.2 N.
-b) 12.9 N.
-c) 14.8 N.
+d) 17 N.
-e) 19.6 N.
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a04DynForce Newton_forces_2-->A mass with weight (mg) equal to 29 newtons is suspended symmetrically from two strings. Each string makes the (same) angle of 60 degrees with respect to the horizontal. What is the tension in each string?
-a) 12.7 N.
-b) 14.6 N.
+c) 16.7 N.
-d) 19.3 N.
-e) 22.1 N.
=====*_Rendition_* 2-3=====
<!--a04DynForce Newton_forces_2-->A mass with weight (mg) equal to 34 newtons is suspended symmetrically from two strings. Each string makes the (same) angle of 14 degrees with respect to the horizontal. What is the tension in each string?
-a) 61.1 N.
+b) 70.3 N.
-c) 80.8 N.
-d) 92.9 N.
-e) 106.9 N.
=====*_Rendition_* 2-4=====
<!--a04DynForce Newton_forces_2-->A mass with weight (mg) equal to 42 newtons is suspended symmetrically from two strings. Each string makes the (same) angle of 26 degrees with respect to the horizontal. What is the tension in each string?
-a) 27.4 N.
-b) 31.5 N.
-c) 36.2 N.
-d) 41.7 N.

+e) 47.9 N.
=====*_Rendition_* 2-5=====
<!--a04DynForce Newton_forces_2-->A mass with weight (mg) equal to 41 newtons is suspended symmetrically from two strings. Each string makes the (same) angle of 30 degrees with respect to the horizontal. What is the tension in each string?
-a) 23.4 N.
-b) 27 N.
-c) 31 N.
-d) 35.7 N.
+e) 41 N.
=====*_Rendition_* 2-6=====
<!--a04DynForce Newton_forces_2-->A mass with weight (mg) equal to 33 newtons is suspended symmetrically from two strings. Each string makes the (same) angle of 72 degrees with respect to the horizontal. What is the tension in each string?
-a) 9.9 N.
-b) 11.4 N.
-c) 13.1 N.
-d) 15.1 N.
+e) 17.3 N.
=====*_Rendition_* 2-7=====
<!--a04DynForce Newton_forces_2-->A mass with weight (mg) equal to 44 newtons is suspended symmetrically from two strings. Each string makes the (same) angle of 60 degrees with respect to the horizontal. What is the tension in each string?
-a) 14.5 N.
-b) 16.7 N.
-c) 19.2 N.
-d) 22.1 N.
+e) 25.4 N.
=====*_Rendition_* 2-8=====
<!--a04DynForce Newton_forces_2-->A mass with weight (mg) equal to 21 newtons is suspended symmetrically from two strings. Each string makes the (same) angle of 66 degrees with respect to the horizontal. What is the tension in each string?
-a) 6.6 N.
-b) 7.6 N.
-c) 8.7 N.
-d) 10 N.
+e) 11.5 N.
=====*_Rendition_* 2-9=====
<!--a04DynForce Newton_forces_2-->A mass with weight (mg) equal to 42 newtons is suspended symmetrically from two strings. Each string makes the (same) angle of 59 degrees with respect to the horizontal. What is the tension in each string?
-a) 21.3 N.
+b) 24.5 N.
-c) 28.2 N.
-d) 32.4 N.
-e) 37.3 N.
=====*_Rendition_* 2-10=====

<!--a04DynForce Newton_forces_2-->A mass with weight (mg) equal to 37 newtons is suspended symmetrically from two strings. Each string makes the (same) angle of 65 degrees with respect to the horizontal. What is the tension in each string?

-a) 15.4 N.
-b) 17.7 N.
+c) 20.4 N.
-d) 23.5 N.
-e) 27 N.

====*_Question_* 3====

=====*_Rendition_* 3-2=====

<!--a04DynForce Newton_forces_3-->A 2.1 kg mass is sliding along a surface that has a kinetic coefficient of friction equal to 0.46 . In addition to the surface friction, there is also an air drag equal to 14 N. What is the magnitude (absolute value) of the acceleration?

-a) 6.4 m/s².
-b) 7.3 m/s².
-c) 8.4 m/s².
-d) 9.7 m/s².
+e) 11.2 m/s².

=====*_Rendition_* 3-3=====

<!--a04DynForce Newton_forces_3-->A 3 kg mass is sliding along a surface that has a kinetic coefficient of friction equal to 0.27 . In addition to the surface friction, there is also an air drag equal to 7 N. What is the magnitude (absolute value) of the acceleration?

-a) 3.8 m/s².
-b) 4.3 m/s².
+c) 5 m/s².
-d) 5.7 m/s².
-e) 6.6 m/s².

=====*_Rendition_* 3-4=====

<!--a04DynForce Newton_forces_3-->A 2.4 kg mass is sliding along a surface that has a kinetic coefficient of friction equal to 0.68 . In addition to the surface friction, there is also an air drag equal to 6 N. What is the magnitude (absolute value) of the acceleration?

+a) 9.2 m/s².
-b) 10.5 m/s².
-c) 12.1 m/s².
-d) 13.9 m/s².
-e) 16 m/s².

=====*_Rendition_* 3-5=====

<!--a04DynForce Newton_forces_3-->A 2.2 kg mass is sliding along a surface that has a kinetic coefficient of friction equal to 0.59 . In addition to the surface friction, there is also an air drag equal to 14 N. What is the magnitude (absolute value) of the acceleration?

-a) 6.9 m/s².
-b) 8 m/s².
-c) 9.2 m/s².
-d) 10.6 m/s².
+e) 12.1 m/s².

=====*_Rendition_* 3-6=====

<!--a04DynForce Newton_forces_3-->A 2.5 kg mass is sliding along a

surface that has a kinetic coefficient of friction equal to 0.41 . In addition to the surface friction, there is also an air drag equal to 11 N. What is the magnitude (absolute value) of the acceleration?
-a) 7.3 m/s².
+b) 8.4 m/s².
-c) 9.7 m/s².
-d) 11.1 m/s².
-e) 12.8 m/s².
=====*_Rendition_* 3-7=====
<!--a04DynForce Newton_forces_3-->A 3.8 kg mass is sliding along a surface that has a kinetic coefficient of friction equal to 0.6 . In addition to the surface friction, there is also an air drag equal to 20 N. What is the magnitude (absolute value) of the acceleration?
-a) 6.4 m/s².
-b) 7.3 m/s².
-c) 8.4 m/s².
-d) 9.7 m/s².
+e) 11.1 m/s².
=====*_Rendition_* 3-8=====
<!--a04DynForce Newton_forces_3-->A 3.2 kg mass is sliding along a surface that has a kinetic coefficient of friction equal to 0.29 . In addition to the surface friction, there is also an air drag equal to 21 N. What is the magnitude (absolute value) of the acceleration?
-a) 8.2 m/s².
+b) 9.4 m/s².
-c) 10.8 m/s².
-d) 12.4 m/s².
-e) 14.3 m/s².
=====*_Rendition_* 3-9=====
<!--a04DynForce Newton_forces_3-->A 2.3 kg mass is sliding along a surface that has a kinetic coefficient of friction equal to 0.41 . In addition to the surface friction, there is also an air drag equal to 16 N. What is the magnitude (absolute value) of the acceleration?
-a) 7.2 m/s².
-b) 8.3 m/s².
-c) 9.5 m/s².
+d) 11 m/s².
-e) 12.6 m/s².
=====*_Rendition_* 3-10=====
<!--a04DynForce Newton_forces_3-->A 3.1 kg mass is sliding along a surface that has a kinetic coefficient of friction equal to 0.43 . In addition to the surface friction, there is also an air drag equal to 12 N. What is the magnitude (absolute value) of the acceleration?
-a) 4.6 m/s².
-b) 5.3 m/s².
-c) 6.1 m/s².
-d) 7 m/s².
+e) 8.1 m/s².
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a04DynForce Newton_forces_4-->A mass with weight (mg) 5.3 newtons is on a horzontal surface. It is being pulled on by a string at an

angle of 30 degrees above the horizontal, with a force equal to 3.05 newtons. If this is the maximum force before the block starts to move, what is the static coefficient of friction?
-a) 0.34
-b) 0.4
-c) 0.49
-d) 0.58
+e) 0.7
=====*_Rendition_* 4-3=====
<!--a04DynForce Newton_forces_4-->A mass with weight (mg) 8.7 newtons is on a horzontal surface. It is being pulled on by a string at an angle of 30 degrees above the horizontal, with a force equal to 4.08 newtons. If this is the maximum force before the block starts to move, what is the static coefficient of friction?
-a) 0.31
-b) 0.37
-c) 0.44
+d) 0.53
-e) 0.64
=====*_Rendition_* 4-4=====
<!--a04DynForce Newton_forces_4-->A mass with weight (mg) 7.9 newtons is on a horzontal surface. It is being pulled on by a string at an angle of 30 degrees above the horizontal, with a force equal to 1.64 newtons. If this is the maximum force before the block starts to move, what is the static coefficient of friction?
-a) 0.1
-b) 0.12
-c) 0.14
-d) 0.17
+e) 0.2
=====*_Rendition_* 4-5=====
<!--a04DynForce Newton_forces_4-->A mass with weight (mg) 10.8 newtons is on a horzontal surface. It is being pulled on by a string at an angle of 30 degrees above the horizontal, with a force equal to 4.53 newtons. If this is the maximum force before the block starts to move, what is the static coefficient of friction?
-a) 0.38
+b) 0.46
-c) 0.55
-d) 0.66
-e) 0.79
=====*_Rendition_* 4-6=====
<!--a04DynForce Newton_forces_4-->A mass with weight (mg) 11 newtons is on a horzontal surface. It is being pulled on by a string at an angle of 30 degrees above the horizontal, with a force equal to 2.77 newtons. If this is the maximum force before the block starts to move, what is the static coefficient of friction?
-a) 0.12
-b) 0.14
-c) 0.17
-d) 0.21
+e) 0.25

=====*_Rendition_* 4-7=====
<!--a04DynForce Newton_forces_4-->A mass with weight (mg) 6.8 newtons is on a horzontal surface. It is being pulled on by a string at an angle of 30 degrees above the horizontal, with a force equal to 2.5 newtons. If this is the maximum force before the block starts to move, what is the static coefficient of friction?
-a) 0.19
-b) 0.23
-c) 0.27
-d) 0.33
+e) 0.39
=====*_Rendition_* 4-8=====
<!--a04DynForce Newton_forces_4-->A mass with weight (mg) 6 newtons is on a horzontal surface. It is being pulled on by a string at an angle of 30 degrees above the horizontal, with a force equal to 3.2 newtons. If this is the maximum force before the block starts to move, what is the static coefficient of friction?
-a) 0.52
+b) 0.63
-c) 0.76
-d) 0.91
-e) 1.09
=====*_Rendition_* 4-9=====
<!--a04DynForce Newton_forces_4-->A mass with weight (mg) 8.9 newtons is on a horzontal surface. It is being pulled on by a string at an angle of 30 degrees above the horizontal, with a force equal to 5.12 newtons. If this is the maximum force before the block starts to move, what is the static coefficient of friction?
+a) 0.7
-b) 0.84
-c) 1.01
-d) 1.21
-e) 1.45
=====*_Rendition_* 4-10=====
<!--a04DynForce Newton_forces_4-->A mass with weight (mg) 8.7 newtons is on a horzontal surface. It is being pulled on by a string at an angle of 30 degrees above the horizontal, with a force equal to 4.08 newtons. If this is the maximum force before the block starts to move, what is the static coefficient of friction?
-a) 0.44
+b) 0.53
-c) 0.64
-d) 0.76
-e) 0.92
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{<!--a04DynForce Newton_sled_1-->A sled of mass 5.4 kg is at rest on a rough surface. A string pulls with a tension of 43.4N at an angle of 31 degrees above the horizontal. What is the magnitude of the friction?}
-a) 24.46 N.
-b) 28.13 N.
-c) 32.35 N.
+d) 37.2 N.
-e) 42.78 N.

{<!--a04DynForce Newton_sled_2-->A sled of mass 5.3 kg is at rest on a rough surface. A string pulls with a tension of 44.9N at an angle of 57 degrees above the horizontal. What is the normal force?}
-a) 8.17 N.
-b) 9.39 N.
-c) 10.8 N.
-d) 12.42 N.
+e) 14.28 N.

{<!--a04DynForce Newton_sled_3-->A sled of mass 5.9 kg is at rest on a perfectly smooth surface. A string pulls with a tension of 47.3N at an angle of 48 degrees above the horizontal. How long will it take to reach a speed of 10.8 m/s?}
-a) 1.15 s
-b) 1.32 s
-c) 1.52 s
-d) 1.75 s
+e) 2.01 s

{<!--a04DynForce Newton_sled_4-->A sled of mass 2.1 kg is on perfectly

smooth surface. A string pulls with a tension of 17.5N. At what angle above the horizontal must the string pull in order to achieve an accelerations of 2.8 m/s²?}
+a) 70.4 degrees
-b) 80.9 degrees
-c) 93.1 degrees
-d) 107 degrees
-e) 123.1 degrees

</quiz>

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Other renditions
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=====*_Rendition_* 1-2=====
<!--a04DynForce Newton_sled_1-->A sled of mass 5.7 kg is at rest on a rough surface. A string pulls with a tension of 41.6N at an angle of 34 degress above the horizontal. What is the magnitude of the friction?
-a) 19.72 N.
-b) 22.68 N.
-c) 26.08 N.
-d) 29.99 N.
+e) 34.49 N.
=====*_Rendition_* 1-3=====
<!--a04DynForce Newton_sled_1-->A sled of mass 5.3 kg is at rest on a rough surface. A string pulls with a tension of 46.8N at an angle of 56 degress above the horizontal. What is the magnitude of the friction?
-a) 17.21 N.
-b) 19.79 N.
-c) 22.76 N.
+d) 26.17 N.
-e) 30.1 N.
=====*_Rendition_* 1-4=====
<!--a04DynForce Newton_sled_1-->A sled of mass 5.9 kg is at rest on a rough surface. A string pulls with a tension of 43.6N at an angle of 38 degress above the horizontal. What is the magnitude of the friction?
-a) 19.64 N.
-b) 22.59 N.
-c) 25.98 N.
-d) 29.88 N.
+e) 34.36 N.
=====*_Rendition_* 1-5=====
<!--a04DynForce Newton_sled_1-->A sled of mass 5.1 kg is at rest on a rough surface. A string pulls with a tension of 48N at an angle of 48 degress above the horizontal. What is the magnitude of the friction?

-a) 24.29 N.
-b) 27.93 N.
+c) 32.12 N.
-d) 36.94 N.
-e) 42.48 N.
=====*_Rendition_* 1-6=====
<!--a04DynForce Newton_sled_1-->A sled of mass 5.9 kg is at rest on a rough surface. A string pulls with a tension of 43.7N at an angle of 41 degress above the horizontal. What is the magnitude of the friction?
-a) 24.94 N.
-b) 28.68 N.
+c) 32.98 N.
-d) 37.93 N.
-e) 43.62 N.
=====*_Rendition_* 1-7=====
<!--a04DynForce Newton_sled_1-->A sled of mass 5.8 kg is at rest on a rough surface. A string pulls with a tension of 42.3N at an angle of 40 degress above the horizontal. What is the magnitude of the friction?
-a) 21.31 N.
-b) 24.5 N.
-c) 28.18 N.
+d) 32.4 N.
-e) 37.26 N.
=====*_Rendition_* 1-8=====
<!--a04DynForce Newton_sled_1-->A sled of mass 5.1 kg is at rest on a rough surface. A string pulls with a tension of 41.2N at an angle of 42 degress above the horizontal. What is the magnitude of the friction?
-a) 23.15 N.
-b) 26.62 N.
+c) 30.62 N.
-d) 35.21 N.
-e) 40.49 N.
=====*_Rendition_* 1-9=====
<!--a04DynForce Newton_sled_1-->A sled of mass 5.4 kg is at rest on a rough surface. A string pulls with a tension of 46.6N at an angle of 38 degress above the horizontal. What is the magnitude of the friction?
+a) 36.72 N.
-b) 42.23 N.
-c) 48.56 N.
-d) 55.85 N.
-e) 64.23 N.
=====*_Rendition_* 1-10=====
<!--a04DynForce Newton_sled_1-->A sled of mass 5.5 kg is at rest on a rough surface. A string pulls with a tension of 46.8N at an angle of 40 degress above the horizontal. What is the magnitude of the friction?
-a) 27.11 N.
-b) 31.17 N.

+c) 35.85 N.
-d) 41.23 N.
-e) 47.41 N.
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a04DynForce Newton_sled_2-->A sled of mass 5.4 kg is at rest on a rough surface. A string pulls with a tension of 40.4N at an angle of 39 degress above the horizontal. What is the normal force?
+a) 27.5 N.
-b) 31.62 N.
-c) 36.36 N.
-d) 41.82 N.
-e) 48.09 N.
=====*_Rendition_* 2-3=====
<!--a04DynForce Newton_sled_2-->A sled of mass 5.3 kg is at rest on a rough surface. A string pulls with a tension of 43N at an angle of 55 degress above the horizontal. What is the normal force?
-a) 10.99 N.
-b) 12.64 N.
-c) 14.54 N.
+d) 16.72 N.
-e) 19.22 N.
=====*_Rendition_* 2-4=====
<!--a04DynForce Newton_sled_2-->A sled of mass 5.7 kg is at rest on a rough surface. A string pulls with a tension of 40.1N at an angle of 42 degress above the horizontal. What is the normal force?
+a) 29.03 N.
-b) 33.38 N.
-c) 38.39 N.
-d) 44.15 N.
-e) 50.77 N.
=====*_Rendition_* 2-5=====
<!--a04DynForce Newton_sled_2-->A sled of mass 5.5 kg is at rest on a rough surface. A string pulls with a tension of 41.3N at an angle of 34 degress above the horizontal. What is the normal force?
-a) 26.79 N.
+b) 30.81 N.
-c) 35.43 N.
-d) 40.74 N.
-e) 46.85 N.
=====*_Rendition_* 2-6=====
<!--a04DynForce Newton_sled_2-->A sled of mass 5.9 kg is at rest on a rough surface. A string pulls with a tension of 45.6N at an angle of 36 degress above the horizontal. What is the normal force?
-a) 23.45 N.
-b) 26.97 N.
+c) 31.02 N.
-d) 35.67 N.
-e) 41.02 N.
=====*_Rendition_* 2-7=====
<!--a04DynForce Newton_sled_2-->A sled of mass 5.8 kg is at rest on a rough surface. A string pulls with a tension of 41.9N at an angle of

42 degress above the horizontal. What is the normal force?
-a) 18.94 N.
-b) 21.78 N.
-c) 25.05 N.
+d) 28.8 N.
-e) 33.12 N.
=====*_Rendition_* 2-8=====
<!--a04DynForce Newton_sled_2-->A sled of mass 5.7 kg is at rest on a rough surface. A string pulls with a tension of 43.9N at an angle of 50 degress above the horizontal. What is the normal force?
-a) 16.81 N.
-b) 19.33 N.
+c) 22.23 N.
-d) 25.57 N.
-e) 29.4 N.
=====*_Rendition_* 2-9=====
<!--a04DynForce Newton_sled_2-->A sled of mass 5.2 kg is at rest on a rough surface. A string pulls with a tension of 45.3N at an angle of 59 degress above the horizontal. What is the normal force?
-a) 10.55 N.
+b) 12.13 N.
-c) 13.95 N.
-d) 16.04 N.
-e) 18.45 N.
=====*_Rendition_* 2-10=====
<!--a04DynForce Newton_sled_2-->A sled of mass 5.8 kg is at rest on a rough surface. A string pulls with a tension of 42.5N at an angle of 51 degress above the horizontal. What is the normal force?
-a) 13.61 N.
-b) 15.66 N.
-c) 18 N.
-d) 20.71 N.
+e) 23.81 N.
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a04DynForce Newton_sled_3-->A sled of mass 5.7 kg is at rest on a perfectly smooth surface. A string pulls with a tension of 44.3N at an angle of 31 degress above the horizontal. How long will it take to reach a speed of 9.2 m/s?
-a) 0.91 s
-b) 1.04 s
-c) 1.2 s
+d) 1.38 s
-e) 1.59 s
=====*_Rendition_* 3-3=====
<!--a04DynForce Newton_sled_3-->A sled of mass 5.5 kg is at rest on a perfectly smooth surface. A string pulls with a tension of 42.8N at an angle of 36 degress above the horizontal. How long will it take to reach a speed of 10.4 m/s?
-a) 1.25 s
-b) 1.44 s
+c) 1.65 s

-d) 1.9 s
-e) 2.18 s
=====*_Rendition_* 3-4=====
<!--a04DynForce Newton_sled_3-->A sled of mass 5.7 kg is at rest on a perfectly smooth surface. A string pulls with a tension of 41.3N at an angle of 40 degress above the horizontal. How long will it take to reach a speed of 10.3 m/s?
-a) 1.4 s
-b) 1.61 s
+c) 1.86 s
-d) 2.13 s
-e) 2.45 s
=====*_Rendition_* 3-5=====
<!--a04DynForce Newton_sled_3-->A sled of mass 5.2 kg is at rest on a perfectly smooth surface. A string pulls with a tension of 46N at an angle of 32 degress above the horizontal. How long will it take to reach a speed of 9.1 m/s?
-a) 1.05 s
+b) 1.21 s
-c) 1.39 s
-d) 1.6 s
-e) 1.84 s
=====*_Rendition_* 3-6=====
<!--a04DynForce Newton_sled_3-->A sled of mass 5.5 kg is at rest on a perfectly smooth surface. A string pulls with a tension of 40.3N at an angle of 43 degress above the horizontal. How long will it take to reach a speed of 9 m/s?
-a) 1.27 s
-b) 1.46 s
+c) 1.68 s
-d) 1.93 s
-e) 2.22 s
=====*_Rendition_* 3-7=====
<!--a04DynForce Newton_sled_3-->A sled of mass 5.7 kg is at rest on a perfectly smooth surface. A string pulls with a tension of 41.7N at an angle of 55 degress above the horizontal. How long will it take to reach a speed of 10.5 m/s?
-a) 1.89 s
-b) 2.18 s
+c) 2.5 s
-d) 2.88 s
-e) 3.31 s
=====*_Rendition_* 3-8=====
<!--a04DynForce Newton_sled_3-->A sled of mass 5.4 kg is at rest on a perfectly smooth surface. A string pulls with a tension of 41.2N at an angle of 58 degress above the horizontal. How long will it take to reach a speed of 10.5 m/s?
+a) 2.6 s
-b) 2.99 s
-c) 3.43 s
-d) 3.95 s
-e) 4.54 s

=====*_Rendition_* 3-9=====
<!--a04DynForce Newton_sled_3-->A sled of mass 5.2 kg is at rest on a perfectly smooth surface. A string pulls with a tension of 41.3N at an angle of 55 degress above the horizontal. How long will it take to reach a speed of 9.8 m/s?
-a) 1.87 s
+b) 2.15 s
-c) 2.47 s
-d) 2.85 s
-e) 3.27 s
=====*_Rendition_* 3-10=====
<!--a04DynForce Newton_sled_3-->A sled of mass 5.1 kg is at rest on a perfectly smooth surface. A string pulls with a tension of 47.8N at an angle of 36 degress above the horizontal. How long will it take to reach a speed of 9 m/s?
-a) 0.68 s
-b) 0.78 s
-c) 0.9 s
-d) 1.03 s
+e) 1.19 s
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a04DynForce Newton_sled_4-->A sled of mass 2.3 kg is on perfectly smooth surface. A string pulls with a tension of 18.3N. At what angle above the horizontal must the string pull in order to achieve an accelerations of 2.8 m/s²?
+a) 69.4 degrees
-b) 79.8 degrees
-c) 91.8 degrees
-d) 105.5 degrees
-e) 121.4 degrees
=====*_Rendition_* 4-3=====
<!--a04DynForce Newton_sled_4-->A sled of mass 2.6 kg is on perfectly smooth surface. A string pulls with a tension of 16.4N. At what angle above the horizontal must the string pull in order to achieve an accelerations of 3.1 m/s²?
-a) 34.6 degrees
-b) 39.8 degrees
-c) 45.8 degrees
-d) 52.7 degrees
+e) 60.6 degrees
=====*_Rendition_* 4-4=====
<!--a04DynForce Newton_sled_4-->A sled of mass 2.6 kg is on perfectly smooth surface. A string pulls with a tension of 19.3N. At what angle above the horizontal must the string pull in order to achieve an accelerations of 2.5 m/s²?
+a) 70.3 degrees
-b) 80.9 degrees
-c) 93 degrees
-d) 106.9 degrees
-e) 123 degrees
=====*_Rendition_* 4-5=====

<!--a04DynForce Newton_sled_4-->A sled of mass 2.5 kg is on perfectly smooth surface. A string pulls with a tension of 18.1N. At what angle above the horizontal must the string pull in order to achieve an accelerations of 2 m/s²?
+a) 74 degrees
-b) 85.1 degrees
-c) 97.8 degrees
-d) 112.5 degrees
-e) 129.4 degrees
=====*_Rendition_* 4-6=====
<!--a04DynForce Newton_sled_4-->A sled of mass 2.2 kg is on perfectly smooth surface. A string pulls with a tension of 17.2N. At what angle above the horizontal must the string pull in order to achieve an accelerations of 3.5 m/s²?
-a) 36.3 degrees
-b) 41.7 degrees
-c) 47.9 degrees
-d) 55.1 degrees
+e) 63.4 degrees
=====*_Rendition_* 4-7=====
<!--a04DynForce Newton_sled_4-->A sled of mass 2.5 kg is on perfectly smooth surface. A string pulls with a tension of 17.7N. At what angle above the horizontal must the string pull in order to achieve an accelerations of 3.1 m/s²?
-a) 48.4 degrees
-b) 55.7 degrees
+c) 64 degrees
-d) 73.6 degrees
-e) 84.7 degrees
=====*_Rendition_* 4-8=====
<!--a04DynForce Newton_sled_4-->A sled of mass 2.6 kg is on perfectly smooth surface. A string pulls with a tension of 19.2N. At what angle above the horizontal must the string pull in order to achieve an accelerations of 2.4 m/s²?
-a) 53.7 degrees
-b) 61.8 degrees
+c) 71 degrees
-d) 81.7 degrees
-e) 93.9 degrees
=====*_Rendition_* 4-9=====
<!--a04DynForce Newton_sled_4-->A sled of mass 2 kg is on perfectly smooth surface. A string pulls with a tension of 17.4N. At what angle above the horizontal must the string pull in order to achieve an accelerations of 2.9 m/s²?
-a) 53.3 degrees
-b) 61.3 degrees
+c) 70.5 degrees
-d) 81.1 degrees
-e) 93.3 degrees
=====*_Rendition_* 4-10=====
<!--a04DynForce Newton_sled_4-->A sled of mass 2.1 kg is on perfectly smooth surface. A string pulls with a tension of 17.7N. At what

angle above the horizontal must the string pull in order to achieve an accelerations of 3.6 m/s²?
-a) 56.3 degrees
+b) 64.7 degrees
-c) 74.4 degrees
-d) 85.6 degrees
-e) 98.4 degrees
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====*_Instructions_*====
Instructions are forthcoming

Transclusion from [[Quizbank/Instructions_0]]:
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{<!--a04DynForce Newton_tensions_1-->[[File:Threetensions.jpg|220px|right]]In the figure shown, θ₁ is 18 degrees, and θ₃ is 34 degrees. The tension T₃ is 24 N. What is the tension, T₁?
}
-a) 15.82 N.
-b) 18.19 N.
+c) 20.92 N.
-d) 24.06 N.
-e) 27.67 N.

{<!--a04DynForce Newton_tensions_2-->[[File:Threetensions.jpg|220px|right]]In the figure shown, θ₁ is   18 degrees, and θ₃ is 34 degrees. The tension T₃ is 24

N. What is the weight?}
-a) 13.1 N.
-b) 15 N.
-c) 17.3 N.
+d) 19.9 N.
-e) 22.9 N.

{<!--a04DynForce Newton_tensions_3-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is 35 degrees, and the ''mass'' is 3.8 kg. What is T₂? }
-a) 56.46 N.
+b) 64.93 N.
-c) 74.66 N.
-d) 85.86 N.
-e) 98.74 N.

{<!--a04DynForce Newton_tensions_4-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is   35 degrees, and the ''mass'' is   3.8 kg. What is T₁?}
-a) 30.8 N.
-b) 36.9 N.
-c) 44.3 N.
+d) 53.2 N.
-e) 63.8 N.

{<!--a04DynForce Newton_tensions_5-->[[File:Threetensions.jpg|220px|right]]In the figure shown, θ₁ is   15 degrees , and θ₃ is   40 degrees . The mass has a 'weight' of 26 N. What is the tension, T₁?
}
-a) 15.99 N.
-b) 18.39 N.
-c) 21.14 N.
+d) 24.31 N.
-e) 27.96 N.

</quiz>

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Other renditions
<div class="mw-collapsible-content">
====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a04DynForce Newton_tensions_1-->[[File:Threetensions.jpg|220px|right]]In the figure shown, θ₁ is 18 degrees, and θ₃ is 38 degrees. The tension T₃ is 19 N. What is the tension, T₁?
-a) 10.35 N.

-b) 11.9 N.
-c) 13.69 N.
+d) 15.74 N.
-e) 18.1 N.
=====*_Rendition_* 1-3=====
<!--a04DynForce
Newton_tensions_1-->[[File:Threetensions.jpg|220px|right]]In the figure shown, θ₁ is 17 degrees, and θ₃ is 30 degrees. The tension T₃ is 46 N. What is the tension, T₁?
-a) 36.22 N.
+b) 41.66 N.
-c) 47.91 N.
-d) 55.09 N.
-e) 63.36 N.
=====*_Rendition_* 1-4=====
<!--a04DynForce
Newton_tensions_1-->[[File:Threetensions.jpg|220px|right]]In the figure shown, θ₁ is 15 degrees, and θ₃ is 37 degrees. The tension T₃ is 22 N. What is the tension, T₁?
-a) 11.96 N.
-b) 13.75 N.
-c) 15.82 N.
+d) 18.19 N.
-e) 20.92 N.
=====*_Rendition_* 1-5=====
<!--a04DynForce
Newton_tensions_1-->[[File:Threetensions.jpg|220px|right]]In the figure shown, θ₁ is 19 degrees, and θ₃ is 38 degrees. The tension T₃ is 21 N. What is the tension, T₁?
-a) 10.01 N.
-b) 11.51 N.
-c) 13.23 N.
-d) 15.22 N.
+e) 17.5 N.
=====*_Rendition_* 1-6=====
<!--a04DynForce
Newton_tensions_1-->[[File:Threetensions.jpg|220px|right]]In the figure shown, θ₁ is 20 degrees, and θ₃ is 29 degrees. The tension T₃ is 25 N. What is the tension, T₁?
-a) 13.3 N.
-b) 15.3 N.
-c) 17.59 N.
-d) 20.23 N.
+e) 23.27 N.
=====*_Rendition_* 1-7=====
<!--a04DynForce
Newton_tensions_1-->[[File:Threetensions.jpg|220px|right]]In the figure shown, θ₁ is 18 degrees, and

θ₃ is 35 degrees. The tension T₃ is 48 N. What is the tension, T₁?
-a) 31.26 N.
-b) 35.95 N.
+c) 41.34 N.
-d) 47.54 N.
-e) 54.68 N.
=====*_Rendition_* 1-8=====
<!--a04DynForce Newton_tensions_1-->[[File:Threetensions.jpg|220px|right]]In the figure shown, θ₁ is 17 degrees, and θ₃ is 29 degrees. The tension T₃ is 12 N. What is the tension, T₁?
-a) 6.27 N.
-b) 7.22 N.
-c) 8.3 N.
-d) 9.54 N.
+e) 10.97 N.
=====*_Rendition_* 1-9=====
<!--a04DynForce Newton_tensions_1-->[[File:Threetensions.jpg|220px|right]]In the figure shown, θ₁ is 16 degrees, and θ₃ is 30 degrees. The tension T₃ is 45 N. What is the tension, T₁?
-a) 26.66 N.
-b) 30.66 N.
-c) 35.25 N.
+d) 40.54 N.
-e) 46.62 N.
=====*_Rendition_* 1-10=====
<!--a04DynForce Newton_tensions_1-->[[File:Threetensions.jpg|220px|right]]In the figure shown, θ₁ is 15 degrees, and θ₃ is 36 degrees. The tension T₃ is 39 N. What is the tension, T₁?
+a) 32.66 N.
-b) 37.56 N.
-c) 43.2 N.
-d) 49.68 N.
-e) 57.13 N.
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a04DynForce Newton_tensions_2-->[[File:Threetensions.jpg|220px|right]]In the figure shown, θ₁ is   18 degrees, and θ₃ is 38 degrees. The tension T₃ is 19 N. What is the weight?
-a) 14.4 N.
+b) 16.6 N.
-c) 19 N.
-d) 21.9 N.
-e) 25.2 N.

=====*_Rendition_* 2-3=====
<!--a04DynForce
Newton_tensions_2-->[[File:Threetensions.jpg|220px|right]]In the figure shown, θ₁ is 17 degrees, and θ₃ is 30 degrees. The tension T₃ is 46 N. What is the weight?
-a) 20.1 N.
-b) 23.1 N.
-c) 26.6 N.
-d) 30.6 N.
+e) 35.2 N.
=====*_Rendition_* 2-4=====
<!--a04DynForce
Newton_tensions_2-->[[File:Threetensions.jpg|220px|right]]In the figure shown, θ₁ is 15 degrees, and θ₃ is 37 degrees. The tension T₃ is 22 N. What is the weight?
-a) 13.6 N.
-b) 15.6 N.
+c) 17.9 N.
-d) 20.6 N.
-e) 23.7 N.
=====*_Rendition_* 2-5=====
<!--a04DynForce Newton_tensions_2-->In the figure "3 tensions" shown above θ₁ is 19 degrees, and θ₃ is 38 degrees. The tension T₃ is 21 N. What is the weight?
+a) 18.6 N.
-b) 21.4 N.
-c) 24.6 N.
-d) 28.3 N.
-e) 32.6 N.
=====*_Rendition_* 2-6=====
<!--a04DynForce Newton_tensions_2-->In the figure "3 tensions" shown above θ₁ is 20 degrees, and θ₃ is 29 degrees. The tension T₃ is 25 N. What is the weight?
+a) 20.1 N.
-b) 23.1 N.
-c) 26.6 N.
-d) 30.5 N.
-e) 35.1 N.
=====*_Rendition_* 2-7=====
<!--a04DynForce Newton_tensions_2-->In the figure "3 tensions" shown above θ₁ is 18 degrees, and θ₃ is 35 degrees. The tension T₃ is 48 N. What is the weight?
+a) 40.3 N.
-b) 46.4 N.
-c) 53.3 N.
-d) 61.3 N.
-e) 70.5 N.
=====*_Rendition_* 2-8=====
<!--a04DynForce Newton_tensions_2-->In the figure "3 tensions" shown above θ₁ is 17 degrees, and θ₃ is

29 degrees. The tension T₃ is 12 N. What is the weight?
-a) 5.9 N.
-b) 6.8 N.
-c) 7.8 N.
+d) 9 N.
-e) 10.4 N.
=====*_Rendition_* 2-9=====
<!--a04DynForce Newton_tensions_2-->In the figure "3 tensions" shown above θ₁ is 16 degrees, and θ₃ is 30 degrees. The tension T₃ is 45 N. What is the weight?
-a) 25.5 N.
-b) 29.3 N.
+c) 33.7 N.
-d) 38.7 N.
-e) 44.5 N.
=====*_Rendition_* 2-10=====
<!--a04DynForce Newton_tensions_2-->In the figure "3 tensions" shown above θ₁ is 15 degrees, and θ₃ is 36 degrees. The tension T₃ is 39 N. What is the weight?
-a) 23.7 N.
-b) 27.3 N.
+c) 31.4 N.
-d) 36.1 N.
-e) 41.5 N.
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a04DynForce Newton_tensions_3-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is 28 degrees, and the ''mass'' is 2.5 kg. What is T₂?
-a) 45.38 N.
+b) 52.19 N.
-c) 60.01 N.
-d) 69.02 N.
-e) 79.37 N.
=====*_Rendition_* 3-3=====
<!--a04DynForce Newton_tensions_3-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is 32 degrees, and the ''mass'' is 2.8 kg. What is T₂?
-a) 45.03 N.
+b) 51.78 N.
-c) 59.55 N.
-d) 68.48 N.
-e) 78.75 N.
=====*_Rendition_* 3-4=====
<!--a04DynForce Newton_tensions_3-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is 21 degrees, and the ''mass'' is 3.1 kg. What is T₂?
-a) 55.74 N.
-b) 64.1 N.
-c) 73.72 N.
+d) 84.77 N.
-e) 97.49 N.

=====*_Rendition_* 3-5=====
<!--a04DynForce Newton_tensions_3-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is 33 degrees, and the ''mass'' is 2.8 kg. What is T₂?
+a) 50.38 N.
-b) 57.94 N.
-c) 66.63 N.
-d) 76.62 N.
-e) 88.12 N.
=====*_Rendition_* 3-6=====
<!--a04DynForce Newton_tensions_3-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is 36 degrees, and the ''mass'' is 3.1 kg. What is T₂?
-a) 39.08 N.
-b) 44.94 N.
+c) 51.69 N.
-d) 59.44 N.
-e) 68.35 N.
=====*_Rendition_* 3-7=====
<!--a04DynForce Newton_tensions_3-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is 33 degrees, and the ''mass'' is 2.7 kg. What is T₂?
-a) 36.74 N.
-b) 42.25 N.
+c) 48.58 N.
-d) 55.87 N.
-e) 64.25 N.
=====*_Rendition_* 3-8=====
<!--a04DynForce Newton_tensions_3-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is 37 degrees, and the ''mass'' is 2.5 kg. What is T₂?
-a) 30.78 N.
-b) 35.4 N.
+c) 40.71 N.
-d) 46.82 N.
-e) 53.84 N.
=====*_Rendition_* 3-9=====
<!--a04DynForce Newton_tensions_3-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is 33 degrees, and the ''mass'' is 3.7 kg. What is T₂?
+a) 66.58 N.
-b) 76.56 N.
-c) 88.05 N.
-d) 101.25 N.
-e) 116.44 N.
=====*_Rendition_* 3-10=====
<!--a04DynForce Newton_tensions_3-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is 28 degrees, and the ''mass'' is 2.9 kg. What is T₂?
+a) 60.54 N.
-b) 69.62 N.
-c) 80.06 N.

-d) 92.07 N.
-e) 105.88 N.
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a04DynForce Newton_tensions_4-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is 28 degrees, and the ''mass'' is 2.5 kg. What is T₁?
-a) 32 N.
-b) 38.4 N.
+c) 46.1 N.
-d) 55.3 N.
-e) 66.4 N.
=====*_Rendition_* 4-3=====
<!--a04DynForce Newton_tensions_4-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is 32 degrees, and the ''mass'' is 2.8 kg. What is T₁?
-a) 21.2 N.
-b) 25.4 N.
-c) 30.5 N.
-d) 36.6 N.
+e) 43.9 N.
=====*_Rendition_* 4-4=====
<!--a04DynForce Newton_tensions_4-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is 21 degrees, and the ''mass'' is 3.1 kg. What is T₁?
+a) 79.1 N.
-b) 95 N.
-c) 114 N.
-d) 136.8 N.
-e) 164.1 N.
=====*_Rendition_* 4-5=====
<!--a04DynForce Newton_tensions_4-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is 33 degrees, and the ''mass'' is 2.8 kg. What is T₁?
-a) 35.2 N.
+b) 42.3 N.
-c) 50.7 N.
-d) 60.8 N.
-e) 73 N.
=====*_Rendition_* 4-6=====
<!--a04DynForce Newton_tensions_4-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is 36 degrees, and the ''mass'' is 3.1 kg. What is T₁?
-a) 34.8 N.
+b) 41.8 N.
-c) 50.2 N.
-d) 60.2 N.
-e) 72.3 N.
=====*_Rendition_* 4-7=====
<!--a04DynForce Newton_tensions_4-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is 33 degrees, and the ''mass'' is 2.7 kg. What is T₁?

+a) 40.7 N.
-b) 48.9 N.
-c) 58.7 N.
-d) 70.4 N.
-e) 84.5 N.
=====*_Rendition_* 4-8=====
<!--a04DynForce Newton_tensions_4-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is   37 degrees, and the ''mass'' is   2.5 kg. What is T₁?
+a) 32.5 N.
-b) 39 N.
-c) 46.8 N.
-d) 56.2 N.
-e) 67.4 N.
=====*_Rendition_* 4-9=====
<!--a04DynForce Newton_tensions_4-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is   33 degrees, and the ''mass'' is   3.7 kg. What is T₁?
-a) 46.5 N.
+b) 55.8 N.
-c) 67 N.
-d) 80.4 N.
-e) 96.5 N.
=====*_Rendition_* 4-10=====
<!--a04DynForce Newton_tensions_4-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is   28 degrees, and the ''mass'' is   2.9 kg. What is T₁?
-a) 30.9 N.
-b) 37.1 N.
-c) 44.5 N.
+d) 53.5 N.
-e) 64.1 N.
====*_Question_* 5====
=====*_Rendition_* 5-2=====
<!--a04DynForce Newton_tensions_5-->[[File:Threetensions.jpg|220px|right]]In the figure shown, θ₁ is   16 degrees , and θ₃ is   30 degrees . The mass has a 'weight' of 44 N. What is the tension, T₁?
-a) 34.83 N.
-b) 40.05 N.
-c) 46.06 N.
+d) 52.97 N.
-e) 60.92 N.
=====*_Rendition_* 5-3=====
<!--a04DynForce Newton_tensions_5-->[[File:Threetensions.jpg|220px|right]]In the figure shown, θ₁ is   17 degrees , and θ₃ is   33 degrees . The mass has a 'weight' of 33 N. What is the tension, T₁?
-a) 27.32 N.
-b) 31.42 N.

+c) 36.13 N.
-d) 41.55 N.
-e) 47.78 N.
=====*_Rendition_* 5-4=====
<!--a04DynForce
Newton_tensions_5-->[[File:Threetensions.jpg|220px|right]]In the
figure shown, θ₁ is   16 degrees , and
θ₃ is   35 degrees . The mass has a 'weight' of 28
N. What is the tension, T₁?
-a) 19.41 N.
-b) 22.32 N.
-c) 25.66 N.
+d) 29.51 N.
-e) 33.94 N.
=====*_Rendition_* 5-5=====
<!--a04DynForce
Newton_tensions_5-->[[File:Threetensions.jpg|220px|right]]In the
figure shown, θ₁ is   17 degrees , and
θ₃ is   29 degrees . The mass has a ''weight'' of
29 N. What is the tension, T₁?
-a) 20.16 N.
-b) 23.18 N.
-c) 26.66 N.
-d) 30.66 N.
+e) 35.26 N.
=====*_Rendition_* 5-6=====
<!--a04DynForce
Newton_tensions_5-->[[File:Threetensions.jpg|220px|right]]In the
figure shown, θ₁ is   20 degrees , and
θ₃ is   31 degrees . The mass has a ''weight'' of
36 N. What is the tension, T₁?
-a) 22.7 N.
-b) 26.11 N.
-c) 30.02 N.
-d) 34.53 N.
+e) 39.71 N.
=====*_Rendition_* 5-7=====
<!--a04DynForce
Newton_tensions_5-->[[File:Threetensions.jpg|220px|right]]In the
figure shown, θ₁ is   18 degrees , and
θ₃ is   29 degrees . The mass has a ''weight'' of
50 N. What is the tension, T₁?
-a) 34.19 N.
-b) 39.32 N.
-c) 45.21 N.
-d) 52 N.
+e) 59.79 N.
=====*_Rendition_* 5-8=====
<!--a04DynForce
Newton_tensions_5-->[[File:Threetensions.jpg|220px|right]]In the
figure shown, θ₁ is   20 degrees , and
θ₃ is   37 degrees . The mass has a ''weight'' of

41 N. What is the tension, T₁?
-a) 29.52 N.
-b) 33.95 N.
+c) 39.04 N.
-d) 44.9 N.
-e) 51.63 N.
=====*_Rendition_* 5-9=====
<!--a04DynForce
Newton_tensions_5-->[[File:Threetensions.jpg|220px|right]]In the
figure shown, θ₁ is   20 degrees , and
θ₃ is   33 degrees . The mass has a ''weight'' of
31 N. What is the tension, T₁?
+a) 32.55 N.
-b) 37.44 N.
-c) 43.05 N.
-d) 49.51 N.
-e) 56.94 N.
=====*_Rendition_* 5-10=====
<!--a04DynForce
Newton_tensions_5-->[[File:Threetensions.jpg|220px|right]]In the
figure shown, θ₁ is   17 degrees , and
θ₃ is   39 degrees . The mass has a ''weight'' of
42 N. What is the tension, T₁?
-a) 34.24 N.
+b) 39.37 N.
-c) 45.28 N.
-d) 52.07 N.
-e) 59.88 N.
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====*_Instructions_*====
Instructions are forthcoming

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{<!--a05frictDragElast_3rdLaw_1-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown, the mass of m₁ is 5.4 kg, and the mass of m₂ is 3.2 kg. If the external force, F_{ext} on m₂ is 104 N, what is the tension in the connecting string? Assume no friction is present.}
-a) 56.8 N
+b) 65.3 N
-c) 75.1 N
-d) 86.4 N
-e) 99.3 N

{<!--a05frictDragElast_3rdLaw_2-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown (with m₁ = 5.4 kg, m₂ = 3.2 kg, and F_{ext} = 104 N), what is the acceleration? Assume no friction is present. }
-a) 9.1 m/s²
-b) 10.5 m/s²
+c) 12.1 m/s²
-d) 13.9 m/s²
-e) 16 m/s²

{<!--a05frictDragElast_3rdLaw_3-->Nine barefoot baseball players, with a total mass of 647 kg plays tug of war against five basketball players wearing shoes that provide a static coefficient of friction of 0.58 . The net mass of the (shoed) basketball team is 392 kg. What is the maximum coefficient of the barefoot boys if they lose?}
+a) 0.351
-b) 0.387
-c) 0.425
-d) 0.468
-e) 0.514

{<!--a05frictDragElast_3rdLaw_4-->Without their shoes, members of a 9 person baseball team have a coefficient of static friction of only 0.23 . But the team wins a game of tug of war due to their superior mass of 638 kg. They are playing against a 5 person basketball team with a net mass of 415 kg. What is the maximum coefficient of static friction of the basketball team? }
-a) 0.321
+b) 0.354
-c) 0.389
-d) 0.428
-e) 0.471

{<!--a05frictDragElast_3rdLaw_5-->[[File:Forces 2 carts connected by

string.jpg|right|340px]] In the figure shown, the mass of m₁ is 6.6 kg, and the mass of m₂ is 2.6 kg. If the external force, F_{ext} on m₂ is 126 N, what is the tension in the connecting string? Assume that m₁ has a kinetic coefficient of friction equal to 0.37, and that for m₂ the coefficient is 0.44 .}
-a) 67.4 N
-b) 77.5 N
+c) 89.1 N
-d) 102.5 N
-e) 117.9 N

</quiz>

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Other renditions
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====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a05frictDragElast_3rdLaw_1-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown, the mass of m₁ is 6.4 kg, and the mass of m₂ is 2.3 kg. If the external force, F_{ext} on m₂ is 174 N, what is the tension in the connecting string? Assume no friction is present.
-a) 84.2 N
-b) 96.8 N
-c) 111.3 N
+d) 128 N
-e) 147.2 N
=====*_Rendition_* 1-3=====
<!--a05frictDragElast_3rdLaw_1-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown, the mass of m₁ is 7 kg, and the mass of m₂ is 3.6 kg. If the external force, F_{ext} on m₂ is 153 N, what is the tension in the connecting string? Assume no friction is present.
-a) 66.4 N
-b) 76.4 N
-c) 87.9 N
+d) 101 N
-e) 116.2 N
=====*_Rendition_* 1-4=====
<!--a05frictDragElast_3rdLaw_1-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown, the mass of m₁ is 6.7 kg, and the mass of m₂ is 2.5 kg. If the external force, F_{ext} on m₂ is 101 N, what is the tension in the connecting string? Assume no friction is present.
-a) 55.6 N

-b) 64 N
+c) 73.6 N
-d) 84.6 N
-e) 97.3 N
=====*_Rendition_* 1-5=====
<!--a05frictDragElast_3rdLaw_1-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown, the mass of m₁ is 5.4 kg, and the mass of m₂ is 3.9 kg. If the external force, F_{ext} on m₂ is 136 N, what is the tension in the connecting string? Assume no friction is present.
+a) 79 N
-b) 90.8 N
-c) 104.4 N
-d) 120.1 N
-e) 138.1 N
=====*_Rendition_* 1-6=====
<!--a05frictDragElast_3rdLaw_1-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown, the mass of m₁ is 5.1 kg, and the mass of m₂ is 2.8 kg. If the external force, F_{ext} on m₂ is 148 N, what is the tension in the connecting string? Assume no friction is present.
+a) 95.5 N
-b) 109.9 N
-c) 126.4 N
-d) 145.3 N
-e) 167.1 N
=====*_Rendition_* 1-7=====
<!--a05frictDragElast_3rdLaw_1-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown, the mass of m₁ is 5.4 kg, and the mass of m₂ is 2.3 kg. If the external force, F_{ext} on m₂ is 138 N, what is the tension in the connecting string? Assume no friction is present.
-a) 84.2 N
+b) 96.8 N
-c) 111.3 N
-d) 128 N
-e) 147.2 N
=====*_Rendition_* 1-8=====
<!--a05frictDragElast_3rdLaw_1-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown, the mass of m₁ is 6.5 kg, and the mass of m₂ is 2.5 kg. If the external force, F_{ext} on m₂ is 141 N, what is the tension in the connecting string? Assume no friction is present.
-a) 58.2 N
-b) 67 N
-c) 77 N
-d) 88.6 N
+e) 101.8 N

=====*_Rendition_* 1-9=====
<!--a05frictDragElast_3rdLaw_1-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown, the mass of m₁ is 5.1 kg, and the mass of m₂ is 3.5 kg. If the external force, F_{ext} on m₂ is 135 N, what is the tension in the connecting string? Assume no friction is present.
-a) 45.8 N
-b) 52.6 N
-c) 60.5 N
-d) 69.6 N
+e) 80.1 N
=====*_Rendition_* 1-10=====
<!--a05frictDragElast_3rdLaw_1-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown, the mass of m₁ is 6.4 kg, and the mass of m₂ is 3.7 kg. If the external force, F_{ext} on m₂ is 135 N, what is the tension in the connecting string? Assume no friction is present.
-a) 74.4 N
+b) 85.5 N
-c) 98.4 N
-d) 113.1 N
-e) 130.1 N
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a05frictDragElast_3rdLaw_2-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown (with m₁ = 6.4 kg, m₂ = 2.3 kg, and F_{ext} = 174 N), what is the acceleration? Assume no friction is present.
+a) 20 m/s²
-b) 23 m/s²
-c) 26.5 m/s²
-d) 30.4 m/s²
-e) 35 m/s²
=====*_Rendition_* 2-3=====
<!--a05frictDragElast_3rdLaw_2-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown (with m₁ = 7 kg, m₂ = 3.6 kg, and F_{ext} = 153 N), what is the acceleration? Assume no friction is present.
-a) 12.6 m/s²
+b) 14.4 m/s²
-c) 16.6 m/s²
-d) 19.1 m/s²
-e) 22 m/s²
=====*_Rendition_* 2-4=====
<!--a05frictDragElast_3rdLaw_2-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown (with m₁ = 6.7 kg, m₂ = 2.5 kg, and F_{ext} = 101 N), what is the acceleration? Assume no friction is present.
-a) 6.3 m/s²
-b) 7.2 m/s²

-c) 8.3 m/s²
-d) 9.5 m/s²
+e) 11 m/s²
=====*_Rendition_* 2-5=====
<!--a05frictDragElast_3rdLaw_2-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown (with m₁ = 5.4 kg, m₂ = 3.9 kg, and F_{ext} = 136 N), what is the acceleration? Assume no friction is present.
-a) 12.7 m/s²
+b) 14.6 m/s²
-c) 16.8 m/s²
-d) 19.3 m/s²
-e) 22.2 m/s²
=====*_Rendition_* 2-6=====
<!--a05frictDragElast_3rdLaw_2-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown (with m₁ = 5.1 kg, m₂ = 2.8 kg, and F_{ext} = 148 N), what is the acceleration? Assume no friction is present.
-a) 14.2 m/s²
-b) 16.3 m/s²
+c) 18.7 m/s²
-d) 21.5 m/s²
-e) 24.8 m/s²
=====*_Rendition_* 2-7=====
<!--a05frictDragElast_3rdLaw_2-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown (with m₁ = 5.4 kg, m₂ = 2.3 kg, and F_{ext} = 138 N), what is the acceleration? Assume no friction is present.
-a) 10.2 m/s²
-b) 11.8 m/s²
-c) 13.6 m/s²
-d) 15.6 m/s²
+e) 17.9 m/s²
=====*_Rendition_* 2-8=====
<!--a05frictDragElast_3rdLaw_2-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown (with m₁ = 6.5 kg, m₂ = 2.5 kg, and F_{ext} = 141 N), what is the acceleration? Assume no friction is present.
-a) 9 m/s²
-b) 10.3 m/s²
-c) 11.8 m/s²
-d) 13.6 m/s²
+e) 15.7 m/s²
=====*_Rendition_* 2-9=====
<!--a05frictDragElast_3rdLaw_2-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown (with m₁ = 5.1 kg, m₂ = 3.5 kg, and F_{ext} = 135 N), what is the acceleration? Assume no friction is present.
-a) 13.7 m/s²
+b) 15.7 m/s²
-c) 18.1 m/s²
-d) 20.8 m/s²

-e) 23.9 m/s²
=====*_Rendition_* 2-10=====
<!--a05frictDragElast_3rdLaw_2-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown (with m₁ = 6.4 kg, m₂ = 3.7 kg, and F_{ext} = 135 N), what is the acceleration? Assume no friction is present.
+a) 13.4 m/s²
-b) 15.4 m/s²
-c) 17.7 m/s²
-d) 20.3 m/s²
-e) 23.4 m/s²
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a05frictDragElast_3rdLaw_3-->Nine barefoot baseball players, with a total mass of 640 kg plays tug of war against five basketball players wearing shoes that provide a static coefficient of friction of 0.68 . The net mass of the (shoed) basketball team is 431 kg. What is the maximum coefficient of the barefoot boys if they lose?
-a) 0.313
-b) 0.344
-c) 0.378
-d) 0.416
+e) 0.458
=====*_Rendition_* 3-3=====
<!--a05frictDragElast_3rdLaw_3-->Nine barefoot baseball players, with a total mass of 625 kg plays tug of war against five basketball players wearing shoes that provide a static coefficient of friction of 0.54 . The net mass of the (shoed) basketball team is 445 kg. What is the maximum coefficient of the barefoot boys if they lose?
-a) 0.263
-b) 0.289
-c) 0.318
-d) 0.35
+e) 0.384
=====*_Rendition_* 3-4=====
<!--a05frictDragElast_3rdLaw_3-->Nine barefoot baseball players, with a total mass of 672 kg plays tug of war against five basketball players wearing shoes that provide a static coefficient of friction of 0.59 . The net mass of the (shoed) basketball team is 407 kg. What is the maximum coefficient of the barefoot boys if they lose?
-a) 0.295
-b) 0.325
+c) 0.357
-d) 0.393
-e) 0.432
=====*_Rendition_* 3-5=====
<!--a05frictDragElast_3rdLaw_3-->Nine barefoot baseball players, with a total mass of 664 kg plays tug of war against five basketball players wearing shoes that provide a static coefficient of friction of 0.53 . The net mass of the (shoed) basketball team is 418 kg. What is the maximum coefficient of the barefoot boys if they lose?
+a) 0.334

-b) 0.367
-c) 0.404
-d) 0.444
-e) 0.488
=====*_Rendition_* 3-6=====
<!--a05frictDragElast_3rdLaw_3-->Nine barefoot baseball players, with a total mass of 679 kg plays tug of war against five basketball players wearing shoes that provide a static coefficient of friction of 0.61 . The net mass of the (shoed) basketball team is 380 kg. What is the maximum coefficient of the barefoot boys if they lose?
-a) 0.31
+b) 0.341
-c) 0.376
-d) 0.413
-e) 0.454
=====*_Rendition_* 3-7=====
<!--a05frictDragElast_3rdLaw_3-->Nine barefoot baseball players, with a total mass of 616 kg plays tug of war against five basketball players wearing shoes that provide a static coefficient of friction of 0.71 . The net mass of the (shoed) basketball team is 388 kg. What is the maximum coefficient of the barefoot boys if they lose?
+a) 0.447
-b) 0.492
-c) 0.541
-d) 0.595
-e) 0.655
=====*_Rendition_* 3-8=====
<!--a05frictDragElast_3rdLaw_3-->Nine barefoot baseball players, with a total mass of 640 kg plays tug of war against five basketball players wearing shoes that provide a static coefficient of friction of 0.61 . The net mass of the (shoed) basketball team is 385 kg. What is the maximum coefficient of the barefoot boys if they lose?
-a) 0.303
-b) 0.334
+c) 0.367
-d) 0.404
-e) 0.444
=====*_Rendition_* 3-9=====
<!--a05frictDragElast_3rdLaw_3-->Nine barefoot baseball players, with a total mass of 692 kg plays tug of war against five basketball players wearing shoes that provide a static coefficient of friction of 0.61 . The net mass of the (shoed) basketball team is 406 kg. What is the maximum coefficient of the barefoot boys if they lose?
+a) 0.358
-b) 0.394
-c) 0.433
-d) 0.476
-e) 0.524
=====*_Rendition_* 3-10=====
<!--a05frictDragElast_3rdLaw_3-->Nine barefoot baseball players, with a total mass of 616 kg plays tug of war against five basketball players wearing shoes that provide a static coefficient of friction of

0.68 . The net mass of the (shoed) basketball team is 421 kg. What is the maximum coefficient of the barefoot boys if they lose?
-a) 0.422
+b) 0.465
-c) 0.511
-d) 0.562
-e) 0.619
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a05frictDragElast_3rdLaw_4-->Without their shoes, members of a 9 person baseball team have a coefficient of static friction of only 0.24 . But the team wins a game of tug of war due to their superior mass of 643 kg. They are playing against a 5 person basketball team with a net mass of 405 kg. What is the maximum coefficient of static friction of the basketball team?
-a) 0.26
-b) 0.286
-c) 0.315
-d) 0.346
+e) 0.381
=====*_Rendition_* 4-3=====
<!--a05frictDragElast_3rdLaw_4-->Without their shoes, members of a 9 person baseball team have a coefficient of static friction of only 0.36 . But the team wins a game of tug of war due to their superior mass of 683 kg. They are playing against a 5 person basketball team with a net mass of 406 kg. What is the maximum coefficient of static friction of the basketball team?
-a) 0.455
-b) 0.501
-c) 0.551
+d) 0.606
-e) 0.666
=====*_Rendition_* 4-4=====
<!--a05frictDragElast_3rdLaw_4-->Without their shoes, members of a 9 person baseball team have a coefficient of static friction of only 0.23 . But the team wins a game of tug of war due to their superior mass of 675 kg. They are playing against a 5 person basketball team with a net mass of 394 kg. What is the maximum coefficient of static friction of the basketball team?
+a) 0.394
-b) 0.433
-c) 0.477
-d) 0.524
-e) 0.577
=====*_Rendition_* 4-5=====
<!--a05frictDragElast_3rdLaw_4-->Without their shoes, members of a 9 person baseball team have a coefficient of static friction of only 0.35 . But the team wins a game of tug of war due to their superior mass of 614 kg. They are playing against a 5 person basketball team with a net mass of 405 kg. What is the maximum coefficient of static friction of the basketball team?
-a) 0.439

-b) 0.482
+c) 0.531
-d) 0.584
-e) 0.642
=====*_Rendition_* 4-6=====
<!--a05frictDragElast_3rdLaw_4-->Without their shoes, members of a 9 person baseball team have a coefficient of static friction of only 0.33 . But the team wins a game of tug of war due to their superior mass of 663 kg. They are playing against a 5 person basketball team with a net mass of 422 kg. What is the maximum coefficient of static friction of the basketball team?
-a) 0.39
-b) 0.428
-c) 0.471
+d) 0.518
-e) 0.57
=====*_Rendition_* 4-7=====
<!--a05frictDragElast_3rdLaw_4-->Without their shoes, members of a 9 person baseball team have a coefficient of static friction of only 0.38 . But the team wins a game of tug of war due to their superior mass of 671 kg. They are playing against a 5 person basketball team with a net mass of 438 kg. What is the maximum coefficient of static friction of the basketball team?
-a) 0.481
-b) 0.529
+c) 0.582
-d) 0.64
-e) 0.704
=====*_Rendition_* 4-8=====
<!--a05frictDragElast_3rdLaw_4-->Without their shoes, members of a 9 person baseball team have a coefficient of static friction of only 0.23 . But the team wins a game of tug of war due to their superior mass of 607 kg. They are playing against a 5 person basketball team with a net mass of 429 kg. What is the maximum coefficient of static friction of the basketball team?
-a) 0.269
-b) 0.296
+c) 0.325
-d) 0.358
-e) 0.394
=====*_Rendition_* 4-9=====
<!--a05frictDragElast_3rdLaw_4-->Without their shoes, members of a 9 person baseball team have a coefficient of static friction of only 0.21 . But the team wins a game of tug of war due to their superior mass of 683 kg. They are playing against a 5 person basketball team with a net mass of 389 kg. What is the maximum coefficient of static friction of the basketball team?
-a) 0.277
-b) 0.305
-c) 0.335
+d) 0.369
-e) 0.406

=====*_Rendition_* 4-10=====
<!--a05frictDragElast_3rdLaw_4-->Without their shoes, members of a 9 person baseball team have a coefficient of static friction of only 0.3 . But the team wins a game of tug of war due to their superior mass of 662 kg. They are playing against a 5 person basketball team with a net mass of 430 kg. What is the maximum coefficient of static friction of the basketball team?
-a) 0.42
+b) 0.462
-c) 0.508
-d) 0.559
-e) 0.615
====*_Question_* 5====
=====*_Rendition_* 5-2=====
<!--a05frictDragElast_3rdLaw_5-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown, the mass of m₁ is 6.9 kg, and the mass of m₂ is 3 kg. If the external force, F_{ext} on m₂ is 131 N, what is the tension in the connecting string? Assume that m₁ has a kinetic coefficient of friction equal to 0.31, and that for m₂ the coefficient is 0.49 .
-a) 76.2 N
+b) 87.6 N
-c) 100.8 N
-d) 115.9 N
-e) 133.3 N
=====*_Rendition_* 5-3=====
<!--a05frictDragElast_3rdLaw_5-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown, the mass of m₁ is 5.7 kg, and the mass of m₂ is 3.1 kg. If the external force, F_{ext} on m₂ is 137 N, what is the tension in the connecting string? Assume that m₁ has a kinetic coefficient of friction equal to 0.34, and that for m₂ the coefficient is 0.47 .
-a) 56.7 N
-b) 65.2 N
-c) 74.9 N
+d) 86.2 N
-e) 99.1 N
=====*_Rendition_* 5-4=====
<!--a05frictDragElast_3rdLaw_5-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown, the mass of m₁ is 5.7 kg, and the mass of m₂ is 2.5 kg. If the external force, F_{ext} on m₂ is 159 N, what is the tension in the connecting string? Assume that m₁ has a kinetic coefficient of friction equal to 0.34, and that for m₂ the coefficient is 0.46 .
-a) 82 N
-b) 94.3 N
+c) 108.5 N
-d) 124.8 N
-e) 143.5 N

=====*_Rendition_* 5-5=====

<!--a05frictDragElast_3rdLaw_5-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown, the mass of m₁ is 6.9 kg, and the mass of m₂ is 2.5 kg. If the external force, F_{ext} on m₂ is 165 N, what is the tension in the connecting string? Assume that m₁ has a kinetic coefficient of friction equal to 0.35, and that for m₂ the coefficient is 0.44 .

-a) 68.3 N
-b) 78.6 N
-c) 90.4 N
-d) 103.9 N
+e) 119.5 N

=====*_Rendition_* 5-6=====

<!--a05frictDragElast_3rdLaw_5-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown, the mass of m₁ is 6.5 kg, and the mass of m₂ is 2.9 kg. If the external force, F_{ext} on m₂ is 132 N, what is the tension in the connecting string? Assume that m₁ has a kinetic coefficient of friction equal to 0.37, and that for m₂ the coefficient is 0.48 .

+a) 89.1 N
-b) 102.5 N
-c) 117.9 N
-d) 135.5 N
-e) 155.9 N

=====*_Rendition_* 5-7=====

<!--a05frictDragElast_3rdLaw_5-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown, the mass of m₁ is 6.8 kg, and the mass of m₂ is 3.3 kg. If the external force, F_{ext} on m₂ is 112 N, what is the tension in the connecting string? Assume that m₁ has a kinetic coefficient of friction equal to 0.39, and that for m₂ the coefficient is 0.46 .

-a) 48.6 N
-b) 55.9 N
-c) 64.2 N
+d) 73.9 N
-e) 85 N

=====*_Rendition_* 5-8=====

<!--a05frictDragElast_3rdLaw_5-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown, the mass of m₁ is 6.5 kg, and the mass of m₂ is 3 kg. If the external force, F_{ext} on m₂ is 175 N, what is the tension in the connecting string? Assume that m₁ has a kinetic coefficient of friction equal to 0.33, and that for m₂ the coefficient is 0.48 .

-a) 66.7 N
-b) 76.7 N
-c) 88.3 N
-d) 101.5 N
+e) 116.7 N

=====*_Rendition_* 5-9=====
<!--a05frictDragElast_3rdLaw_5-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown, the mass of m₁ is 6 kg, and the mass of m₂ is 3.2 kg. If the external force, F_{ext} on m₂ is 173 N, what is the tension in the connecting string? Assume that m₁ has a kinetic coefficient of friction equal to 0.31, and that for m₂ the coefficient is 0.44 .
+a) 110.2 N
-b) 126.7 N
-c) 145.7 N
-d) 167.6 N
-e) 192.7 N
=====*_Rendition_* 5-10=====
<!--a05frictDragElast_3rdLaw_5-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown, the mass of m₁ is 5.2 kg, and the mass of m₂ is 2.9 kg. If the external force, F_{ext} on m₂ is 179 N, what is the tension in the connecting string? Assume that m₁ has a kinetic coefficient of friction equal to 0.36, and that for m₂ the coefficient is 0.46 .
-a) 74.4 N
-b) 85.5 N
-c) 98.3 N
+d) 113.1 N
-e) 130.1 N
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====*_Instructions_*====
Instructions are forthcoming

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*_See_* [[User:Guy vandegrift]]
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===*_Quiz_*===
<quiz display=simple>
{<!--a06uniformCircMotGravitation_friction_1-->A merry-go-round has an angular frequency, ω, equal to 0.15 rad/sec. How many minutes does it take to complete 8.5 revolutions? }
-a) 4.49 minutes.
-b) 5.16 minutes.
+c) 5.93 minutes.
-d) 6.82 minutes.
-e) 7.85 minutes.

{<!--a06uniformCircMotGravitation_friction_2-->A merry-go round has a period of 0.22 minutes. What is the centripetal force on a 81.2 kg person who is standing 1.64 meters from the center?}
-a) 26.2 newtons.
+b) 30.2 newtons.
-c) 34.7 newtons.
-d) 39.9 newtons.
-e) 45.9 newtons.

{<!--a06uniformCircMotGravitation_friction_3-->A merry-go round has a period of 0.22 minutes. What is the minimum coefficient of static friction that would allow a 81.2 kg person to stand1.64 meters from the center, without grabbing something?}
-a) 0.033
+b) 0.038
-c) 0.044
-d) 0.05
-e) 0.058

{<!--a06uniformCircMotGravitation_friction_4-->What is the gravitational acceleration on a plant that is 2.37 times more massive than Earth, and a radius that is 1.52 times greater than Earths?}
+a) 10.1 m/s²
-b) 11.6 m/s²
-c) 13.3 m/s²
-d) 15.3 m/s²
-e) 17.6 m/s²

{<!--a06uniformCircMotGravitation_friction_5-->What is the gravitational acceleration on a plant that is 2.89 times more dense than Earth, and a radius that is 2.38 times greater than Earth's?}
-a) 58.6 m/s²
+b) 67.4 m/s²
-c) 77.5 m/s²
-d) 89.1 m/s²
-e) 102.5 m/s²

</quiz>

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Other renditions
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====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a06uniformCircMotGravitation_friction_1-->A merry-go-round has an angular frequency, ω, equal to 0.174 rad/sec. How many minutes does it take to complete 8.5 revolutions?
-a) 3.87 minutes.
-b) 4.45 minutes.
+c) 5.12 minutes.
-d) 5.88 minutes.
-e) 6.77 minutes.
=====*_Rendition_* 1-3=====
<!--a06uniformCircMotGravitation_friction_1-->A merry-go-round has an angular frequency, ω, equal to 0.192 rad/sec. How many minutes does it take to complete 12.5 revolutions?
-a) 5.93 minutes.
+b) 6.82 minutes.
-c) 7.84 minutes.
-d) 9.02 minutes.
-e) 10.37 minutes.
=====*_Rendition_* 1-4=====
<!--a06uniformCircMotGravitation_friction_1-->A merry-go-round has an angular frequency, ω, equal to 0.188 rad/sec. How many minutes does it take to complete 6.5 revolutions?
-a) 2.74 minutes.
-b) 3.15 minutes.
+c) 3.62 minutes.
-d) 4.16 minutes.
-e) 4.79 minutes.
=====*_Rendition_* 1-5=====
<!--a06uniformCircMotGravitation_friction_1-->A merry-go-round has an angular frequency, ω, equal to 0.168 rad/sec. How many minutes does it take to complete 6.5 revolutions?
-a) 2.66 minutes.
-b) 3.06 minutes.
-c) 3.52 minutes.
+d) 4.05 minutes.
-e) 4.66 minutes.
=====*_Rendition_* 1-6=====
<!--a06uniformCircMotGravitation_friction_1-->A merry-go-round has an angular frequency, ω, equal to 0.174 rad/sec. How many minutes does it take to complete 12.5 revolutions?
-a) 5.69 minutes.
-b) 6.54 minutes.
+c) 7.52 minutes.
-d) 8.65 minutes.
-e) 9.95 minutes.

=====*_Rendition_* 1-7=====
<!--a06uniformCircMotGravitation_friction_1-->A merry-go-round has an angular frequency, ω, equal to 0.192 rad/sec. How many minutes does it take to complete 8.5 revolutions?
-a) 3.05 minutes.
-b) 3.51 minutes.
-c) 4.03 minutes.
+d) 4.64 minutes.
-e) 5.33 minutes.
=====*_Rendition_* 1-8=====
<!--a06uniformCircMotGravitation_friction_1-->A merry-go-round has an angular frequency, ω, equal to 0.182 rad/sec. How many minutes does it take to complete 12.5 revolutions?
-a) 5.44 minutes.
-b) 6.25 minutes.
+c) 7.19 minutes.
-d) 8.27 minutes.
-e) 9.51 minutes.
=====*_Rendition_* 1-9=====
<!--a06uniformCircMotGravitation_friction_1-->A merry-go-round has an angular frequency, ω, equal to 0.15 rad/sec. How many minutes does it take to complete 9.5 revolutions?
-a) 5.77 minutes.
+b) 6.63 minutes.
-c) 7.63 minutes.
-d) 8.77 minutes.
-e) 10.09 minutes.
=====*_Rendition_* 1-10=====
<!--a06uniformCircMotGravitation_friction_1-->A merry-go-round has an angular frequency, ω, equal to 0.16 rad/sec. How many minutes does it take to complete 9.5 revolutions?
-a) 5.41 minutes.
+b) 6.22 minutes.
-c) 7.15 minutes.
-d) 8.22 minutes.
-e) 9.46 minutes.
=====*_Rendition_* 1-11=====
<!--a06uniformCircMotGravitation_friction_1-->A merry-go-round has an angular frequency, ω, equal to 0.198 rad/sec. How many minutes does it take to complete 10.5 revolutions?
-a) 4.83 minutes.
+b) 5.55 minutes.
-c) 6.39 minutes.
-d) 7.34 minutes.
-e) 8.45 minutes.
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a06uniformCircMotGravitation_friction_2-->A merry-go round has a period of 0.34 minutes. What is the centripetal force on a 89.6 kg person who is standing 2.25 meters from the center?
-a) 16.6 newtons.
+b) 19.1 newtons.

-c) 22 newtons.
-d) 25.3 newtons.
-e) 29.1 newtons.
=====*_Rendition_* 2-3=====
<!--a06uniformCircMotGravitation_friction_2-->A merry-go round has a period of 0.38 minutes. What is the centripetal force on a 77.6 kg person who is standing 1.59 meters from the center?
+a) 9.4 newtons.
-b) 10.8 newtons.
-c) 12.4 newtons.
-d) 14.3 newtons.
-e) 16.4 newtons.
=====*_Rendition_* 2-4=====
<!--a06uniformCircMotGravitation_friction_2-->A merry-go round has a period of 0.26 minutes. What is the centripetal force on a 51.9 kg person who is standing 1.26 meters from the center?
-a) 6.1 newtons.
-b) 7 newtons.
-c) 8 newtons.
-d) 9.2 newtons.
+e) 10.6 newtons.
=====*_Rendition_* 2-5=====
<!--a06uniformCircMotGravitation_friction_2-->A merry-go round has a period of 0.32 minutes. What is the centripetal force on a 88.1 kg person who is standing 1.73 meters from the center?
+a) 16.3 newtons.
-b) 18.8 newtons.
-c) 21.6 newtons.
-d) 24.8 newtons.
-e) 28.5 newtons.
=====*_Rendition_* 2-6=====
<!--a06uniformCircMotGravitation_friction_2-->A merry-go round has a period of 0.34 minutes. What is the centripetal force on a 51.4 kg person who is standing 3.09 meters from the center?
-a) 8.6 newtons.
-b) 9.9 newtons.
-c) 11.4 newtons.
-d) 13.1 newtons.
+e) 15.1 newtons.
=====*_Rendition_* 2-7=====
<!--a06uniformCircMotGravitation_friction_2-->A merry-go round has a period of 0.38 minutes. What is the centripetal force on a 64.8 kg person who is standing 1.76 meters from the center?
-a) 5 newtons.
-b) 5.7 newtons.
-c) 6.5 newtons.
-d) 7.5 newtons.
+e) 8.7 newtons.
=====*_Rendition_* 2-8=====
<!--a06uniformCircMotGravitation_friction_2-->A merry-go round has a period of 0.26 minutes. What is the centripetal force on a 53.3 kg person who is standing 1.35 meters from the center?

-a) 7.7 newtons.
-b) 8.8 newtons.
-c) 10.2 newtons.
+d) 11.7 newtons.
-e) 13.4 newtons.
=====*_Rendition_* 2-9=====
<!--a06uniformCircMotGravitation_friction_2-->A merry-go round has a period of 0.22 minutes. What is the centripetal force on a 96.9 kg person who is standing 1.95 meters from the center?
-a) 32.4 newtons.
-b) 37.2 newtons.
+c) 42.8 newtons.
-d) 49.2 newtons.
-e) 56.6 newtons.
=====*_Rendition_* 2-10=====
<!--a06uniformCircMotGravitation_friction_2-->A merry-go round has a period of 0.36 minutes. What is the centripetal force on a 73.9 kg person who is standing 2.94 meters from the center?
-a) 12.1 newtons.
-b) 13.9 newtons.
-c) 16 newtons.
+d) 18.4 newtons.
-e) 21.1 newtons.
=====*_Rendition_* 2-11=====
<!--a06uniformCircMotGravitation_friction_2-->A merry-go round has a period of 0.36 minutes. What is the centripetal force on a 67.1 kg person who is standing 1.19 meters from the center?
-a) 4.4 newtons.
-b) 5.1 newtons.
-c) 5.9 newtons.
+d) 6.8 newtons.
-e) 7.8 newtons.
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a06uniformCircMotGravitation_friction_3-->A merry-go round has a period of 0.34 minutes. What is the minimum coefficient of static friction that would allow a 89.6 kg person to stand2.25 meters from the center, without grabbing something?
-a) 0.019
+b) 0.022
-c) 0.025
-d) 0.029
-e) 0.033
=====*_Rendition_* 3-3=====
<!--a06uniformCircMotGravitation_friction_3-->A merry-go round has a period of 0.38 minutes. What is the minimum coefficient of static friction that would allow a 77.6 kg person to stand1.59 meters from the center, without grabbing something?
-a) 0.008
-b) 0.009
-c) 0.011
+d) 0.012

-e) 0.014
=====*_Rendition_* 3-4=====
<!--a06uniformCircMotGravitation_friction_3-->A merry-go round has a period of 0.26 minutes. What is the minimum coefficient of static friction that would allow a 51.9 kg person to stand1.26 meters from the center, without grabbing something?
+a) 0.021
-b) 0.024
-c) 0.028
-d) 0.032
-e) 0.036
=====*_Rendition_* 3-5=====
<!--a06uniformCircMotGravitation_friction_3-->A merry-go round has a period of 0.32 minutes. What is the minimum coefficient of static friction that would allow a 88.1 kg person to stand1.73 meters from the center, without grabbing something?
+a) 0.019
-b) 0.022
-c) 0.025
-d) 0.029
-e) 0.033
=====*_Rendition_* 3-6=====
<!--a06uniformCircMotGravitation_friction_3-->A merry-go round has a period of 0.34 minutes. What is the minimum coefficient of static friction that would allow a 51.4 kg person to stand3.09 meters from the center, without grabbing something?
-a) 0.017
-b) 0.02
-c) 0.023
-d) 0.026
+e) 0.03
=====*_Rendition_* 3-7=====
<!--a06uniformCircMotGravitation_friction_3-->A merry-go round has a period of 0.38 minutes. What is the minimum coefficient of static friction that would allow a 64.8 kg person to stand1.76 meters from the center, without grabbing something?
-a) 0.008
-b) 0.009
-c) 0.01
-d) 0.012
+e) 0.014
=====*_Rendition_* 3-8=====
<!--a06uniformCircMotGravitation_friction_3-->A merry-go round has a period of 0.26 minutes. What is the minimum coefficient of static friction that would allow a 53.3 kg person to stand1.35 meters from the center, without grabbing something?
-a) 0.019
+b) 0.022
-c) 0.026
-d) 0.03
-e) 0.034
=====*_Rendition_* 3-9=====

<!--a06uniformCircMotGravitation_friction_3-->A merry-go round has a period of 0.22 minutes. What is the minimum coefficient of static friction that would allow a 96.9 kg person to stand1.95 meters from the center, without grabbing something?
-a) 0.03
-b) 0.034
-c) 0.039
+d) 0.045
-e) 0.052
=====*_Rendition_* 3-10=====
<!--a06uniformCircMotGravitation_friction_3-->A merry-go round has a period of 0.36 minutes. What is the minimum coefficient of static friction that would allow a 73.9 kg person to stand2.94 meters from the center, without grabbing something?
-a) 0.017
-b) 0.019
-c) 0.022
+d) 0.025
-e) 0.029
=====*_Rendition_* 3-11=====
<!--a06uniformCircMotGravitation_friction_3-->A merry-go round has a period of 0.36 minutes. What is the minimum coefficient of static friction that would allow a 67.1 kg person to stand1.19 meters from the center, without grabbing something?
-a) 0.006
-b) 0.007
-c) 0.008
-d) 0.009
+e) 0.01
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a06uniformCircMotGravitation_friction_4-->What is the gravitational acceleration on a plant that is 2.67 times more massive than Earth, and a radius that is 1.74 times greater than Earths?
-a) 5.7 m/s²
-b) 6.5 m/s²
-c) 7.5 m/s²
+d) 8.6 m/s²
-e) 9.9 m/s²
=====*_Rendition_* 4-3=====
<!--a06uniformCircMotGravitation_friction_4-->What is the gravitational acceleration on a plant that is 2.33 times more massive than Earth, and a radius that is 1.49 times greater than Earths?
+a) 10.3 m/s²
-b) 11.8 m/s²
-c) 13.6 m/s²
-d) 15.6 m/s²
-e) 18 m/s²
=====*_Rendition_* 4-4=====
<!--a06uniformCircMotGravitation_friction_4-->What is the gravitational acceleration on a plant that is 2.05 times more massive than Earth, and a radius that is 1.56 times greater than Earths?

-a) 4.7 m/s²
-b) 5.4 m/s²
-c) 6.2 m/s²
-d) 7.2 m/s²
+e) 8.3 m/s²
=====*_Rendition_* 4-5=====
<!--a06uniformCircMotGravitation_friction_4-->What is the gravitational acceleration on a plant that is 1.83 times more massive than Earth, and a radius that is 1.38 times greater than Earths?
-a) 8.2 m/s²
+b) 9.4 m/s²
-c) 10.8 m/s²
-d) 12.5 m/s²
-e) 14.3 m/s²
=====*_Rendition_* 4-6=====
<!--a06uniformCircMotGravitation_friction_4-->What is the gravitational acceleration on a plant that is 2.59 times more massive than Earth, and a radius that is 1.75 times greater than Earths?
+a) 8.3 m/s²
-b) 9.5 m/s²
-c) 11 m/s²
-d) 12.6 m/s²
-e) 14.5 m/s²
=====*_Rendition_* 4-7=====
<!--a06uniformCircMotGravitation_friction_4-->What is the gravitational acceleration on a plant that is 1.34 times more massive than Earth, and a radius that is 1.45 times greater than Earths?
-a) 4.7 m/s²
-b) 5.4 m/s²
+c) 6.2 m/s²
-d) 7.2 m/s²
-e) 8.3 m/s²
=====*_Rendition_* 4-8=====
<!--a06uniformCircMotGravitation_friction_4-->What is the gravitational acceleration on a plant that is 1.96 times more massive than Earth, and a radius that is 1.62 times greater than Earths?
-a) 4.8 m/s²
-b) 5.5 m/s²
-c) 6.4 m/s²
+d) 7.3 m/s²
-e) 8.4 m/s²
=====*_Rendition_* 4-9=====
<!--a06uniformCircMotGravitation_friction_4-->What is the gravitational acceleration on a plant that is 2.13 times more massive than Earth, and a radius that is 1.31 times greater than Earths?
-a) 8 m/s²
-b) 9.2 m/s²
-c) 10.6 m/s²
+d) 12.2 m/s²
-e) 14 m/s²
=====*_Rendition_* 4-10=====
<!--a06uniformCircMotGravitation_friction_4-->What is the

gravitational acceleration on a plant that is 1.34 times more massive than Earth, and a radius that is 1.88 times greater than Earths?
-a) 2.4 m/s²
-b) 2.8 m/s²
-c) 3.2 m/s²
+d) 3.7 m/s²
-e) 4.3 m/s²
=====*_Rendition_* 4-11=====
<!--a06uniformCircMotGravitation_friction_4-->What is the gravitational acceleration on a plant that is 2.21 times more massive than Earth, and a radius that is 1.74 times greater than Earths?
-a) 4.1 m/s²
-b) 4.7 m/s²
-c) 5.4 m/s²
-d) 6.2 m/s²
+e) 7.2 m/s²
====*_Question_* 5====
=====*_Rendition_* 5-2=====
<!--a06uniformCircMotGravitation_friction_5-->What is the gravitational acceleration on a plant that is 1.95 times more dense than Earth, and a radius that is 2.12 times greater than Earth's?
+a) 40.5 m/s²
-b) 46.6 m/s²
-c) 53.6 m/s²
-d) 61.6 m/s²
-e) 70.9 m/s²
=====*_Rendition_* 5-3=====
<!--a06uniformCircMotGravitation_friction_5-->What is the gravitational acceleration on a plant that is 1.92 times more dense than Earth, and a radius that is 1.69 times greater than Earth's?
-a) 24 m/s²
-b) 27.7 m/s²
+c) 31.8 m/s²
-d) 36.6 m/s²
-e) 42.1 m/s²
=====*_Rendition_* 5-4=====
<!--a06uniformCircMotGravitation_friction_5-->What is the gravitational acceleration on a plant that is 1.94 times more dense than Earth, and a radius that is 2.35 times greater than Earth's?
-a) 38.9 m/s²
+b) 44.7 m/s²
-c) 51.4 m/s²
-d) 59.1 m/s²
-e) 67.9 m/s²
=====*_Rendition_* 5-5=====
<!--a06uniformCircMotGravitation_friction_5-->What is the gravitational acceleration on a plant that is 1.29 times more dense than Earth, and a radius that is 1.53 times greater than Earth's?
-a) 12.7 m/s²
-b) 14.6 m/s²
-c) 16.8 m/s²
+d) 19.3 m/s²

-e) 22.2 m/s²
=====*_Rendition_* 5-6=====
<!--a06uniformCircMotGravitation_friction_5-->What is the gravitational acceleration on a plant that is 2.98 times more dense than Earth, and a radius that is 1.81 times greater than Earth's?
-a) 30.2 m/s²
-b) 34.8 m/s²
-c) 40 m/s²
-d) 46 m/s²
+e) 52.9 m/s²
=====*_Rendition_* 5-7=====
<!--a06uniformCircMotGravitation_friction_5-->What is the gravitational acceleration on a plant that is 1.23 times more dense than Earth, and a radius that is 2.98 times greater than Earth's?
+a) 35.9 m/s²
-b) 41.3 m/s²
-c) 47.5 m/s²
-d) 54.6 m/s²
-e) 62.8 m/s²
=====*_Rendition_* 5-8=====
<!--a06uniformCircMotGravitation_friction_5-->What is the gravitational acceleration on a plant that is 1.73 times more dense than Earth, and a radius that is 2.44 times greater than Earth's?
+a) 41.4 m/s²
-b) 47.6 m/s²
-c) 54.7 m/s²
-d) 62.9 m/s²
-e) 72.4 m/s²
=====*_Rendition_* 5-9=====
<!--a06uniformCircMotGravitation_friction_5-->What is the gravitational acceleration on a plant that is 1.23 times more dense than Earth, and a radius that is 1.83 times greater than Earth's?
-a) 19.2 m/s²
+b) 22.1 m/s²
-c) 25.4 m/s²
-d) 29.2 m/s²
-e) 33.5 m/s²
=====*_Rendition_* 5-10=====
<!--a06uniformCircMotGravitation_friction_5-->What is the gravitational acceleration on a plant that is 1.47 times more dense than Earth, and a radius that is 1.42 times greater than Earth's?
+a) 20.5 m/s²
-b) 23.5 m/s²
-c) 27.1 m/s²
-d) 31.1 m/s²
-e) 35.8 m/s²
=====*_Rendition_* 5-11=====
<!--a06uniformCircMotGravitation_friction_5-->What is the gravitational acceleration on a plant that is 2.01 times more dense than Earth, and a radius that is 1.54 times greater than Earth's?
-a) 26.4 m/s²
+b) 30.3 m/s²

-c) 34.9 m/s²
-d) 40.1 m/s²
-e) 46.1 m/s²
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====*_Instructions_*====
Instructions are forthcoming

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*_See_* [[User:Guy vandegrift]]
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{<!--a06uniformCircMotGravitation_proof_1-->[[File:UniCircMot_gv52.png|right|180px]] Is $dv/d\ell=v/r$ valid for uniform circular motion?

}
+ Yes
- No

{<!--a06uniformCircMotGravitation_proof_10-->[[File:UniCircMot_gv52.png|right|180px]] Is $dv/r=d\ell/v$ valid for uniform circular motion?

}
- Yes
+ No

{<!--a06uniformCircMotGravitation_proof_11-->[[File:UniCircMot_gv52.png|right|180px]] Is $rd\ell=vdv$ valid for uniform circular motion?

}
- Yes
+ No

{<!--a06uniformCircMotGravitation_proof_12-->[[File:UniCircMot_gv52.pn

g|right|180px]] Is $dv=|\vec v_2|-|\vec v_1|$ valid for uniform circular motion?

}
- Yes
+ No

{<!--a06uniformCircMotGravitation_proof_13-->[[File:UniCircMot_gv52.png|right|180px]] Is $d\ell/dv=v/r$ valid for uniform circular motion?

}
- Yes
+ No

{<!--a06uniformCircMotGravitation_proof_14-->[[File:UniCircMot_gv52.png|right|180px]] Is $dv/d\ell=r/v$ valid for uniform circular motion?

}
- Yes
+ No

{<!--a06uniformCircMotGravitation_proof_2-->[[File:UniCircMot_gv52.png|right|180px]] Is $dv=|\vec v_2-\vec v_1|$ valid for uniform circular motion?

}
+ Yes
- No

{<!--a06uniformCircMotGravitation_proof_3-->[[File:UniCircMot_gv52.png|right|180px]] Is $d\ell=vdt$ valid for uniform circular motion?

}
+ Yes
- No

{<!--a06uniformCircMotGravitation_proof_4-->[[File:UniCircMot_gv52.png|right|180px]] Is $adt/v =vdt/ r$ valid for uniform circular motion?

}
+ Yes
- No

{<!--a06uniformCircMotGravitation_proof_5-->[[File:UniCircMot_gv52.png|right|180px]] Is $dv=adt$ valid for uniform circular motion?

}
+ Yes
- No

{<!--a06uniformCircMotGravitation_proof_6-->[[File:UniCircMot_gv52.png|right|180px]] Is $|d\vec v|=adt$ valid for uniform circular motion?

}
+ Yes
- No

{<!--a06uniformCircMotGravitation_proof_7-->[[File:UniCircMot_gv52.png|right|180px]] Is $d\ell=|\vec r_2-\vec r_1|$ valid for uniform circular motion?

}
+ Yes
- No

{<!--a06uniformCircMotGravitation_proof_8-->[[File:UniCircMot_gv52.png
|right|180px]] Is $d\ell=|\vec r_2|-|\vec r_1|$ valid for
uniform circular motion?

}
- Yes
+ No

{<!--a06uniformCircMotGravitation_proof_9-->[[File:UniCircMot_gv52.png
|right|180px]] Is $v/d\ell=r/dv$ valid for uniform
circular motion?

}
- Yes
+ No

</quiz>

====*_Instructions_*====
Instructions are forthcoming

Transclusion from [[Quizbank/Instructions_0]]:
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*_See_* [[User:Guy vandegrift]]
</div></div>
===*_Quiz_*===
<quiz display=simple>
{<!--aa07energy_cart1_1-->If the initial velocity after leaving the
spring is 5.00 m/s, how high does it reach before coming to
rest?[[File:Roller coaster energy conservation.jpg|right|280px]]}
- a) 1.10 m
- b) 1.16 m
- c) 1.21 m
+ d) 1.28 m
- e) 1.34 m

{<!--aa07energy_cart1_2-->The mass of the cart is 2.0kg, and the spring constant is 5447N/m. If the initial compression of the spring is 0.10m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]}
- a) 1.32E+00 m
+ b) 1.39E+00 m
- c) 1.46E+00 m
- d) 1.53E+00 m
- e) 1.61E+00 m

{<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 1.4m/s, when the cart was situated at a height of 2.2m?, [[File:Roller coaster energy conservation.jpg|right|280px]]}
- a) 2.00 m
- b) 2.10 m
+ c) 2.20 m
- d) 2.31 m
- e) 2.43 m

</quiz>

<div class="toccolours mw-collapsible mw-collapsed" style="width:100%">

Other renditions
<div class="mw-collapsible-content">
====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 9.60 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 3.87 m
- b) 4.06 m
- c) 4.26 m
- d) 4.48 m
+ e) 4.70 m
=====*_Rendition_* 1-3=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 9.60 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 4.26 m
- b) 4.48 m
+ c) 4.70 m
- d) 4.94 m
- e) 5.18 m
=====*_Rendition_* 1-4=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 9.10 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 3.48 m

- b) 3.65 m
- c) 3.83 m
- d) 4.02 m
+ e) 4.22 m
=====*_Rendition_* 1-5=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 6.70 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
+ a) 2.29 m
- b) 2.40 m
- c) 2.53 m
- d) 2.65 m
- e) 2.78 m
=====*_Rendition_* 1-6=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 9.00 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 3.75 m
- b) 3.94 m
+ c) 4.13 m
- d) 4.34 m
- e) 4.56 m
=====*_Rendition_* 1-7=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 9.80 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 4.44 m
- b) 4.67 m
+ c) 4.90 m
- d) 5.15 m
- e) 5.40 m
=====*_Rendition_* 1-8=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 6.10 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 1.64 m
- b) 1.72 m
- c) 1.81 m
+ d) 1.90 m
- e) 1.99 m
=====*_Rendition_* 1-9=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 9.50 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 3.98 m
- b) 4.18 m
- c) 4.39 m
+ d) 4.60 m
- e) 4.83 m
=====*_Rendition_* 1-10=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 6.50 m/s, how high does it reach before coming to

rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 1.96 m
- b) 2.05 m
+ c) 2.16 m
- d) 2.26 m
- e) 2.38 m
=====*_Rendition_* 1-11=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 6.90 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
+ a) 2.43 m
- b) 2.55 m
- c) 2.68 m
- d) 2.81 m
- e) 2.95 m
=====*_Rendition_* 1-12=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 7.90 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 2.62 m
- b) 2.75 m
- c) 2.89 m
- d) 3.03 m
+ e) 3.18 m
=====*_Rendition_* 1-13=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 7.70 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 2.88 m
+ b) 3.02 m
- c) 3.18 m
- d) 3.34 m
- e) 3.50 m
=====*_Rendition_* 1-14=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 9.40 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 3.89 m
- b) 4.09 m
- c) 4.29 m
+ d) 4.51 m
- e) 4.73 m
=====*_Rendition_* 1-15=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 8.80 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 3.58 m
- b) 3.76 m
+ c) 3.95 m
- d) 4.15 m
- e) 4.36 m
=====*_Rendition_* 1-16=====

<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 7.70 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 2.88 m
+ b) 3.02 m
- c) 3.18 m
- d) 3.34 m
- e) 3.50 m
=====*_Rendition_* 1-17=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 7.60 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 2.42 m
- b) 2.55 m
- c) 2.67 m
- d) 2.81 m
+ e) 2.95 m
=====*_Rendition_* 1-18=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 7.30 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 2.35 m
- b) 2.47 m
- c) 2.59 m
+ d) 2.72 m
- e) 2.85 m
=====*_Rendition_* 1-19=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 7.30 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 2.35 m
- b) 2.47 m
- c) 2.59 m
+ d) 2.72 m
- e) 2.85 m
=====*_Rendition_* 1-20=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 5.90 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 1.69 m
+ b) 1.78 m
- c) 1.86 m
- d) 1.96 m
- e) 2.06 m
=====*_Rendition_* 1-21=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 5.30 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 1.24 m
- b) 1.30 m
- c) 1.36 m
+ d) 1.43 m

- e) 1.50 m
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--aa07energy_cart1_2-->The mass of the cart is 2.0kg,   and the spring constant is 6541N/m. If the initial compression of the spring is 2.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
+ a) 6.67E+02 m
- b) 7.01E+02 m
- c) 7.36E+02 m
- d) 7.73E+02 m
- e) 8.11E+02 m
=====*_Rendition_* 2-3=====
<!--aa07energy_cart1_2-->The mass of the cart is 2.0kg,   and the spring constant is 7779N/m. If the initial compression of the spring is 1.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 1.80E+02 m
- b) 1.89E+02 m
+ c) 1.98E+02 m
- d) 2.08E+02 m
- e) 2.19E+02 m
=====*_Rendition_* 2-4=====
<!--aa07energy_cart1_2-->The mass of the cart is 4.0kg,   and the spring constant is 9396N/m. If the initial compression of the spring is 4.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 1.74E+03 m
- b) 1.83E+03 m
+ c) 1.92E+03 m
- d) 2.01E+03 m
- e) 2.11E+03 m
=====*_Rendition_* 2-5=====
<!--aa07energy_cart1_2-->The mass of the cart is 4.0kg,   and the spring constant is 6611N/m. If the initial compression of the spring is 2.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
+ a) 3.37E+02 m
- b) 3.54E+02 m
- c) 3.72E+02 m
- d) 3.90E+02 m
- e) 4.10E+02 m
=====*_Rendition_* 2-6=====
<!--aa07energy_cart1_2-->The mass of the cart is 3.0kg,   and the spring constant is 5128N/m. If the initial compression of the spring is 2.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 2.87E+02 m
- b) 3.01E+02 m
- c) 3.16E+02 m
- d) 3.32E+02 m
+ e) 3.49E+02 m

=====*_Rendition_* 2-7=====
<!--aa07energy_cart1_2-->The mass of the cart is 4.0kg,   and the spring constant is 9905N/m. If the initial compression of the spring is 1.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
+ a) 1.26E+02 m
- b) 1.33E+02 m
- c) 1.39E+02 m
- d) 1.46E+02 m
- e) 1.54E+02 m
=====*_Rendition_* 2-8=====
<!--aa07energy_cart1_2-->The mass of the cart is 3.0kg,   and the spring constant is 7685N/m. If the initial compression of the spring is 3.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 1.02E+03 m
- b) 1.07E+03 m
- c) 1.12E+03 m
+ d) 1.18E+03 m
- e) 1.24E+03 m
=====*_Rendition_* 2-9=====
<!--aa07energy_cart1_2-->The mass of the cart is 3.0kg,   and the spring constant is 8959N/m. If the initial compression of the spring is 4.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 2.21E+03 m
- b) 2.32E+03 m
+ c) 2.44E+03 m
- d) 2.56E+03 m
- e) 2.69E+03 m
=====*_Rendition_* 2-10=====
<!--aa07energy_cart1_2-->The mass of the cart is 2.0kg,   and the spring constant is 8128N/m. If the initial compression of the spring is 5.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 4.26E+03 m
- b) 4.48E+03 m
- c) 4.70E+03 m
- d) 4.94E+03 m
+ e) 5.18E+03 m
=====*_Rendition_* 2-11=====
<!--aa07energy_cart1_2-->The mass of the cart is 4.0kg,   and the spring constant is 5938N/m. If the initial compression of the spring is 5.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
+ a) 1.89E+03 m
- b) 1.99E+03 m
- c) 2.09E+03 m
- d) 2.19E+03 m
- e) 2.30E+03 m
=====*_Rendition_* 2-12=====
<!--aa07energy_cart1_2-->The mass of the cart is 4.0kg,   and the

spring constant is 5240N/m. If the initial compression of the spring is 4.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
+ a) 1.07E+03 m
- b) 1.12E+03 m
- c) 1.18E+03 m
- d) 1.24E+03 m
- e) 1.30E+03 m
=====*_Rendition_* 2-13=====
<!--aa07energy_cart1_2-->The mass of the cart is 4.0kg,   and the spring constant is 5859N/m. If the initial compression of the spring is 1.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 7.12E+01 m
+ b) 7.47E+01 m
- c) 7.85E+01 m
- d) 8.24E+01 m
- e) 8.65E+01 m
=====*_Rendition_* 2-14=====
<!--aa07energy_cart1_2-->The mass of the cart is 4.0kg,   and the spring constant is 6023N/m. If the initial compression of the spring is 5.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
+ a) 1.92E+03 m
- b) 2.02E+03 m
- c) 2.12E+03 m
- d) 2.22E+03 m
- e) 2.33E+03 m
=====*_Rendition_* 2-15=====
<!--aa07energy_cart1_2-->The mass of the cart is 3.0kg,   and the spring constant is 8205N/m. If the initial compression of the spring is 3.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
+ a) 1.26E+03 m
- b) 1.32E+03 m
- c) 1.38E+03 m
- d) 1.45E+03 m
- e) 1.53E+03 m
=====*_Rendition_* 2-16=====
<!--aa07energy_cart1_2-->The mass of the cart is 3.0kg,   and the spring constant is 6073N/m. If the initial compression of the spring is 4.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 1.57E+03 m
+ b) 1.65E+03 m
- c) 1.74E+03 m
- d) 1.82E+03 m
- e) 1.91E+03 m
=====*_Rendition_* 2-17=====
<!--aa07energy_cart1_2-->The mass of the cart is 4.0kg,   and the spring constant is 9395N/m. If the initial compression of the spring is 4.00m, how high does it reach before coming to rest?[[File:Roller

coaster energy conservation.jpg|right|280px]]
- a) 1.66E+03 m
- b) 1.74E+03 m
- c) 1.83E+03 m
+ d) 1.92E+03 m
- e) 2.01E+03 m
=====*_Rendition_* 2-18=====
<!--aa07energy_cart1_2-->The mass of the cart is 3.0kg,   and the spring constant is 8219N/m. If the initial compression of the spring is 1.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 1.33E+02 m
+ b) 1.40E+02 m
- c) 1.47E+02 m
- d) 1.54E+02 m
- e) 1.62E+02 m
=====*_Rendition_* 2-19=====
<!--aa07energy_cart1_2-->The mass of the cart is 3.0kg,   and the spring constant is 7035N/m. If the initial compression of the spring is 2.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 4.56E+02 m
+ b) 4.79E+02 m
- c) 5.03E+02 m
- d) 5.28E+02 m
- e) 5.54E+02 m
=====*_Rendition_* 2-20=====
<!--aa07energy_cart1_2-->The mass of the cart is 4.0kg,   and the spring constant is 9397N/m. If the initial compression of the spring is 4.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
+ a) 1.92E+03 m
- b) 2.01E+03 m
- c) 2.11E+03 m
- d) 2.22E+03 m
- e) 2.33E+03 m
=====*_Rendition_* 2-21=====
<!--aa07energy_cart1_2-->The mass of the cart is 3.0kg,   and the spring constant is 7941N/m. If the initial compression of the spring is 2.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 5.14E+02 m
+ b) 5.40E+02 m
- c) 5.67E+02 m
- d) 5.96E+02 m
- e) 6.25E+02 m
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 2.8m/s, when the cart was situated at a height of 2.3m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 2.19 m

+ b) 2.30 m
- c) 2.42 m
- d) 2.54 m
- e) 2.66 m
=====*_Rendition_* 3-3=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 2.2m/s, when the cart was situated at a height of 2.4m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 1.97 m
- b) 2.07 m
- c) 2.18 m
- d) 2.29 m
+ e) 2.40 m
=====*_Rendition_* 3-4=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 2.4m/s, when the cart was situated at a height of 3.8m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 3.28 m
- b) 3.45 m
- c) 3.62 m
+ d) 3.80 m
- e) 3.99 m
=====*_Rendition_* 3-5=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 1.4m/s, when the cart was situated at a height of 2.7m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
+ a) 2.70 m
- b) 2.84 m
- c) 2.98 m
- d) 3.13 m
- e) 3.28 m
=====*_Rendition_* 3-6=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 2.4m/s, when the cart was situated at a height of 2.3m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 1.99 m
- b) 2.09 m
- c) 2.19 m
+ d) 2.30 m
- e) 2.42 m
=====*_Rendition_* 3-7=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 2.1m/s, when the cart was situated at a height of 2.7m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 2.45 m
- b) 2.57 m
+ c) 2.70 m
- d) 2.84 m
- e) 2.98 m
=====*_Rendition_* 3-8=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 2.5m/s, when the cart was situated at a height of

3.6m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 3.43 m
+ b) 3.60 m
- c) 3.78 m
- d) 3.97 m
- e) 4.17 m
=====*_Rendition_* 3-9=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 1.8m/s, when the cart was situated at a height of 2.8m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 2.42 m
- b) 2.54 m
- c) 2.67 m
+ d) 2.80 m
- e) 2.94 m
=====*_Rendition_* 3-10=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 2.7m/s, when the cart was situated at a height of 3.5m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 2.88 m
- b) 3.02 m
- c) 3.17 m
- d) 3.33 m
+ e) 3.50 m
=====*_Rendition_* 3-11=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 2.7m/s, when the cart was situated at a height of 2.5m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 2.06 m
- b) 2.16 m
- c) 2.27 m
- d) 2.38 m
+ e) 2.50 m
=====*_Rendition_* 3-12=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 2.9m/s, when the cart was situated at a height of 3.5m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 2.88 m
- b) 3.02 m
- c) 3.17 m
- d) 3.33 m
+ e) 3.50 m
=====*_Rendition_* 3-13=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 1.5m/s, when the cart was situated at a height of 3.3m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 3.14 m
+ b) 3.30 m
- c) 3.46 m
- d) 3.64 m
- e) 3.82 m
=====*_Rendition_* 3-14=====

<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 2.4m/s, when the cart was situated at a height of 3.7m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 3.52 m
+ b) 3.70 m
- c) 3.89 m
- d) 4.08 m
- e) 4.28 m
=====*_Rendition_* 3-15=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 2.6m/s, when the cart was situated at a height of 2.5m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 2.27 m
- b) 2.38 m
+ c) 2.50 m
- d) 2.63 m
- e) 2.76 m
=====*_Rendition_* 3-16=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 2.4m/s, when the cart was situated at a height of 3.4m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 3.24 m
+ b) 3.40 m
- c) 3.57 m
- d) 3.75 m
- e) 3.94 m
=====*_Rendition_* 3-17=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 1.8m/s, when the cart was situated at a height of 3.8m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 3.28 m
- b) 3.45 m
- c) 3.62 m
+ d) 3.80 m
- e) 3.99 m
=====*_Rendition_* 3-18=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 1.5m/s, when the cart was situated at a height of 3.3m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
+ a) 3.30 m
- b) 3.46 m
- c) 3.64 m
- d) 3.82 m
- e) 4.01 m
=====*_Rendition_* 3-19=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 2.6m/s, when the cart was situated at a height of 3.7m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 3.52 m
+ b) 3.70 m
- c) 3.89 m
- d) 4.08 m

- e) 4.28 m
=====*_Rendition_* 3-20=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 1.6m/s, when the cart was situated at a height of 3.5m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 3.33 m
+ b) 3.50 m
- c) 3.68 m
- d) 3.86 m
- e) 4.05 m
=====*_Rendition_* 3-21=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 1.8m/s, when the cart was situated at a height of 2.5m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
+ a) 2.50 m
- b) 2.63 m
- c) 2.76 m
- d) 2.89 m
- e) 3.04 m
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====*_Instructions_*====
Instructions are forthcoming

Transclusion from [[Quizbank/Instructions_0]]:
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===*_Quiz_*===
<quiz display=simple>
{<!--a07energy_cart2_1-->The spring constant is 561N/m, and the initial compression is 0.12m. What is the mass if the cart reaches a height of 1.38m, before coming to rest?[[File:Roller coaster energy

conservation.jpg|260px|right]]}
- a) 0.271 kg
- b) 0.284 kg
+ c) 0.299 kg
- d) 0.314 kg
- e) 0.329 kg

{<!--a07energy_cart2_2-->The cart has a mass of 3.03kg.   It is moving at a speed of 2.10m/s, when it is at a height of 2.45m.   If the spring constant was 572N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]}
- a) 0.43 m
- b) 0.46 m
- c) 0.49 m
+ d) 0.53 m
- e) 0.56 m

{<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s,   when you encounter a hill of height 1.14m. What is your speed at the top of the hill?}
- a) 1.149 m/s
- b) 1.218 m/s
+ c) 1.291 m/s
- d) 1.368 m/s
- e) 1.450 m/s

</quiz>

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Other renditions
<div class="mw-collapsible-content">
====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a07energy_cart2_1-->The spring constant is 663N/m, and the initial compression is 0.22m. What is the mass if the cart reaches a height of 2.80m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 0.481 kg
- b) 0.505 kg
- c) 0.530 kg
- d) 0.557 kg
+ e) 0.585 kg
=====*_Rendition_* 1-3=====
<!--a07energy_cart2_1-->The spring constant is 615N/m, and the initial compression is 0.12m. What is the mass if the cart reaches a height of 2.74m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 0.157 kg

+ b) 0.165 kg
- c) 0.173 kg
- d) 0.182 kg
- e) 0.191 kg
=====*_Rendition_* 1-4=====
<!--a07energy_cart2_1-->The spring constant is 752N/m, and the initial compression is 0.18m. What is the mass if the cart reaches a height of 2.95m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
+ a) 0.421 kg
- b) 0.442 kg
- c) 0.465 kg
- d) 0.488 kg
- e) 0.512 kg
=====*_Rendition_* 1-5=====
<!--a07energy_cart2_1-->The spring constant is 539N/m, and the initial compression is 0.27m. What is the mass if the cart reaches a height of 1.20m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 1.443 kg
- b) 1.515 kg
- c) 1.591 kg
+ d) 1.671 kg
- e) 1.754 kg
=====*_Rendition_* 1-6=====
<!--a07energy_cart2_1-->The spring constant is 720N/m, and the initial compression is 0.19m. What is the mass if the cart reaches a height of 1.95m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 0.559 kg
- b) 0.587 kg
- c) 0.617 kg
- d) 0.648 kg
+ e) 0.680 kg
=====*_Rendition_* 1-7=====
<!--a07energy_cart2_1-->The spring constant is 620N/m, and the initial compression is 0.19m. What is the mass if the cart reaches a height of 1.45m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 0.750 kg
+ b) 0.788 kg
- c) 0.827 kg
- d) 0.868 kg
- e) 0.912 kg
=====*_Rendition_* 1-8=====
<!--a07energy_cart2_1-->The spring constant is 594N/m, and the initial compression is 0.27m. What is the mass if the cart reaches a height of 1.66m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 1.268 kg
+ b) 1.331 kg
- c) 1.397 kg

- d) 1.467 kg
- e) 1.541 kg
=====*_Rendition_* 1-9=====
<!--a07energy_cart2_1-->The spring constant is 623N/m, and the initial compression is 0.24m. What is the mass if the cart reaches a height of 1.43m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 1.053 kg
- b) 1.106 kg
- c) 1.161 kg
- d) 1.219 kg
+ e) 1.280 kg
=====*_Rendition_* 1-10=====
<!--a07energy_cart2_1-->The spring constant is 525N/m, and the initial compression is 0.19m. What is the mass if the cart reaches a height of 1.17m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 0.714 kg
- b) 0.750 kg
- c) 0.787 kg
+ d) 0.826 kg
- e) 0.868 kg
=====*_Rendition_* 1-11=====
<!--a07energy_cart2_1-->The spring constant is 710N/m, and the initial compression is 0.15m. What is the mass if the cart reaches a height of 2.62m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 0.282 kg
- b) 0.296 kg
+ c) 0.311 kg
- d) 0.327 kg
- e) 0.343 kg
=====*_Rendition_* 1-12=====
<!--a07energy_cart2_1-->The spring constant is 755N/m, and the initial compression is 0.21m. What is the mass if the cart reaches a height of 3.12m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 0.494 kg
- b) 0.519 kg
+ c) 0.544 kg
- d) 0.572 kg
- e) 0.600 kg
=====*_Rendition_* 1-13=====
<!--a07energy_cart2_1-->The spring constant is 608N/m, and the initial compression is 0.20m. What is the mass if the cart reaches a height of 1.68m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 0.608 kg
- b) 0.638 kg
- c) 0.670 kg
- d) 0.703 kg
+ e) 0.739 kg

=====*_Rendition_* 1-14=====
<!--a07energy_cart2_1-->The spring constant is 640N/m, and the initial compression is 0.15m. What is the mass if the cart reaches a height of 2.07m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 0.307 kg
- b) 0.322 kg
- c) 0.338 kg
+ d) 0.355 kg
- e) 0.373 kg
=====*_Rendition_* 1-15=====
<!--a07energy_cart2_1-->The spring constant is 621N/m, and the initial compression is 0.14m. What is the mass if the cart reaches a height of 3.01m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 0.187 kg
- b) 0.196 kg
+ c) 0.206 kg
- d) 0.217 kg
- e) 0.227 kg
=====*_Rendition_* 1-16=====
<!--a07energy_cart2_1-->The spring constant is 612N/m, and the initial compression is 0.15m. What is the mass if the cart reaches a height of 1.59m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 0.401 kg
- b) 0.421 kg
+ c) 0.442 kg
- d) 0.464 kg
- e) 0.487 kg
=====*_Rendition_* 1-17=====
<!--a07energy_cart2_1-->The spring constant is 630N/m, and the initial compression is 0.25m. What is the mass if the cart reaches a height of 1.26m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 1.312 kg
- b) 1.377 kg
- c) 1.446 kg
- d) 1.518 kg
+ e) 1.594 kg
=====*_Rendition_* 1-18=====
<!--a07energy_cart2_1-->The spring constant is 704N/m, and the initial compression is 0.13m. What is the mass if the cart reaches a height of 3.02m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
+ a) 0.201 kg
- b) 0.211 kg
- c) 0.222 kg
- d) 0.233 kg
- e) 0.244 kg
=====*_Rendition_* 1-19=====
<!--a07energy_cart2_1-->The spring constant is 682N/m, and the

initial compression is 0.21m. What is the mass if the cart reaches a height of 1.47m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
+ a) 1.044 kg
- b) 1.096 kg
- c) 1.151 kg
- d) 1.208 kg
- e) 1.269 kg
=====*_Rendition_* 1-20=====
<!--a07energy_cart2_1-->The spring constant is 731N/m, and the initial compression is 0.25m. What is the mass if the cart reaches a height of 2.04m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
+ a) 1.143 kg
- b) 1.200 kg
- c) 1.260 kg
- d) 1.323 kg
- e) 1.389 kg
=====*_Rendition_* 1-21=====
<!--a07energy_cart2_1-->The spring constant is 676N/m, and the initial compression is 0.14m. What is the mass if the cart reaches a height of 2.73m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 0.225 kg
- b) 0.236 kg
+ c) 0.248 kg
- d) 0.260 kg
- e) 0.273 kg
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a07energy_cart2_2-->The cart has a mass of 36.20kg.   It is moving at a speed of 3.50m/s, when it is at a height of 3.70m.   If the spring constant was 518N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 2.13 m
- b) 2.27 m
+ c) 2.43 m
- d) 2.60 m
- e) 2.79 m
=====*_Rendition_* 2-3=====
<!--a07energy_cart2_2-->The cart has a mass of 44.40kg.   It is moving at a speed of 3.10m/s, when it is at a height of 2.47m.   If the spring constant was 682N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 1.48 m
- b) 1.59 m
- c) 1.70 m
- d) 1.82 m
+ e) 1.94 m
=====*_Rendition_* 2-4=====
<!--a07energy_cart2_2-->The cart has a mass of 40.30kg.   It is moving at a speed of 3.40m/s, when it is at a height of 3.59m.   If the

spring constant was 539N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]
+ a) 2.47 m
- b) 2.65 m
- c) 2.83 m
- d) 3.03 m
- e) 3.24 m
=====*_Rendition_* 2-5=====
<!--a07energy_cart2_2-->The cart has a mass of 42.40kg.   It is moving at a speed of 2.10m/s, when it is at a height of 2.08m.   If the spring constant was 522N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 1.46 m
- b) 1.56 m
- c) 1.67 m
- d) 1.79 m
+ e) 1.92 m
=====*_Rendition_* 2-6=====
<!--a07energy_cart2_2-->The cart has a mass of 37.60kg.   It is moving at a speed of 2.50m/s, when it is at a height of 2.74m.   If the spring constant was 534N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 1.68 m
- b) 1.79 m
- c) 1.92 m
+ d) 2.05 m
- e) 2.20 m
=====*_Rendition_* 2-7=====
<!--a07energy_cart2_2-->The cart has a mass of 36.60kg.   It is moving at a speed of 2.60m/s, when it is at a height of 3.45m.   If the spring constant was 616N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 1.72 m
- b) 1.84 m
- c) 1.96 m
+ d) 2.10 m
- e) 2.25 m
=====*_Rendition_* 2-8=====
<!--a07energy_cart2_2-->The cart has a mass of 37.20kg.   It is moving at a speed of 2.40m/s, when it is at a height of 3.15m.   If the spring constant was 596N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 1.79 m
- b) 1.92 m
+ c) 2.05 m
- d) 2.20 m
- e) 2.35 m
=====*_Rendition_* 2-9=====
<!--a07energy_cart2_2-->The cart has a mass of 36.40kg.   It is moving at a speed of 3.90m/s, when it is at a height of 2.52m.   If the spring constant was 612N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]

- a) 1.83 m
+ b) 1.96 m
- c) 2.10 m
- d) 2.24 m
- e) 2.40 m
=====*_Rendition_* 2-10=====
<!--a07energy_cart2_2-->The cart has a mass of 36.30kg.   It is moving at a speed of 2.10m/s, when it is at a height of 3.33m.   If the spring constant was 677N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 1.69 m
- b) 1.81 m
+ c) 1.93 m
- d) 2.07 m
- e) 2.21 m
=====*_Rendition_* 2-11=====
<!--a07energy_cart2_2-->The cart has a mass of 47.10kg.   It is moving at a speed of 3.90m/s, when it is at a height of 2.75m.   If the spring constant was 539N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]
+ a) 2.46 m
- b) 2.63 m
- c) 2.81 m
- d) 3.01 m
- e) 3.22 m
=====*_Rendition_* 2-12=====
<!--a07energy_cart2_2-->The cart has a mass of 36.10kg.   It is moving at a speed of 3.70m/s, when it is at a height of 3.05m.   If the spring constant was 665N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]
+ a) 2.00 m
- b) 2.14 m
- c) 2.29 m
- d) 2.45 m
- e) 2.62 m
=====*_Rendition_* 2-13=====
<!--a07energy_cart2_2-->The cart has a mass of 42.30kg.   It is moving at a speed of 3.10m/s, when it is at a height of 2.52m.   If the spring constant was 499N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 2.09 m
+ b) 2.24 m
- c) 2.39 m
- d) 2.56 m
- e) 2.74 m
=====*_Rendition_* 2-14=====
<!--a07energy_cart2_2-->The cart has a mass of 46.40kg.   It is moving at a speed of 3.80m/s, when it is at a height of 3.99m.   If the spring constant was 500N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 2.39 m
- b) 2.56 m

- c) 2.74 m
+ d) 2.93 m
- e) 3.14 m
=====*_Rendition_* 2-15=====
<!--a07energy_cart2_2-->The cart has a mass of 31.70kg.   It is moving at a speed of 3.30m/s, when it is at a height of 3.61m.   If the spring constant was 665N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 1.72 m
- b) 1.84 m
+ c) 1.97 m
- d) 2.11 m
- e) 2.26 m
=====*_Rendition_* 2-16=====
<!--a07energy_cart2_2-->The cart has a mass of 35.20kg.   It is moving at a speed of 3.50m/s, when it is at a height of 2.34m.   If the spring constant was 554N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]
+ a) 1.92 m
- b) 2.06 m
- c) 2.20 m
- d) 2.35 m
- e) 2.52 m
=====*_Rendition_* 2-17=====
<!--a07energy_cart2_2-->The cart has a mass of 38.00kg.   It is moving at a speed of 2.10m/s, when it is at a height of 3.71m.   If the spring constant was 540N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 1.78 m
- b) 1.90 m
- c) 2.03 m
- d) 2.18 m
+ e) 2.33 m
=====*_Rendition_* 2-18=====
<!--a07energy_cart2_2-->The cart has a mass of 31.20kg.   It is moving at a speed of 2.50m/s, when it is at a height of 2.10m.   If the spring constant was 649N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 1.23 m
- b) 1.32 m
- c) 1.41 m
+ d) 1.51 m
- e) 1.62 m
=====*_Rendition_* 2-19=====
<!--a07energy_cart2_2-->The cart has a mass of 48.30kg.   It is moving at a speed of 3.80m/s, when it is at a height of 3.61m.   If the spring constant was 699N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 1.85 m
- b) 1.98 m
- c) 2.12 m
- d) 2.27 m

+ e) 2.43 m
=====*_Rendition_* 2-20=====
<!--a07energy_cart2_2-->The cart has a mass of 36.50kg.   It is moving at a speed of 2.10m/s, when it is at a height of 3.46m.   If the spring constant was 594N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 1.97 m
+ b) 2.11 m
- c) 2.25 m
- d) 2.41 m
- e) 2.58 m
=====*_Rendition_* 2-21=====
<!--a07energy_cart2_2-->The cart has a mass of 47.20kg.   It is moving at a speed of 2.20m/s, when it is at a height of 2.77m.   If the spring constant was 527N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]
+ a) 2.30 m
- b) 2.46 m
- c) 2.63 m
- d) 2.82 m
- e) 3.02 m
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s,   when you encounter a hill of height 1.14m. What is your speed at the top of the hill?
+ a) 1.291 m/s
- b) 1.368 m/s
- c) 1.450 m/s
- d) 1.537 m/s
- e) 1.630 m/s
=====*_Rendition_* 3-3=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s,   when you encounter a hill of height 1.14m. What is your speed at the top of the hill?
- a) 1.022 m/s
- b) 1.084 m/s
- c) 1.149 m/s
- d) 1.218 m/s
+ e) 1.291 m/s
=====*_Rendition_* 3-4=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s,   when you encounter a hill of height 1.14m. What is your speed at the top of the hill?
- a) 1.084 m/s
- b) 1.149 m/s
- c) 1.218 m/s
+ d) 1.291 m/s
- e) 1.368 m/s

=====*_Rendition_* 3-5=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s,   when you encounter a hill of height 1.14m. What is your speed at the top of the hill?
- a) 1.218 m/s
+ b) 1.291 m/s
- c) 1.368 m/s
- d) 1.450 m/s
- e) 1.537 m/s
=====*_Rendition_* 3-6=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s,   when you encounter a hill of height 1.14m. What is your speed at the top of the hill?
+ a) 1.291 m/s
- b) 1.368 m/s
- c) 1.450 m/s
- d) 1.537 m/s
- e) 1.630 m/s
=====*_Rendition_* 3-7=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s,   when you encounter a hill of height 1.14m. What is your speed at the top of the hill?
- a) 1.218 m/s
+ b) 1.291 m/s
- c) 1.368 m/s
- d) 1.450 m/s
- e) 1.537 m/s
=====*_Rendition_* 3-8=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s,   when you encounter a hill of height 1.14m. What is your speed at the top of the hill?
- a) 1.022 m/s
- b) 1.084 m/s
- c) 1.149 m/s
- d) 1.218 m/s
+ e) 1.291 m/s
=====*_Rendition_* 3-9=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s,   when you encounter a hill of height 1.14m. What is your speed at the top of the hill?
- a) 1.218 m/s
+ b) 1.291 m/s
- c) 1.368 m/s
- d) 1.450 m/s
- e) 1.537 m/s
=====*_Rendition_* 3-10=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road.

Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s, when you encounter a hill of height 1.14m. What is your speed at the top of the hill?
- a) 1.084 m/s
- b) 1.149 m/s
- c) 1.218 m/s
+ d) 1.291 m/s
- e) 1.368 m/s

=====*_Rendition_* 3-11=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s, when you encounter a hill of height 1.14m. What is your speed at the top of the hill?
- a) 1.022 m/s
- b) 1.084 m/s
- c) 1.149 m/s
- d) 1.218 m/s
+ e) 1.291 m/s

=====*_Rendition_* 3-12=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s, when you encounter a hill of height 1.14m. What is your speed at the top of the hill?
- a) 1.022 m/s
- b) 1.084 m/s
- c) 1.149 m/s
- d) 1.218 m/s
+ e) 1.291 m/s

=====*_Rendition_* 3-13=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s, when you encounter a hill of height 1.14m. What is your speed at the top of the hill?
- a) 1.218 m/s
+ b) 1.291 m/s
- c) 1.368 m/s
- d) 1.450 m/s
- e) 1.537 m/s

=====*_Rendition_* 3-14=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s, when you encounter a hill of height 1.14m. What is your speed at the top of the hill?
+ a) 1.291 m/s
- b) 1.368 m/s
- c) 1.450 m/s
- d) 1.537 m/s
- e) 1.630 m/s

=====*_Rendition_* 3-15=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s, when you encounter a hill of height 1.14m. What is your

speed at the top of the hill?
- a) 1.149 m/s
- b) 1.218 m/s
+ c) 1.291 m/s
- d) 1.368 m/s
- e) 1.450 m/s
=====*_Rendition_* 3-16=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s, when you encounter a hill of height 1.14m. What is your speed at the top of the hill?
+ a) 1.291 m/s
- b) 1.368 m/s
- c) 1.450 m/s
- d) 1.537 m/s
- e) 1.630 m/s
=====*_Rendition_* 3-17=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s, when you encounter a hill of height 1.14m. What is your speed at the top of the hill?
- a) 1.084 m/s
- b) 1.149 m/s
- c) 1.218 m/s
+ d) 1.291 m/s
- e) 1.368 m/s
=====*_Rendition_* 3-18=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s, when you encounter a hill of height 1.14m. What is your speed at the top of the hill?
- a) 1.022 m/s
- b) 1.084 m/s
- c) 1.149 m/s
- d) 1.218 m/s
+ e) 1.291 m/s
=====*_Rendition_* 3-19=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s, when you encounter a hill of height 1.14m. What is your speed at the top of the hill?
- a) 1.149 m/s
- b) 1.218 m/s
+ c) 1.291 m/s
- d) 1.368 m/s
- e) 1.450 m/s
=====*_Rendition_* 3-20=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s, when you encounter a hill of height 1.14m. What is your speed at the top of the hill?
- a) 1.149 m/s

- b) 1.218 m/s
+ c) 1.291 m/s
- d) 1.368 m/s
- e) 1.450 m/s
=====*_Rendition_* 3-21=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s,   when you encounter a hill of height 1.14m. What is your speed at the top of the hill?
+ a) 1.291 m/s
- b) 1.368 m/s
- c) 1.450 m/s
- d) 1.537 m/s
- e) 1.630 m/s
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{<!--a08linearMomentumCollisions_1-->On object of mass 2.8 kg that is moving at a velocity of 23m/s collides with a stationary object of mass 20.47 kg. What is the final velocity if they stick? (Assume no external friction.)}
-a) 2.31m/s.
+b) 2.77m/s.
-c) 3.32m/s.
-d) 3.99m/s.

-e) 4.78m/s.

{<!--a08linearMomentumCollisions_2-->A car of mass 637 kg is driving on an icy road at a speed of 22 m/s, when it collides with a stationary truck. After the collision they stick and move at a speed of 7.7 m/s. What was the mass of the truck?}
-a) 822
-b) 986
+c) 1183
-d) 1420
-e) 1704

{<!--a08linearMomentumCollisions_3-->[[File:Ballistic pendulum.svg|right|160px]]A 167 gm bullet strikes a ballistic pendulum of mass 2.1 kg (before the bullet struck). After impact, the pendulum rises by 65 cm. What was the speed of the bullet?}
-a) 37 m/s.
-b) 40 m/s.
-c) 42 m/s.
-d) 45 m/s.
+e) 48 m/s.

</quiz>

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Other renditions
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====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a08linearMomentumCollisions_1-->On object of mass 3 kg that is moving at a velocity of 17m/s collides with a stationary object of mass 10.2 kg. What is the final velocity if they stick? (Assume no external friction.)
-a) 2.68m/s.
-b) 3.22m/s.
+c) 3.86m/s.
-d) 4.64m/s.
-e) 5.56m/s.
=====*_Rendition_* 1-3=====
<!--a08linearMomentumCollisions_1-->On object of mass 2.3 kg that is moving at a velocity of 22m/s collides with a stationary object of mass 19.36 kg. What is the final velocity if they stick? (Assume no external friction.)
-a) 1.62m/s.
-b) 1.95m/s.
+c) 2.34m/s.
-d) 2.8m/s.
-e) 3.36m/s.
=====*_Rendition_* 1-4=====

<!--a08linearMomentumCollisions_1-->On object of mass 2.3 kg that is moving at a velocity of 22m/s collides with a stationary object of mass 19.8 kg. What is the final velocity if they stick? (Assume no external friction.)
-a) 1.32m/s.
-b) 1.59m/s.
-c) 1.91m/s.
+d) 2.29m/s.
-e) 2.75m/s.
=====*_Rendition_* 1-5=====
<!--a08linearMomentumCollisions_1-->On object of mass 2.3 kg that is moving at a velocity of 24m/s collides with a stationary object of mass 17.52 kg. What is the final velocity if they stick? (Assume no external friction.)
-a) 1.93m/s.
-b) 2.32m/s.
+c) 2.79m/s.
-d) 3.34m/s.
-e) 4.01m/s.
=====*_Rendition_* 1-6=====
<!--a08linearMomentumCollisions_1-->On object of mass 2.3 kg that is moving at a velocity of 16m/s collides with a stationary object of mass 9.6 kg. What is the final velocity if they stick? (Assume no external friction.)
-a) 1.49m/s.
-b) 1.79m/s.
-c) 2.15m/s.
-d) 2.58m/s.
+e) 3.09m/s.
=====*_Rendition_* 1-7=====
<!--a08linearMomentumCollisions_1-->On object of mass 2.9 kg that is moving at a velocity of 21m/s collides with a stationary object of mass 12.6 kg. What is the final velocity if they stick? (Assume no external friction.)
+a) 3.93m/s.
-b) 4.71m/s.
-c) 5.66m/s.
-d) 6.79m/s.
-e) 8.15m/s.
=====*_Rendition_* 1-8=====
<!--a08linearMomentumCollisions_1-->On object of mass 2.5 kg that is moving at a velocity of 23m/s collides with a stationary object of mass 17.94 kg. What is the final velocity if they stick? (Assume no external friction.)
-a) 1.95m/s.
-b) 2.34m/s.
+c) 2.81m/s.
-d) 3.38m/s.
-e) 4.05m/s.
=====*_Rendition_* 1-9=====
<!--a08linearMomentumCollisions_1-->On object of mass 2 kg that is moving at a velocity of 25m/s collides with a stationary object of

mass 25 kg. What is the final velocity if they stick? (Assume no external friction.)
-a) 1.29m/s.
-b) 1.54m/s.
+c) 1.85m/s.
-d) 2.22m/s.
-e) 2.67m/s.
=====*_Rendition_* 1-10=====
<!--a08linearMomentumCollisions_1-->On object of mass 2.7 kg that is moving at a velocity of 25m/s collides with a stationary object of mass 20.75 kg. What is the final velocity if they stick? (Assume no external friction.)
-a) 2m/s.
-b) 2.4m/s.
+c) 2.88m/s.
-d) 3.45m/s.
-e) 4.14m/s.
=====*_Rendition_* 1-11=====
<!--a08linearMomentumCollisions_1-->On object of mass 2.2 kg that is moving at a velocity of 28m/s collides with a stationary object of mass 18.48 kg. What is the final velocity if they stick? (Assume no external friction.)
-a) 1.72m/s.
-b) 2.07m/s.
-c) 2.48m/s.
+d) 2.98m/s.
-e) 3.57m/s.
=====*_Rendition_* 1-12=====
<!--a08linearMomentumCollisions_1-->On object of mass 2.3 kg that is moving at a velocity of 24m/s collides with a stationary object of mass 22.8 kg. What is the final velocity if they stick? (Assume no external friction.)
-a) 1.06m/s.
-b) 1.27m/s.
-c) 1.53m/s.
-d) 1.83m/s.
+e) 2.2m/s.
=====*_Rendition_* 1-13=====
<!--a08linearMomentumCollisions_1-->On object of mass 2.6 kg that is moving at a velocity of 23m/s collides with a stationary object of mass 18.17 kg. What is the final velocity if they stick? (Assume no external friction.)
+a) 2.88m/s.
-b) 3.45m/s.
-c) 4.15m/s.
-d) 4.98m/s.
-e) 5.97m/s.
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a08linearMomentumCollisions_2-->A car of mass 634 kg is driving on an icy road at a speed of 17 m/s, when it collides with a stationary truck. After the collision they stick and move at a speed of 5.5 m/s.

 What was the mass of the truck?
-a) 767 kg
-b) 921 kg
-c) 1105 kg
+d) 1326 kg
-e) 1591 kg
=====*_Rendition_* 2-3=====
<!--a08linearMomentumCollisions_2-->A car of mass 796 kg is driving on an icy road at a speed of 18 m/s, when it collides with a stationary truck. After the collision they stick and move at a speed of 5.9 m/s.
 What was the mass of the truck?
-a) 1134 kg
-b) 1360 kg
+c) 1632 kg
-d) 1959 kg
-e) 2351 kg
=====*_Rendition_* 2-4=====
<!--a08linearMomentumCollisions_2-->A car of mass 884 kg is driving on an icy road at a speed of 20 m/s, when it collides with a stationary truck. After the collision they stick and move at a speed of 4.2 m/s.
 What was the mass of the truck?
+a) 3326 kg
-b) 3991 kg
-c) 4789 kg
-d) 5747 kg
-e) 6896 kg
=====*_Rendition_* 2-5=====
<!--a08linearMomentumCollisions_2-->A car of mass 860 kg is driving on an icy road at a speed of 17 m/s, when it collides with a stationary truck. After the collision they stick and move at a speed of 5.9 m/s.
 What was the mass of the truck?
-a) 1124 kg
-b) 1348 kg
+c) 1618 kg
-d) 1942 kg
-e) 2330 kg
=====*_Rendition_* 2-6=====
<!--a08linearMomentumCollisions_2-->A car of mass 674 kg is driving on an icy road at a speed of 16 m/s, when it collides with a stationary truck. After the collision they stick and move at a speed of 5.9 m/s.
 What was the mass of the truck?
-a) 801 kg
-b) 961 kg
+c) 1154 kg
-d) 1385 kg
-e) 1661 kg
=====*_Rendition_* 2-7=====
<!--a08linearMomentumCollisions_2-->A car of mass 571 kg is driving on an icy road at a speed of 24 m/s, when it collides with a stationary truck. After the collision they stick and move at a speed of 5.5 m/s.
 What was the mass of the truck?
-a) 1334 kg

-b) 1601 kg
+c) 1921 kg
-d) 2305 kg
-e) 2766 kg
=====*_Rendition_* 2-8=====
<!--a08linearMomentumCollisions_2-->A car of mass 806 kg is driving on an icy road at a speed of 24 m/s, when it collides with a stationary truck. After the collision they stick and move at a speed of 5.5 m/s. What was the mass of the truck?
-a) 1883 kg
-b) 2259 kg
+c) 2711 kg
-d) 3253 kg
-e) 3904 kg
=====*_Rendition_* 2-9=====
<!--a08linearMomentumCollisions_2-->A car of mass 636 kg is driving on an icy road at a speed of 22 m/s, when it collides with a stationary truck. After the collision they stick and move at a speed of 5.2 m/s. What was the mass of the truck?
-a) 1427 kg
-b) 1712 kg
+c) 2055 kg
-d) 2466 kg
-e) 2959 kg
=====*_Rendition_* 2-10=====
<!--a08linearMomentumCollisions_2-->A car of mass 863 kg is driving on an icy road at a speed of 25 m/s, when it collides with a stationary truck. After the collision they stick and move at a speed of 5.7 m/s. What was the mass of the truck?
-a) 2435 kg
+b) 2922 kg
-c) 3507 kg
-d) 4208 kg
-e) 5049 kg
=====*_Rendition_* 2-11=====
<!--a08linearMomentumCollisions_2-->A car of mass 856 kg is driving on an icy road at a speed of 19 m/s, when it collides with a stationary truck. After the collision they stick and move at a speed of 4.7 m/s. What was the mass of the truck?
-a) 1507 kg
-b) 1809 kg
-c) 2170 kg
+d) 2604 kg
-e) 3125 kg
=====*_Rendition_* 2-12=====
<!--a08linearMomentumCollisions_2-->A car of mass 841 kg is driving on an icy road at a speed of 21 m/s, when it collides with a stationary truck. After the collision they stick and move at a speed of 4.2 m/s. What was the mass of the truck?
-a) 1622 kg
-b) 1947 kg
-c) 2336 kg

-d) 2803 kg
+e) 3364 kg
=====*_Rendition_* 2-13=====
<!--a08linearMomentumCollisions_2-->A car of mass 654 kg is driving on an icy road at a speed of 15 m/s, when it collides with a stationary truck. After the collision they stick and move at a speed of 5.7 m/s. What was the mass of the truck?
-a) 741 kg
-b) 889 kg
+c) 1067 kg
-d) 1280 kg
-e) 1537 kg
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a08linearMomentumCollisions_3-->[[File:Ballistic pendulum.svg|right|160px]]A 159 gm bullet strikes a ballistic pendulum of mass 2.08 kg (before the bullet struck). After impact, the pendulum rises by 65 cm. What was the speed of the bullet?
-a) 44 m/s.
-b) 47 m/s.
+c) 50 m/s.
-d) 54 m/s.
-e) 58 m/s.
=====*_Rendition_* 3-3=====
<!--a08linearMomentumCollisions_3-->[[File:Ballistic pendulum.svg|right|160px]]A 171 gm bullet strikes a ballistic pendulum of mass 2.41 kg (before the bullet struck). After impact, the pendulum rises by 65 cm. What was the speed of the bullet?
-a) 41 m/s.
-b) 44 m/s.
-c) 47 m/s.
-d) 50 m/s.
+e) 54 m/s.
=====*_Rendition_* 3-4=====
<!--a08linearMomentumCollisions_3-->[[File:Ballistic pendulum.svg|right|160px]]A 157 gm bullet strikes a ballistic pendulum of mass 2.22 kg (before the bullet struck). After impact, the pendulum rises by 65 cm. What was the speed of the bullet?
-a) 47 m/s.
-b) 51 m/s.
+c) 54 m/s.
-d) 58 m/s.
-e) 62 m/s.
=====*_Rendition_* 3-5=====
<!--a08linearMomentumCollisions_3-->[[File:Ballistic pendulum.svg|right|160px]]A 195 gm bullet strikes a ballistic pendulum of mass 2.13 kg (before the bullet struck). After impact, the pendulum rises by 65 cm. What was the speed of the bullet?
-a) 32 m/s.
-b) 35 m/s.
-c) 37 m/s.
-d) 40 m/s.

+e) 43 m/s.
=====*_Rendition_* 3-6=====
<!--a08linearMomentumCollisions_3-->[[File:Ballistic pendulum.svg|right|160px]]A 191 gm bullet strikes a ballistic pendulum of mass 2.19 kg (before the bullet struck). After impact, the pendulum rises by 65 cm. What was the speed of the bullet?
-a) 34 m/s.
-b) 36 m/s.
-c) 39 m/s.
-d) 42 m/s.
+e) 44 m/s.
=====*_Rendition_* 3-7=====
<!--a08linearMomentumCollisions_3-->[[File:Ballistic pendulum.svg|right|160px]]A 191 gm bullet strikes a ballistic pendulum of mass 2.02 kg (before the bullet struck). After impact, the pendulum rises by 65 cm. What was the speed of the bullet?
-a) 34 m/s.
-b) 36 m/s.
-c) 39 m/s.
+d) 41 m/s.
-e) 44 m/s.
=====*_Rendition_* 3-8=====
<!--a08linearMomentumCollisions_3-->[[File:Ballistic pendulum.svg|right|160px]]A 159 gm bullet strikes a ballistic pendulum of mass 2.11 kg (before the bullet struck). After impact, the pendulum rises by 65 cm. What was the speed of the bullet?
-a) 39 m/s.
-b) 42 m/s.
-c) 44 m/s.
-d) 48 m/s.
+e) 51 m/s.
=====*_Rendition_* 3-9=====
<!--a08linearMomentumCollisions_3-->[[File:Ballistic pendulum.svg|right|160px]]A 169 gm bullet strikes a ballistic pendulum of mass 2.45 kg (before the bullet struck). After impact, the pendulum rises by 65 cm. What was the speed of the bullet?
+a) 55 m/s.
-b) 59 m/s.
-c) 63 m/s.
-d) 68 m/s.
-e) 73 m/s.
=====*_Rendition_* 3-10=====
<!--a08linearMomentumCollisions_3-->[[File:Ballistic pendulum.svg|right|160px]]A 161 gm bullet strikes a ballistic pendulum of mass 2.1 kg (before the bullet struck). After impact, the pendulum rises by 65 cm. What was the speed of the bullet?
-a) 44 m/s.
-b) 47 m/s.
+c) 50 m/s.
-d) 54 m/s.
-e) 57 m/s.
=====*_Rendition_* 3-11=====

<!--a08linearMomentumCollisions_3-->[[File:Ballistic pendulum.svg|right|160px]]A 159 gm bullet strikes a ballistic pendulum of mass 2.27 kg (before the bullet struck). After impact, the pendulum rises by 65 cm. What was the speed of the bullet?
+a) 55 m/s.
-b) 58 m/s.
-c) 62 m/s.
-d) 67 m/s.
-e) 71 m/s.
=====*_Rendition_* 3-12=====
<!--a08linearMomentumCollisions_3-->[[File:Ballistic pendulum.svg|right|160px]]A 167 gm bullet strikes a ballistic pendulum of mass 2.28 kg (before the bullet struck). After impact, the pendulum rises by 65 cm. What was the speed of the bullet?
-a) 43 m/s.
-b) 46 m/s.
-c) 49 m/s.
+d) 52 m/s.
-e) 56 m/s.
=====*_Rendition_* 3-13=====
<!--a08linearMomentumCollisions_3-->[[File:Ballistic pendulum.svg|right|160px]]A 164 gm bullet strikes a ballistic pendulum of mass 2.48 kg (before the bullet struck). After impact, the pendulum rises by 65 cm. What was the speed of the bullet?
-a) 54 m/s.
+b) 58 m/s.
-c) 62 m/s.
-d) 66 m/s.
-e) 70 m/s.
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====*_Instructions_*====
Instructions are forthcoming

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{<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 7.6m is attached to a wall by a frictionless hinge (shown as a circle). The bar is held horizontal by a string that makes and angle θ = 37.4 degrees above the horizontal. An object of mass, M =   6kg is suspended at a length, L =   5.4m from the wall. What is the tension, T, in the string?}
-a) 3.45E+01 N
-b) 4.34E+01 N
-c) 5.46E+01 N
+d) 6.88E+01 N
-e) 8.66E+01 N

{<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 5.3m, L₂ = 4.3m and L₃ = 7.3m. What is F₁ if F₂ =3.6N and F₃ =5.1N?}
-a) 8.21E+00 N
+b) 9.95E+00 N
-c) 1.20E+01 N
-d) 1.46E+01 N
-e) 1.77E+01 N

{<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.1m is attached to a wall by a frictionless hinge (shown as a circle). The bar is held horizontal by a string that makes and angle θ = 28.2 degrees above the horizontal. An object of mass, M =   9.2kg is suspended at a length, L =   5.7m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?}
-a) 8.06E+01 N
-b) 9.77E+01 N
+c) 1.18E+02 N
-d) 1.43E+02 N
-e) 1.74E+02 N

{<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.5m, L₂ = 4.5m and L₃ = 7.8m. What is F₂ if F₁ =0.56N and F₃ =0.4N?}
-a) 6.50E-02 N
-b) 7.87E-02 N
-c) 9.54E-02 N
+d) 1.16E-01 N

-e) 1.40E-01 N

{<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.5m is attached to a wall by a frictionless hinge (shown as a circle). The bar is held horizontal by a string that makes and angle θ = 26.5 degrees above the horizontal. An object of mass, M = 6.8kg is suspended at a length, L =6.6m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?}
-a) 1.39E+01 N
-b) 1.68E+01 N
+c) 2.03E+01 N
-d) 2.46E+01 N
-e) 2.99E+01 N

</quiz>

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Other renditions
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====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.3m is attached to a wall by a frictionless hinge (shown as a circle). The bar is held horizontal by a string that makes and angle θ = 28.1 degrees above the horizontal. An object of mass, M = 8.1kg is suspended at a length, L = 5.7m from the wall. What is the tension, T, in the string?
-a) 8.20E+01 N
+b) 1.03E+02 N
-c) 1.30E+02 N
-d) 1.64E+02 N
-e) 2.06E+02 N
=====*_Rendition_* 1-3=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 7.8m is attached to a wall by a frictionless hinge (shown as a circle). The bar is held horizontal by a string that makes and angle θ = 27.7 degrees above the horizontal. An object of mass, M = 7.7kg is suspended at a length, L = 5.2m from the wall. What is the tension, T, in the string?
+a) 1.08E+02 N
-b) 1.36E+02 N
-c) 1.72E+02 N
-d) 2.16E+02 N
-e) 2.72E+02 N
=====*_Rendition_* 1-4=====

<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.7m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 26.5 degrees above the horizontal. An object of mass, M =   7.6kg is suspended at a length, L =   4.7m from the wall. What is the tension, T, in the string?
-a) 3.59E+01 N
-b) 4.52E+01 N
-c) 5.69E+01 N
-d) 7.16E+01 N
+e) 9.02E+01 N
=====*_Rendition_* 1-5=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.4m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 37.7 degrees above the horizontal. An object of mass, M =   5.1kg is suspended at a length, L =   4.7m from the wall. What is the tension, T, in the string?
-a) 1.82E+01 N
-b) 2.29E+01 N
-c) 2.89E+01 N
-d) 3.63E+01 N
+e) 4.57E+01 N
=====*_Rendition_* 1-6=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.7m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 29.5 degrees above the horizontal. An object of mass, M =   4.7kg is suspended at a length, L =   6m from the wall. What is the tension, T, in the string?
-a) 3.65E+01 N
-b) 4.60E+01 N
+c) 5.79E+01 N
-d) 7.28E+01 N
-e) 9.17E+01 N
=====*_Rendition_* 1-7=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.1m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 26.7 degrees above the horizontal. An object of mass, M =   6.2kg is suspended at a length, L =   5.6m from the wall. What is the tension, T, in the string?
-a) 3.31E+01 N
-b) 4.17E+01 N
-c) 5.25E+01 N
-d) 6.61E+01 N
+e) 8.32E+01 N
=====*_Rendition_* 1-8=====

<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.1m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 31.1 degrees above the horizontal. An object of mass, M =   5.4kg is suspended at a length, L =   6.2m from the wall. What is the tension, T, in the string?
-a) 3.93E+01 N
-b) 4.95E+01 N
-c) 6.23E+01 N
+d) 7.84E+01 N
-e) 9.87E+01 N
=====*_Rendition_* 1-9=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.4m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 31.6 degrees above the horizontal. An object of mass, M =   4.6kg is suspended at a length, L =   4.7m from the wall. What is the tension, T, in the string?
+a) 4.81E+01 N
-b) 6.06E+01 N
-c) 7.63E+01 N
-d) 9.60E+01 N
-e) 1.21E+02 N
=====*_Rendition_* 1-10=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 29 degrees above the horizontal. An object of mass, M =   8.1kg is suspended at a length, L =   4.4m from the wall. What is the tension, T, in the string?
-a) 3.59E+01 N
-b) 4.51E+01 N
-c) 5.68E+01 N
-d) 7.15E+01 N
+e) 9.01E+01 N
=====*_Rendition_* 1-11=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.6m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 24.4 degrees above the horizontal. An object of mass, M =   6.9kg is suspended at a length, L =   4.5m from the wall. What is the tension, T, in the string?
-a) 3.05E+01 N
-b) 3.85E+01 N
-c) 4.84E+01 N
-d) 6.09E+01 N
+e) 7.67E+01 N
=====*_Rendition_* 1-12=====

<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 7.6m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 26.6 degrees above the horizontal. An object of mass, M =   6.4kg is suspended at a length, L =   6.1m from the wall. What is the tension, T, in the string?
-a) 4.48E+01 N
-b) 5.63E+01 N
-c) 7.09E+01 N
-d) 8.93E+01 N
+e) 1.12E+02 N
=====*_Rendition_* 1-13=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.7m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 38.2 degrees above the horizontal. An object of mass, M =   6.5kg is suspended at a length, L =   6.5m from the wall. What is the tension, T, in the string?
+a) 7.70E+01 N
-b) 9.69E+01 N
-c) 1.22E+02 N
-d) 1.54E+02 N
-e) 1.93E+02 N
=====*_Rendition_* 1-14=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.4m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 31.2 degrees above the horizontal. An object of mass, M =   4.8kg is suspended at a length, L =   5.5m from the wall. What is the tension, T, in the string?
+a) 5.95E+01 N
-b) 7.49E+01 N
-c) 9.42E+01 N
-d) 1.19E+02 N
-e) 1.49E+02 N
=====*_Rendition_* 1-15=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.4m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 25.4 degrees above the horizontal. An object of mass, M =   7.6kg is suspended at a length, L =   5.2m from the wall. What is the tension, T, in the string?
+a) 1.07E+02 N
-b) 1.35E+02 N
-c) 1.70E+02 N
-d) 2.14E+02 N
-e) 2.70E+02 N
=====*_Rendition_* 1-16=====

<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.7m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 30.9 degrees above the horizontal. An object of mass, M =   9.2kg is suspended at a length, L =   5.3m from the wall. What is the tension, T, in the string?
-a) 8.50E+01 N
+b) 1.07E+02 N
-c) 1.35E+02 N
-d) 1.70E+02 N
-e) 2.13E+02 N
=====*_Rendition_* 1-17=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.5m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 35.6 degrees above the horizontal. An object of mass, M =   6kg is suspended at a length, L =   6m from the wall. What is the tension, T, in the string?
-a) 3.57E+01 N
-b) 4.50E+01 N
-c) 5.66E+01 N
+d) 7.13E+01 N
-e) 8.98E+01 N
=====*_Rendition_* 1-18=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.1m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 33.6 degrees above the horizontal. An object of mass, M =   9.6kg is suspended at a length, L =   4.6m from the wall. What is the tension, T, in the string?
-a) 6.83E+01 N
+b) 8.59E+01 N
-c) 1.08E+02 N
-d) 1.36E+02 N
-e) 1.71E+02 N
=====*_Rendition_* 1-19=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.5m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 33.6 degrees above the horizontal. An object of mass, M =   7.3kg is suspended at a length, L =   5.7m from the wall. What is the tension, T, in the string?
-a) 4.34E+01 N
-b) 5.47E+01 N
-c) 6.89E+01 N
+d) 8.67E+01 N
-e) 1.09E+02 N
=====*_Rendition_* 1-20=====

<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.6m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 29.9 degrees above the horizontal. An object of mass, M =   8kg is suspended at a length, L =   5.9m from the wall. What is the tension, T, in the string?
-a) 6.81E+01 N
-b) 8.57E+01 N
+c) 1.08E+02 N
-d) 1.36E+02 N
-e) 1.71E+02 N
=====*_Rendition_* 1-21=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.6m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 29.9 degrees above the horizontal. An object of mass, M =   8.6kg is suspended at a length, L =   5m from the wall. What is the tension, T, in the string?
+a) 8.81E+01 N
-b) 1.11E+02 N
-c) 1.40E+02 N
-d) 1.76E+02 N
-e) 2.21E+02 N
=====*_Rendition_* 1-22=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.1m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 32 degrees above the horizontal. An object of mass, M =   4.6kg is suspended at a length, L =   4.3m from the wall. What is the tension, T, in the string?
-a) 1.80E+01 N
-b) 2.26E+01 N
-c) 2.85E+01 N
-d) 3.59E+01 N
+e) 4.52E+01 N
=====*_Rendition_* 1-23=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.6m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 37.6 degrees above the horizontal. An object of mass, M =   7.4kg is suspended at a length, L =   6.2m from the wall. What is the tension, T, in the string?
-a) 3.41E+01 N
-b) 4.29E+01 N
-c) 5.41E+01 N
-d) 6.81E+01 N
+e) 8.57E+01 N
=====*_Rendition_* 1-24=====

<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.9m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 29.4 degrees above the horizontal. An object of mass, M =   4.3kg is suspended at a length, L =   5.3m from the wall. What is the tension, T, in the string?
-a) 4.06E+01 N
+b) 5.11E+01 N
-c) 6.44E+01 N
-d) 8.10E+01 N
-e) 1.02E+02 N
=====*_Rendition_* 1-25=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.8m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 25.2 degrees above the horizontal. An object of mass, M =   4.7kg is suspended at a length, L =   4.4m from the wall. What is the tension, T, in the string?
-a) 1.93E+01 N
-b) 2.43E+01 N
-c) 3.06E+01 N
-d) 3.86E+01 N
+e) 4.86E+01 N
=====*_Rendition_* 1-26=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 24.3 degrees above the horizontal. An object of mass, M =   9kg is suspended at a length, L =   5.4m from the wall. What is the tension, T, in the string?
+a) 1.29E+02 N
-b) 1.62E+02 N
-c) 2.04E+02 N
-d) 2.57E+02 N
-e) 3.23E+02 N
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 5.4m, L₂ = 3.3m and L₃ = 8m. What is F₁ if F₂ =9.8N and F₃ =5.7N?
-a) 6.70E+00 N
-b) 8.12E+00 N
-c) 9.83E+00 N
-d) 1.19E+01 N
+e) 1.44E+01 N
=====*_Rendition_* 2-3=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 5.7m,

L₂ = 4.5m and L₃ = 8.2m. What is F₁ if F₂ =8.6N and F₃ =6.7N?
-a) 1.36E+01 N
+b) 1.64E+01 N
-c) 1.99E+01 N
-d) 2.41E+01 N
-e) 2.92E+01 N
=====*_Rendition_* 2-4=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.3m, L₂ = 4.3m and L₃ = 8.5m. What is F₁ if F₂ =8.4N and F₃ =5.2N?
+a) 1.27E+01 N
-b) 1.54E+01 N
-c) 1.87E+01 N
-d) 2.27E+01 N
-e) 2.75E+01 N
=====*_Rendition_* 2-5=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 5.3m, L₂ = 3.3m and L₃ = 8.7m. What is F₁ if F₂ =8.7N and F₃ =6N?
-a) 7.09E+00 N
-b) 8.58E+00 N
-c) 1.04E+01 N
-d) 1.26E+01 N
+e) 1.53E+01 N
=====*_Rendition_* 2-6=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 5.8m, L₂ = 3.5m and L₃ = 7.8m. What is F₁ if F₂ =7.3N and F₃ =5.3N?
-a) 7.86E+00 N
-b) 9.52E+00 N
+c) 1.15E+01 N
-d) 1.40E+01 N
-e) 1.69E+01 N
=====*_Rendition_* 2-7=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.5m, L₂ = 3.2m and L₃ = 8.8m. What is F₁ if F₂ =9.3N and F₃ =5.9N?
-a) 8.56E+00 N
-b) 1.04E+01 N
+c) 1.26E+01 N
-d) 1.52E+01 N
-e) 1.84E+01 N
=====*_Rendition_* 2-8=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 5.4m, L₂ = 3.5m and L₃ = 7.4m. What is F₁ if F₂ =7.7N and F₃ =5.8N?

-a) 1.07E+01 N
+b) 1.29E+01 N
-c) 1.57E+01 N
-d) 1.90E+01 N
-e) 2.30E+01 N
=====*_Rendition_* 2-9=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.6m, L₂ = 3.1m and L₃ = 8.8m. What is F₁ if F₂ =9.2N and F₃ =5.9N?
-a) 5.66E+00 N
-b) 6.85E+00 N
-c) 8.30E+00 N
-d) 1.01E+01 N
+e) 1.22E+01 N
=====*_Rendition_* 2-10=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.4m, L₂ = 3.2m and L₃ = 8.3m. What is F₁ if F₂ =8.5N and F₃ =6.5N?
-a) 5.89E+00 N
-b) 7.13E+00 N
-c) 8.64E+00 N
-d) 1.05E+01 N
+e) 1.27E+01 N
=====*_Rendition_* 2-11=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.9m, L₂ = 4.3m and L₃ = 8m. What is F₁ if F₂ =8.4N and F₃ =5.2N?
-a) 7.67E+00 N
-b) 9.30E+00 N
+c) 1.13E+01 N
-d) 1.36E+01 N
-e) 1.65E+01 N
=====*_Rendition_* 2-12=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.6m, L₂ = 3.2m and L₃ = 7.8m. What is F₁ if F₂ =8.6N and F₃ =5.8N?
+a) 1.10E+01 N
-b) 1.34E+01 N
-c) 1.62E+01 N
-d) 1.96E+01 N
-e) 2.38E+01 N
=====*_Rendition_* 2-13=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 5.6m, L₂ = 4.3m and L₃ = 8.3m. What is F₁ if F₂ =8.6N and F₃ =6.3N?
-a) 7.40E+00 N
-b) 8.96E+00 N

-c) 1.09E+01 N
-d) 1.32E+01 N
+e) 1.59E+01 N
=====*_Rendition_* 2-14=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 5.5m, L₂ = 3.7m and L₃ = 8.2m. What is F₁ if F₂ =7.8N and F₃ =5.6N?
-a) 9.26E+00 N
-b) 1.12E+01 N
+c) 1.36E+01 N
-d) 1.65E+01 N
-e) 2.00E+01 N
=====*_Rendition_* 2-15=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.4m, L₂ = 4.3m and L₃ = 8.3m. What is F₁ if F₂ =7.1N and F₃ =5.2N?
-a) 9.50E+00 N
+b) 1.15E+01 N
-c) 1.39E+01 N
-d) 1.69E+01 N
-e) 2.05E+01 N
=====*_Rendition_* 2-16=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.8m, L₂ = 4.2m and L₃ = 8.9m. What is F₁ if F₂ =7.7N and F₃ =6.3N?
-a) 6.03E+00 N
-b) 7.31E+00 N
-c) 8.86E+00 N
-d) 1.07E+01 N
+e) 1.30E+01 N
=====*_Rendition_* 2-17=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 5.9m, L₂ = 3.1m and L₃ = 7.4m. What is F₁ if F₂ =9.1N and F₃ =5.9N?
-a) 8.30E+00 N
-b) 1.01E+01 N
+c) 1.22E+01 N
-d) 1.48E+01 N
-e) 1.79E+01 N
=====*_Rendition_* 2-18=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.4m, L₂ = 3.5m and L₃ = 7.3m. What is F₁ if F₂ =8.8N and F₃ =5.9N?
-a) 9.53E+00 N
+b) 1.15E+01 N
-c) 1.40E+01 N
-d) 1.69E+01 N

-e) 2.05E+01 N
=====*_Rendition_* 2-19=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.1m, L₂ = 4.3m and L₃ = 8m. What is F₁ if F₂ =9.9N and F₃ =5.4N?
+a) 1.41E+01 N
-b) 1.70E+01 N
-c) 2.06E+01 N
-d) 2.50E+01 N
-e) 3.03E+01 N
=====*_Rendition_* 2-20=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6m, L₂ = 3.7m and L₃ = 7.3m. What is F₁ if F₂ =8.7N and F₃ =5.5N?
-a) 9.95E+00 N
+b) 1.21E+01 N
-c) 1.46E+01 N
-d) 1.77E+01 N
-e) 2.14E+01 N
=====*_Rendition_* 2-21=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.6m, L₂ = 4.4m and L₃ = 7.8m. What is F₁ if F₂ =7.7N and F₃ =6.5N?
-a) 8.73E+00 N
-b) 1.06E+01 N
+c) 1.28E+01 N
-d) 1.55E+01 N
-e) 1.88E+01 N
=====*_Rendition_* 2-22=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 5.3m, L₂ = 4.3m and L₃ = 8m. What is F₁ if F₂ =7.6N and F₃ =5.9N?
-a) 1.03E+01 N
-b) 1.24E+01 N
+c) 1.51E+01 N
-d) 1.83E+01 N
-e) 2.21E+01 N
=====*_Rendition_* 2-23=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.5m, L₂ = 4.1m and L₃ = 7.5m. What is F₁ if F₂ =9N and F₃ =5.2N?
-a) 9.64E+00 N
+b) 1.17E+01 N
-c) 1.41E+01 N
-d) 1.71E+01 N
-e) 2.08E+01 N
=====*_Rendition_* 2-24=====

<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 5.4m, L₂ = 3.3m and L₃ = 7.4m. What is F₁ if F₂ =7.5N and F₃ =5.4N?
-a) 8.16E+00 N
-b) 9.89E+00 N
+c) 1.20E+01 N
-d) 1.45E+01 N
-e) 1.76E+01 N
=====*_Rendition_* 2-25=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 5.4m, L₂ = 4.2m and L₃ = 8.1m. What is F₁ if F₂ =7.2N and F₃ =6.7N?
-a) 1.29E+01 N
+b) 1.56E+01 N
-c) 1.90E+01 N
-d) 2.30E+01 N
-e) 2.78E+01 N
=====*_Rendition_* 2-26=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.7m, L₂ = 3.7m and L₃ = 7.9m. What is F₁ if F₂ =7.2N and F₃ =5.4N?
+a) 1.03E+01 N
-b) 1.25E+01 N
-c) 1.52E+01 N
-d) 1.84E+01 N
-e) 2.23E+01 N
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.8m is attached to a wall by a frictionless hinge (shown as a circle). The bar is held horizontal by a string that makes and angle θ = 27.3 degrees above the horizontal. An object of mass, M =   8.2kg is suspended at a length, L =   4.7m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
-a) 6.86E+01 N
+b) 8.32E+01 N
-c) 1.01E+02 N
-d) 1.22E+02 N
-e) 1.48E+02 N
=====*_Rendition_* 3-3=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8m is attached to a wall by a frictionless hinge (shown as a circle). The bar is held horizontal by a string that makes and angle θ = 35.4 degrees above the horizontal. An object of mass, M =   8.3kg is suspended at a length, L =   5m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?

+a) 7.15E+01 N
-b) 8.67E+01 N
-c) 1.05E+02 N
-d) 1.27E+02 N
-e) 1.54E+02 N
=====*_Rendition_* 3-4=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 7.9m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 37.7 degrees above the horizontal. An object of mass, M =   4.1kg is suspended at a length, L =   6.1m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
-a) 3.31E+01 N
+b) 4.01E+01 N
-c) 4.86E+01 N
-d) 5.89E+01 N
-e) 7.14E+01 N
=====*_Rendition_* 3-5=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 7.6m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 36.8 degrees above the horizontal. An object of mass, M =   7.3kg is suspended at a length, L =   4.9m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
-a) 4.20E+01 N
-b) 5.09E+01 N
+c) 6.17E+01 N
-d) 7.47E+01 N
-e) 9.05E+01 N
=====*_Rendition_* 3-6=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.8m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 38.4 degrees above the horizontal. An object of mass, M =   7kg is suspended at a length, L =   4.2m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
-a) 3.06E+01 N
+b) 3.71E+01 N
-c) 4.49E+01 N
-d) 5.44E+01 N
-e) 6.60E+01 N
=====*_Rendition_* 3-7=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.4m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ =

30.7 degrees above the horizontal. An object of mass, M =   5.2kg is suspended at a length, L =   5.3m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
-a) 3.05E+01 N
-b) 3.69E+01 N
-c) 4.47E+01 N
+d) 5.42E+01 N
-e) 6.56E+01 N
=====*_Rendition_* 3-8=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.1m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 37.9 degrees above the horizontal. An object of mass, M =   6kg is suspended at a length, L =   4.5m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
+a) 4.20E+01 N
-b) 5.08E+01 N
-c) 6.16E+01 N
-d) 7.46E+01 N
-e) 9.04E+01 N
=====*_Rendition_* 3-9=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.8m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 27.5 degrees above the horizontal. An object of mass, M =   6.2kg is suspended at a length, L =   6.5m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
-a) 4.00E+01 N
-b) 4.85E+01 N
-c) 5.87E+01 N
-d) 7.12E+01 N
+e) 8.62E+01 N
=====*_Rendition_* 3-10=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.2m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 37.6 degrees above the horizontal. An object of mass, M =   9.2kg is suspended at a length, L =   4.9m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
-a) 4.25E+01 N
-b) 5.15E+01 N
+c) 6.24E+01 N
-d) 7.55E+01 N
-e) 9.15E+01 N
=====*_Rendition_* 3-11=====

<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.1m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 24.6 degrees above the horizontal. An object of mass, M = 3.5kg is suspended at a length, L = 5.4m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
-a) 3.03E+01 N
-b) 3.67E+01 N
+c) 4.45E+01 N
-d) 5.39E+01 N
-e) 6.53E+01 N
=====*_Rendition_* 3-12=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 33.4 degrees above the horizontal. An object of mass, M = 5.1kg is suspended at a length, L = 5.1m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
-a) 2.42E+01 N
-b) 2.93E+01 N
-c) 3.55E+01 N
+d) 4.30E+01 N
-e) 5.20E+01 N
=====*_Rendition_* 3-13=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 26.6 degrees above the horizontal. An object of mass, M = 3.9kg is suspended at a length, L = 6.5m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
-a) 3.10E+01 N
-b) 3.76E+01 N
-c) 4.55E+01 N
+d) 5.51E+01 N
-e) 6.68E+01 N
=====*_Rendition_* 3-14=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.9m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 28 degrees above the horizontal. An object of mass, M = 8.7kg is suspended at a length, L = 6.5m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
-a) 9.67E+01 N
+b) 1.17E+02 N

-c) 1.42E+02 N
-d) 1.72E+02 N
-e) 2.08E+02 N
=====*_Rendition_* 3-15=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.1m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 32 degrees above the horizontal. An object of mass, M = 7.6kg is suspended at a length, L = 5.1m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
+a) 7.50E+01 N
-b) 9.09E+01 N
-c) 1.10E+02 N
-d) 1.33E+02 N
-e) 1.62E+02 N
=====*_Rendition_* 3-16=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 34.1 degrees above the horizontal. An object of mass, M = 7.8kg is suspended at a length, L = 4.2m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
+a) 5.93E+01 N
-b) 7.18E+01 N
-c) 8.70E+01 N
-d) 1.05E+02 N
-e) 1.28E+02 N
=====*_Rendition_* 3-17=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 7.7m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 29.1 degrees above the horizontal. An object of mass, M = 7.2kg is suspended at a length, L = 4.5m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
-a) 5.05E+01 N
-b) 6.12E+01 N
+c) 7.41E+01 N
-d) 8.98E+01 N
-e) 1.09E+02 N
=====*_Rendition_* 3-18=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.5m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 33.9 degrees above the horizontal. An object of mass, M = 8.4kg is suspended at a length, L = 4.9m from the wall. What is the x

(horizontal) component of the force exerted by the wall on the horizontal bar?
+a) 7.06E+01 N
-b) 8.56E+01 N
-c) 1.04E+02 N
-d) 1.26E+02 N
-e) 1.52E+02 N
=====*_Rendition_* 3-19=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 7.5m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 25.6 degrees above the horizontal. An object of mass, M =   3.5kg is suspended at a length, L =   5.1m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
-a) 3.32E+01 N
-b) 4.02E+01 N
+c) 4.87E+01 N
-d) 5.90E+01 N
-e) 7.15E+01 N
=====*_Rendition_* 3-20=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 7.4m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 35.3 degrees above the horizontal. An object of mass, M =   4.7kg is suspended at a length, L =   5.2m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
+a) 4.57E+01 N
-b) 5.54E+01 N
-c) 6.71E+01 N
-d) 8.13E+01 N
-e) 9.85E+01 N
=====*_Rendition_* 3-21=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.8m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 28.9 degrees above the horizontal. An object of mass, M =   7.7kg is suspended at a length, L =   5.1m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
-a) 4.00E+01 N
-b) 4.85E+01 N
-c) 5.87E+01 N
+d) 7.11E+01 N
-e) 8.62E+01 N
=====*_Rendition_* 3-22=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 7.6m is

attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 24.8 degrees above the horizontal. An object of mass, M =   8.9kg is suspended at a length, L =   5.5m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
-a) 9.31E+01 N
-b) 1.13E+02 N
+c) 1.37E+02 N
-d) 1.65E+02 N
-e) 2.01E+02 N
=====*_Rendition_* 3-23=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.9m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 33.9 degrees above the horizontal. An object of mass, M =   8.1kg is suspended at a length, L =   6.3m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
-a) 5.70E+01 N
-b) 6.90E+01 N
+c) 8.36E+01 N
-d) 1.01E+02 N
-e) 1.23E+02 N
=====*_Rendition_* 3-24=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 7.4m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 33.5 degrees above the horizontal. An object of mass, M =   5kg is suspended at a length, L =   5.4m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
-a) 3.04E+01 N
-b) 3.68E+01 N
-c) 4.46E+01 N
+d) 5.40E+01 N
-e) 6.54E+01 N
=====*_Rendition_* 3-25=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.2m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 35.1 degrees above the horizontal. An object of mass, M =   3.5kg is suspended at a length, L =   6.2m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
-a) 2.71E+01 N
+b) 3.29E+01 N
-c) 3.98E+01 N
-d) 4.83E+01 N

-e) 5.85E+01 N
=====*_Rendition_* 3-26=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 28.9 degrees above the horizontal. An object of mass, M =   9.2kg is suspended at a length, L =   4.3m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
-a) 6.44E+01 N
+b) 7.80E+01 N
-c) 9.45E+01 N
-d) 1.15E+02 N
-e) 1.39E+02 N
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6m, L₂ = 4.3m and L₃ = 8.7m. What is F₂ if F₁ =0.98N and F₃ =0.1N?
-a) 5.41E-01 N
-b) 6.55E-01 N
-c) 7.94E-01 N
-d) 9.62E-01 N
+e) 1.17E+00 N
=====*_Rendition_* 4-3=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.1m, L₂ = 3.2m and L₃ = 7.2m. What is F₂ if F₁ =0.77N and F₃ =0N?
-a) 8.25E-01 N
-b) 1.00E+00 N
-c) 1.21E+00 N
+d) 1.47E+00 N
-e) 1.78E+00 N
=====*_Rendition_* 4-4=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.1m, L₂ = 4.8m and L₃ = 7.2m. What is F₂ if F₁ =0.72N and F₃ =0.1N?
-a) 6.31E-01 N
+b) 7.65E-01 N
-c) 9.27E-01 N
-d) 1.12E+00 N
-e) 1.36E+00 N
=====*_Rendition_* 4-5=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6m, L₂ = 3.8m and L₃ = 7.2m. What is F₂ if F₁ =0.62N and F₃ =0N?
-a) 6.67E-01 N

-b) 8.08E-01 N
+c) 9.79E-01 N
-d) 1.19E+00 N
-e) 1.44E+00 N
=====*_Rendition_* 4-6=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 5.5m, L₂ = 3.7m and L₃ = 8.6m. What is F₂ if F₁ =0.51N and F₃ =0N?
-a) 4.26E-01 N
-b) 5.16E-01 N
-c) 6.26E-01 N
+d) 7.58E-01 N
-e) 9.18E-01 N
=====*_Rendition_* 4-7=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6m, L₂ = 4.5m and L₃ = 8.6m. What is F₂ if F₁ =0.82N and F₃ =0.1N?
-a) 6.15E-01 N
-b) 7.45E-01 N
+c) 9.02E-01 N
-d) 1.09E+00 N
-e) 1.32E+00 N
=====*_Rendition_* 4-8=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.8m, L₂ = 4.8m and L₃ = 7.9m. What is F₂ if F₁ =0.56N and F₃ =0N?
-a) 6.55E-01 N
+b) 7.93E-01 N
-c) 9.61E-01 N
-d) 1.16E+00 N
-e) 1.41E+00 N
=====*_Rendition_* 4-9=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.1m, L₂ = 4m and L₃ = 7.5m. What is F₂ if F₁ =0.74N and F₃ =0N?
-a) 6.35E-01 N
-b) 7.69E-01 N
-c) 9.31E-01 N
+d) 1.13E+00 N
-e) 1.37E+00 N
=====*_Rendition_* 4-10=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.4m, L₂ = 3.4m and L₃ = 7.1m. What is F₂ if F₁ =0.87N and F₃ =0.1N?
+a) 1.43E+00 N
-b) 1.73E+00 N
-c) 2.10E+00 N

-d) 2.54E+00 N
-e) 3.08E+00 N
=====*_Rendition_* 4-11=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 5.2m, L₂ = 4.5m and L₃ = 8.6m. What is F₂ if F₁ =0.86N and F₃ =0.1N?
-a) 3.73E-01 N
-b) 4.51E-01 N
-c) 5.47E-01 N
-d) 6.63E-01 N
+e) 8.03E-01 N
=====*_Rendition_* 4-12=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 5.1m, L₂ = 4.8m and L₃ = 7.4m. What is F₂ if F₁ =0.56N and F₃ =0N?
-a) 4.91E-01 N
+b) 5.95E-01 N
-c) 7.21E-01 N
-d) 8.73E-01 N
-e) 1.06E+00 N
=====*_Rendition_* 4-13=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 5.4m, L₂ = 3.1m and L₃ = 8.1m. What is F₂ if F₁ =0.94N and F₃ =0.1N?
-a) 1.14E+00 N
+b) 1.38E+00 N
-c) 1.67E+00 N
-d) 2.02E+00 N
-e) 2.45E+00 N
=====*_Rendition_* 4-14=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.4m, L₂ = 3.7m and L₃ = 8.2m. What is F₂ if F₁ =0.56N and F₃ =0N?
+a) 9.69E-01 N
-b) 1.17E+00 N
-c) 1.42E+00 N
-d) 1.72E+00 N
-e) 2.09E+00 N
=====*_Rendition_* 4-15=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.6m, L₂ = 4.3m and L₃ = 8.9m. What is F₂ if F₁ =0.77N and F₃ =0.1N?
-a) 8.05E-01 N
+b) 9.75E-01 N
-c) 1.18E+00 N
-d) 1.43E+00 N
-e) 1.73E+00 N

=====*_Rendition_* 4-16=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 5.5m, L₂ = 3.5m and L₃ = 8.3m. What is F₂ if F₁ =0.92N and F₃ =0.1N?
-a) 8.23E-01 N
-b) 9.98E-01 N
+c) 1.21E+00 N
-d) 1.46E+00 N
-e) 1.77E+00 N
=====*_Rendition_* 4-17=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.5m, L₂ = 3.5m and L₃ = 8.8m. What is F₂ if F₁ =0.64N and F₃ =0N?
-a) 6.68E-01 N
-b) 8.10E-01 N
-c) 9.81E-01 N
+d) 1.19E+00 N
-e) 1.44E+00 N
=====*_Rendition_* 4-18=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.3m, L₂ = 3.8m and L₃ = 8.6m. What is F₂ if F₁ =0.91N and F₃ =0.1N?
-a) 5.95E-01 N
-b) 7.21E-01 N
-c) 8.74E-01 N
-d) 1.06E+00 N
+e) 1.28E+00 N
=====*_Rendition_* 4-19=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 5.9m, L₂ = 3.7m and L₃ = 8.5m. What is F₂ if F₁ =0.81N and F₃ =0.1N?
-a) 7.23E-01 N
-b) 8.76E-01 N
+c) 1.06E+00 N
-d) 1.29E+00 N
-e) 1.56E+00 N
=====*_Rendition_* 4-20=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.4m, L₂ = 3.7m and L₃ = 8.4m. What is F₂ if F₁ =0.7N and F₃ =0N?
-a) 5.62E-01 N
-b) 6.81E-01 N
-c) 8.25E-01 N
-d) 9.99E-01 N
+e) 1.21E+00 N
=====*_Rendition_* 4-21=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on

fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.6m, L₂ = 4.4m and L₃ = 7.4m. What is F₂ if F₁ =0.93N and F₃ =0N?
-a) 6.48E-01 N
-b) 7.84E-01 N
-c) 9.50E-01 N
-d) 1.15E+00 N
+e) 1.39E+00 N
=====*_Rendition_* 4-22=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.8m, L₂ = 4.3m and L₃ = 8.2m. What is F₂ if F₁ =0.9N and F₃ =0.1N?
-a) 5.72E-01 N
-b) 6.93E-01 N
-c) 8.40E-01 N
-d) 1.02E+00 N
+e) 1.23E+00 N
=====*_Rendition_* 4-23=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.9m, L₂ = 4.4m and L₃ = 8.2m. What is F₂ if F₁ =0.96N and F₃ =0.1N?
-a) 7.42E-01 N
-b) 8.99E-01 N
-c) 1.09E+00 N
+d) 1.32E+00 N
-e) 1.60E+00 N
=====*_Rendition_* 4-24=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.4m, L₂ = 3.9m and L₃ = 8.1m. What is F₂ if F₁ =0.72N and F₃ =0.1N?
-a) 6.63E-01 N
-b) 8.04E-01 N
+c) 9.74E-01 N
-d) 1.18E+00 N
-e) 1.43E+00 N
=====*_Rendition_* 4-25=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.8m, L₂ = 4.8m and L₃ = 8.7m. What is F₂ if F₁ =0.89N and F₃ =0.1N?
-a) 8.91E-01 N
+b) 1.08E+00 N
-c) 1.31E+00 N
-d) 1.58E+00 N
-e) 1.92E+00 N
=====*_Rendition_* 4-26=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.9m, L₂ = 4m and L₃ = 8.4m. What is F₂ if

F₁ =0.99N and F₃ =0.1N?
+a) 1.50E+00 N
-b) 1.81E+00 N
-c) 2.20E+00 N
-d) 2.66E+00 N
-e) 3.23E+00 N
====*_Question_* 5====
=====*_Rendition_* 5-2=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 7.6m is attached to a wall by a frictionless hinge (shown as a circle). The bar is held horizontal by a string that makes and angle θ = 27.6 degrees above the horizontal. An object of mass, M =   5.1kg is suspended at a length, L =6.2m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
-a) 7.60E+00 N
+b) 9.21E+00 N
-c) 1.12E+01 N
-d) 1.35E+01 N
-e) 1.64E+01 N
=====*_Rendition_* 5-3=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.8m is attached to a wall by a frictionless hinge (shown as a circle). The bar is held horizontal by a string that makes and angle θ = 27.4 degrees above the horizontal. An object of mass, M =   7.1kg is suspended at a length, L =5.2m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
-a) 2.70E+01 N
+b) 3.27E+01 N
-c) 3.96E+01 N
-d) 4.79E+01 N
-e) 5.81E+01 N
=====*_Rendition_* 5-4=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.8m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 26 degrees above the horizontal. An object of mass, M =   8.5kg is suspended at a length, L =6.1m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
-a) 1.46E+01 N
-b) 1.77E+01 N
-c) 2.14E+01 N
-d) 2.60E+01 N
+e) 3.15E+01 N
=====*_Rendition_* 5-5=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 7.7m is

attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 28.6 degrees above the horizontal. An object of mass, M =   6.2kg is suspended at a length, L =4.2m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
-a) 2.28E+01 N
+b) 2.76E+01 N
-c) 3.35E+01 N
-d) 4.05E+01 N
-e) 4.91E+01 N
=====*_Rendition_* 5-6=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 7.7m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 33.2 degrees above the horizontal. An object of mass, M =   8.2kg is suspended at a length, L =5.7m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
+a) 2.09E+01 N
-b) 2.53E+01 N
-c) 3.06E+01 N
-d) 3.71E+01 N
-e) 4.50E+01 N
=====*_Rendition_* 5-7=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.4m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 31.9 degrees above the horizontal. An object of mass, M =   5.7kg is suspended at a length, L =6.4m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
-a) 1.47E+01 N
+b) 1.78E+01 N
-c) 2.16E+01 N
-d) 2.62E+01 N
-e) 3.17E+01 N
=====*_Rendition_* 5-8=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.4m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 32.6 degrees above the horizontal. An object of mass, M =   5.2kg is suspended at a length, L =5.6m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
-a) 1.40E+01 N
+b) 1.70E+01 N
-c) 2.06E+01 N
-d) 2.49E+01 N

-e) 3.02E+01 N
=====*_Rendition_* 5-9=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.1m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 30.3 degrees above the horizontal. An object of mass, M = 5.8kg is suspended at a length, L =6.5m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
+a) 1.62E+01 N
-b) 1.97E+01 N
-c) 2.38E+01 N
-d) 2.89E+01 N
-e) 3.50E+01 N
=====*_Rendition_* 5-10=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.5m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 36 degrees above the horizontal. An object of mass, M = 7.4kg is suspended at a length, L =5.6m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
-a) 2.04E+01 N
+b) 2.47E+01 N
-c) 3.00E+01 N
-d) 3.63E+01 N
-e) 4.40E+01 N
=====*_Rendition_* 5-11=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 31.7 degrees above the horizontal. An object of mass, M = 9.8kg is suspended at a length, L =5.7m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
+a) 3.52E+01 N
-b) 4.27E+01 N
-c) 5.17E+01 N
-d) 6.26E+01 N
-e) 7.59E+01 N
=====*_Rendition_* 5-12=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 7.8m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 31.4 degrees above the horizontal. An object of mass, M = 5.7kg is suspended at a length, L =6.4m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?

-a) 6.83E+00 N
-b) 8.28E+00 N
+c) 1.00E+01 N
-d) 1.21E+01 N
-e) 1.47E+01 N
=====*_Rendition_* 5-13=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 7.8m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 30 degrees above the horizontal. An object of mass, M =   6.4kg is suspended at a length, L =6.5m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
+a) 1.05E+01 N
-b) 1.27E+01 N
-c) 1.53E+01 N
-d) 1.86E+01 N
-e) 2.25E+01 N
=====*_Rendition_* 5-14=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.6m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 35 degrees above the horizontal. An object of mass, M =   5.1kg is suspended at a length, L =5.5m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
+a) 2.13E+01 N
-b) 2.59E+01 N
-c) 3.13E+01 N
-d) 3.80E+01 N
-e) 4.60E+01 N
=====*_Rendition_* 5-15=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 7.5m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 32.7 degrees above the horizontal. An object of mass, M =   8.5kg is suspended at a length, L =5.1m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
-a) 1.82E+01 N
-b) 2.20E+01 N
+c) 2.67E+01 N
-d) 3.23E+01 N
-e) 3.91E+01 N
=====*_Rendition_* 5-16=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.4m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ =

33.4 degrees above the horizontal. An object of mass, M = 3.5kg is suspended at a length, L =5.6m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
-a) 9.45E+00 N
-b) 1.14E+01 N
+c) 1.39E+01 N
-d) 1.68E+01 N
-e) 2.04E+01 N
=====*_Rendition_* 5-17=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 7.8m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 29.1 degrees above the horizontal. An object of mass, M = 4kg is suspended at a length, L =5.5m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
-a) 6.50E+00 N
-b) 7.88E+00 N
-c) 9.54E+00 N
+d) 1.16E+01 N
-e) 1.40E+01 N
=====*_Rendition_* 5-18=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.9m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 32.4 degrees above the horizontal. An object of mass, M = 7kg is suspended at a length, L =6.2m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
-a) 1.17E+01 N
-b) 1.42E+01 N
-c) 1.72E+01 N
+d) 2.08E+01 N
-e) 2.52E+01 N
=====*_Rendition_* 5-19=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.8m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 36.7 degrees above the horizontal. An object of mass, M = 4.7kg is suspended at a length, L =4.4m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
-a) 1.18E+01 N
-b) 1.43E+01 N
-c) 1.73E+01 N
-d) 2.09E+01 N
+e) 2.54E+01 N
=====*_Rendition_* 5-20=====

<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.2m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 30.9 degrees above the horizontal. An object of mass, M =   3.6kg is suspended at a length, L =4.9m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
-a) 1.12E+01 N
-b) 1.36E+01 N
+c) 1.65E+01 N
-d) 2.00E+01 N
-e) 2.42E+01 N
=====*_Rendition_* 5-21=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.6m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 35.8 degrees above the horizontal. An object of mass, M =   7.3kg is suspended at a length, L =4.4m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
-a) 1.96E+01 N
-b) 2.38E+01 N
-c) 2.88E+01 N
+d) 3.49E+01 N
-e) 4.23E+01 N
=====*_Rendition_* 5-22=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.9m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 26 degrees above the horizontal. An object of mass, M =   9.1kg is suspended at a length, L =5.6m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
-a) 3.20E+01 N
+b) 3.87E+01 N
-c) 4.69E+01 N
-d) 5.69E+01 N
-e) 6.89E+01 N
=====*_Rendition_* 5-23=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 7.3m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 27.3 degrees above the horizontal. An object of mass, M =   9.1kg is suspended at a length, L =5.3m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
+a) 2.44E+01 N
-b) 2.96E+01 N

-c) 3.59E+01 N
-d) 4.34E+01 N
-e) 5.26E+01 N
=====*_Rendition_* 5-24=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.6m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 35.4 degrees above the horizontal. An object of mass, M =   9.1kg is suspended at a length, L =4.7m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
-a) 3.34E+01 N
+b) 4.04E+01 N
-c) 4.90E+01 N
-d) 5.94E+01 N
-e) 7.19E+01 N
=====*_Rendition_* 5-25=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 7.7m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 30.4 degrees above the horizontal. An object of mass, M =   4.3kg is suspended at a length, L =4.1m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
-a) 1.34E+01 N
-b) 1.63E+01 N
+c) 1.97E+01 N
-d) 2.39E+01 N
-e) 2.89E+01 N
=====*_Rendition_* 5-26=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.4m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 31.1 degrees above the horizontal. An object of mass, M =   8.4kg is suspended at a length, L =6.1m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
-a) 1.54E+01 N
-b) 1.86E+01 N
+c) 2.25E+01 N
-d) 2.73E+01 N
-e) 3.31E+01 N
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====*_Instructions_*====
Instructions are forthcoming

Transclusion from [[Quizbank/Instructions_0]]:
{{:Quizbank/Instructions_0}}
[[Category:QB/Numerical]]

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{<!--a10rotationalMotionAngMom_dynamics_1-->A car with a tire radius
of 0.26 m accelerates from 0 to 36 m/s in 6.8 seconds.  What is the
angular acceleration of the wheel?}
-a) 1.15 x 10<sup>1</sup> m
-b) 1.39 x 10<sup>1</sup> m
-c) 1.68 x 10<sup>1</sup> m
+d) 2.04 x 10<sup>1</sup> m
-e) 2.47 x 10<sup>1</sup> m

{<!--a10rotationalMotionAngMom_dynamics_2-->A lead filled bicycle
wheel of radius 0.57 m and mass 2.2 kg is rotating at a frequency of
1.7 revolutions per second.  What is the moment of inertia?}
-a) 4.02 x 10<sup>-1</sup> kg m<sup>2</sup>/s<sup>2</sup>
-b) 4.87 x 10<sup>-1</sup> kg m<sup>2</sup>/s<sup>2</sup>
-c) 5.9 x 10<sup>-1</sup> kg m<sup>2</sup>/s<sup>2</sup>
+d) 7.15 x 10<sup>-1</sup> kg m<sup>2</sup>/s<sup>2</sup>
-e) 8.66 x 10<sup>-1</sup> kg m<sup>2</sup>/s<sup>2</sup>

{<!--a10rotationalMotionAngMom_dynamics_3-->A lead filled bicycle
wheel of radius 0.57 m and mass 2.2 kg is rotating at a frequency of
1.7 revolutions per second.  What is the total kinetic energy if the
wheel is rotating about a stationary axis?}
-a) 1.99 x 10<sup>1</sup> J
-b) 2.29 x 10<sup>1</sup> J
-c) 2.76 x 10<sup>1</sup> J
-d) 3.43 x 10<sup>1</sup> J
+e) 4.08 x 10<sup>1</sup> J

{<!--a10rotationalMotionAngMom_dynamics_4-->[[File:Yo yo moment of
```

inertia.jpg|right|280px]]The moment of inertia of a solid disk of mass, M, and radius, R, is ½ MR². Two identical disks, each with mass 3.8 kg are attached. The larger disk has a diameter of 0.9 m, and the smaller disk has a diameter of 0.46 m. If a force of 76 N is applied at the rim of the smaller disk, what is the angular acceleration?}
-a) 2.03 x 10¹ s⁻²
-b) 2.45 x 10¹ s⁻²
-c) 2.97 x 10¹ s⁻²
+d) 3.6 x 10¹ s⁻²
-e) 4.36 x 10¹ s⁻²

</quiz>

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Other renditions
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====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a10rotationalMotionAngMom_dynamics_1-->A car with a tire radius of 0.26 m accelerates from 0 to 27 m/s in 9.5 seconds. What is the angular acceleration of the wheel?
+a) 1.09 x 10¹ m
-b) 1.32 x 10¹ m
-c) 1.6 x 10¹ m
-d) 1.94 x 10¹ m
-e) 2.36 x 10¹ m
=====*_Rendition_* 1-3=====
<!--a10rotationalMotionAngMom_dynamics_1-->A car with a tire radius of 0.35 m accelerates from 0 to 32 m/s in 8.8 seconds. What is the angular acceleration of the wheel?
-a) 5.84 x 10⁰ m
-b) 7.08 x 10⁰ m
-c) 8.58 x 10⁰ m
+d) 1.04 x 10¹ m
-e) 1.26 x 10¹ m
=====*_Rendition_* 1-4=====
<!--a10rotationalMotionAngMom_dynamics_1-->A car with a tire radius of 0.34 m accelerates from 0 to 25 m/s in 9.2 seconds. What is the angular acceleration of the wheel?
-a) 5.45 x 10⁰ m
-b) 6.6 x 10⁰ m
+c) 7.99 x 10⁰ m
-d) 9.68 x 10⁰ m
-e) 1.17 x 10¹ m
=====*_Rendition_* 1-5=====
<!--a10rotationalMotionAngMom_dynamics_1-->A car with a tire radius of 0.31 m accelerates from 0 to 39 m/s in 9.3 seconds. What is the angular acceleration of the wheel?

-a) 1.12 x 10¹ m
+b) 1.35 x 10¹ m
-c) 1.64 x 10¹ m
-d) 1.99 x 10¹ m
-e) 2.41 x 10¹ m
=====*_Rendition_* 1-6=====
<!--a10rotationalMotionAngMom_dynamics_1-->A car with a tire radius of 0.21 m accelerates from 0 to 26 m/s in 11.1 seconds. What is the angular acceleration of the wheel?
-a) 9.21 x 10⁰ m
+b) 1.12 x 10¹ m
-c) 1.35 x 10¹ m
-d) 1.64 x 10¹ m
-e) 1.98 x 10¹ m
=====*_Rendition_* 1-7=====
<!--a10rotationalMotionAngMom_dynamics_1-->A car with a tire radius of 0.24 m accelerates from 0 to 33 m/s in 8.5 seconds. What is the angular acceleration of the wheel?
-a) 1.34 x 10¹ m
+b) 1.62 x 10¹ m
-c) 1.96 x 10¹ m
-d) 2.37 x 10¹ m
-e) 2.88 x 10¹ m
=====*_Rendition_* 1-8=====
<!--a10rotationalMotionAngMom_dynamics_1-->A car with a tire radius of 0.21 m accelerates from 0 to 26 m/s in 9.1 seconds. What is the angular acceleration of the wheel?
-a) 7.65 x 10⁰ m
-b) 9.27 x 10⁰ m
-c) 1.12 x 10¹ m
+d) 1.36 x 10¹ m
-e) 1.65 x 10¹ m
=====*_Rendition_* 1-9=====
<!--a10rotationalMotionAngMom_dynamics_1-->A car with a tire radius of 0.28 m accelerates from 0 to 22 m/s in 10 seconds. What is the angular acceleration of the wheel?
-a) 5.35 x 10⁰ m
-b) 6.49 x 10⁰ m
+c) 7.86 x 10⁰ m
-d) 9.52 x 10⁰ m
-e) 1.15 x 10¹ m
=====*_Rendition_* 1-10=====
<!--a10rotationalMotionAngMom_dynamics_1-->A car with a tire radius of 0.23 m accelerates from 0 to 31 m/s in 11.3 seconds. What is the angular acceleration of the wheel?
-a) 9.85 x 10⁰ m
+b) 1.19 x 10¹ m
-c) 1.45 x 10¹ m
-d) 1.75 x 10¹ m
-e) 2.12 x 10¹ m
=====*_Rendition_* 1-11=====
<!--a10rotationalMotionAngMom_dynamics_1-->A car with a tire radius of

0.21 m accelerates from 0 to 29 m/s in 11 seconds. What is the angular acceleration of the wheel?
+a) 1.26 x 10¹ m
-b) 1.52 x 10¹ m
-c) 1.84 x 10¹ m
-d) 2.23 x 10¹ m
-e) 2.7 x 10¹ m
=====*_Rendition_* 1-12=====
<!--a10rotationalMotionAngMom_dynamics_1-->A car with a tire radius of 0.23 m accelerates from 0 to 23 m/s in 10.5 seconds. What is the angular acceleration of the wheel?
+a) 9.52 x 10⁰ m
-b) 1.15 x 10¹ m
-c) 1.4 x 10¹ m
-d) 1.69 x 10¹ m
-e) 2.05 x 10¹ m
=====*_Rendition_* 1-13=====
<!--a10rotationalMotionAngMom_dynamics_1-->A car with a tire radius of 0.37 m accelerates from 0 to 28 m/s in 11.9 seconds. What is the angular acceleration of the wheel?
+a) 6.36 x 10⁰ m
-b) 7.7 x 10⁰ m
-c) 9.33 x 10⁰ m
-d) 1.13 x 10¹ m
-e) 1.37 x 10¹ m
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a10rotationalMotionAngMom_dynamics_2-->A lead filled bicycle wheel of radius 0.47 m and mass 2.2 kg is rotating at a frequency of 1.9 revolutions per second. What is the moment of inertia?
-a) 3.31 x 10⁻¹ kg m²/s²
-b) 4.01 x 10⁻¹ kg m²/s²
+c) 4.86 x 10⁻¹ kg m²/s²
-d) 5.89 x 10⁻¹ kg m²/s²
-e) 7.13 x 10⁻¹ kg m²/s²
=====*_Rendition_* 2-3=====
<!--a10rotationalMotionAngMom_dynamics_2-->A lead filled bicycle wheel of radius 0.33 m and mass 2.2 kg is rotating at a frequency of 1.3 revolutions per second. What is the moment of inertia?
+a) 2.4 x 10⁻¹ kg m²/s²
-b) 2.9 x 10⁻¹ kg m²/s²
-c) 3.52 x 10⁻¹ kg m²/s²
-d) 4.26 x 10⁻¹ kg m²/s²
-e) 5.16 x 10⁻¹ kg m²/s²
=====*_Rendition_* 2-4=====
<!--a10rotationalMotionAngMom_dynamics_2-->A lead filled bicycle wheel of radius 0.37 m and mass 2.3 kg is rotating at a frequency of 1.6 revolutions per second. What is the moment of inertia?
+a) 3.15 x 10⁻¹ kg m²/s²
-b) 3.81 x 10⁻¹ kg m²/s²
-c) 4.62 x 10⁻¹ kg m²/s²
-d) 5.6 x 10⁻¹ kg m²/s²

-e) 6.78 x 10⁻¹ kg m²/s²
=====*_Rendition_* 2-5=====
<!--a10rotationalMotionAngMom_dynamics_2-->A lead filled bicycle wheel of radius 0.35 m and mass 2.7 kg is rotating at a frequency of 1.5 revolutions per second. What is the moment of inertia?
-a) 2.25 x 10⁻¹ kg m²/s²
-b) 2.73 x 10⁻¹ kg m²/s²
+c) 3.31 x 10⁻¹ kg m²/s²
-d) 4.01 x 10⁻¹ kg m²/s²
-e) 4.85 x 10⁻¹ kg m²/s²
=====*_Rendition_* 2-6=====
<!--a10rotationalMotionAngMom_dynamics_2-->A lead filled bicycle wheel of radius 0.56 m and mass 2.9 kg is rotating at a frequency of 1.6 revolutions per second. What is the moment of inertia?
-a) 7.51 x 10⁻¹ kg m²/s²
+b) 9.09 x 10⁻¹ kg m²/s²
-c) 1.1 x 10⁰ kg m²/s²
-d) 1.33 x 10⁰ kg m²/s²
-e) 1.62 x 10⁰ kg m²/s²
=====*_Rendition_* 2-7=====
<!--a10rotationalMotionAngMom_dynamics_2-->A lead filled bicycle wheel of radius 0.43 m and mass 2.2 kg is rotating at a frequency of 1.1 revolutions per second. What is the moment of inertia?
-a) 1.89 x 10⁻¹ kg m²/s²
-b) 2.29 x 10⁻¹ kg m²/s²
-c) 2.77 x 10⁻¹ kg m²/s²
-d) 3.36 x 10⁻¹ kg m²/s²
+e) 4.07 x 10⁻¹ kg m²/s²
=====*_Rendition_* 2-8=====
<!--a10rotationalMotionAngMom_dynamics_2-->A lead filled bicycle wheel of radius 0.35 m and mass 2.3 kg is rotating at a frequency of 1.1 revolutions per second. What is the moment of inertia?
+a) 2.82 x 10⁻¹ kg m²/s²
-b) 3.41 x 10⁻¹ kg m²/s²
-c) 4.14 x 10⁻¹ kg m²/s²
-d) 5.01 x 10⁻¹ kg m²/s²
-e) 6.07 x 10⁻¹ kg m²/s²
=====*_Rendition_* 2-9=====
<!--a10rotationalMotionAngMom_dynamics_2-->A lead filled bicycle wheel of radius 0.38 m and mass 2.8 kg is rotating at a frequency of 1.7 revolutions per second. What is the moment of inertia?
-a) 3.34 x 10⁻¹ kg m²/s²
+b) 4.04 x 10⁻¹ kg m²/s²
-c) 4.9 x 10⁻¹ kg m²/s²
-d) 5.93 x 10⁻¹ kg m²/s²
-e) 7.19 x 10⁻¹ kg m²/s²
=====*_Rendition_* 2-10=====
<!--a10rotationalMotionAngMom_dynamics_2-->A lead filled bicycle wheel of radius 0.37 m and mass 2.1 kg is rotating at a frequency of 1.4 revolutions per second. What is the moment of inertia?
+a) 2.87 x 10⁻¹ kg m²/s²
-b) 3.48 x 10⁻¹ kg m²/s²

-c) 4.22 x 10⁻¹ kg m²/s²
-d) 5.11 x 10⁻¹ kg m²/s²
-e) 6.19 x 10⁻¹ kg m²/s²
=====*_Rendition_* 2-11=====
<!--a10rotationalMotionAngMom_dynamics_2-->A lead filled bicycle wheel of radius 0.58 m and mass 2.8 kg is rotating at a frequency of 1.8 revolutions per second. What is the moment of inertia?
+a) 9.42 x 10⁻¹ kg m²/s²
-b) 1.14 x 10⁰ kg m²/s²
-c) 1.38 x 10⁰ kg m²/s²
-d) 1.67 x 10⁰ kg m²/s²
-e) 2.03 x 10⁰ kg m²/s²
=====*_Rendition_* 2-12=====
<!--a10rotationalMotionAngMom_dynamics_2-->A lead filled bicycle wheel of radius 0.41 m and mass 2.9 kg is rotating at a frequency of 1.7 revolutions per second. What is the moment of inertia?
-a) 4.02 x 10⁻¹ kg m²/s²
+b) 4.87 x 10⁻¹ kg m²/s²
-c) 5.91 x 10⁻¹ kg m²/s²
-d) 7.16 x 10⁻¹ kg m²/s²
-e) 8.67 x 10⁻¹ kg m²/s²
=====*_Rendition_* 2-13=====
<!--a10rotationalMotionAngMom_dynamics_2-->A lead filled bicycle wheel of radius 0.4 m and mass 2.7 kg is rotating at a frequency of 1.6 revolutions per second. What is the moment of inertia?
+a) 4.32 x 10⁻¹ kg m²/s²
-b) 5.23 x 10⁻¹ kg m²/s²
-c) 6.34 x 10⁻¹ kg m²/s²
-d) 7.68 x 10⁻¹ kg m²/s²
-e) 9.31 x 10⁻¹ kg m²/s²
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a10rotationalMotionAngMom_dynamics_3-->A lead filled bicycle wheel of radius 0.47 m and mass 2.2 kg is rotating at a frequency of 1.9 revolutions per second. What is the total kinetic energy if the wheel is rotating about a stationary axis?
+a) 3.46 x 10¹ J
-b) 4.2 x 10¹ J
-c) 5.08 x 10¹ J
-d) 6.16 x 10¹ J
-e) 7.46 x 10¹ J
=====*_Rendition_* 3-3=====
<!--a10rotationalMotionAngMom_dynamics_3-->A lead filled bicycle wheel of radius 0.33 m and mass 2.2 kg is rotating at a frequency of 1.3 revolutions per second. What is the total kinetic if the wheel is rotating about a stationary axis?
-a) 6.6 x 10⁰ J
+b) 7.99 x 10⁰ J
-c) 9.68 x 10⁰ J
-d) 1.17 x 10¹ J
-e) 1.42 x 10¹ J
=====*_Rendition_* 3-4=====

<!--a10rotationalMotionAngMom_dynamics_3-->A lead filled bicycle wheel of radius 0.37 m and mass 2.3 kg is rotating at a frequency of 1.6 revolutions per second. What is the total kinetic energy if the wheel is rotating about a stationary axis?
-a) 7.39 x 10⁰ J
-b) 8.95 x 10⁰ J
-c) 1.08 x 10¹ J
-d) 1.31 x 10¹ J
+e) 1.59 x 10¹ J
=====*_Rendition_* 3-5=====
<!--a10rotationalMotionAngMom_dynamics_3-->A lead filled bicycle wheel of radius 0.35 m and mass 2.7 kg is rotating at a frequency of 1.5 revolutions per second. What is the total kinetic energy if the wheel is rotating about a stationary axis?
-a) 8.26 x 10⁰ J
-b) 1 x 10¹ J
-c) 1.21 x 10¹ J
+d) 1.47 x 10¹ J
-e) 1.78 x 10¹ J
=====*_Rendition_* 3-6=====
<!--a10rotationalMotionAngMom_dynamics_3-->A lead filled bicycle wheel of radius 0.56 m and mass 2.9 kg is rotating at a frequency of 1.6 revolutions per second. What is the total kinetic energy if the wheel is rotating about a stationary axis?
-a) 3.79 x 10¹ J
+b) 4.6 x 10¹ J
-c) 5.57 x 10¹ J
-d) 6.75 x 10¹ J
-e) 8.17 x 10¹ J
=====*_Rendition_* 3-7=====
<!--a10rotationalMotionAngMom_dynamics_3-->A lead filled bicycle wheel of radius 0.43 m and mass 2.2 kg is rotating at a frequency of 1.1 revolutions per second. What is the total kinetic energy if the wheel is rotating about a stationary axis?
-a) 4.51 x 10⁰ J
-b) 5.46 x 10⁰ J
-c) 6.62 x 10⁰ J
-d) 8.02 x 10⁰ J
+e) 9.72 x 10⁰ J
=====*_Rendition_* 3-8=====
<!--a10rotationalMotionAngMom_dynamics_3-->A lead filled bicycle wheel of radius 0.35 m and mass 2.3 kg is rotating at a frequency of 1.1 revolutions per second. What is the total kinetic energy if the wheel is rotating about a stationary axis?
-a) 3.78 x 10⁰ J
-b) 4.58 x 10⁰ J
-c) 5.55 x 10⁰ J
+d) 6.73 x 10⁰ J
-e) 8.15 x 10⁰ J
=====*_Rendition_* 3-9=====
<!--a10rotationalMotionAngMom_dynamics_3-->A lead filled bicycle wheel of radius 0.38 m and mass 2.8 kg is rotating at a frequency of 1.7

revolutions per second. What is the total kinetic energy if the wheel is rotating about a stationary axis?
-a) 1.07 x 10¹ J
-b) 1.3 x 10¹ J
-c) 1.57 x 10¹ J
-d) 1.9 x 10¹ J
+e) 2.31 x 10¹ J
=====*_Rendition_* 3-10=====
<!--a10rotationalMotionAngMom_dynamics_3-->A lead filled bicycle wheel of radius 0.37 m and mass 2.1 kg is rotating at a frequency of 1.4 revolutions per second. What is the total kinetic energy if the wheel is rotating about a stationary axis?
-a) 5.16 x 10⁰ J
-b) 6.25 x 10⁰ J
-c) 7.58 x 10⁰ J
-d) 9.18 x 10⁰ J
+e) 1.11 x 10¹ J
=====*_Rendition_* 3-11=====
<!--a10rotationalMotionAngMom_dynamics_3-->A lead filled bicycle wheel of radius 0.58 m and mass 2.8 kg is rotating at a frequency of 1.8 revolutions per second. What is the total kinetic energy if the wheel is rolling about a stationary axis?
-a) 3.39 x 10¹ J
-b) 4.1 x 10¹ J
-c) 4.97 x 10¹ J
+d) 6.02 x 10¹ J
-e) 7.3 x 10¹ J
=====*_Rendition_* 3-12=====
<!--a10rotationalMotionAngMom_dynamics_3-->A lead filled bicycle wheel of radius 0.41 m and mass 2.9 kg is rotating at a frequency of 1.7 revolutions per second. What is the total kinetic energy if the wheel is rolling about a stationary axis?
+a) 2.78 x 10¹ J
-b) 3.37 x 10¹ J
-c) 4.08 x 10¹ J
-d) 4.95 x 10¹ J
-e) 5.99 x 10¹ J
=====*_Rendition_* 3-13=====
<!--a10rotationalMotionAngMom_dynamics_3-->A lead filled bicycle wheel of radius 0.4 m and mass 2.7 kg is rotating at a frequency of 1.6 revolutions per second. What is the total kinetic energy if the wheel is rolling about a stationary axis?
-a) 1.23 x 10¹ J
-b) 1.49 x 10¹ J
-c) 1.8 x 10¹ J
+d) 2.18 x 10¹ J
-e) 2.64 x 10¹ J
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a10rotationalMotionAngMom_dynamics_4-->[[File:Yo yo moment of inertia.jpg|right|280px]]The moment of inertia of a solid disk of mass, M, and radius, R, is ½ MR². Two identical disks,

each with mass 2.7 kg are attached. The larger disk has a diameter of 0.87 m, and the smaller disk has a diameter of 0.45 m. If a force of 55 N is applied at the rim of the smaller disk, what is the angular acceleration?
-a) 2.6 x 10¹ s⁻²
-b) 3.15 x 10¹ s⁻²
+c) 3.82 x 10¹ s⁻²
-d) 4.63 x 10¹ s⁻²
-e) 5.61 x 10¹ s⁻²
=====*_Rendition_* 4-3=====
<!--a10rotationalMotionAngMom_dynamics_4-->[[File:Yo yo moment of inertia.jpg|right|280px]]The moment of inertia of a solid disk of mass, M, and radius, R, is ½ MR². Two identical disks, each with mass 3.6 kg are attached. The larger disk has a diameter of 0.71 m, and the smaller disk has a diameter of 0.32 m. If a force of 13 N is applied at the rim of the smaller disk, what is the angular acceleration?
-a) 5.19 x 10⁰ s⁻²
-b) 6.29 x 10⁰ s⁻²
+c) 7.62 x 10⁰ s⁻²
-d) 9.23 x 10⁰ s⁻²
-e) 1.12 x 10¹ s⁻²
=====*_Rendition_* 4-4=====
<!--a10rotationalMotionAngMom_dynamics_4-->[[File:Yo yo moment of inertia.jpg|right|280px]]The moment of inertia of a solid disk of mass, M, and radius, R, is ½ MR². Two identical disks, each with mass 4.7 kg are attached. The larger disk has a diameter of 0.81 m, and the smaller disk has a diameter of 0.44 m. If a force of 97 N is applied at the rim of the smaller disk, what is the angular acceleration?
+a) 4.27 x 10¹ s⁻²
-b) 5.18 x 10¹ s⁻²
-c) 6.27 x 10¹ s⁻²
-d) 7.6 x 10¹ s⁻²
-e) 9.21 x 10¹ s⁻²
=====*_Rendition_* 4-5=====
<!--a10rotationalMotionAngMom_dynamics_4-->[[File:Yo yo moment of inertia.jpg|right|280px]]The moment of inertia of a solid disk of mass, M, and radius, R, is ½ MR². Two identical disks, each with mass 3.4 kg are attached. The larger disk has a diameter of 0.91 m, and the smaller disk has a diameter of 0.56 m. If a force of 35 N is applied at the rim of the smaller disk, what is the angular acceleration?
-a) 9.37 x 10⁰ s⁻²
-b) 1.14 x 10¹ s⁻²
-c) 1.38 x 10¹ s⁻²
-d) 1.67 x 10¹ s⁻²
+e) 2.02 x 10¹ s⁻²
=====*_Rendition_* 4-6=====
<!--a10rotationalMotionAngMom_dynamics_4-->[[File:Yo yo moment of inertia.jpg|right|280px]]The moment of inertia of a solid disk of mass, M, and radius, R, is ½ MR². Two identical disks,

each with mass 9.3 kg are attached. The larger disk has a diameter of 0.83 m, and the smaller disk has a diameter of 0.46 m. If a force of 96 N is applied at the rim of the smaller disk, what is the angular acceleration?
-a) 9.79 x 10⁰ s⁻²
-b) 1.19 x 10¹ s⁻²
-c) 1.44 x 10¹ s⁻²
-d) 1.74 x 10¹ s⁻²
+e) 2.11 x 10¹ s⁻²
=====*_Rendition_* 4-7=====
<!--a10rotationalMotionAngMom_dynamics_4-->[[File:Yo yo moment of inertia.jpg|right|280px]]The moment of inertia of a solid disk of mass, M, and radius, R, is ½ MR². Two identical disks, each with mass 3 kg are attached. The larger disk has a diameter of 0.92 m, and the smaller disk has a diameter of 0.48 m. If a force of 70 N is applied at the rim of the smaller disk, what is the angular acceleration?
-a) 2.83 x 10¹ s⁻²
-b) 3.43 x 10¹ s⁻²
+c) 4.16 x 10¹ s⁻²
-d) 5.04 x 10¹ s⁻²
-e) 6.11 x 10¹ s⁻²
=====*_Rendition_* 4-8=====
<!--a10rotationalMotionAngMom_dynamics_4-->[[File:Yo yo moment of inertia.jpg|right|280px]]The moment of inertia of a solid disk of mass, M, and radius, R, is ½ MR². Two identical disks, each with mass 5.2 kg are attached. The larger disk has a diameter of 0.92 m, and the smaller disk has a diameter of 0.47 m. If a force of 53 N is applied at the rim of the smaller disk, what is the angular acceleration?
-a) 1.48 x 10¹ s⁻²
+b) 1.8 x 10¹ s⁻²
-c) 2.18 x 10¹ s⁻²
-d) 2.64 x 10¹ s⁻²
-e) 3.19 x 10¹ s⁻²
=====*_Rendition_* 4-9=====
<!--a10rotationalMotionAngMom_dynamics_4-->[[File:Yo yo moment of inertia.jpg|right|280px]]The moment of inertia of a solid disk of mass, M, and radius, R, is ½ MR². Two identical disks, each with mass 9.7 kg are attached. The larger disk has a diameter of 0.83 m, and the smaller disk has a diameter of 0.41 m. If a force of 31 N is applied at the rim of the smaller disk, what is the angular acceleration?
-a) 3.44 x 10⁰ s⁻²
-b) 4.17 x 10⁰ s⁻²
-c) 5.05 x 10⁰ s⁻²
+d) 6.12 x 10⁰ s⁻²
-e) 7.41 x 10⁰ s⁻²
=====*_Rendition_* 4-10=====
<!--a10rotationalMotionAngMom_dynamics_4-->[[File:Yo yo moment of inertia.jpg|right|280px]]The moment of inertia of a solid disk of mass, M, and radius, R, is ½ MR². Two identical disks,

each with mass 1.8 kg are attached. The larger disk has a diameter of 0.85 m, and the smaller disk has a diameter of 0.44 m. If a force of 14 N is applied at the rim of the smaller disk, what is the angular acceleration?
-a) 8.4 x 10⁰ s⁻²
-b) 1.02 x 10¹ s⁻²
-c) 1.23 x 10¹ s⁻²
+d) 1.49 x 10¹ s⁻²
-e) 1.81 x 10¹ s⁻²
=====*_Rendition_* 4-11=====
<!--a10rotationalMotionAngMom_dynamics_4-->[[File:Yo yo moment of inertia.jpg|right|280px]]The moment of inertia of a solid disk of mass, M, and radius, R, is ½ MR². Two identical disks, each with mass 8.1 kg are attached. The larger disk has a diameter of 0.99 m, and the smaller disk has a diameter of 0.63 m. If a force of 87 N is applied at the rim of the smaller disk, what is the angular acceleration?
-a) 9.12 x 10⁰ s⁻²
-b) 1.11 x 10¹ s⁻²
-c) 1.34 x 10¹ s⁻²
-d) 1.62 x 10¹ s⁻²
+e) 1.97 x 10¹ s⁻²
=====*_Rendition_* 4-12=====
<!--a10rotationalMotionAngMom_dynamics_4-->[[File:Yo yo moment of inertia.jpg|right|280px]]The moment of inertia of a solid disk of mass, M, and radius, R, is ½ MR². Two identical disks, each with mass 3.9 kg are attached. The larger disk has a diameter of 0.9 m, and the smaller disk has a diameter of 0.46 m. If a force of 44 N is applied at the rim of the smaller disk, what is the angular acceleration?
-a) 9.43 x 10⁰ s⁻²
-b) 1.14 x 10¹ s⁻²
-c) 1.38 x 10¹ s⁻²
-d) 1.68 x 10¹ s⁻²
+e) 2.03 x 10¹ s⁻²
=====*_Rendition_* 4-13=====
<!--a10rotationalMotionAngMom_dynamics_4-->[[File:Yo yo moment of inertia.jpg|right|280px]]The moment of inertia of a solid disk of mass, M, and radius, R, is ½ MR². Two identical disks, each with mass 1.8 kg are attached. The larger disk has a diameter of 0.86 m, and the smaller disk has a diameter of 0.38 m. If a force of 31 N is applied at the rim of the smaller disk, what is the angular acceleration?
-a) 1.37 x 10¹ s⁻²
-b) 1.67 x 10¹ s⁻²
-c) 2.02 x 10¹ s⁻²
-d) 2.44 x 10¹ s⁻²
+e) 2.96 x 10¹ s⁻²
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====*_Instructions_*====
Instructions are forthcoming

Transclusion from [[Quizbank/Instructions_0]]:
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{<!--a11fluidStatics_buoyantForce_1-->A cylinder with a radius of 0.22 m and a length of 2.2 m is held so that the top circular face is 4.8 m below the water. The mass of the block is 826.0 kg. The mass density of water is 1000kg/m^3. What is the pressure at the top face of the cylinder?}
- 3.20E4 Pa
- 3.88E4 Pa
+ 4.70E4 Pa
- 5.70E4 Pa
- 6.90E4 Pa

{<!--a11fluidStatics_buoyantForce_2-->A cylinder with a radius of 0.22 m and a length of 2.2 m is held so that the top circular face is 4.8 m below the water. The mass of the block is 826.0 kg. The mass density of water is 1000kg/m^3. What is the buoyant force?}
- 2.71E3 N
+ 3.28E3 N
- 3.97E3 N
- 4.81E3 N
- 5.83E3 N

{<!--a11fluidStatics_buoyantForce_3-->A cylinder with a radius of 0.22 m and a length of 2.2 m is held so that the top circular face is 4.8 m below the water. The mass of the block is 826.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the water at the top surface?}

+ 7.15E3 N
- 9.00E3 N
- 1.13E4 N
- 1.43E4 N
- 1.80E4 N

{<!--a11fluidStatics_buoyantForce_4-->A cylinder with a radius of 0.22 m and a length of 2.2 m is held so that the top circular face is 4.8 m below the water. The mass of the block is 826.0 kg. The mass density of water is 1000kg/m^3. What,what is the force exerted by the fluid on the bottom of the cylinder?}
+ 1.04E4 Pa
- 1.31E4 Pa
- 1.65E4 Pa
- 2.08E4 Pa
- 2.62E4 Pa

</quiz>

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Other renditions
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====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a11fluidStatics_buoyantForce_1-->A cylinder with a radius of 0.25 m and a length of 2.5 m is held so that the top circular face is 4.2 m below the water. The mass of the block is 853.0 kg. The mass density of water is 1000kg/m^3. What is the pressure at the top face of the cylinder?
- 3.40E4 Pa
+ 4.12E4 Pa
- 4.99E4 Pa
- 6.04E4 Pa
- 7.32E4 Pa
=====*_Rendition_* 1-3=====
<!--a11fluidStatics_buoyantForce_1-->A cylinder with a radius of 0.38 m and a length of 2.2 m is held so that the top circular face is 3.8 m below the water. The mass of the block is 903.0 kg. The mass density of water is 1000kg/m^3. What is the pressure at the top face of the cylinder?
+ 3.72E4 Pa
- 4.51E4 Pa
- 5.47E4 Pa
- 6.62E4 Pa
- 8.02E4 Pa
=====*_Rendition_* 1-4=====
<!--a11fluidStatics_buoyantForce_1-->A cylinder with a radius of 0.38 m and a length of 3.6 m is held so that the top circular face is 4.2 m below the water. The mass of the block is 829.0 kg. The mass density

of water is 1000kg/m^3. What is the pressure at the top face of the cylinder?
- 3.40E4 Pa
+ 4.12E4 Pa
- 4.99E4 Pa
- 6.04E4 Pa
- 7.32E4 Pa
=====*_Rendition_* 1-5=====
<!--a11fluidStatics_buoyantForce_1-->A cylinder with a radius of 0.28 m and a length of 2.9 m is held so that the top circular face is 4.6 m below the water. The mass of the block is 880.0 kg. The mass density of water is 1000kg/m^3. What is the pressure at the top face of the cylinder?
- 2.54E4 Pa
- 3.07E4 Pa
- 3.72E4 Pa
+ 4.51E4 Pa
- 5.46E4 Pa
=====*_Rendition_* 1-6=====
<!--a11fluidStatics_buoyantForce_1-->A cylinder with a radius of 0.24 m and a length of 3.8 m is held so that the top circular face is 3.5 m below the water. The mass of the block is 853.0 kg. The mass density of water is 1000kg/m^3. What is the pressure at the top face of the cylinder?
- 2.83E4 Pa
+ 3.43E4 Pa
- 4.16E4 Pa
- 5.03E4 Pa
- 6.10E4 Pa
=====*_Rendition_* 1-7=====
<!--a11fluidStatics_buoyantForce_1-->A cylinder with a radius of 0.29 m and a length of 2.8 m is held so that the top circular face is 4.6 m below the water. The mass of the block is 952.0 kg. The mass density of water is 1000kg/m^3. What is the pressure at the top face of the cylinder?
- 3.07E4 Pa
- 3.72E4 Pa
+ 4.51E4 Pa
- 5.46E4 Pa
- 6.62E4 Pa
=====*_Rendition_* 1-8=====
<!--a11fluidStatics_buoyantForce_1-->A cylinder with a radius of 0.33 m and a length of 2.9 m is held so that the top circular face is 4.1 m below the water. The mass of the block is 912.0 kg. The mass density of water is 1000kg/m^3. What is the pressure at the top face of the cylinder?
- 2.26E4 Pa
- 2.74E4 Pa
- 3.32E4 Pa
+ 4.02E4 Pa
- 4.87E4 Pa
=====*_Rendition_* 1-9=====

<!--a11fluidStatics_buoyantForce_1-->A cylinder with a radius of 0.31 m and a length of 3.5 m is held so that the top circular face is 4.8 m below the water. The mass of the block is 933.0 kg. The mass density of water is 1000kg/m^3. What is the pressure at the top face of the cylinder?
- 3.88E4 Pa
+ 4.70E4 Pa
- 5.70E4 Pa
- 6.90E4 Pa
- 8.37E4 Pa
=====*_Rendition_* 1-10=====
<!--a11fluidStatics_buoyantForce_1-->A cylinder with a radius of 0.29 m and a length of 2.3 m is held so that the top circular face is 4.7 m below the water. The mass of the block is 968.0 kg. The mass density of water is 1000kg/m^3. What is the pressure at the top face of the cylinder?
- 2.59E4 Pa
- 3.14E4 Pa
- 3.80E4 Pa
+ 4.61E4 Pa
- 5.58E4 Pa
=====*_Rendition_* 1-11=====
<!--a11fluidStatics_buoyantForce_1-->A cylinder with a radius of 0.28 m and a length of 2.6 m is held so that the top circular face is 4.1 m below the water. The mass of the block is 831.0 kg. The mass density of water is 1000kg/m^3. What is the pressure at the top face of the cylinder?
- 2.74E4 Pa
- 3.32E4 Pa
+ 4.02E4 Pa
- 4.87E4 Pa
- 5.90E4 Pa
=====*_Rendition_* 1-12=====
<!--a11fluidStatics_buoyantForce_1-->A cylinder with a radius of 0.38 m and a length of 2.3 m is held so that the top circular face is 4.5 m below the water. The mass of the block is 909.0 kg. The mass density of water is 1000kg/m^3. What is the pressure at the top face of the cylinder?
- 2.48E4 Pa
- 3.00E4 Pa
- 3.64E4 Pa
+ 4.41E4 Pa
- 5.34E4 Pa
=====*_Rendition_* 1-13=====
<!--a11fluidStatics_buoyantForce_1-->A cylinder with a radius of 0.25 m and a length of 3.5 m is held so that the top circular face is 3.3 m below the water. The mass of the block is 922.0 kg. The mass density of water is 1000kg/m^3. What is the pressure at the top face of the cylinder?
+ 3.23E4 Pa
- 3.92E4 Pa
- 4.75E4 Pa

- 5.75E4 Pa
- 6.97E4 Pa
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a11fluidStatics_buoyantForce_2-->A cylinder with a radius of 0.25 m and a length of 2.5 m is held so that the top circular face is 4.2 m below the water. The mass of the block is 853.0 kg. The mass density of water is 1000kg/m^3. What is the buoyant force?
- 2.71E3 N
- 3.28E3 N
- 3.97E3 N
+ 4.81E3 N
- 5.83E3 N
=====*_Rendition_* 2-3=====
<!--a11fluidStatics_buoyantForce_2-->A cylinder with a radius of 0.38 m and a length of 2.2 m is held so that the top circular face is 3.8 m below the water. The mass of the block is 903.0 kg. The mass density of water is 1000kg/m^3. What is the buoyant force?
- 8.07E3 N
+ 9.78E3 N
- 1.18E4 N
- 1.44E4 N
- 1.74E4 N
=====*_Rendition_* 2-4=====
<!--a11fluidStatics_buoyantForce_2-->A cylinder with a radius of 0.38 m and a length of 3.6 m is held so that the top circular face is 4.2 m below the water. The mass of the block is 829.0 kg. The mass density of water is 1000kg/m^3. What is the buoyant force?
- 1.09E4 N
- 1.32E4 N
+ 1.60E4 N
- 1.94E4 N
- 2.35E4 N
=====*_Rendition_* 2-5=====
<!--a11fluidStatics_buoyantForce_2-->A cylinder with a radius of 0.28 m and a length of 2.9 m is held so that the top circular face is 4.6 m below the water. The mass of the block is 880.0 kg. The mass density of water is 1000kg/m^3. What is the buoyant force?
+ 7.00E3 N
- 8.48E3 N
- 1.03E4 N
- 1.24E4 N
- 1.51E4 N
=====*_Rendition_* 2-6=====
<!--a11fluidStatics_buoyantForce_2-->A cylinder with a radius of 0.24 m and a length of 3.8 m is held so that the top circular face is 3.5 m below the water. The mass of the block is 853.0 kg. The mass density of water is 1000kg/m^3. What is the buoyant force?
- 5.56E3 N
+ 6.74E3 N
- 8.16E3 N
- 9.89E3 N

- 1.20E4 N
=====*_Rendition_* 2-7=====
<!--a11fluidStatics_buoyantForce_2-->A cylinder with a radius of 0.29 m and a length of 2.8 m is held so that the top circular face is 4.6 m below the water. The mass of the block is 952.0 kg. The mass density of water is 1000kg/m^3. What is the buoyant force?
- 4.94E3 N
- 5.98E3 N
+ 7.25E3 N
- 8.78E3 N
- 1.06E4 N
=====*_Rendition_* 2-8=====
<!--a11fluidStatics_buoyantForce_2-->A cylinder with a radius of 0.33 m and a length of 2.9 m is held so that the top circular face is 4.1 m below the water. The mass of the block is 912.0 kg. The mass density of water is 1000kg/m^3. What is the buoyant force?
+ 9.72E3 N
- 1.18E4 N
- 1.43E4 N
- 1.73E4 N
- 2.09E4 N
=====*_Rendition_* 2-9=====
<!--a11fluidStatics_buoyantForce_2-->A cylinder with a radius of 0.31 m and a length of 3.5 m is held so that the top circular face is 4.8 m below the water. The mass of the block is 933.0 kg. The mass density of water is 1000kg/m^3. What is the buoyant force?
- 5.82E3 N
- 7.06E3 N
- 8.55E3 N
+ 1.04E4 N
- 1.25E4 N
=====*_Rendition_* 2-10=====
<!--a11fluidStatics_buoyantForce_2-->A cylinder with a radius of 0.29 m and a length of 2.3 m is held so that the top circular face is 4.7 m below the water. The mass of the block is 968.0 kg. The mass density of water is 1000kg/m^3. What is the buoyant force?
+ 5.96E3 N
- 7.21E3 N
- 8.74E3 N
- 1.06E4 N
- 1.28E4 N
=====*_Rendition_* 2-11=====
<!--a11fluidStatics_buoyantForce_2-->A cylinder with a radius of 0.28 m and a length of 2.6 m is held so that the top circular face is 4.1 m below the water. The mass of the block is 831.0 kg. The mass density of water is 1000kg/m^3. What is the buoyant force?
- 5.18E3 N
+ 6.28E3 N
- 7.60E3 N
- 9.21E3 N
- 1.12E4 N
=====*_Rendition_* 2-12=====

<!--a11fluidStatics_buoyantForce_2-->A cylinder with a radius of 0.38 m and a length of 2.3 m is held so that the top circular face is 4.5 m below the water. The mass of the block is 909.0 kg. The mass density of water is 1000kg/m^3. What is the buoyant force?
- 6.97E3 N
- 8.44E3 N
+ 1.02E4 N
- 1.24E4 N
- 1.50E4 N
=====*_Rendition_* 2-13=====
<!--a11fluidStatics_buoyantForce_2-->A cylinder with a radius of 0.25 m and a length of 3.5 m is held so that the top circular face is 3.3 m below the water. The mass of the block is 922.0 kg. The mass density of water is 1000kg/m^3. What is the buoyant force?
- 5.56E3 N
+ 6.73E3 N
- 8.16E3 N
- 9.89E3 N
- 1.20E4 N
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a11fluidStatics_buoyantForce_3-->A cylinder with a radius of 0.25 m and a length of 2.5 m is held so that the top circular face is 4.2 m below the water. The mass of the block is 853.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the water at the top surface?
+ 8.08E3 N
- 1.02E4 N
- 1.28E4 N
- 1.61E4 N
- 2.03E4 N
=====*_Rendition_* 3-3=====
<!--a11fluidStatics_buoyantForce_3-->A cylinder with a radius of 0.38 m and a length of 2.2 m is held so that the top circular face is 3.8 m below the water. The mass of the block is 903.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the water at the top surface?
- 1.07E4 N
- 1.34E4 N
+ 1.69E4 N
- 2.13E4 N
- 2.68E4 N
=====*_Rendition_* 3-4=====
<!--a11fluidStatics_buoyantForce_3-->A cylinder with a radius of 0.38 m and a length of 3.6 m is held so that the top circular face is 4.2 m below the water. The mass of the block is 829.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the water at the top surface?
- 1.48E4 N
+ 1.87E4 N
- 2.35E4 N
- 2.96E4 N

- 3.73E4 N
=====*_Rendition_* 3-5=====
<!--a11fluidStatics_buoyantForce_3-->A cylinder with a radius of 0.28 m and a length of 2.9 m is held so that the top circular face is 4.6 m below the water. The mass of the block is 880.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the water at the top surface?
+ 1.11E4 N
- 1.40E4 N
- 1.76E4 N
- 2.22E4 N
- 2.79E4 N
=====*_Rendition_* 3-6=====
<!--a11fluidStatics_buoyantForce_3-->A cylinder with a radius of 0.24 m and a length of 3.8 m is held so that the top circular face is 3.5 m below the water. The mass of the block is 853.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the water at the top surface?
- 3.11E3 N
- 3.92E3 N
- 4.93E3 N
+ 6.21E3 N
- 7.81E3 N
=====*_Rendition_* 3-7=====
<!--a11fluidStatics_buoyantForce_3-->A cylinder with a radius of 0.29 m and a length of 2.8 m is held so that the top circular face is 4.6 m below the water. The mass of the block is 952.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the water at the top surface?
+ 1.19E4 N
- 1.50E4 N
- 1.89E4 N
- 2.38E4 N
- 2.99E4 N
=====*_Rendition_* 3-8=====
<!--a11fluidStatics_buoyantForce_3-->A cylinder with a radius of 0.33 m and a length of 2.9 m is held so that the top circular face is 4.1 m below the water. The mass of the block is 912.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the water at the top surface?
- 6.89E3 N
- 8.67E3 N
- 1.09E4 N
+ 1.37E4 N
- 1.73E4 N
=====*_Rendition_* 3-9=====
<!--a11fluidStatics_buoyantForce_3-->A cylinder with a radius of 0.31 m and a length of 3.5 m is held so that the top circular face is 4.8 m below the water. The mass of the block is 933.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the water at the top surface?
- 7.12E3 N

- 8.96E3 N
- 1.13E4 N
+ 1.42E4 N
- 1.79E4 N
=====*_Rendition_* 3-10=====
<!--a11fluidStatics_buoyantForce_3-->A cylinder with a radius of 0.29 m and a length of 2.3 m is held so that the top circular face is 4.7 m below the water. The mass of the block is 968.0 kg. The mass density of water is 1000kg/m^3. What is what is the force exerted by the water at the top surface?
- 6.10E3 N
- 7.68E3 N
- 9.67E3 N
+ 1.22E4 N
- 1.53E4 N
=====*_Rendition_* 3-11=====
<!--a11fluidStatics_buoyantForce_3-->A cylinder with a radius of 0.28 m and a length of 2.6 m is held so that the top circular face is 4.1 m below the water. The mass of the block is 831.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the water at the top surface?
- 6.24E3 N
- 7.86E3 N
+ 9.90E3 N
- 1.25E4 N
- 1.57E4 N
=====*_Rendition_* 3-12=====
<!--a11fluidStatics_buoyantForce_3-->A cylinder with a radius of 0.38 m and a length of 2.3 m is held so that the top circular face is 4.5 m below the water. The mass of the block is 909.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the water at the top surface?
- 1.59E4 N
+ 2.00E4 N
- 2.52E4 N
- 3.17E4 N
- 3.99E4 N
=====*_Rendition_* 3-13=====
<!--a11fluidStatics_buoyantForce_3-->A cylinder with a radius of 0.25 m and a length of 3.5 m is held so that the top circular face is 3.3 m below the water. The mass of the block is 922.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the water at the top surface?
- 4.01E3 N
- 5.04E3 N
+ 6.35E3 N
- 7.99E3 N
- 1.01E4 N
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a11fluidStatics_buoyantForce_4-->A cylinder with a radius of 0.25 m and a length of 2.5 m is held so that the top circular face is 4.2 m

below the water. The mass of the block is 853.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the fluid on the bottom of the cylinder?
- 1.02E4 Pa
+ 1.29E4 Pa
- 1.62E4 Pa
- 2.04E4 Pa
- 2.57E4 Pa
=====*_Rendition_* 4-3=====
<!--a11fluidStatics_buoyantForce_4-->A cylinder with a radius of 0.38 m and a length of 2.2 m is held so that the top circular face is 3.8 m below the water. The mass of the block is 903.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the fluid on the bottom of the cylinder?
- 1.68E4 Pa
- 2.12E4 Pa
+ 2.67E4 Pa
- 3.36E4 Pa
- 4.23E4 Pa
=====*_Rendition_* 4-4=====
<!--a11fluidStatics_buoyantForce_4-->A cylinder with a radius of 0.38 m and a length of 3.6 m is held so that the top circular face is 4.2 m below the water. The mass of the block is 829.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the fluid on the bottom of the cylinder?
- 1.74E4 Pa
- 2.19E4 Pa
- 2.75E4 Pa
+ 3.47E4 Pa
- 4.37E4 Pa
=====*_Rendition_* 4-5=====
<!--a11fluidStatics_buoyantForce_4-->A cylinder with a radius of 0.28 m and a length of 2.9 m is held so that the top circular face is 4.6 m below the water. The mass of the block is 880.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the fluid on the bottom of the cylinder?
- 1.14E4 Pa
- 1.44E4 Pa
+ 1.81E4 Pa
- 2.28E4 Pa
- 2.87E4 Pa
=====*_Rendition_* 4-6=====
<!--a11fluidStatics_buoyantForce_4-->A cylinder with a radius of 0.24 m and a length of 3.8 m is held so that the top circular face is 3.5 m below the water. The mass of the block is 853.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the fluid on the bottom of the cylinder?
- 8.17E3 Pa
- 1.03E4 Pa
+ 1.29E4 Pa
- 1.63E4 Pa
- 2.05E4 Pa

=====*_Rendition_* 4-7=====
<!--a11fluidStatics_buoyantForce_4-->A cylinder with a radius of 0.29 m and a length of 2.8 m is held so that the top circular face is 4.6 m below the water. The mass of the block is 952.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the fluid on the bottom of the cylinder?
- 1.52E4 Pa
+ 1.92E4 Pa
- 2.41E4 Pa
- 3.04E4 Pa
- 3.82E4 Pa
=====*_Rendition_* 4-8=====
<!--a11fluidStatics_buoyantForce_4-->A cylinder with a radius of 0.33 m and a length of 2.9 m is held so that the top circular face is 4.1 m below the water. The mass of the block is 912.0 kg. The mass density of water is 1000kg/m^3. What is is the force exerted by the fluid on the bottom of the cylinder?
+ 2.35E4 Pa
- 2.95E4 Pa
- 3.72E4 Pa
- 4.68E4 Pa
- 5.90E4 Pa
=====*_Rendition_* 4-9=====
<!--a11fluidStatics_buoyantForce_4-->A cylinder with a radius of 0.31 m and a length of 3.5 m is held so that the top circular face is 4.8 m below the water. The mass of the block is 933.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the fluid on the bottom of the cylinder?
- 1.95E4 Pa
+ 2.46E4 Pa
- 3.09E4 Pa
- 3.89E4 Pa
- 4.90E4 Pa
=====*_Rendition_* 4-10=====
<!--a11fluidStatics_buoyantForce_4-->A cylinder with a radius of 0.29 m and a length of 2.3 m is held so that the top circular face is 4.7 m below the water. The mass of the block is 968.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the fluid on the bottom of the cylinder?
- 1.44E4 Pa
+ 1.81E4 Pa
- 2.28E4 Pa
- 2.87E4 Pa
- 3.62E4 Pa
=====*_Rendition_* 4-11=====
<!--a11fluidStatics_buoyantForce_4-->A cylinder with a radius of 0.28 m and a length of 2.6 m is held so that the top circular face is 4.1 m below the water. The mass of the block is 831.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the fluid on the bottom of the cylinder?
- 8.11E3 Pa
- 1.02E4 Pa

- 1.28E4 Pa
+ 1.62E4 Pa
- 2.04E4 Pa
=====*_Rendition_* 4-12=====
<!--a11fluidStatics_buoyantForce_4-->A cylinder with a radius of 0.38 m and a length of 2.3 m is held so that the top circular face is 4.5 m below the water. The mass of the block is 909.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the fluid on the bottom of the cylinder?
+ 3.02E4 Pa
- 3.81E4 Pa
- 4.79E4 Pa
- 6.03E4 Pa
- 7.59E4 Pa
=====*_Rendition_* 4-13=====
<!--a11fluidStatics_buoyantForce_4-->A cylinder with a radius of 0.25 m and a length of 3.5 m is held so that the top circular face is 3.3 m below the water. The mass of the block is 922.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the fluid on the bottom of the cylinder?
- 8.26E3 Pa
- 1.04E4 Pa
+ 1.31E4 Pa
- 1.65E4 Pa
- 2.07E4 Pa
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====*_Instructions_*====
Instructions are forthcoming

Transclusion from [[Quizbank/Instructions_0]]:
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*_See_* [[User:Guy vandegrift]]

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===*_Quiz_*===
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{<!--a12fluidDynamics_pipeDiameter_1-->A 8.3 cm diameter pipe can fill a 1.7 m^3 volume in 6.0 minutes. Before exiting the pipe, the diameter is reduced to 3.0 cm (with no loss of flow rate). What is the speed in the first (wider) pipe?}
-a) 7.20E-1 m/s
+b) 8.73E-1 m/s
-c) 1.06E0 m/s
-d) 1.28E0 m/s
-e) 1.55E0 m/s

{<!--a12fluidDynamics_pipeDiameter_2-->A 8.3 cm diameter pipe can fill a 1.7 m^3 volume in 6.0 minutes. Before exiting the pipe, the diameter is reduced to 3.0 cm (with no loss of flow rate). What is the pressure difference (in Pascals) between the two regions of the pipe?}
-a) 1.81E4
+b) 2.19E4
-c) 2.66E4
-d) 3.22E4
-e) 3.90E4

{<!--a12fluidDynamics_pipeDiameter_3-->A 8.3 cm diameter pipe can fill a 1.7 m^3 volume in 6.0 minutes. Before exiting the pipe, the diameter is reduced to 3.0 cm (with no loss of flow rate). If two fluid elements at the center of the pipe are separated by 19.0 mm when they are both in the wide pipe, and we neglect turbulence, what is the separation when both are in the narrow pipe?}
+a) 1.45E2 mm
-b) 1.76E2 mm
-c) 2.13E2 mm
-d) 2.59E2 mm
-e) 3.13E2 mm

{<!--a12fluidDynamics_pipeDiameter_4-->A large cylinder is filled with water so that the bottom is 7.8 m below the waterline. At the bottom is a small hole with a diameter of 5.4E-4 m. How fast is the water flowing at the hole? (Neglect viscous effects, turbulence, and also assume that the hole is so small that no significant motion occurs at the top of the cylinder.)}
-a) 8.42E0 m/s
-b) 1.02E1 m/s
+c) 1.24E1 m/s
-d) 1.50E1 m/s
-e) 1.81E1 m/s

</quiz>

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====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a12fluidDynamics_pipeDiameter_1-->A 9.4 cm diameter pipe can fill a 2.2 m^3 volume in 5.0 minutes. Before exiting the pipe, the diameter is reduced to 3.1 cm (with no loss of flow rate). What is the speed in the first (wider) pipe?
-a) 5.94E-1 m/s
-b) 7.20E-1 m/s
-c) 8.72E-1 m/s
+d) 1.06E0 m/s
-e) 1.28E0 m/s
=====*_Rendition_* 1-3=====
<!--a12fluidDynamics_pipeDiameter_1-->A 9.7 cm diameter pipe can fill a 1.2 m^3 volume in 4.0 minutes. Before exiting the pipe, the diameter is reduced to 4.3 cm (with no loss of flow rate). What is the speed in the first (wider) pipe?
-a) 4.61E-1 m/s
-b) 5.58E-1 m/s
+c) 6.77E-1 m/s
-d) 8.20E-1 m/s
-e) 9.93E-1 m/s
=====*_Rendition_* 1-4=====
<!--a12fluidDynamics_pipeDiameter_1-->A 9.2 cm diameter pipe can fill a 1.6 m^3 volume in 8.0 minutes. Before exiting the pipe, the diameter is reduced to 4.0 cm (with no loss of flow rate). What is the speed in the first (wider) pipe?
+a) 5.01E-1 m/s
-b) 6.08E-1 m/s
-c) 7.36E-1 m/s
-d) 8.92E-1 m/s
-e) 1.08E0 m/s
=====*_Rendition_* 1-5=====
<!--a12fluidDynamics_pipeDiameter_1-->A 6.4 cm diameter pipe can fill a 1.8 m^3 volume in 8.0 minutes. Before exiting the pipe, the diameter is reduced to 3.7 cm (with no loss of flow rate). What is the speed in the first (wider) pipe?
-a) 7.94E-1 m/s
-b) 9.62E-1 m/s
+c) 1.17E0 m/s
-d) 1.41E0 m/s
-e) 1.71E0 m/s
=====*_Rendition_* 1-6=====
<!--a12fluidDynamics_pipeDiameter_1-->A 6.4 cm diameter pipe can fill a 1.6 m^3 volume in 4.0 minutes. Before exiting the pipe, the diameter is reduced to 4.8 cm (with no loss of flow rate). What is the speed in the first (wider) pipe?
+a) 2.07E0 m/s
-b) 2.51E0 m/s
-c) 3.04E0 m/s

-d) 3.69E0 m/s
-e) 4.46E0 m/s
=====*_Rendition_* 1-7=====
<!--a12fluidDynamics_pipeDiameter_1-->A 9.4 cm diameter pipe can fill a 1.5 m^3 volume in 7.0 minutes. Before exiting the pipe, the diameter is reduced to 1.7 cm (with no loss of flow rate). What is the speed in the first (wider) pipe?
-a) 2.89E-1 m/s
-b) 3.51E-1 m/s
-c) 4.25E-1 m/s
+d) 5.15E-1 m/s
-e) 6.23E-1 m/s
=====*_Rendition_* 1-8=====
<!--a12fluidDynamics_pipeDiameter_1-->A 6.5 cm diameter pipe can fill a 1.8 m^3 volume in 4.0 minutes. Before exiting the pipe, the diameter is reduced to 2.3 cm (with no loss of flow rate). What is the speed in the first (wider) pipe?
-a) 1.27E0 m/s
-b) 1.54E0 m/s
-c) 1.87E0 m/s
+d) 2.26E0 m/s
-e) 2.74E0 m/s
=====*_Rendition_* 1-9=====
<!--a12fluidDynamics_pipeDiameter_1-->A 6.7 cm diameter pipe can fill a 2.2 m^3 volume in 8.0 minutes. Before exiting the pipe, the diameter is reduced to 2.3 cm (with no loss of flow rate). What is the speed in the first (wider) pipe?
-a) 8.86E-1 m/s
-b) 1.07E0 m/s
+c) 1.30E0 m/s
-d) 1.57E0 m/s
-e) 1.91E0 m/s
=====*_Rendition_* 1-10=====
<!--a12fluidDynamics_pipeDiameter_1-->A 6.3 cm diameter pipe can fill a 1.4 m^3 volume in 8.0 minutes. Before exiting the pipe, the diameter is reduced to 4.8 cm (with no loss of flow rate). What is the speed in the first (wider) pipe?
-a) 7.72E-1 m/s
+b) 9.36E-1 m/s
-c) 1.13E0 m/s
-d) 1.37E0 m/s
-e) 1.66E0 m/s
=====*_Rendition_* 1-11=====
<!--a12fluidDynamics_pipeDiameter_1-->A 7.0 cm diameter pipe can fill a 2.1 m^3 volume in 8.0 minutes. Before exiting the pipe, the diameter is reduced to 1.7 cm (with no loss of flow rate). What is the speed in the first (wider) pipe?
+a) 1.14E0 m/s
-b) 1.38E0 m/s
-c) 1.67E0 m/s
-d) 2.02E0 m/s
-e) 2.45E0 m/s

=====*_Rendition_* 1-12=====
<!--a12fluidDynamics_pipeDiameter_1-->A 7.9 cm diameter pipe can fill a 1.5 m^3 volume in 7.0 minutes. Before exiting the pipe, the diameter is reduced to 2.7 cm (with no loss of flow rate). What is the speed in the first (wider) pipe?
-a) 6.01E-1 m/s
+b) 7.29E-1 m/s
-c) 8.83E-1 m/s
-d) 1.07E0 m/s
-e) 1.30E0 m/s
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a12fluidDynamics_pipeDiameter_2-->A 9.4 cm diameter pipe can fill a 2.2 m^3 volume in 5.0 minutes. Before exiting the pipe, the diameter is reduced to 3.1 cm (with no loss of flow rate). What is the pressure difference (in Pascals) between the two regions of the pipe?
-a) 3.85E4
+b) 4.66E4
-c) 5.65E4
-d) 6.85E4
-e) 8.29E4
=====*_Rendition_* 2-3=====
<!--a12fluidDynamics_pipeDiameter_2-->A 9.7 cm diameter pipe can fill a 1.2 m^3 volume in 4.0 minutes. Before exiting the pipe, the diameter is reduced to 4.3 cm (with no loss of flow rate). What is the pressure difference (in Pascals) between the two regions of the pipe?
+a) 5.70E3
-b) 6.90E3
-c) 8.36E3
-d) 1.01E4
-e) 1.23E4
=====*_Rendition_* 2-4=====
<!--a12fluidDynamics_pipeDiameter_2-->A 9.2 cm diameter pipe can fill a 1.6 m^3 volume in 8.0 minutes. Before exiting the pipe, the diameter is reduced to 4.0 cm (with no loss of flow rate). What is the pressure difference (in Pascals) between the two regions of the pipe?
-a) 1.91E3
-b) 2.31E3
-c) 2.80E3
+d) 3.39E3
-e) 4.11E3
=====*_Rendition_* 2-5=====
<!--a12fluidDynamics_pipeDiameter_2-->A 6.4 cm diameter pipe can fill a 1.8 m^3 volume in 8.0 minutes. Before exiting the pipe, the diameter is reduced to 3.7 cm (with no loss of flow rate). What is the pressure difference (in Pascals) between the two regions of the pipe?
-a) 3.04E3
-b) 3.68E3
-c) 4.46E3
+d) 5.40E3
-e) 6.55E3
=====*_Rendition_* 2-6=====

<!--a12fluidDynamics_pipeDiameter_2-->A 6.4 cm diameter pipe can fill a 1.6 m^3 volume in 4.0 minutes. Before exiting the pipe, the diameter is reduced to 4.8 cm (with no loss of flow rate). What is the pressure difference (in Pascals) between the two regions of the pipe?
+a) 4.64E3
-b) 5.62E3
-c) 6.81E3
-d) 8.25E3
-e) 9.99E3
=====*_Rendition_* 2-7=====
<!--a12fluidDynamics_pipeDiameter_2-->A 9.4 cm diameter pipe can fill a 1.5 m^3 volume in 7.0 minutes. Before exiting the pipe, the diameter is reduced to 1.7 cm (with no loss of flow rate). What is the pressure difference (in Pascals) between the two regions of the pipe?
+a) 1.24E5
-b) 1.50E5
-c) 1.82E5
-d) 2.20E5
-e) 2.66E5
=====*_Rendition_* 2-8=====
<!--a12fluidDynamics_pipeDiameter_2-->A 6.5 cm diameter pipe can fill a 1.8 m^3 volume in 4.0 minutes. Before exiting the pipe, the diameter is reduced to 2.3 cm (with no loss of flow rate). What is the pressure difference (in Pascals) between the two regions of the pipe?
+a) 1.60E5
-b) 1.94E5
-c) 2.35E5
-d) 2.85E5
-e) 3.46E5
=====*_Rendition_* 2-9=====
<!--a12fluidDynamics_pipeDiameter_2-->A 6.7 cm diameter pipe can fill a 2.2 m^3 volume in 8.0 minutes. Before exiting the pipe, the diameter is reduced to 2.3 cm (with no loss of flow rate). What is the pressure difference (in Pascals) between the two regions of the pipe?
+a) 6.00E4
-b) 7.27E4
-c) 8.81E4
-d) 1.07E5
-e) 1.29E5
=====*_Rendition_* 2-10=====
<!--a12fluidDynamics_pipeDiameter_2-->A 6.3 cm diameter pipe can fill a 1.4 m^3 volume in 8.0 minutes. Before exiting the pipe, the diameter is reduced to 4.8 cm (with no loss of flow rate). What is the pressure difference (in Pascals) between the two regions of the pipe?
-a) 4.84E2
-b) 5.87E2
-c) 7.11E2
+d) 8.61E2
-e) 1.04E3
=====*_Rendition_* 2-11=====
<!--a12fluidDynamics_pipeDiameter_2-->A 7.0 cm diameter pipe can fill a 2.1 m^3 volume in 8.0 minutes. Before exiting the pipe, the diameter

is reduced to 1.7 cm (with no loss of flow rate). What is the pressure difference (in Pascals) between the two regions of the pipe?
-a) 1.26E5
-b) 1.53E5
+c) 1.85E5
-d) 2.24E5
-e) 2.72E5
=====*_Rendition_* 2-12=====
<!--a12fluidDynamics_pipeDiameter_2-->A 7.9 cm diameter pipe can fill a 1.5 m^3 volume in 7.0 minutes. Before exiting the pipe, the diameter is reduced to 2.7 cm (with no loss of flow rate). What is the pressure difference (in Pascals) between the two regions of the pipe?
-a) 1.08E4
-b) 1.31E4
-c) 1.58E4
+d) 1.92E4
-e) 2.32E4
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a12fluidDynamics_pipeDiameter_3-->A 9.4 cm diameter pipe can fill a 2.2 m^3 volume in 5.0 minutes. Before exiting the pipe, the diameter is reduced to 3.1 cm (with no loss of flow rate). If two fluid elements at the center of the pipe are separated by 21.0 mm when they are both in the wide pipe, and we neglect turbulence, what is the separation when both are in the narrow pipe?
-a) 1.59E2 mm
+b) 1.93E2 mm
-c) 2.34E2 mm
-d) 2.83E2 mm
-e) 3.43E2 mm
=====*_Rendition_* 3-3=====
<!--a12fluidDynamics_pipeDiameter_3-->A 9.7 cm diameter pipe can fill a 1.2 m^3 volume in 4.0 minutes. Before exiting the pipe, the diameter is reduced to 4.3 cm (with no loss of flow rate). If two fluid elements at the center of the pipe are separated by 22.0 mm when they are both in the wide pipe, and we neglect turbulence, what is the separation when both are in the narrow pipe?
-a) 6.30E1 mm
-b) 7.63E1 mm
-c) 9.24E1 mm
+d) 1.12E2 mm
-e) 1.36E2 mm
=====*_Rendition_* 3-4=====
<!--a12fluidDynamics_pipeDiameter_3-->A 9.2 cm diameter pipe can fill a 1.6 m^3 volume in 8.0 minutes. Before exiting the pipe, the diameter is reduced to 4.0 cm (with no loss of flow rate). If two fluid elements at the center of the pipe are separated by 34.0 mm when they are both in the wide pipe, and we neglect turbulence, what is the separation when both are in the narrow pipe?
-a) 1.23E2 mm
-b) 1.48E2 mm
+c) 1.80E2 mm

-d) 2.18E2 mm
-e) 2.64E2 mm
=====*_Rendition_* 3-5=====
<!--a12fluidDynamics_pipeDiameter_3-->A 6.4 cm diameter pipe can fill a 1.8 m^3 volume in 8.0 minutes. Before exiting the pipe, the diameter is reduced to 3.7 cm (with no loss of flow rate). If two fluid elements at the center of the pipe are separated by 18.0 mm when they are both in the wide pipe, and we neglect turbulence, what is the separation when both are in the narrow pipe?
-a) 4.45E1 mm
+b) 5.39E1 mm
-c) 6.52E1 mm
-d) 7.90E1 mm
-e) 9.58E1 mm
=====*_Rendition_* 3-6=====
<!--a12fluidDynamics_pipeDiameter_3-->A 6.4 cm diameter pipe can fill a 1.6 m^3 volume in 4.0 minutes. Before exiting the pipe, the diameter is reduced to 4.8 cm (with no loss of flow rate). If two fluid elements at the center of the pipe are separated by 28.0 mm when they are both in the wide pipe, and we neglect turbulence, what is the separation when both are in the narrow pipe?
-a) 2.80E1 mm
-b) 3.39E1 mm
-c) 4.11E1 mm
+d) 4.98E1 mm
-e) 6.03E1 mm
=====*_Rendition_* 3-7=====
<!--a12fluidDynamics_pipeDiameter_3-->A 9.4 cm diameter pipe can fill a 1.5 m^3 volume in 7.0 minutes. Before exiting the pipe, the diameter is reduced to 1.7 cm (with no loss of flow rate). If two fluid elements at the center of the pipe are separated by 37.0 mm when they are both in the wide pipe, and we neglect turbulence, what is the separation when both are in the narrow pipe?
-a) 9.34E2 mm
+b) 1.13E3 mm
-c) 1.37E3 mm
-d) 1.66E3 mm
-e) 2.01E3 mm
=====*_Rendition_* 3-8=====
<!--a12fluidDynamics_pipeDiameter_3-->A 6.5 cm diameter pipe can fill a 1.8 m^3 volume in 4.0 minutes. Before exiting the pipe, the diameter is reduced to 2.3 cm (with no loss of flow rate). If two fluid elements at the center of the pipe are separated by 30.0 mm when they are both in the wide pipe, and we neglect turbulence, what is the separation when both are in the narrow pipe?
-a) 1.63E2 mm
-b) 1.98E2 mm
+c) 2.40E2 mm
-d) 2.90E2 mm
-e) 3.52E2 mm
=====*_Rendition_* 3-9=====
<!--a12fluidDynamics_pipeDiameter_3-->A 6.7 cm diameter pipe can fill

a 2.2 m^3 volume in 8.0 minutes. Before exiting the pipe, the diameter is reduced to 2.3 cm (with no loss of flow rate). If two fluid elements at the center of the pipe are separated by 16.0 mm when they are both in the wide pipe, and we neglect turbulence, what is the separation when both are in the narrow pipe?
-a) 9.25E1 mm
-b) 1.12E2 mm
+c) 1.36E2 mm
-d) 1.64E2 mm
-e) 1.99E2 mm
=====*_Rendition_* 3-10=====
<!--a12fluidDynamics_pipeDiameter_3-->A 6.3 cm diameter pipe can fill a 1.4 m^3 volume in 8.0 minutes. Before exiting the pipe, the diameter is reduced to 4.8 cm (with no loss of flow rate). If two fluid elements at the center of the pipe are separated by 32.0 mm when they are both in the wide pipe, and we neglect turbulence, what is the separation when both are in the narrow pipe?
-a) 3.10E1 mm
-b) 3.76E1 mm
-c) 4.55E1 mm
+d) 5.51E1 mm
-e) 6.68E1 mm
=====*_Rendition_* 3-11=====
<!--a12fluidDynamics_pipeDiameter_3-->A 7.0 cm diameter pipe can fill a 2.1 m^3 volume in 8.0 minutes. Before exiting the pipe, the diameter is reduced to 1.7 cm (with no loss of flow rate). If two fluid elements at the center of the pipe are separated by 29.0 mm when they are both in the wide pipe, and we neglect turbulence, what is the separation when both are in the narrow pipe?
-a) 4.06E2 mm
+b) 4.92E2 mm
-c) 5.96E2 mm
-d) 7.22E2 mm
-e) 8.74E2 mm
=====*_Rendition_* 3-12=====
<!--a12fluidDynamics_pipeDiameter_3-->A 7.9 cm diameter pipe can fill a 1.5 m^3 volume in 7.0 minutes. Before exiting the pipe, the diameter is reduced to 2.7 cm (with no loss of flow rate). If two fluid elements at the center of the pipe are separated by 28.0 mm when they are both in the wide pipe, and we neglect turbulence, what is the separation when both are in the narrow pipe?
-a) 1.35E2 mm
-b) 1.63E2 mm
-c) 1.98E2 mm
+d) 2.40E2 mm
-e) 2.90E2 mm
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a12fluidDynamics_pipeDiameter_4-->A large cylinder is filled with water so that the bottom is 8.6 m below the waterline. At the bottom is a small hole with a diameter of 9.1E-4 m. How fast is the water flowing at the hole? (Neglect viscous effects, turbulence, and also

assume that the hole is so small that no significant motion occurs at the top of the cylinder.)
+a) 1.30E1 m/s
-b) 1.57E1 m/s
-c) 1.91E1 m/s
-d) 2.31E1 m/s
-e) 2.80E1 m/s
=====*_Rendition_* 4-3=====
<!--a12fluidDynamics_pipeDiameter_4-->A large cylinder is filled with water so that the bottom is 8.8 m below the waterline. At the bottom is a small hole with a diameter of 6.3E-4 m. How fast is the water flowing at the hole? (Neglect viscous effects, turbulence, and also assume that the hole is so small that no significant motion occurs at the top of the cylinder.)
-a) 1.08E1 m/s
+b) 1.31E1 m/s
-c) 1.59E1 m/s
-d) 1.93E1 m/s
-e) 2.34E1 m/s
=====*_Rendition_* 4-4=====
<!--a12fluidDynamics_pipeDiameter_4-->A large cylinder is filled with water so that the bottom is 8.0 m below the waterline. At the bottom is a small hole with a diameter of 9.1E-4 m. How fast is the water flowing at the hole? (Neglect viscous effects, turbulence, and also assume that the hole is so small that no significant motion occurs at the top of the cylinder.)
-a) 7.04E0 m/s
-b) 8.53E0 m/s
-c) 1.03E1 m/s
+d) 1.25E1 m/s
-e) 1.52E1 m/s
=====*_Rendition_* 4-5=====
<!--a12fluidDynamics_pipeDiameter_4-->A large cylinder is filled with water so that the bottom is 7.0 m below the waterline. At the bottom is a small hole with a diameter of 7.8E-4 m. How fast is the water flowing at the hole? (Neglect viscous effects, turbulence, and also assume that the hole is so small that no significant motion occurs at the top of the cylinder.)
-a) 7.98E0 m/s
-b) 9.67E0 m/s
+c) 1.17E1 m/s
-d) 1.42E1 m/s
-e) 1.72E1 m/s
=====*_Rendition_* 4-6=====
<!--a12fluidDynamics_pipeDiameter_4-->A large cylinder is filled with water so that the bottom is 7.0 m below the waterline. At the bottom is a small hole with a diameter of 8.2E-4 m. How fast is the water flowing at the hole? (Neglect viscous effects, turbulence, and also assume that the hole is so small that no significant motion occurs at the top of the cylinder.)
-a) 7.98E0 m/s
-b) 9.67E0 m/s

+c) 1.17E1 m/s
-d) 1.42E1 m/s
-e) 1.72E1 m/s
=====*_Rendition_* 4-7=====
<!--a12fluidDynamics_pipeDiameter_4-->A large cylinder is filled with water so that the bottom is 5.7 m below the waterline. At the bottom is a small hole with a diameter of 5.7E-4 m. How fast is the water flowing at the hole? (Neglect viscous effects, turbulence, and also assume that the hole is so small that no significant motion occurs at the top of the cylinder.)
-a) 5.94E0 m/s
-b) 7.20E0 m/s
-c) 8.72E0 m/s
+d) 1.06E1 m/s
-e) 1.28E1 m/s
=====*_Rendition_* 4-8=====
<!--a12fluidDynamics_pipeDiameter_4-->A large cylinder is filled with water so that the bottom is 6.8 m below the waterline. At the bottom is a small hole with a diameter of 7.4E-4 m. How fast is the water flowing at the hole? (Neglect viscous effects, turbulence, and also assume that the hole is so small that no significant motion occurs at the top of the cylinder.)
-a) 9.53E0 m/s
+b) 1.15E1 m/s
-c) 1.40E1 m/s
-d) 1.69E1 m/s
-e) 2.05E1 m/s
=====*_Rendition_* 4-9=====
<!--a12fluidDynamics_pipeDiameter_4-->A large cylinder is filled with water so that the bottom is 6.4 m below the waterline. At the bottom is a small hole with a diameter of 9.7E-4 m. How fast is the water flowing at the hole? (Neglect viscous effects, turbulence, and also assume that the hole is so small that no significant motion occurs at the top of the cylinder.)
-a) 9.24E0 m/s
+b) 1.12E1 m/s
-c) 1.36E1 m/s
-d) 1.64E1 m/s
-e) 1.99E1 m/s
=====*_Rendition_* 4-10=====
<!--a12fluidDynamics_pipeDiameter_4-->A large cylinder is filled with water so that the bottom is 8.9 m below the waterline. At the bottom is a small hole with a diameter of 7.6E-4 m. How fast is the water flowing at the hole? (Neglect viscous effects, turbulence, and also assume that the hole is so small that no significant motion occurs at the top of the cylinder.)
-a) 1.09E1 m/s
+b) 1.32E1 m/s
-c) 1.60E1 m/s
-d) 1.94E1 m/s
-e) 2.35E1 m/s
=====*_Rendition_* 4-11=====

<!--a12fluidDynamics_pipeDiameter_4-->A large cylinder is filled with water so that the bottom is 5.4 m below the waterline. At the bottom is a small hole with a diameter of 9.6E-4 m. How fast is the water flowing at the hole? (Neglect viscous effects, turbulence, and also assume that the hole is so small that no significant motion occurs at the top of the cylinder.)
-a) 7.01E0 m/s
-b) 8.49E0 m/s
+c) 1.03E1 m/s
-d) 1.25E1 m/s
-e) 1.51E1 m/s
=====*_Rendition_* 4-12=====
<!--a12fluidDynamics_pipeDiameter_4-->A large cylinder is filled with water so that the bottom is 7.8 m below the waterline. At the bottom is a small hole with a diameter of 5.4E-4 m. How fast is the water flowing at the hole? (Neglect viscous effects, turbulence, and also assume that the hole is so small that no significant motion occurs at the top of the cylinder.)
-a) 8.42E0 m/s
-b) 1.02E1 m/s
+c) 1.24E1 m/s
-d) 1.50E1 m/s
-e) 1.81E1 m/s
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===*_Quiz_*===
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{<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_1-->What is the root-mean-square of 27, 4, and -39?}
-a) 1.734 x 10¹
-b) 1.946 x 10¹
-c) 2.183 x 10¹
-d) 2.449 x 10¹
+e) 2.748 x 10¹

{<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_2-->What is the rms speed of a molecule with an atomic mass of 9 if the temperature is 60 degrees Fahrenheit?}
-a) 5.03 x 10² m/s
-b) 6.09 x 10² m/s
-c) 7.38 x 10² m/s
+d) 8.95 x 10² m/s
-e) 1.08 x 10³ m/s

{<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_3-->If a molecule with atomic mass equal to 7 amu has a speed of 289 m/s, what is the speed at an atom in the same atmosphere of a molecule with an atomic mass of 22 ?}
-a) 1.11 x 10² m/s
-b) 1.35 x 10² m/s
+c) 1.63 x 10² m/s
-d) 1.98 x 10² m/s
-e) 2.39 x 10² m/s

</quiz>

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Other renditions
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=====*_Rendition_* 1-2=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_1-->What is the root-mean-square of 33, 27, and -39?
-a) 2.105 x 10¹
-b) 2.362 x 10¹
-c) 2.65 x 10¹
-d) 2.973 x 10¹
+e) 3.336 x 10¹
=====*_Rendition_* 1-3=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_1-->What is the root-mean-square of 6, -2, and -44?
-a) 1.619 x 10¹
-b) 1.817 x 10¹
-c) 2.039 x 10¹

-d) 2.287 x 10¹
+e) 2.566 x 10¹
=====*_Rendition_* 1-4=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_1-->What is the root-mean-square of 44, 4, and 36?
-a) 2.614 x 10¹
-b) 2.933 x 10¹
+c) 3.29 x 10¹
-d) 3.692 x 10¹
-e) 4.142 x 10¹
=====*_Rendition_* 1-5=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_1-->What is the root-mean-square of -20, 40, and -32?
-a) 2.522 x 10¹
-b) 2.83 x 10¹
+c) 3.175 x 10¹
-d) 3.562 x 10¹
-e) 3.997 x 10¹
=====*_Rendition_* 1-6=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_1-->What is the root-mean-square of 36, 6, and -23?
-a) 1.763 x 10¹
-b) 1.978 x 10¹
-c) 2.22 x 10¹
+d) 2.491 x 10¹
-e) 2.795 x 10¹
=====*_Rendition_* 1-7=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_1-->What is the root-mean-square of -28, -38, and -13?
-a) 2.519 x 10¹
+b) 2.827 x 10¹
-c) 3.172 x 10¹
-d) 3.559 x 10¹
-e) 3.993 x 10¹
=====*_Rendition_* 1-8=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_1-->What is the root-mean-square of 9, -17, and -8?
+a) 1.203 x 10¹
-b) 1.35 x 10¹
-c) 1.514 x 10¹
-d) 1.699 x 10¹
-e) 1.906 x 10¹
=====*_Rendition_* 1-9=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_1-->What is the root-mean-square of -46, -13, and 17?
-a) 2.074 x 10¹
-b) 2.327 x 10¹
-c) 2.611 x 10¹
+d) 2.929 x 10¹
-e) 3.287 x 10¹
=====*_Rendition_* 1-10=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_1-->What is the

root-mean-square of 28, 21, and 32?
-a) 2.44 x 10¹
+b) 2.738 x 10¹
-c) 3.072 x 10¹
-d) 3.447 x 10¹
-e) 3.868 x 10¹
=====*_Rendition_* 1-11=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_1-->What is the root-mean-square of 5, 7, and 0?
-a) 4.426 x 10⁰
+b) 4.967 x 10⁰
-c) 5.573 x 10⁰
-d) 6.253 x 10⁰
-e) 7.015 x 10⁰
=====*_Rendition_* 1-12=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_1-->What is the root-mean-square of -19, -16, and -19?
-a) 1.278 x 10¹
-b) 1.434 x 10¹
-c) 1.609 x 10¹
+d) 1.806 x 10¹
-e) 2.026 x 10¹
=====*_Rendition_* 1-13=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_1-->What is the root-mean-square of 11, 36, and 4?
-a) 1.948 x 10¹
+b) 2.186 x 10¹
-c) 2.452 x 10¹
-d) 2.751 x 10¹
-e) 3.087 x 10¹
=====*_Rendition_* 1-14=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_1-->What is the root-mean-square of 45, 23, and -43?
-a) 3.414 x 10¹
+b) 3.831 x 10¹
-c) 4.298 x 10¹
-d) 4.823 x 10¹
-e) 5.411 x 10¹
=====*_Rendition_* 1-15=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_1-->What is the root-mean-square of 1, 9, and -10?
-a) 4.914 x 10⁰
-b) 5.514 x 10⁰
-c) 6.187 x 10⁰
-d) 6.942 x 10⁰
+e) 7.789 x 10⁰
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_2-->What is the rms speed of a molecule with an atomic mass of 20 if the temperature is 86 degrees Fahrenheit?
+a) 6.15 x 10² m/s

-b) 7.45 x 10² m/s
-c) 9.03 x 10² m/s
-d) 1.09 x 10³ m/s
-e) 1.32 x 10³ m/s
=====*_Rendition_* 2-3=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_2-->What is the rms speed of a molecule with an atomic mass of 7 if the temperature is 107 degrees Fahrenheit?
-a) 7.22 x 10² m/s
-b) 8.74 x 10² m/s
+c) 1.06 x 10³ m/s
-d) 1.28 x 10³ m/s
-e) 1.55 x 10³ m/s
=====*_Rendition_* 2-4=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_2-->What is the rms speed of a molecule with an atomic mass of 11 if the temperature is 102 degrees Fahrenheit?
-a) 3.9 x 10² m/s
-b) 4.73 x 10² m/s
-c) 5.73 x 10² m/s
-d) 6.94 x 10² m/s
+e) 8.41 x 10² m/s
=====*_Rendition_* 2-5=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_2-->What is the rms speed of a molecule with an atomic mass of 19 if the temperature is 65 degrees Fahrenheit?
-a) 5.11 x 10² m/s
+b) 6.19 x 10² m/s
-c) 7.49 x 10² m/s
-d) 9.08 x 10² m/s
-e) 1.1 x 10³ m/s
=====*_Rendition_* 2-6=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_2-->What is the rms speed of a molecule with an atomic mass of 12 if the temperature is 93 degrees Fahrenheit?
+a) 7.99 x 10² m/s
-b) 9.68 x 10² m/s
-c) 1.17 x 10³ m/s
-d) 1.42 x 10³ m/s
-e) 1.72 x 10³ m/s
=====*_Rendition_* 2-7=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_2-->What is the rms speed of a molecule with an atomic mass of 17 if the temperature is 7 degrees Fahrenheit?
-a) 4.2 x 10² m/s
-b) 5.09 x 10² m/s
+c) 6.17 x 10² m/s
-d) 7.47 x 10² m/s
-e) 9.05 x 10² m/s
=====*_Rendition_* 2-8=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_2-->What is the rms speed of a molecule with an atomic mass of 18 if the temperature is

113 degrees Fahrenheit?
-a) 3.08 x 10² m/s
-b) 3.73 x 10² m/s
-c) 4.52 x 10² m/s
-d) 5.48 x 10² m/s
+e) 6.64 x 10² m/s
=====*_Rendition_* 2-9=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_2-->What is the rms speed of a molecule with an atomic mass of 11 if the temperature is 48 degrees Fahrenheit?
-a) 4.5 x 10² m/s
-b) 5.45 x 10² m/s
-c) 6.6 x 10² m/s
+d) 8 x 10² m/s
-e) 9.69 x 10² m/s
=====*_Rendition_* 2-10=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_2-->What is the rms speed of a molecule with an atomic mass of 14 if the temperature is 22 degrees Fahrenheit?
+a) 6.9 x 10² m/s
-b) 8.37 x 10² m/s
-c) 1.01 x 10³ m/s
-d) 1.23 x 10³ m/s
-e) 1.49 x 10³ m/s
=====*_Rendition_* 2-11=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_2-->What is the rms speed of a molecule with an atomic mass of 19 if the temperature is 78 degrees Fahrenheit?
-a) 4.27 x 10² m/s
-b) 5.17 x 10² m/s
+c) 6.26 x 10² m/s
-d) 7.59 x 10² m/s
-e) 9.19 x 10² m/s
=====*_Rendition_* 2-12=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_2-->What is the rms speed of a molecule with an atomic mass of 14 if the temperature is 10 degrees Fahrenheit?
-a) 3.16 x 10² m/s
-b) 3.83 x 10² m/s
-c) 4.65 x 10² m/s
-d) 5.63 x 10² m/s
+e) 6.82 x 10² m/s
=====*_Rendition_* 2-13=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_2-->What is the rms speed of a molecule with an atomic mass of 18 if the temperature is 12 degrees Fahrenheit?
-a) 2.8 x 10² m/s
-b) 3.39 x 10² m/s
-c) 4.11 x 10² m/s
-d) 4.97 x 10² m/s
+e) 6.03 x 10² m/s
=====*_Rendition_* 2-14=====

<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_2-->What is the rms speed of a molecule with an atomic mass of 21 if the temperature is 58 degrees Fahrenheit?
-a) 4.82 x 10² m/s
+b) 5.84 x 10² m/s
-c) 7.08 x 10² m/s
-d) 8.58 x 10² m/s
-e) 1.04 x 10³ m/s
=====*_Rendition_* 2-15=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_2-->What is the rms speed of a molecule with an atomic mass of 17 if the temperature is 31 degrees Fahrenheit?
+a) 6.32 x 10² m/s
-b) 7.66 x 10² m/s
-c) 9.28 x 10² m/s
-d) 1.12 x 10³ m/s
-e) 1.36 x 10³ m/s
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_3-->If a molecule with atomic mass equal to 9 amu has a speed of 431 m/s, what is the speed at an atom in the same atmosphere of a molecule with an atomic mass of 23 ?
-a) 1.84 x 10² m/s
-b) 2.23 x 10² m/s
+c) 2.7 x 10² m/s
-d) 3.27 x 10² m/s
-e) 3.96 x 10² m/s
=====*_Rendition_* 3-3=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_3-->If a molecule with atomic mass equal to 7 amu has a speed of 399 m/s, what is the speed at an atom in the same atmosphere of a molecule with an atomic mass of 31 ?
-a) 8.8 x 10¹ m/s
-b) 1.07 x 10² m/s
-c) 1.29 x 10² m/s
-d) 1.56 x 10² m/s
+e) 1.9 x 10² m/s
=====*_Rendition_* 3-4=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_3-->If a molecule with atomic mass equal to 5 amu has a speed of 263 m/s, what is the speed at an atom in the same atmosphere of a molecule with an atomic mass of 21 ?
-a) 7.22 x 10¹ m/s
-b) 8.74 x 10¹ m/s
-c) 1.06 x 10² m/s
+d) 1.28 x 10² m/s
-e) 1.55 x 10² m/s
=====*_Rendition_* 3-5=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_3-->If a molecule with atomic mass equal to 2 amu has a speed of 305 m/s, what is the speed at an atom in the same atmosphere of a molecule with an atomic mass of

29 ?
+a) 8.01 x 10¹ m/s
-b) 9.7 x 10¹ m/s
-c) 1.18 x 10² m/s
-d) 1.42 x 10² m/s
-e) 1.73 x 10² m/s
=====*_Rendition_* 3-6=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_3-->If a molecule with atomic mass equal to 3 amu has a speed of 405 m/s, what is the speed at an atom in the same atmosphere of a molecule with an atomic mass of 24 ?
-a) 8.05 x 10¹ m/s
-b) 9.76 x 10¹ m/s
-c) 1.18 x 10² m/s
+d) 1.43 x 10² m/s
-e) 1.73 x 10² m/s
=====*_Rendition_* 3-7=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_3-->If a molecule with atomic mass equal to 6 amu has a speed of 265 m/s, what is the speed at an atom in the same atmosphere of a molecule with an atomic mass of 28 ?
-a) 1.01 x 10² m/s
+b) 1.23 x 10² m/s
-c) 1.49 x 10² m/s
-d) 1.8 x 10² m/s
-e) 2.18 x 10² m/s
=====*_Rendition_* 3-8=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_3-->If a molecule with atomic mass equal to 2 amu has a speed of 245 m/s, what is the speed at an atom in the same atmosphere of a molecule with an atomic mass of 31 ?
-a) 4.24 x 10¹ m/s
-b) 5.14 x 10¹ m/s
+c) 6.22 x 10¹ m/s
-d) 7.54 x 10¹ m/s
-e) 9.13 x 10¹ m/s
=====*_Rendition_* 3-9=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_3-->If a molecule with atomic mass equal to 9 amu has a speed of 445 m/s, what is the speed at an atom in the same atmosphere of a molecule with an atomic mass of 25 ?
-a) 1.82 x 10² m/s
-b) 2.2 x 10² m/s
+c) 2.67 x 10² m/s
-d) 3.23 x 10² m/s
-e) 3.92 x 10² m/s
=====*_Rendition_* 3-10=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_3-->If a molecule with atomic mass equal to 6 amu has a speed of 217 m/s, what is the speed at an atom in the same atmosphere of a molecule with an atomic mass of 30 ?
-a) 5.46 x 10¹ m/s

-b) 6.61 x 10¹ m/s
-c) 8.01 x 10¹ m/s
+d) 9.7 x 10¹ m/s
-e) 1.18 x 10² m/s
=====*_Rendition_* 3-11=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_3-->If a molecule with atomic mass equal to 8 amu has a speed of 475 m/s, what is the speed at an atom in the same atmosphere of a molecule with an atomic mass of 28 ?
-a) 1.73 x 10² m/s
-b) 2.1 x 10² m/s
+c) 2.54 x 10² m/s
-d) 3.08 x 10² m/s
-e) 3.73 x 10² m/s
=====*_Rendition_* 3-12=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_3-->If a molecule with atomic mass equal to 4 amu has a speed of 353 m/s, what is the speed at an atom in the same atmosphere of a molecule with an atomic mass of 27 ?
-a) 7.64 x 10¹ m/s
-b) 9.26 x 10¹ m/s
-c) 1.12 x 10² m/s
+d) 1.36 x 10² m/s
-e) 1.65 x 10² m/s
=====*_Rendition_* 3-13=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_3-->If a molecule with atomic mass equal to 8 amu has a speed of 331 m/s, what is the speed at an atom in the same atmosphere of a molecule with an atomic mass of 27 ?
-a) 8.36 x 10¹ m/s
-b) 1.01 x 10² m/s
-c) 1.23 x 10² m/s
-d) 1.49 x 10² m/s
+e) 1.8 x 10² m/s
=====*_Rendition_* 3-14=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_3-->If a molecule with atomic mass equal to 9 amu has a speed of 249 m/s, what is the speed at an atom in the same atmosphere of a molecule with an atomic mass of 31 ?
-a) 6.23 x 10¹ m/s
-b) 7.54 x 10¹ m/s
-c) 9.14 x 10¹ m/s
-d) 1.11 x 10² m/s
+e) 1.34 x 10² m/s
=====*_Rendition_* 3-15=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_3-->If a molecule with atomic mass equal to 7 amu has a speed of 253 m/s, what is the speed at an atom in the same atmosphere of a molecule with an atomic mass of 26 ?
+a) 1.31 x 10² m/s
-b) 1.59 x 10² m/s
-c) 1.93 x 10² m/s

-d) 2.33 x 10² m/s
-e) 2.83 x 10² m/s
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{<!--a14HeatTransfer_specifHeatConduct_1-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.98 kg is filled with 0.23 kg of water. How much heat does it take to raise both from 39.7 C to 88 C?   }
+a) 8.91 x 10⁴ J
-b) 1.05 x 10⁵ J
-c) 1.24 x 10⁵ J
-d) 1.46 x 10⁵ J
-e) 1.72 x 10⁵ J

{<!--a14HeatTransfer_specifHeatConduct_2-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.98 kg is filled with 0.23 kg of water. What fraction of the heat went into the aluminum?   }
-a) 2.9 x 10⁻¹
-b) 3.4 x 10⁻¹
-c) 4.1 x 10⁻¹
+d) 4.8 x 10⁻¹

-e) 5.6 x 10⁻¹

{<!--a14HeatTransfer_specifHeatConduct_3-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.98 kg is filled with 0.23 kg of water. You are consulting for the flat earth society, a group of people who believe that the acceleration of gravity equals 9.8 m/s/s at all altitudes. Based on this assumption, from what height must the water and container be dropped to achieve the same change in temperature? (For comparison, Earth's radius is 6,371 kilometers)   }
-a) 5.12 x 10⁰ km
-b) 6.2 x 10⁰ km
+c) 7.51 x 10⁰ km
-d) 9.1 x 10⁰ km
-e) 1.1 x 10¹ km

{<!--a14HeatTransfer_specifHeatConduct_4-->A window is square, with a length of each side equal to 0.86 meters. The glass has a thickness of 14 mm. To decrease the heat loss, you reduce the size of the window by decreasing the length of each side by a factor of 1.46. You also increase the thickness of the glass by a factor of 2.31. If the inside and outside temperatures are unchanged, by what factor have you decreased the heat flow?. By what factor have you decreased the heat flow (assuming the same inside and outside temperatures).}
-a) 4.06 x 10⁰ unit
+b) 4.92 x 10⁰ unit
-c) 5.97 x 10⁰ unit
-d) 7.23 x 10⁰ unit
-e) 8.76 x 10⁰ unit

</quiz>

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Other renditions
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====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a14HeatTransfer_specifHeatConduct_1-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.71 kg is filled with 0.19 kg of water. How much heat does it take to raise both from 53.5 C to 86.9 C?
+a) 4.79 x 10⁴ J
-b) 5.65 x 10⁴ J
-c) 6.66 x 10⁴ J
-d) 7.85 x 10⁴ J
-e) 9.25 x 10⁴ J
=====*_Rendition_* 1-3=====

<!--a14HeatTransfer_specifHeatConduct_1-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.82 kg is filled with 0.11 kg of water. How much heat does it take to raise both from 20.2 C to 96.9 C?
-a) 6.62 x 10⁴ J
-b) 7.8 x 10⁴ J
+c) 9.19 x 10⁴ J
-d) 1.08 x 10⁵ J
-e) 1.28 x 10⁵ J
=====*_Rendition_* 1-4=====
<!--a14HeatTransfer_specifHeatConduct_1-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.68 kg is filled with 0.17 kg of water. How much heat does it take to raise both from 47.8 C to 83.2 C?
-a) 3.37 x 10⁴ J
-b) 3.98 x 10⁴ J
+c) 4.69 x 10⁴ J
-d) 5.52 x 10⁴ J
-e) 6.51 x 10⁴ J
=====*_Rendition_* 1-5=====
<!--a14HeatTransfer_specifHeatConduct_1-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.99 kg is filled with 0.26 kg of water. How much heat does it take to raise both from 54.4 C to 78.1 C?
-a) 2.43 x 10⁴ J
-b) 2.86 x 10⁴ J
-c) 3.38 x 10⁴ J
-d) 3.98 x 10⁴ J
+e) 4.69 x 10⁴ J
=====*_Rendition_* 1-6=====
<!--a14HeatTransfer_specifHeatConduct_1-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.95 kg is filled with 0.19 kg of water. How much heat does it take to raise both from 32.6 C to 75.6 C?
-a) 3.68 x 10⁴ J
-b) 4.33 x 10⁴ J
-c) 5.11 x 10⁴ J
-d) 6.02 x 10⁴ J
+e) 7.1 x 10⁴ J
=====*_Rendition_* 1-7=====
<!--a14HeatTransfer_specifHeatConduct_1-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.61 kg is filled with 0.21 kg of water. How much heat does it take to raise both from 21.9 C to 98.6 C?
-a) 7.88 x 10⁴ J
-b) 9.29 x 10⁴ J
+c) 1.1 x 10⁵ J

-d) 1.29 x 10⁵ J
-e) 1.52 x 10⁵ J
=====*_Rendition_* 1-8=====
<!--a14HeatTransfer_specifHeatConduct_1-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.66 kg is filled with 0.11 kg of water. How much heat does it take to raise both from 57.1 C to 78 C?
-a) 1.59 x 10⁴ J
-b) 1.87 x 10⁴ J
+c) 2.2 x 10⁴ J
-d) 2.6 x 10⁴ J
-e) 3.06 x 10⁴ J
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a14HeatTransfer_specifHeatConduct_2-->{The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.71 kg is filled with 0.19 kg of water. What fraction of the heat went into the aluminum?

-a) 2.3 x 10⁻¹
-b) 2.7 x 10⁻¹
-c) 3.2 x 10⁻¹
-d) 3.8 x 10⁻¹
+e) 4.5 x 10⁻¹
=====*_Rendition_* 2-3=====
<!--a14HeatTransfer_specifHeatConduct_2-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.82 kg is filled with 0.11 kg of water. What fraction of the heat went into the aluminum?

-a) 3.8 x 10⁻¹
-b) 4.4 x 10⁻¹
-c) 5.2 x 10⁻¹
+d) 6.2 x 10⁻¹
-e) 7.3 x 10⁻¹
=====*_Rendition_* 2-4=====
<!--a14HeatTransfer_specifHeatConduct_2-->{The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.68 kg is filled with 0.17 kg of water. What fraction of the heat went into the aluminum?

-a) 2.8 x 10⁻¹
-b) 3.3 x 10⁻¹
-c) 3.9 x 10⁻¹
+d) 4.6 x 10⁻¹
-e) 5.5 x 10⁻¹
=====*_Rendition_* 2-5=====
<!--a14HeatTransfer_specifHeatConduct_2-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.99 kg is filled with 0.26 kg of water. What fraction of the heat went into the aluminum?

-a) 2.7 x 10⁻¹
-b) 3.2 x 10⁻¹
-c) 3.8 x 10⁻¹
+d) 4.5 x 10⁻¹
-e) 5.3 x 10⁻¹
=====*_Rendition_* 2-6=====
<!--a14HeatTransfer_specifHeatConduct_2-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.95 kg is filled with 0.19 kg of water. What fraction of the heat went into the aluminum?

+a) 5.2 x 10⁻¹
-b) 6.1 x 10⁻¹
-c) 7.2 x 10⁻¹
-d) 8.5 x 10⁻¹
-e) 1 x 10⁰
=====*_Rendition_* 2-7=====
<!--a14HeatTransfer_specifHeatConduct_2-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.61 kg is filled with 0.21 kg of water. What fraction of the heat went into the aluminum?

-a) 3.3 x 10⁻¹
+b) 3.8 x 10⁻¹
-c) 4.5 x 10⁻¹
-d) 5.3 x 10⁻¹
-e) 6.3 x 10⁻¹
=====*_Rendition_* 2-8=====
<!--a14HeatTransfer_specifHeatConduct_2-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.66 kg is filled with 0.11 kg of water. What fraction of the heat went into the aluminum?

-a) 3.4 x 10⁻¹
-b) 4.1 x 10⁻¹
-c) 4.8 x 10⁻¹
+d) 5.6 x 10⁻¹
-e) 6.6 x 10⁻¹
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a14HeatTransfer_specifHeatConduct_3-->{The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.71 kg is filled with 0.19 kg of water. You are consulting for the flat earth society, a group of people who believe that the acceleration of gravity equals 9.8 m/s/s at all altitudes. Based on this assumption, from what height must the water and container be dropped to achieve the same change in temperature? (For comparison, Earth's radius is 6,371 kilometers)
+a) 5.43 x 10⁰ km
-b) 6.58 x 10⁰ km

-c) 7.97 x 10⁰ km
-d) 9.66 x 10⁰ km
-e) 1.17 x 10¹ km
=====*_Rendition_* 3-3=====
<!--a14HeatTransfer_specifHeatConduct_3-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.82 kg is filled with 0.11 kg of water. You are consulting for the flat earth society, a group of people who believe that the acceleration of gravity equals 9.8 m/s/s at all altitudes. Based on this assumption, from what height must the water and container be dropped to achieve the same change in temperature? (For comparison, Earth's radius is 6,371 kilometers)
-a) 4.68 x 10⁰ km
-b) 5.67 x 10⁰ km
-c) 6.87 x 10⁰ km
-d) 8.32 x 10⁰ km
+e) 1.01 x 10¹ km
=====*_Rendition_* 3-4=====
<!--a14HeatTransfer_specifHeatConduct_3-->{The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.68 kg is filled with 0.17 kg of water. You are consulting for the flat earth society, a group of people who believe that the acceleration of gravity equals 9.8 m/s/s at all altitudes. Based on this assumption, from what height must the water and container be dropped to achieve the same change in temperature? (For comparison, Earth's radius is 6,371 kilometers)
-a) 2.61 x 10⁰ km
-b) 3.16 x 10⁰ km
-c) 3.83 x 10⁰ km
-d) 4.64 x 10⁰ km
+e) 5.62 x 10⁰ km
=====*_Rendition_* 3-5=====
<!--a14HeatTransfer_specifHeatConduct_3-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.99 kg is filled with 0.26 kg of water. You are consulting for the flat earth society, a group of people who believe that the acceleration of gravity equals 9.8 m/s/s at all altitudes. Based on this assumption, from what height must the water and container be dropped to achieve the same change in temperature? (For comparison, Earth's radius is 6,371 kilometers)
-a) 3.16 x 10⁰ km
+b) 3.83 x 10⁰ km
-c) 4.64 x 10⁰ km
-d) 5.62 x 10⁰ km
-e) 6.81 x 10⁰ km
=====*_Rendition_* 3-6=====
<!--a14HeatTransfer_specifHeatConduct_3-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.95 kg is filled with

0.19 kg of water. You are consulting for the flat earth society, a group of people who believe that the acceleration of gravity equals 9.8 m/s/s at all altitudes. Based on this assumption, from what height must the water and container be dropped to achieve the same change in temperature? (For comparison, Earth's radius is 6,371 kilometers)
-a) 5.24 x 10⁰ km
+b) 6.35 x 10⁰ km
-c) 7.7 x 10⁰ km
-d) 9.32 x 10⁰ km
-e) 1.13 x 10¹ km
=====*_Rendition_* 3-7=====
<!--a14HeatTransfer_specifHeatConduct_3-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.61 kg is filled with 0.21 kg of water. You are consulting for the flat earth society, a group of people who believe that the acceleration of gravity equals 9.8 m/s/s at all altitudes. Based on this assumption, from what height must the water and container be dropped to achieve the same change in temperature? (For comparison, Earth's radius is 6,371 kilometers)
-a) 6.33 x 10⁰ km
-b) 7.66 x 10⁰ km
-c) 9.29 x 10⁰ km
-d) 1.13 x 10¹ km
+e) 1.36 x 10¹ km
=====*_Rendition_* 3-8=====
<!--a14HeatTransfer_specifHeatConduct_3-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.66 kg is filled with 0.11 kg of water. You are consulting for the flat earth society, a group of people who believe that the acceleration of gravity equals 9.8 m/s/s at all altitudes. Based on this assumption, from what height must the water and container be dropped to achieve the same change in temperature? (For comparison, Earth's radius is 6,371 kilometers)
-a) 1.64 x 10⁰ km
-b) 1.99 x 10⁰ km
-c) 2.41 x 10⁰ km
+d) 2.92 x 10⁰ km
-e) 3.54 x 10⁰ km
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a14HeatTransfer_specifHeatConduct_4-->A window is square, with a length of each side equal to 0.95 meters. The glass has a thickness of 13 mm. To decrease the heat loss, you reduce the size of the window by decreasing the length of each side by a factor of 1.59. You also increase the thickness of the glass by a factor of 2.84. If the inside and outside temperatures are unchanged, by what factor have you decreased the heat flow?. By what factor have you decreased the heat flow (assuming the same inside and outside temperatures).
+a) 7.18 x 10⁰ unit

-b) 8.7 x 10⁰ unit
-c) 1.05 x 10¹ unit
-d) 1.28 x 10¹ unit
-e) 1.55 x 10¹ unit

=====*_Rendition_* 4-3=====

<!--a14HeatTransfer_specifHeatConduct_4-->A window is square, with a length of each side equal to 0.81 meters. The glass has a thickness of 13 mm. To decrease the heat loss, you reduce the size of the window by decreasing the length of each side by a factor of 1.24. You also increase the thickness of the glass by a factor of 2.15. If the inside and outside temperatures are unchanged, by what factor have you decreased the heat flow?. By what factor have you decreased the heat flow (assuming the same inside and outside temperatures).

-a) 1.53 x 10⁰ unit
-b) 1.86 x 10⁰ unit
-c) 2.25 x 10⁰ unit
-d) 2.73 x 10⁰ unit
+e) 3.31 x 10⁰ unit

=====*_Rendition_* 4-4=====

<!--a14HeatTransfer_specifHeatConduct_4-->A window is square, with a length of each side equal to 0.78 meters. The glass has a thickness of 11 mm. To decrease the heat loss, you reduce the size of the window by decreasing the length of each side by a factor of 1.31. You also increase the thickness of the glass by a factor of 2.97. If the inside and outside temperatures are unchanged, by what factor have you decreased the heat flow?. By what factor have you decreased the heat flow (assuming the same inside and outside temperatures).

-a) 2.37 x 10⁰ unit
-b) 2.87 x 10⁰ unit
-c) 3.47 x 10⁰ unit
-d) 4.21 x 10⁰ unit
+e) 5.1 x 10⁰ unit

=====*_Rendition_* 4-5=====

<!--a14HeatTransfer_specifHeatConduct_4-->A window is square, with a length of each side equal to 0.79 meters. The glass has a thickness of 15 mm. To decrease the heat loss, you reduce the size of the window by decreasing the length of each side by a factor of 1.33. You also increase the thickness of the glass by a factor of 2.17. If the inside and outside temperatures are unchanged, by what factor have you decreased the heat flow?. By what factor have you decreased the heat flow (assuming the same inside and outside temperatures).

-a) 2.16 x 10⁰ unit
-b) 2.62 x 10⁰ unit
-c) 3.17 x 10⁰ unit
+d) 3.84 x 10⁰ unit
-e) 4.65 x 10⁰ unit

=====*_Rendition_* 4-6=====

<!--a14HeatTransfer_specifHeatConduct_4-->A window is square, with a length of each side equal to 0.73 meters. The glass has a thickness of 16 mm. To decrease the heat loss, you reduce the size of the window by decreasing the length of each side by a factor of 1.27. You also increase the thickness of the glass by a factor of 2. If the

inside and outside temperatures are unchanged, by what factor have you decreased the heat flow?. By what factor have you decreased the heat flow (assuming the same inside and outside temperatures).
-a) 1.5 x 10⁰ unit
-b) 1.81 x 10⁰ unit
-c) 2.2 x 10⁰ unit
-d) 2.66 x 10⁰ unit
+e) 3.23 x 10⁰ unit
=====*_Rendition_* 4-7=====
<!--a14HeatTransfer_specifHeatConduct_4-->A window is square, with a length of each side equal to 0.93 meters. The glass has a thickness of 15 mm. To decrease the heat loss, you reduce the size of the window by decreasing the length of each side by a factor of 1.55. You also increase the thickness of the glass by a factor of 2.54. If the inside and outside temperatures are unchanged, by what factor have you decreased the heat flow?. By what factor have you decreased the heat flow (assuming the same inside and outside temperatures).
-a) 4.16 x 10⁰ unit
-b) 5.04 x 10⁰ unit
+c) 6.1 x 10⁰ unit
-d) 7.39 x 10⁰ unit
-e) 8.96 x 10⁰ unit
=====*_Rendition_* 4-8=====
<!--a14HeatTransfer_specifHeatConduct_4-->A window is square, with a length of each side equal to 0.73 meters. The glass has a thickness of 14 mm. To decrease the heat loss, you reduce the size of the window by decreasing the length of each side by a factor of 1.45. You also increase the thickness of the glass by a factor of 2.4. If the inside and outside temperatures are unchanged, by what factor have you decreased the heat flow?. By what factor have you decreased the heat flow (assuming the same inside and outside temperatures).
+a) 5.05 x 10⁰ unit
-b) 6.11 x 10⁰ unit
-c) 7.41 x 10⁰ unit
-d) 8.97 x 10⁰ unit
-e) 1.09 x 10¹ unit
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====*_Instructions_*====
Instructions are forthcoming

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{<!--a15Thermodynamics_heatEngine_1-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 2.8 moles of an ideal gas. The pressures and volumes are: P₁= 1.4 kPa, P₂= 2.8 kPa. The volumes are V₁= 2.8m³ and V₄= 5.1m³. How much work is done in in one cycle?}
-a) 5.09 x 10² J
+b) 1.61 x 10³ J
-c) 5.09 x 10³ J
-d) 1.61 x 10⁴ J
-e) 5.09 x 10⁴ J

{<!--a15Thermodynamics_heatEngine_2-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 2.6 moles of an ideal gas. The pressures and volumes are: P₁= 3 kPa, P₂= 5.9 kPa. The volumes are V₁= 2.5m³ and V₄= 3.6m³. How much work is involved between 1 and 4?}
-a) 3.3 x 10² J
-b) 1.04 x 10³ J
+c) 3.3 x 10³ J
-d) 1.04 x 10⁴ J
-e) 3.3 x 10⁴ J

{<!--a15Thermodynamics_heatEngine_3-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 2.1 moles of an ideal gas. The pressures and volumes are: P₁= 1.2 kPa, P₂= 4.1 kPa. The volumes are V₁= 3.1m³ and V₄= 4.3m³.   How much work is involved between 2 and 4?}
-a) 1.01 x 10³ J
+b) 3.18 x 10³ J
-c) 1.01 x 10⁴ J
-d) 3.18 x 10⁴ J
-e) 1.01 x 10⁵ J

{<!--a15Thermodynamics_heatEngine_4-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 1.4 moles of an

ideal gas. The pressures and volumes are: P₁= 2.2 kPa, P₂= 4 kPa. The volumes are V₁= 1.4m³ and V₄= 3.3m³. What is the temperature at step 4?}
-a) 1.97 x 10² K
+b) 6.24 x 10² K
-c) 1.97 x 10³ K
-d) 6.24 x 10³ K
-e) 1.97 x 10⁴ K

</quiz>

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Other renditions
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====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a15Thermodynamics_heatEngine_1-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 2.1 moles of an ideal gas. The pressures and volumes are: P₁= 2.2 kPa, P₂= 4.4 kPa. The volumes are V₁= 2.6m³ and V₄= 4m³. How much work is done in in one cycle?
-a) 4.87 x 10¹ J
-b) 1.54 x 10² J
-c) 4.87 x 10² J
+d) 1.54 x 10³ J
-e) 4.87 x 10³ J
=====*_Rendition_* 1-3=====
<!--a15Thermodynamics_heatEngine_1-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 2.1 moles of an ideal gas. The pressures and volumes are: P₁= 2.8 kPa, P₂= 5.6 kPa. The volumes are V₁= 2.1m³ and V₄= 4.8m³. How much work is done in in one cycle?
-a) 3.78 x 10² J
-b) 1.2 x 10³ J
+c) 3.78 x 10³ J
-d) 1.2 x 10⁴ J
-e) 3.78 x 10⁴ J
=====*_Rendition_* 1-4=====
<!--a15Thermodynamics_heatEngine_1-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 3.1 moles of an ideal gas. The pressures and volumes are: P₁= 2.5 kPa, P₂= 4.5 kPa. The volumes are V₁= 1.4m³ and V₄= 2.9m³. How much work is done in in one cycle?
-a) 4.74 x 10² J
+b) 1.5 x 10³ J

-c) 4.74 x 10³ J
-d) 1.5 x 10⁴ J
-e) 4.74 x 10⁴ J
=====*_Rendition_* 1-5=====
<!--a15Thermodynamics_heatEngine_1-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 1.6 moles of an ideal gas. The pressures and volumes are: P₁= 1.9 kPa, P₂= 3.6 kPa. The volumes are V₁= 1.6m³ and V₄= 3.3m³. How much work is done in in one cycle?
-a) 4.57 x 10¹ J
-b) 1.45 x 10² J
-c) 4.57 x 10² J
+d) 1.45 x 10³ J
-e) 4.57 x 10³ J
=====*_Rendition_* 1-6=====
<!--a15Thermodynamics_heatEngine_1-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 1.1 moles of an ideal gas. The pressures and volumes are: P₁= 2 kPa, P₂= 4.1 kPa. The volumes are V₁= 2.1m³ and V₄= 4.3m³. How much work is done in in one cycle?
-a) 7.3 x 10² J
+b) 2.31 x 10³ J
-c) 7.3 x 10³ J
-d) 2.31 x 10⁴ J
-e) 7.3 x 10⁴ J
=====*_Rendition_* 1-7=====
<!--a15Thermodynamics_heatEngine_1-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 2.9 moles of an ideal gas. The pressures and volumes are: P₁= 2.3 kPa, P₂= 4.8 kPa. The volumes are V₁= 2.1m³ and V₄= 3.5m³. How much work is done in in one cycle?
-a) 1.75 x 10¹ J
-b) 5.53 x 10¹ J
-c) 1.75 x 10² J
-d) 5.53 x 10² J
+e) 1.75 x 10³ J
=====*_Rendition_* 1-8=====
<!--a15Thermodynamics_heatEngine_1-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 1.9 moles of an ideal gas. The pressures and volumes are: P₁= 1.2 kPa, P₂= 2.9 kPa. The volumes are V₁= 2.6m³ and V₄= 4.7m³. How much work is done in in one cycle?
-a) 5.64 x 10² J
+b) 1.79 x 10³ J
-c) 5.64 x 10³ J
-d) 1.79 x 10⁴ J
-e) 5.64 x 10⁴ J
=====*_Rendition_* 1-9=====

<!--a15Thermodynamics_heatEngine_1-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 2 moles of an ideal gas. The pressures and volumes are: P₁= 2.9 kPa, P₂= 4 kPa. The volumes are V₁= 2m³ and V₄= 3.2m³. How much work is done in in one cycle?
-a) 6.6 x 10⁰ J
-b) 2.09 x 10¹ J
-c) 6.6 x 10¹ J
-d) 2.09 x 10² J
+e) 6.6 x 10² J
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a15Thermodynamics_heatEngine_2-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 1.2 moles of an ideal gas. The pressures and volumes are: P₁= 2.7 kPa, P₂= 3.8 kPa. The volumes are V₁= 1.8m³ and V₄= 4.7m³. How much work is involved between 1 and 4?
+a) 7.83 x 10³ J
-b) 2.48 x 10⁴ J
-c) 7.83 x 10⁴ J
-d) 2.48 x 10⁵ J
-e) 7.83 x 10⁵ J
=====*_Rendition_* 2-3=====
<!--a15Thermodynamics_heatEngine_2-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 2.4 moles of an ideal gas. The pressures and volumes are: P₁= 2.1 kPa, P₂= 3.2 kPa. The volumes are V₁= 1.1m³ and V₄= 2.2m³. How much work is involved between 1 and 4?
-a) 2.31 x 10² J
-b) 7.3 x 10² J
+c) 2.31 x 10³ J
-d) 7.3 x 10³ J
-e) 2.31 x 10⁴ J
=====*_Rendition_* 2-4=====
<!--a15Thermodynamics_heatEngine_2-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 2 moles of an ideal gas. The pressures and volumes are: P₁= 1.5 kPa, P₂= 2.7 kPa. The volumes are V₁= 1.9m³ and V₄= 3.3m³. How much work is involved between 1 and 4?
-a) 6.64 x 10² J
+b) 2.1 x 10³ J
-c) 6.64 x 10³ J
-d) 2.1 x 10⁴ J
-e) 6.64 x 10⁴ J
=====*_Rendition_* 2-5=====
<!--a15Thermodynamics_heatEngine_2-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 1.2 moles of an ideal gas. The pressures and volumes are: P₁= 1.1 kPa,

P₂= 3.5 kPa. The volumes are V₁= 1.2m³ and V₄= 2.5m³. How much work is involved between 1 and 4?
-a) 1.43 x 10¹ J
-b) 4.52 x 10¹ J
-c) 1.43 x 10² J
-d) 4.52 x 10² J
+e) 1.43 x 10³ J
=====*_Rendition_* 2-6=====
<!--a15Thermodynamics_heatEngine_2-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 1.3 moles of an ideal gas. The pressures and volumes are: P₁= 1.6 kPa, P₂= 4.3 kPa. The volumes are V₁= 1.6m³ and V₄= 3.2m³. How much work is involved between 1 and 4?
+a) 2.56 x 10³ J
-b) 8.1 x 10³ J
-c) 2.56 x 10⁴ J
-d) 8.1 x 10⁴ J
-e) 2.56 x 10⁵ J
=====*_Rendition_* 2-7=====
<!--a15Thermodynamics_heatEngine_2-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 2.8 moles of an ideal gas. The pressures and volumes are: P₁= 1.5 kPa, P₂= 2.7 kPa. The volumes are V₁= 1.9m³ and V₄= 4.4m³. How much work is involved between 1 and 4?
-a) 3.75 x 10² J
-b) 1.19 x 10³ J
+c) 3.75 x 10³ J
-d) 1.19 x 10⁴ J
-e) 3.75 x 10⁴ J
=====*_Rendition_* 2-8=====
<!--a15Thermodynamics_heatEngine_2-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 1.3 moles of an ideal gas. The pressures and volumes are: P₁= 3.1 kPa, P₂= 4.3 kPa. The volumes are V₁= 1.1m³ and V₄= 2.8m³. How much work is involved between 1 and 4?
-a) 1.67 x 10³ J
+b) 5.27 x 10³ J
-c) 1.67 x 10⁴ J
-d) 5.27 x 10⁴ J
-e) 1.67 x 10⁵ J
=====*_Rendition_* 2-9=====
<!--a15Thermodynamics_heatEngine_2-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 2.2 moles of an ideal gas. The pressures and volumes are: P₁= 2.2 kPa, P₂= 3.7 kPa. The volumes are V₁= 1.8m³ and V₄= 4.4m³. How much work is involved between 1 and 4?
-a) 1.81 x 10² J

-b) 5.72 x 10² J
-c) 1.81 x 10³ J
+d) 5.72 x 10³ J
-e) 1.81 x 10⁴ J
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a15Thermodynamics_heatEngine_3-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 1.1 moles of an ideal gas. The pressures and volumes are: P₁= 1.4 kPa, P₂= 2.8 kPa. The volumes are V₁= 2.7m³ and V₄= 4.6m³.   How much work is involved between 2 and 4?
-a) 3.99 x 10¹ J
-b) 1.26 x 10² J
-c) 3.99 x 10² J
-d) 1.26 x 10³ J
+e) 3.99 x 10³ J
=====*_Rendition_* 3-3=====
<!--a15Thermodynamics_heatEngine_3-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 3 moles of an ideal gas. The pressures and volumes are: P₁= 1.3 kPa, P₂= 3.7 kPa. The volumes are V₁= 1.1m³ and V₄= 2.2m³.   How much work is involved between 2 and 4?
-a) 8.7 x 10² J
+b) 2.75 x 10³ J
-c) 8.7 x 10³ J
-d) 2.75 x 10⁴ J
-e) 8.7 x 10⁴ J
=====*_Rendition_* 3-4=====
<!--a15Thermodynamics_heatEngine_3-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 2.9 moles of an ideal gas. The pressures and volumes are: P₁= 1.7 kPa, P₂= 3.1 kPa. The volumes are V₁= 2.8m³ and V₄= 4.3m³.   How much work is involved between 2 and 4?
+a) 3.6 x 10³ J
-b) 1.14 x 10⁴ J
-c) 3.6 x 10⁴ J
-d) 1.14 x 10⁵ J
-e) 3.6 x 10⁵ J
=====*_Rendition_* 3-5=====
<!--a15Thermodynamics_heatEngine_3-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 1.9 moles of an ideal gas. The pressures and volumes are: P₁= 2.3 kPa, P₂= 5.3 kPa. The volumes are V₁= 1.8m³ and V₄= 3m³.   How much work is involved between 2 and 4?
-a) 1.44 x 10² J
-b) 4.56 x 10² J
-c) 1.44 x 10³ J
+d) 4.56 x 10³ J

-e) 1.44 x 10⁴ J
=====*_Rendition_* 3-6=====
<!--a15Thermodynamics_heatEngine_3-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 2.5 moles of an ideal gas. The pressures and volumes are: P₁= 2 kPa, P₂= 3.2 kPa. The volumes are V₁= 1.1m³ and V₄= 3.1m³.   How much work is involved between 2 and 4?
-a) 1.64 x 10³ J
+b) 5.2 x 10³ J
-c) 1.64 x 10⁴ J
-d) 5.2 x 10⁴ J
-e) 1.64 x 10⁵ J
=====*_Rendition_* 3-7=====
<!--a15Thermodynamics_heatEngine_3-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 2.5 moles of an ideal gas. The pressures and volumes are: P₁= 1.7 kPa, P₂= 4.5 kPa. The volumes are V₁= 1.6m³ and V₄= 2.7m³.   How much work is involved between 2 and 4?
-a) 1.08 x 10³ J
+b) 3.41 x 10³ J
-c) 1.08 x 10⁴ J
-d) 3.41 x 10⁴ J
-e) 1.08 x 10⁵ J
=====*_Rendition_* 3-8=====
<!--a15Thermodynamics_heatEngine_3-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 2.5 moles of an ideal gas. The pressures and volumes are: P₁= 3 kPa, P₂= 5.4 kPa. The volumes are V₁= 2.6m³ and V₄= 5m³.   How much work is involved between 2 and 4?
-a) 1.01 x 10² J
-b) 3.19 x 10² J
-c) 1.01 x 10³ J
-d) 3.19 x 10³ J
+e) 1.01 x 10⁴ J
=====*_Rendition_* 3-9=====
<!--a15Thermodynamics_heatEngine_3-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 2.9 moles of an ideal gas. The pressures and volumes are: P₁= 1.3 kPa, P₂= 3.4 kPa. The volumes are V₁= 2.5m³ and V₄= 4.3m³.   How much work is involved between 2 and 4?
-a) 1.34 x 10² J
-b) 4.23 x 10² J
-c) 1.34 x 10³ J
+d) 4.23 x 10³ J
-e) 1.34 x 10⁴ J
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a15Thermodynamics_heatEngine_4-->[[File:Thermodynamic cycles for

quizzes.svg|right|180px]] A 1241 heat cycle uses 2.5 moles of an ideal gas. The pressures and volumes are: P₁= 2.9 kPa, P₂= 4.9 kPa. The volumes are V₁= 2.5m³ and V₄= 4.7m³. What is the temperature at step 4?
-a) 2.07 x 10² K
+b) 6.56 x 10² K
-c) 2.07 x 10³ K
-d) 6.56 x 10³ K
-e) 2.07 x 10⁴ K
=====*_Rendition_* 4-3=====
<!--a15Thermodynamics_heatEngine_4-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 1.3 moles of an ideal gas. The pressures and volumes are: P₁= 1.6 kPa, P₂= 4.3 kPa. The volumes are V₁= 2.9m³ and V₄= 5.8m³. What is the temperature at step 4?
-a) 8.59 x 10⁰ K
-b) 2.71 x 10¹ K
-c) 8.59 x 10¹ K
-d) 2.71 x 10² K
+e) 8.59 x 10² K
=====*_Rendition_* 4-4=====
<!--a15Thermodynamics_heatEngine_4-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 2.5 moles of an ideal gas. The pressures and volumes are: P₁= 2.2 kPa, P₂= 3.8 kPa. The volumes are V₁= 2.9m³ and V₄= 5.4m³. What is the temperature at step 4?
-a) 5.71 x 10⁰ K
-b) 1.81 x 10¹ K
-c) 5.71 x 10¹ K
-d) 1.81 x 10² K
+e) 5.71 x 10² K
=====*_Rendition_* 4-5=====
<!--a15Thermodynamics_heatEngine_4-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 1.5 moles of an ideal gas. The pressures and volumes are: P₁= 2.6 kPa, P₂= 5.7 kPa. The volumes are V₁= 2.7m³ and V₄= 5.5m³. What is the temperature at step 4?
+a) 1.15 x 10³ K
-b) 3.63 x 10³ K
-c) 1.15 x 10⁴ K
-d) 3.63 x 10⁴ K
-e) 1.15 x 10⁵ K
=====*_Rendition_* 4-6=====
<!--a15Thermodynamics_heatEngine_4-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 1.6 moles of an ideal gas. The pressures and volumes are: P₁= 1.5 kPa, P₂= 3 kPa. The volumes are V₁= 2.4m³ and V₄= 4.5m³. What is the temperature at step

4?
-a) 1.6 x 10¹ K
-b) 5.07 x 10¹ K
-c) 1.6 x 10² K
+d) 5.07 x 10² K
-e) 1.6 x 10³ K
=====*_Rendition_* 4-7=====
<!--a15Thermodynamics_heatEngine_4-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 2 moles of an ideal gas. The pressures and volumes are: P₁= 2.6 kPa, P₂= 4.9 kPa. The volumes are V₁= 1.2m³ and V₄= 3.5m³. What is the temperature at step 4?
-a) 5.47 x 10¹ K
-b) 1.73 x 10² K
+c) 5.47 x 10² K
-d) 1.73 x 10³ K
-e) 5.47 x 10³ K
=====*_Rendition_* 4-8=====
<!--a15Thermodynamics_heatEngine_4-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 1.9 moles of an ideal gas. The pressures and volumes are: P₁= 2.9 kPa, P₂= 4.7 kPa. The volumes are V₁= 2.7m³ and V₄= 5.6m³. What is the temperature at step 4?
-a) 1.03 x 10¹ K
-b) 3.25 x 10¹ K
-c) 1.03 x 10² K
-d) 3.25 x 10² K
+e) 1.03 x 10³ K
=====*_Rendition_* 4-9=====
<!--a15Thermodynamics_heatEngine_4-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 1.4 moles of an ideal gas. The pressures and volumes are: P₁= 1.4 kPa, P₂= 4.1 kPa. The volumes are V₁= 2.1m³ and V₄= 4.7m³. What is the temperature at step 4?
-a) 1.79 x 10² K
+b) 5.65 x 10² K
-c) 1.79 x 10³ K
-d) 5.65 x 10³ K
-e) 1.79 x 10⁴ K
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Instructions are forthcoming

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===*_Quiz_*===
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{<!--a16OscillationsWaves_amplitudes_1-->A 0.156 kg mass is on a
spring that causes the frequency of oscillation to be 95 cycles per
second.  The maximum velocity is 50.6 m/s.  What is the maximum force
on the mass?}
-a) 2.2 x 10<sup>3</sup> N
+b) 4.7 x 10<sup>3</sup> N
-c) 1 x 10<sup>4</sup> N
-d) 2.2 x 10<sup>4</sup> N
-e) 4.7 x 10<sup>4</sup> N

{<!--a16OscillationsWaves_amplitudes_2-->A spring with spring constant
5.5 kN/m is attached to a 9.8 gram mass.  The maximum acelleration is
3.4 m/s<sup>2</sup>.  What is the maximum displacement?}
-a) 1.92 x 10<sup>-7</sup> m
-b) 6.06 x 10<sup>-7</sup> m
-c) 1.92 x 10<sup>-6</sup> m
+d) 6.06 x 10<sup>-6</sup> m
-e) 1.92 x 10<sup>-5</sup> m

{<!--a16OscillationsWaves_amplitudes_3-->A spring of spring constant
9.1 kN/m causes a mass to move with a period of 6.5 ms. The maximum
displacement is 8.1 mm.  What is the maximum kinetic energy?}
-a) 9.44 x 10<sup>-3</sup> J
-b) 2.99 x 10<sup>-2</sup> J
-c) 9.44 x 10<sup>-2</sup> J
+d) 2.99 x 10<sup>-1</sup> J
-e) 9.44 x 10<sup>-1</sup> J

{<!--a16OscillationsWaves_amplitudes_4-->A spring with spring constant
3.1 kN/m undergoes simple harmonic motion with a frequency of 2.9 kHz.
 The maximum force  is 2.3 N.  What is the total energy?}
-a) 2.7 x 10<sup>-4</sup> J
```

+b) 8.53 x 10⁻⁴ J
-c) 2.7 x 10⁻³ J
-d) 8.53 x 10⁻³ J
-e) 2.7 x 10⁻² J

</quiz>

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Other renditions
<div class="mw-collapsible-content">
====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a16OscillationsWaves_amplitudes_1-->A 0.047 kg mass is on a spring that causes the frequency of oscillation to be 26 cycles per second. The maximum velocity is 90.5 m/s. What is the maximum force on the mass?
-a) 1.5 x 10² N
-b) 3.2 x 10² N
+c) 6.9 x 10² N
-d) 1.5 x 10³ N
-e) 3.2 x 10³ N
=====*_Rendition_* 1-3=====
<!--a16OscillationsWaves_amplitudes_1-->A 0.111 kg mass is on a spring that causes the frequency of oscillation to be 63 cycles per second. The maximum velocity is 20.3 m/s. What is the maximum force on the mass?
-a) 1.9 x 10² N
-b) 4.1 x 10² N
+c) 8.9 x 10² N
-d) 1.9 x 10³ N
-e) 4.1 x 10³ N
=====*_Rendition_* 1-4=====
<!--a16OscillationsWaves_amplitudes_1-->A 0.062 kg mass is on a spring that causes the frequency of oscillation to be 65 cycles per second. The maximum velocity is 70.2 m/s. What is the maximum force on the mass?
+a) 1.8 x 10³ N
-b) 3.8 x 10³ N
-c) 8.3 x 10³ N
-d) 1.8 x 10⁴ N
-e) 3.8 x 10⁴ N
=====*_Rendition_* 1-5=====
<!--a16OscillationsWaves_amplitudes_1-->A 0.177 kg mass is on a spring that causes the frequency of oscillation to be 71 cycles per second. The maximum velocity is 60.9 m/s. What is the maximum force on the mass?
-a) 2.2 x 10³ N
+b) 4.8 x 10³ N
-c) 1 x 10⁴ N

-d) 2.2 x 10⁴ N
-e) 4.8 x 10⁴ N
=====*_Rendition_* 1-6=====
<!--a16OscillationsWaves_amplitudes_1-->A 0.187 kg mass is on a spring that causes the frequency of oscillation to be 34 cycles per second. The maximum velocity is 90.3 m/s. What is the maximum force on the mass?
-a) 1.7 x 10² N
-b) 3.6 x 10² N
-c) 7.8 x 10² N
-d) 1.7 x 10³ N
+e) 3.6 x 10³ N
=====*_Rendition_* 1-7=====
<!--a16OscillationsWaves_amplitudes_1-->A 0.035 kg mass is on a spring that causes the frequency of oscillation to be 36 cycles per second. The maximum velocity is 60.7 m/s. What is the maximum force on the mass?
-a) 1 x 10² N
-b) 2.2 x 10² N
+c) 4.8 x 10² N
-d) 1 x 10³ N
-e) 2.2 x 10³ N
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a16OscillationsWaves_amplitudes_2-->A spring with spring constant 5.9 kN/m is attached to a 6.5 gram mass. The maximum acelleration is 3.6 m/s². What is the maximum displacement?
-a) 1.25 x 10⁻⁶ m
+b) 3.97 x 10⁻⁶ m
-c) 1.25 x 10⁻⁵ m
-d) 3.97 x 10⁻⁵ m
-e) 1.25 x 10⁻⁴ m
=====*_Rendition_* 2-3=====
<!--a16OscillationsWaves_amplitudes_2-->A spring with spring constant 7.8 kN/m is attached to a 2.5 gram mass. The maximum acelleration is 6.8 m/s². What is the maximum displacement?
-a) 6.89 x 10⁻⁷ m
+b) 2.18 x 10⁻⁶ m
-c) 6.89 x 10⁻⁶ m
-d) 2.18 x 10⁻⁵ m
-e) 6.89 x 10⁻⁵ m
=====*_Rendition_* 2-4=====
<!--a16OscillationsWaves_amplitudes_2-->A spring with spring constant 2.9 kN/m is attached to a 6.7 gram mass. The maximum acelleration is 3.8 m/s². What is the maximum displacement?
-a) 8.78 x 10⁻⁸ m
-b) 2.78 x 10⁻⁷ m
-c) 8.78 x 10⁻⁷ m
-d) 2.78 x 10⁻⁶ m
+e) 8.78 x 10⁻⁶ m
=====*_Rendition_* 2-5=====
<!--a16OscillationsWaves_amplitudes_2-->A spring with spring constant

7.8 kN/m is attached to a 5.7 gram mass. The maximum acelleration is 5.9 m/s². What is the maximum displacement?
-a) 1.36 x 10⁻⁷ m
-b) 4.31 x 10⁻⁷ m
-c) 1.36 x 10⁻⁶ m
+d) 4.31 x 10⁻⁶ m
-e) 1.36 x 10⁻⁵ m
=====*_Rendition_* 2-6=====
<!--a16OscillationsWaves_amplitudes_2-->A spring with spring constant 9.6 kN/m is attached to a 9.1 gram mass. The maximum acelleration is 1.6 m/s². What is the maximum displacement?
-a) 4.8 x 10⁻⁷ m
+b) 1.52 x 10⁻⁶ m
-c) 4.8 x 10⁻⁶ m
-d) 1.52 x 10⁻⁵ m
-e) 4.8 x 10⁻⁵ m
=====*_Rendition_* 2-7=====
<!--a16OscillationsWaves_amplitudes_2-->A spring with spring constant 2.5 kN/m is attached to a 7.7 gram mass. The maximum acelleration is 1.2 m/s². What is the maximum displacement?
-a) 3.7 x 10⁻⁸ m
-b) 1.17 x 10⁻⁷ m
-c) 3.7 x 10⁻⁷ m
-d) 1.17 x 10⁻⁶ m
+e) 3.7 x 10⁻⁶ m
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a16OscillationsWaves_amplitudes_3-->A spring of spring constant 8.7 kN/m causes a mass to move with a period of 5.2 ms. The maximum displacement is 7.1 mm. What is the maximum kinetic energy?
+a) 2.19 x 10⁻¹ J
-b) 6.93 x 10⁻¹ J
-c) 2.19 x 10⁰ J
-d) 6.93 x 10⁰ J
-e) 2.19 x 10¹ J
=====*_Rendition_* 3-3=====
<!--a16OscillationsWaves_amplitudes_3-->A spring of spring constant 8.4 kN/m causes a mass to move with a period of 2.2 ms. The maximum displacement is 2.1 mm. What is the maximum kinetic energy?
-a) 1.85 x 10⁻³ J
-b) 5.86 x 10⁻³ J
+c) 1.85 x 10⁻² J
-d) 5.86 x 10⁻² J
-e) 1.85 x 10⁻¹ J
=====*_Rendition_* 3-4=====
<!--a16OscillationsWaves_amplitudes_3-->A spring of spring constant 2.1 kN/m causes a mass to move with a period of 1.4 ms. The maximum displacement is 6.6 mm. What is the maximum kinetic energy?
-a) 1.45 x 10⁻³ J
-b) 4.57 x 10⁻³ J
-c) 1.45 x 10⁻² J
+d) 4.57 x 10⁻² J

-e) 1.45 x 10⁻¹ J
=====*_Rendition_* 3-5=====
<!--a16OscillationsWaves_amplitudes_3-->A spring of spring constant 6.9 kN/m causes a mass to move with a period of 8.6 ms. The maximum displacement is 2.3 mm. What is the maximum kinetic energy?
-a) 5.77 x 10⁻³ J
+b) 1.83 x 10⁻² J
-c) 5.77 x 10⁻² J
-d) 1.83 x 10⁻¹ J
-e) 5.77 x 10⁻¹ J
=====*_Rendition_* 3-6=====
<!--a16OscillationsWaves_amplitudes_3-->A spring of spring constant 4.9 kN/m causes a mass to move with a period of 8.8 ms. The maximum displacement is 2.1 mm. What is the maximum kinetic energy?
-a) 3.42 x 10⁻³ J
+b) 1.08 x 10⁻² J
-c) 3.42 x 10⁻² J
-d) 1.08 x 10⁻¹ J
-e) 3.42 x 10⁻¹ J
=====*_Rendition_* 3-7=====
<!--a16OscillationsWaves_amplitudes_3-->A spring of spring constant 2.9 kN/m causes a mass to move with a period of 5.2 ms. The maximum displacement is 3.8 mm. What is the maximum kinetic energy?
-a) 2.09 x 10⁻³ J
-b) 6.62 x 10⁻³ J
+c) 2.09 x 10⁻² J
-d) 6.62 x 10⁻² J
-e) 2.09 x 10⁻¹ J
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a16OscillationsWaves_amplitudes_4-->A spring with spring constant 1.7 kN/m undergoes simple harmonic motion with a frequency of 3.9 kHz. The maximum force is 8.6 N. What is the total energy?
-a) 2.18 x 10⁻⁴ J
-b) 6.88 x 10⁻⁴ J
-c) 2.18 x 10⁻³ J
-d) 6.88 x 10⁻³ J
+e) 2.18 x 10⁻² J
=====*_Rendition_* 4-3=====
<!--a16OscillationsWaves_amplitudes_4-->A spring with spring constant 2.8 kN/m undergoes simple harmonic motion with a frequency of 8.5 kHz. The maximum force is 8.2 N. What is the total energy?
+a) 1.2 x 10⁻² J
-b) 3.8 x 10⁻² J
-c) 1.2 x 10⁻¹ J
-d) 3.8 x 10⁻¹ J
-e) 1.2 x 10⁰ J
=====*_Rendition_* 4-4=====
<!--a16OscillationsWaves_amplitudes_4-->A spring with spring constant 2.7 kN/m undergoes simple harmonic motion with a frequency of 3.1 kHz. The maximum force is 6.3 N. What is the total energy?
-a) 2.32 x 10⁻³ J

+b) 7.35 x 10⁻³ J
-c) 2.32 x 10⁻² J
-d) 7.35 x 10⁻² J
-e) 2.32 x 10⁻¹ J
=====*_Rendition_* 4-5=====
<!--a16OscillationsWaves_amplitudes_4-->A spring with spring constant 1.2 kN/m undergoes simple harmonic motion with a frequency of 5.3 kHz. The maximum force is 1.5 N. What is the total energy?
-a) 2.96 x 10⁻⁵ J
-b) 9.38 x 10⁻⁵ J
-c) 2.96 x 10⁻⁴ J
+d) 9.38 x 10⁻⁴ J
-e) 2.96 x 10⁻³ J
=====*_Rendition_* 4-6=====
<!--a16OscillationsWaves_amplitudes_4-->A spring with spring constant 7.7 kN/m undergoes simple harmonic motion with a frequency of 4.4 kHz. The maximum force is 9.4 N. What is the total energy?
-a) 5.74 x 10⁻⁵ J
-b) 1.81 x 10⁻⁴ J
-c) 5.74 x 10⁻⁴ J
-d) 1.81 x 10⁻³ J
+e) 5.74 x 10⁻³ J
=====*_Rendition_* 4-7=====
<!--a16OscillationsWaves_amplitudes_4-->A spring with spring constant 1.1 kN/m undergoes simple harmonic motion with a frequency of 8.4 kHz. The maximum force is 3.8 N. What is the total energy?
-a) 6.56 x 10⁻⁴ J
-b) 2.08 x 10⁻³ J
+c) 6.56 x 10⁻³ J
-d) 2.08 x 10⁻² J
-e) 6.56 x 10⁻² J
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Instructions are forthcoming

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[[Category:QB/Numerical]]
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===*_Quiz_*===
<quiz display=simple>
{<!--a17PhysHearing_echoString_1-->The temperature is -2 degrees Celsius, and you are standing 0.88 km from a cliff. What is the echo time?}
-a) 4.238 x 10⁰ seconds
-b) 4.576 x 10⁰ seconds
-c) 4.941 x 10⁰ seconds
+d) 5.335 x 10⁰ seconds
-e) 5.761 x 10⁰ seconds

{<!--a17PhysHearing_echoString_2-->While standing 0.88 km from a cliff, you measure the echo time to be 5.069 seconds. What is the temperature?}
+a) 2.72 x 10¹Celsius
-b) 3.15 x 10¹Celsius
-c) 3.63 x 10¹Celsius
-d) 4.19 x 10¹Celsius
-e) 4.84 x 10¹Celsius

{<!--a17PhysHearing_echoString_3-->What is the speed of a transverse wave on a string if the string is 1.11 m long, clamped at both ends, and harmonic number 4 has a frequency of 611 Hz?}
-a) 1.57 x 10² unit
-b) 1.91 x 10² unit
-c) 2.31 x 10² unit
-d) 2.8 x 10² unit
+e) 3.39 x 10² unit

</quiz>

<div class="toccolours mw-collapsible mw-collapsed" style="width:100%">

Other renditions
<div class="mw-collapsible-content">
====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a17PhysHearing_echoString_1-->The temperature is -1.3 degrees Celsius, and you are standing 0.89 km from a cliff. What is the echo time?
+a) 5.389 x 10⁰ seconds
-b) 5.819 x 10⁰ seconds
-c) 6.283 x 10⁰ seconds

-d) 6.784 x 10⁰ seconds
-e) 7.326 x 10⁰ seconds
=====*_Rendition_* 1-3=====
<!--a17PhysHearing_echoString_1-->The temperature is -2.9 degrees Celsius, and you are standing 0.77 km from a cliff. What is the echo time?
-a) 3.714 x 10⁰ seconds
-b) 4.011 x 10⁰ seconds
-c) 4.331 x 10⁰ seconds
+d) 4.676 x 10⁰ seconds
-e) 5.049 x 10⁰ seconds
=====*_Rendition_* 1-4=====
<!--a17PhysHearing_echoString_1-->The temperature is -2.7 degrees Celsius, and you are standing 0.58 km from a cliff. What is the echo time?
-a) 2.797 x 10⁰ seconds
-b) 3.02 x 10⁰ seconds
-c) 3.261 x 10⁰ seconds
+d) 3.521 x 10⁰ seconds
-e) 3.802 x 10⁰ seconds
=====*_Rendition_* 1-5=====
<!--a17PhysHearing_echoString_1-->The temperature is -2.9 degrees Celsius, and you are standing 0.76 km from a cliff. What is the echo time?
-a) 3.395 x 10⁰ seconds
-b) 3.666 x 10⁰ seconds
-c) 3.959 x 10⁰ seconds
-d) 4.274 x 10⁰ seconds
+e) 4.615 x 10⁰ seconds
=====*_Rendition_* 1-6=====
<!--a17PhysHearing_echoString_1-->The temperature is -1.4 degrees Celsius, and you are standing 0.94 km from a cliff. What is the echo time?
-a) 4.883 x 10⁰ seconds
-b) 5.272 x 10⁰ seconds
+c) 5.693 x 10⁰ seconds
-d) 6.147 x 10⁰ seconds
-e) 6.637 x 10⁰ seconds
=====*_Rendition_* 1-7=====
<!--a17PhysHearing_echoString_1-->The temperature is -2.4 degrees Celsius, and you are standing 0.94 km from a cliff. What is the echo time?
-a) 4.53 x 10⁰ seconds
-b) 4.892 x 10⁰ seconds
-c) 5.282 x 10⁰ seconds
+d) 5.703 x 10⁰ seconds
-e) 6.158 x 10⁰ seconds
=====*_Rendition_* 1-8=====
<!--a17PhysHearing_echoString_1-->The temperature is -3 degrees Celsius, and you are standing 0.66 km from a cliff. What is the echo time?
-a) 2.949 x 10⁰ seconds

-b) 3.184 x 10⁰ seconds
-c) 3.438 x 10⁰ seconds
-d) 3.713 x 10⁰ seconds
+e) 4.009 x 10⁰ seconds
=====*_Rendition_* 1-9=====
<!--a17PhysHearing_echoString_1-->The temperature is -2.3 degrees Celsius, and you are standing 0.62 km from a cliff. What is the echo time?
-a) 3.226 x 10⁰ seconds
-b) 3.483 x 10⁰ seconds
+c) 3.761 x 10⁰ seconds
-d) 4.061 x 10⁰ seconds
-e) 4.385 x 10⁰ seconds
=====*_Rendition_* 1-10=====
<!--a17PhysHearing_echoString_1-->The temperature is -2.1 degrees Celsius, and you are standing 0.83 km from a cliff. What is the echo time?
+a) 5.033 x 10⁰ seconds
-b) 5.435 x 10⁰ seconds
-c) 5.868 x 10⁰ seconds
-d) 6.336 x 10⁰ seconds
-e) 6.842 x 10⁰ seconds
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a17PhysHearing_echoString_2-->While standing 0.89 km from a cliff, you measure the echo time to be 5.227 seconds. What is the temperature?
+a) 1.58 x 10¹Celsius
-b) 1.83 x 10¹Celsius
-c) 2.11 x 10¹Celsius
-d) 2.44 x 10¹Celsius
-e) 2.81 x 10¹Celsius
=====*_Rendition_* 2-3=====
<!--a17PhysHearing_echoString_2-->While standing 0.77 km from a cliff, you measure the echo time to be 4.442 seconds. What is the temperature?
-a) 1.48 x 10¹Celsius
-b) 1.71 x 10¹Celsius
-c) 1.98 x 10¹Celsius
-d) 2.28 x 10¹Celsius
+e) 2.63 x 10¹Celsius
=====*_Rendition_* 2-4=====
<!--a17PhysHearing_echoString_2-->While standing 0.58 km from a cliff, you measure the echo time to be 3.38 seconds. What is the temperature?
-a) 1.53 x 10¹Celsius
-b) 1.76 x 10¹Celsius
+c) 2.03 x 10¹Celsius
-d) 2.35 x 10¹Celsius
-e) 2.71 x 10¹Celsius
=====*_Rendition_* 2-5=====
<!--a17PhysHearing_echoString_2-->While standing 0.76 km from a cliff,

you measure the echo time to be 4.339 seconds. What is the temperature?
-a) 2.83 x 10¹Celsius
+b) 3.26 x 10¹Celsius
-c) 3.77 x 10¹Celsius
-d) 4.35 x 10¹Celsius
-e) 5.03 x 10¹Celsius
=====*_Rendition_* 2-6=====
<!--a17PhysHearing_echoString_2-->While standing 0.94 km from a cliff, you measure the echo time to be 5.522 seconds. What is the temperature?
+a) 1.57 x 10¹Celsius
-b) 1.81 x 10¹Celsius
-c) 2.09 x 10¹Celsius
-d) 2.41 x 10¹Celsius
-e) 2.79 x 10¹Celsius
=====*_Rendition_* 2-7=====
<!--a17PhysHearing_echoString_2-->While standing 0.94 km from a cliff, you measure the echo time to be 5.418 seconds. What is the temperature?
-a) 2.33 x 10¹Celsius
+b) 2.69 x 10¹Celsius
-c) 3.1 x 10¹Celsius
-d) 3.58 x 10¹Celsius
-e) 4.14 x 10¹Celsius
=====*_Rendition_* 2-8=====
<!--a17PhysHearing_echoString_2-->While standing 0.66 km from a cliff, you measure the echo time to be 3.768 seconds. What is the temperature?
+a) 3.26 x 10¹Celsius
-b) 3.77 x 10¹Celsius
-c) 4.35 x 10¹Celsius
-d) 5.03 x 10¹Celsius
-e) 5.81 x 10¹Celsius
=====*_Rendition_* 2-9=====
<!--a17PhysHearing_echoString_2-->While standing 0.62 km from a cliff, you measure the echo time to be 3.648 seconds. What is the temperature?
+a) 1.47 x 10¹Celsius
-b) 1.7 x 10¹Celsius
-c) 1.97 x 10¹Celsius
-d) 2.27 x 10¹Celsius
-e) 2.62 x 10¹Celsius
=====*_Rendition_* 2-10=====
<!--a17PhysHearing_echoString_2-->While standing 0.83 km from a cliff, you measure the echo time to be 4.832 seconds. What is the temperature?
-a) 1.57 x 10¹Celsius
-b) 1.81 x 10¹Celsius
+c) 2.09 x 10¹Celsius
-d) 2.42 x 10¹Celsius
-e) 2.79 x 10¹Celsius

====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a17PhysHearing_echoString_3-->What is the speed of a transverse wave on a string if the string is 0.68 m long, clamped at both ends, and harmonic number 3 has a frequency of 756 Hz?
+a) 3.43 x 10² unit
-b) 4.15 x 10² unit
-c) 5.03 x 10² unit
-d) 6.09 x 10² unit
-e) 7.38 x 10² unit
=====*_Rendition_* 3-3=====
<!--a17PhysHearing_echoString_3-->What is the speed of a transverse wave on a string if the string is 0.94 m long, clamped at both ends, and harmonic number 5 has a frequency of 715 Hz?
-a) 1.83 x 10² unit
-b) 2.22 x 10² unit
+c) 2.69 x 10² unit
-d) 3.26 x 10² unit
-e) 3.95 x 10² unit
=====*_Rendition_* 3-4=====
<!--a17PhysHearing_echoString_3-->What is the speed of a transverse wave on a string if the string is 1.19 m long, clamped at both ends, and harmonic number 6 has a frequency of 834 Hz?
-a) 2.25 x 10² unit
-b) 2.73 x 10² unit
+c) 3.31 x 10² unit
-d) 4.01 x 10² unit
-e) 4.86 x 10² unit
=====*_Rendition_* 3-5=====
<!--a17PhysHearing_echoString_3-->What is the speed of a transverse wave on a string if the string is 0.5 m long, clamped at both ends, and harmonic number 4 has a frequency of 316 Hz?
+a) 7.9 x 10¹ unit
-b) 9.57 x 10¹ unit
-c) 1.16 x 10² unit
-d) 1.4 x 10² unit
-e) 1.7 x 10² unit
=====*_Rendition_* 3-6=====
<!--a17PhysHearing_echoString_3-->What is the speed of a transverse wave on a string if the string is 1.13 m long, clamped at both ends, and harmonic number 5 has a frequency of 409 Hz?
-a) 1.26 x 10² unit
-b) 1.53 x 10² unit
+c) 1.85 x 10² unit
-d) 2.24 x 10² unit
-e) 2.71 x 10² unit
=====*_Rendition_* 3-7=====
<!--a17PhysHearing_echoString_3-->What is the speed of a transverse wave on a string if the string is 1.05 m long, clamped at both ends, and harmonic number 5 has a frequency of 110 Hz?
-a) 3.15 x 10¹ unit
-b) 3.81 x 10¹ unit

+c) 4.62 x 10¹ unit
-d) 5.6 x 10¹ unit
-e) 6.78 x 10¹ unit
=====*_Rendition_* 3-8=====
<!--a17PhysHearing_echoString_3-->What is the speed of a transverse wave on a string if the string is 0.58 m long, clamped at both ends, and harmonic number 4 has a frequency of 543 Hz?
-a) 8.86 x 10¹ unit
-b) 1.07 x 10² unit
-c) 1.3 x 10² unit
+d) 1.57 x 10² unit
-e) 1.91 x 10² unit
=====*_Rendition_* 3-9=====
<!--a17PhysHearing_echoString_3-->What is the speed of a transverse wave on a string if the string is 0.45 m long, clamped at both ends, and harmonic number 4 has a frequency of 996 Hz?
-a) 1.53 x 10² unit
-b) 1.85 x 10² unit
+c) 2.24 x 10² unit
-d) 2.72 x 10² unit
-e) 3.29 x 10² unit
=====*_Rendition_* 3-10=====
<!--a17PhysHearing_echoString_3-->What is the speed of a transverse wave on a string if the string is 1.05 m long, clamped at both ends, and harmonic number 5 has a frequency of 153 Hz?
-a) 5.3 x 10¹ unit
+b) 6.43 x 10¹ unit
-c) 7.79 x 10¹ unit
-d) 9.43 x 10¹ unit
-e) 1.14 x 10² unit
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====*_Instructions_*====
Instructions are forthcoming

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===*_Quiz_*===
<quiz display=simple>
{<!--a18ElectricChargeField_findE_1-->What is the magnitude of the electric field at the origin if a 1.8 nC charge is placed at x = 7.9 m, and a 2.1 nC charge is placed at y = 7 m?}
-a) 2.61 x 10⁻¹N/C
-b) 3.02 x 10⁻¹N/C
-c) 3.48 x 10⁻¹N/C
-d) 4.02 x 10⁻¹N/C
+e) 4.64 x 10⁻¹N/C

{<!--a18ElectricChargeField_findE_2-->What angle does the electric field at the origin make with the x-axis if a 1.1 nC charge is placed at x = -6.5 m, and a 1.4 nC charge is placed at y = -8.3 m?}
+a) 3.8 x 10¹degrees
-b) 4.39 x 10¹degrees
-c) 5.06 x 10¹degrees
-d) 5.85 x 10¹degrees
-e) 6.75 x 10¹degrees

{<!--a18ElectricChargeField_findE_3-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(6a, 4a) is βkQ/a², where β equals}
-a) 1.33 x 10⁻³
-b) 1.61 x 10⁻³
-c) 1.95 x 10⁻³
-d) 2.37 x 10⁻³
+e) 2.87 x 10⁻³

{<!--a18ElectricChargeField_findE_4-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the y component of the electric field at (x,y) =(1.1a, 1.2a) is βkQ/a², where β equals }
-a) 2.36 x 10⁻¹
-b) 2.86 x 10⁻¹
+c) 3.47 x 10⁻¹
-d) 4.2 x 10⁻¹
-e) 5.09 x 10⁻¹

</quiz>

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Other renditions
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====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a18ElectricChargeField_findE_1-->What is the magnitude of the electric field at the origin if a 2.9 nC charge is placed at x = 5.9 m, and a 2.7 nC charge is placed at y = 9.2 m?
+a) 8.02 x 10⁻¹N/C
-b) 9.26 x 10⁻¹N/C
-c) 1.07 x 10⁰N/C
-d) 1.23 x 10⁰N/C
-e) 1.43 x 10⁰N/C
=====*_Rendition_* 1-3=====
<!--a18ElectricChargeField_findE_1-->What is the magnitude of the electric field at the origin if a 2.1 nC charge is placed at x = 7 m, and a 2.1 nC charge is placed at y = 8.6 m?
-a) 3 x 10⁻¹N/C
-b) 3.47 x 10⁻¹N/C
-c) 4 x 10⁻¹N/C
+d) 4.62 x 10⁻¹N/C
-e) 5.34 x 10⁻¹N/C
=====*_Rendition_* 1-4=====
<!--a18ElectricChargeField_findE_1-->What is the magnitude of the electric field at the origin if a 3.1 nC charge is placed at x = 6.2 m, and a 2.6 nC charge is placed at y = 6 m?
-a) 5.47 x 10⁻¹N/C
-b) 6.32 x 10⁻¹N/C
-c) 7.3 x 10⁻¹N/C
-d) 8.43 x 10⁻¹N/C
+e) 9.73 x 10⁻¹N/C
=====*_Rendition_* 1-5=====
<!--a18ElectricChargeField_findE_1-->What is the magnitude of the electric field at the origin if a 3 nC charge is placed at x = 5.1 m, and a 2 nC charge is placed at y = 8.6 m?
-a) 7.99 x 10⁻¹N/C
-b) 9.22 x 10⁻¹N/C
+c) 1.07 x 10⁰N/C
-d) 1.23 x 10⁰N/C
-e) 1.42 x 10⁰N/C
=====*_Rendition_* 1-6=====
<!--a18ElectricChargeField_findE_1-->What is the magnitude of the electric field at the origin if a 1.8 nC charge is placed at x = 9.6 m, and a 2 nC charge is placed at y = 8.7 m?
+a) 2.95 x 10⁻¹N/C
-b) 3.41 x 10⁻¹N/C
-c) 3.94 x 10⁻¹N/C
-d) 4.55 x 10⁻¹N/C
-e) 5.25 x 10⁻¹N/C
=====*_Rendition_* 1-7=====
<!--a18ElectricChargeField_findE_1-->What is the magnitude of the

electric field at the origin if a 1.7 nC charge is placed at x = 6.4 m, and a 3 nC charge is placed at y = 8 m?
-a) 4.22 x 10⁻¹N/C
-b) 4.87 x 10⁻¹N/C
+c) 5.63 x 10⁻¹N/C
-d) 6.5 x 10⁻¹N/C
-e) 7.51 x 10⁻¹N/C
=====*_Rendition_* 1-8=====
<!--a18ElectricChargeField_findE_1-->What is the magnitude of the electric field at the origin if a 1.9 nC charge is placed at x = 9.7 m, and a 3.1 nC charge is placed at y = 5.5 m?
-a) 5.28 x 10⁻¹N/C
-b) 6.1 x 10⁻¹N/C
-c) 7.04 x 10⁻¹N/C
-d) 8.13 x 10⁻¹N/C
+e) 9.39 x 10⁻¹N/C
=====*_Rendition_* 1-9=====
<!--a18ElectricChargeField_findE_1-->What is the magnitude of the electric field at the origin if a 2.7 nC charge is placed at x = 9.1 m, and a 2.5 nC charge is placed at y = 5.9 m?
-a) 3.99 x 10⁻¹N/C
-b) 4.6 x 10⁻¹N/C
-c) 5.32 x 10⁻¹N/C
-d) 6.14 x 10⁻¹N/C
+e) 7.09 x 10⁻¹N/C
=====*_Rendition_* 1-10=====
<!--a18ElectricChargeField_findE_1-->What is the magnitude of the electric field at the origin if a 1.2 nC charge is placed at x = 5.9 m, and a 3.1 nC charge is placed at y = 6.1 m?
-a) 7.02 x 10⁻¹N/C
+b) 8.11 x 10⁻¹N/C
-c) 9.36 x 10⁻¹N/C
-d) 1.08 x 10⁰N/C
-e) 1.25 x 10⁰N/C
=====*_Rendition_* 1-11=====
<!--a18ElectricChargeField_findE_1-->What is the magnitude of the electric field at the origin if a 1.4 nC charge is placed at x = 8.2 m, and a 2.3 nC charge is placed at y = 5.9 m?
-a) 5.39 x 10⁻¹N/C
+b) 6.23 x 10⁻¹N/C
-c) 7.19 x 10⁻¹N/C
-d) 8.31 x 10⁻¹N/C
-e) 9.59 x 10⁻¹N/C
=====*_Rendition_* 1-12=====
<!--a18ElectricChargeField_findE_1-->What is the magnitude of the electric field at the origin if a 3 nC charge is placed at x = 8.8 m, and a 2.9 nC charge is placed at y = 6.9 m?
-a) 4.87 x 10⁻¹N/C
-b) 5.62 x 10⁻¹N/C
+c) 6.49 x 10⁻¹N/C
-d) 7.49 x 10⁻¹N/C
-e) 8.65 x 10⁻¹N/C

=====*_Rendition_* 1-13=====
<!--a18ElectricChargeField_findE_1-->What is the magnitude of the electric field at the origin if a 2.5 nC charge is placed at x = 5.3 m, and a 1.9 nC charge is placed at y = 5.6 m?
-a) 7.26 x 10⁻¹N/C
-b) 8.38 x 10⁻¹N/C
+c) 9.68 x 10⁻¹N/C
-d) 1.12 x 10⁰N/C
-e) 1.29 x 10⁰N/C
=====*_Rendition_* 1-14=====
<!--a18ElectricChargeField_findE_1-->What is the magnitude of the electric field at the origin if a 1.8 nC charge is placed at x = 5.2 m, and a 3.1 nC charge is placed at y = 7.6 m?
+a) 7.69 x 10⁻¹N/C
-b) 8.88 x 10⁻¹N/C
-c) 1.03 x 10⁰N/C
-d) 1.18 x 10⁰N/C
-e) 1.37 x 10⁰N/C
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a18ElectricChargeField_findE_2-->What angle does the electric field at the origin make with the x-axis if a 1.3 nC charge is placed at x = -9 m, and a 1.5 nC charge is placed at y = -5.2 m?
-a) 4.15 x 10¹degrees
-b) 4.8 x 10¹degrees
-c) 5.54 x 10¹degrees
-d) 6.4 x 10¹degrees
+e) 7.39 x 10¹degrees
=====*_Rendition_* 2-3=====
<!--a18ElectricChargeField_findE_2-->What angle does the electric field at the origin make with the x-axis if a 1.4 nC charge is placed at x = -8.7 m, and a 2.7 nC charge is placed at y = -8.3 m?
-a) 4.85 x 10¹degrees
-b) 5.61 x 10¹degrees
+c) 6.47 x 10¹degrees
-d) 7.48 x 10¹degrees
-e) 8.63 x 10¹degrees
=====*_Rendition_* 2-4=====
<!--a18ElectricChargeField_findE_2-->What angle does the electric field at the origin make with the x-axis if a 2 nC charge is placed at x = -8.7 m, and a 2.7 nC charge is placed at y = -5.2 m?
-a) 4.23 x 10¹degrees
-b) 4.88 x 10¹degrees
-c) 5.64 x 10¹degrees
-d) 6.51 x 10¹degrees
+e) 7.52 x 10¹degrees
=====*_Rendition_* 2-5=====
<!--a18ElectricChargeField_findE_2-->What angle does the electric field at the origin make with the x-axis if a 2 nC charge is placed at x = -8 m, and a 1.4 nC charge is placed at y = -9.3 m?
-a) 2.37 x 10¹degrees
+b) 2.74 x 10¹degrees

-c) 3.16 x 10¹degrees
-d) 3.65 x 10¹degrees
-e) 4.22 x 10¹degrees
=====*_Rendition_* 2-6=====
<!--a18ElectricChargeField_findE_2-->What angle does the electric field at the origin make with the x-axis if a 1.9 nC charge is placed at x = -5.4 m, and a 1.5 nC charge is placed at y = -7.1 m?
-a) 1.38 x 10¹degrees
-b) 1.59 x 10¹degrees
-c) 1.84 x 10¹degrees
-d) 2.13 x 10¹degrees
+e) 2.45 x 10¹degrees
=====*_Rendition_* 2-7=====
<!--a18ElectricChargeField_findE_2-->What angle does the electric field at the origin make with the x-axis if a 1.8 nC charge is placed at x = -6.9 m, and a 2.5 nC charge is placed at y = -7.5 m?
-a) 2.79 x 10¹degrees
-b) 3.22 x 10¹degrees
-c) 3.72 x 10¹degrees
-d) 4.3 x 10¹degrees
+e) 4.96 x 10¹degrees
=====*_Rendition_* 2-8=====
<!--a18ElectricChargeField_findE_2-->What angle does the electric field at the origin make with the x-axis if a 1.4 nC charge is placed at x = -5.5 m, and a 2.8 nC charge is placed at y = -6.8 m?
-a) 3.95 x 10¹degrees
-b) 4.56 x 10¹degrees
+c) 5.26 x 10¹degrees
-d) 6.08 x 10¹degrees
-e) 7.02 x 10¹degrees
=====*_Rendition_* 2-9=====
<!--a18ElectricChargeField_findE_2-->What angle does the electric field at the origin make with the x-axis if a 2.6 nC charge is placed at x = -8.3 m, and a 2.5 nC charge is placed at y = -9.6 m?
-a) 2.32 x 10¹degrees
-b) 2.68 x 10¹degrees
-c) 3.09 x 10¹degrees
+d) 3.57 x 10¹degrees
-e) 4.12 x 10¹degrees
=====*_Rendition_* 2-10=====
<!--a18ElectricChargeField_findE_2-->What angle does the electric field at the origin make with the x-axis if a 2.8 nC charge is placed at x = -8 m, and a 1.5 nC charge is placed at y = -8.7 m?
+a) 2.44 x 10¹degrees
-b) 2.81 x 10¹degrees
-c) 3.25 x 10¹degrees
-d) 3.75 x 10¹degrees
-e) 4.33 x 10¹degrees
=====*_Rendition_* 2-11=====
<!--a18ElectricChargeField_findE_2-->What angle does the electric field at the origin make with the x-axis if a 2.9 nC charge is placed at x = -7.3 m, and a 1.7 nC charge is placed at y = -8.1 m?

+a) 2.55 x 10¹degrees
-b) 2.94 x 10¹degrees
-c) 3.4 x 10¹degrees
-d) 3.92 x 10¹degrees
-e) 4.53 x 10¹degrees
=====*_Rendition_* 2-12=====
<!--a18ElectricChargeField_findE_2-->What angle does the electric field at the origin make with the x-axis if a 2.8 nC charge is placed at x = -9.8 m, and a 2.8 nC charge is placed at y = -5.8 m?
+a) 7.07 x 10¹degrees
-b) 8.16 x 10¹degrees
-c) 9.43 x 10¹degrees
-d) 1.09 x 10²degrees
-e) 1.26 x 10²degrees
=====*_Rendition_* 2-13=====
<!--a18ElectricChargeField_findE_2-->What angle does the electric field at the origin make with the x-axis if a 1.2 nC charge is placed at x = -6.7 m, and a 1.7 nC charge is placed at y = -6.1 m?
-a) 4.47 x 10¹degrees
-b) 5.17 x 10¹degrees
+c) 5.97 x 10¹degrees
-d) 6.89 x 10¹degrees
-e) 7.96 x 10¹degrees
=====*_Rendition_* 2-14=====
<!--a18ElectricChargeField_findE_2-->What angle does the electric field at the origin make with the x-axis if a 2.9 nC charge is placed at x = -6.3 m, and a 2.1 nC charge is placed at y = -8.8 m?
-a) 1.32 x 10¹degrees
-b) 1.53 x 10¹degrees
-c) 1.76 x 10¹degrees
+d) 2.04 x 10¹degrees
-e) 2.35 x 10¹degrees
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a18ElectricChargeField_findE_3-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(4a, 3a) is βkQ/a², where β equals
-a) 4.1 x 10⁻³
-b) 4.96 x 10⁻³
-c) 6.01 x 10⁻³
+d) 7.28 x 10⁻³
-e) 8.82 x 10⁻³
=====*_Rendition_* 3-3=====
<!--a18ElectricChargeField_findE_3-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(4a, 5a) is βkQ/a², where β equals
+a) 6.11 x 10⁻⁴
-b) 7.4 x 10⁻⁴

-c) 8.97 x 10⁻⁴
-d) 1.09 x 10⁻³
-e) 1.32 x 10⁻³
=====*_Rendition_* 3-4=====
<!--a18ElectricChargeField_findE_3-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(6a, 5a) is βkQ/a², where β equals
+a) 1.61 x 10⁻³ unit
-b) 1.95 x 10⁻³ unit
-c) 2.36 x 10⁻³ unit
-d) 2.86 x 10⁻³ unit
-e) 3.46 x 10⁻³ unit
=====*_Rendition_* 3-5=====
<!--a18ElectricChargeField_findE_3-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(4a, 3a) is βkQ/a², where β equals
-a) 3.38 x 10⁻³ unit
-b) 4.1 x 10⁻³ unit
-c) 4.96 x 10⁻³ unit
-d) 6.01 x 10⁻³ unit
+e) 7.28 x 10⁻³ unit
=====*_Rendition_* 3-6=====
<!--a18ElectricChargeField_findE_3-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(5a, 4a) is βkQ/a², where β equals
-a) 1.76 x 10⁻³ unit
-b) 2.13 x 10⁻³ unit
-c) 2.59 x 10⁻³ unit
+d) 3.13 x 10⁻³ unit
-e) 3.79 x 10⁻³ unit
=====*_Rendition_* 3-7=====
<!--a18ElectricChargeField_findE_3-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(4a, 6a) is βkQ/a², where β equals
-a) 1.52 x 10⁻⁴ unit
-b) 1.85 x 10⁻⁴ unit
+c) 2.24 x 10⁻⁴ unit
-d) 2.71 x 10⁻⁴ unit
-e) 3.28 x 10⁻⁴ unit
=====*_Rendition_* 3-8=====
<!--a18ElectricChargeField_findE_3-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(4a, 4a) is βkQ/a², where β

equals
-a) 2.22 x 10⁻³ unit
+b) 2.69 x 10⁻³ unit
-c) 3.26 x 10⁻³ unit
-d) 3.95 x 10⁻³ unit
-e) 4.79 x 10⁻³ unit
=====*_Rendition_* 3-9=====
<!--a18ElectricChargeField_findE_3-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(6a, 5a) is βkQ/a², where β equals
-a) 1.09 x 10⁻³ unit
-b) 1.33 x 10⁻³ unit
+c) 1.61 x 10⁻³ unit
-d) 1.95 x 10⁻³ unit
-e) 2.36 x 10⁻³ unit
=====*_Rendition_* 3-10=====
<!--a18ElectricChargeField_findE_3-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(3a, 5a) is βkQ/a², where β equals
+a) 1.08 x 10⁻³ unit
-b) 1.31 x 10⁻³ unit
-c) 1.59 x 10⁻³ unit
-d) 1.93 x 10⁻³ unit
-e) 2.34 x 10⁻³ unit
=====*_Rendition_* 3-11=====
<!--a18ElectricChargeField_findE_3-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(4a, 2a) is βkQ/a², where β equals
-a) 7.31 x 10⁻³ unit
-b) 8.86 x 10⁻³ unit
-c) 1.07 x 10⁻² unit
-d) 1.3 x 10⁻² unit
+e) 1.57 x 10⁻² unit
=====*_Rendition_* 3-12=====
<!--a18ElectricChargeField_findE_3-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(6a, 4a) is βkQ/a², where β equals
-a) 1.33 x 10⁻³ unit
-b) 1.61 x 10⁻³ unit
-c) 1.95 x 10⁻³ unit
-d) 2.37 x 10⁻³ unit
+e) 2.87 x 10⁻³ unit
=====*_Rendition_* 3-13=====
<!--a18ElectricChargeField_findE_3-->A dipole at the origin consists

of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(5a, 5a) is βkQ/a², where β equals
-a) 6.46 x 10⁻⁴ unit
-b) 7.82 x 10⁻⁴ unit
-c) 9.48 x 10⁻⁴ unit
-d) 1.15 x 10⁻³ unit
+e) 1.39 x 10⁻³ unit
=====*_Rendition_* 3-14=====
<!--a18ElectricChargeField_findE_3-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(6a, 5a) is βkQ/a², where β equals
-a) 1.33 x 10⁻³ unit
+b) 1.61 x 10⁻³ unit
-c) 1.95 x 10⁻³ unit
-d) 2.36 x 10⁻³ unit
-e) 2.86 x 10⁻³ unit
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a18ElectricChargeField_findE_4-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the y component of the electric field at (x,y) =(1.1a, 1.2a) is βkQ/a², where β equals
-a) 1.61 x 10⁻¹
-b) 1.95 x 10⁻¹
-c) 2.36 x 10⁻¹
-d) 2.86 x 10⁻¹
+e) 3.47 x 10⁻¹
=====*_Rendition_* 4-3=====
<!--a18ElectricChargeField_findE_4-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the y component of the electric field at (x,y) =(1.1a, 1.2a) is βkQ/a², where β equals
-a) 2.86 x 10⁻¹
+b) 3.47 x 10⁻¹
-c) 4.2 x 10⁻¹
-d) 5.09 x 10⁻¹
-e) 6.17 x 10⁻¹
=====*_Rendition_* 4-4=====
<!--a18ElectricChargeField_findE_4-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the y component of the electric field at (x,y) =(1.1a, 1.2a) is βkQ/a², where β equals
+a) 3.47 x 10⁻¹ unit
-b) 4.2 x 10⁻¹ unit
-c) 5.09 x 10⁻¹ unit

-d) 6.17 x 10⁻¹ unit
-e) 7.47 x 10⁻¹ unit
=====*_Rendition_* 4-5=====
<!--a18ElectricChargeField_findE_4-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the y component of the electric field at (x,y) =(1.1a, 1.2a) is βkQ/a², where β equals
-a) 2.36 x 10⁻¹ unit
-b) 2.86 x 10⁻¹ unit
+c) 3.47 x 10⁻¹ unit
-d) 4.2 x 10⁻¹ unit
-e) 5.09 x 10⁻¹ unit
=====*_Rendition_* 4-6=====
<!--a18ElectricChargeField_findE_4-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the y component of the electric field at (x,y) =(1.1a, 1.2a) is βkQ/a², where β equals
-a) 1.61 x 10⁻¹ unit
-b) 1.95 x 10⁻¹ unit
-c) 2.36 x 10⁻¹ unit
-d) 2.86 x 10⁻¹ unit
+e) 3.47 x 10⁻¹ unit
=====*_Rendition_* 4-7=====
<!--a18ElectricChargeField_findE_4-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the y component of the electric field at (x,y) =(1.1a, 1.2a) is βkQ/a², where β equals
-a) 2.36 x 10⁻¹ unit
-b) 2.86 x 10⁻¹ unit
+c) 3.47 x 10⁻¹ unit
-d) 4.2 x 10⁻¹ unit
-e) 5.09 x 10⁻¹ unit
=====*_Rendition_* 4-8=====
<!--a18ElectricChargeField_findE_4-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the y component of the electric field at (x,y) =(1.1a, 1.2a) is βkQ/a², where β equals
-a) 2.86 x 10⁻¹ unit
+b) 3.47 x 10⁻¹ unit
-c) 4.2 x 10⁻¹ unit
-d) 5.09 x 10⁻¹ unit
-e) 6.17 x 10⁻¹ unit
=====*_Rendition_* 4-9=====
<!--a18ElectricChargeField_findE_4-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the y component of the electric field at (x,y) =(1.1a, 1.2a) is βkQ/a², where β equals

+a) 3.47 x 10⁻¹ unit
-b) 4.2 x 10⁻¹ unit
-c) 5.09 x 10⁻¹ unit
-d) 6.17 x 10⁻¹ unit
-e) 7.47 x 10⁻¹ unit
=====*_Rendition_* 4-10=====
<!--a18ElectricChargeField_findE_4-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the y component of the electric field at (x,y) =(1.1a, 1.2a) is βkQ/a², where β equals
-a) 1.95 x 10⁻¹ unit
-b) 2.36 x 10⁻¹ unit
-c) 2.86 x 10⁻¹ unit
+d) 3.47 x 10⁻¹ unit
-e) 4.2 x 10⁻¹ unit
=====*_Rendition_* 4-11=====
<!--a18ElectricChargeField_findE_4-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the y component of the electric field at (x,y) =(1.1a, 1.2a) is βkQ/a², where β equals
-a) 1.95 x 10⁻¹ unit
-b) 2.36 x 10⁻¹ unit
-c) 2.86 x 10⁻¹ unit
+d) 3.47 x 10⁻¹ unit
-e) 4.2 x 10⁻¹ unit
=====*_Rendition_* 4-12=====
<!--a18ElectricChargeField_findE_4-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the y component of the electric field at (x,y) =(1.1a, 1.2a) is βkQ/a², where β equals
-a) 1.61 x 10⁻¹ unit
-b) 1.95 x 10⁻¹ unit
-c) 2.36 x 10⁻¹ unit
-d) 2.86 x 10⁻¹ unit
+e) 3.47 x 10⁻¹ unit
=====*_Rendition_* 4-13=====
<!--a18ElectricChargeField_findE_4-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the y component of the electric field at (x,y) =(1.1a, 1.2a) is βkQ/a², where β equals
-a) 1.95 x 10⁻¹ unit
-b) 2.36 x 10⁻¹ unit
-c) 2.86 x 10⁻¹ unit
+d) 3.47 x 10⁻¹ unit
-e) 4.2 x 10⁻¹ unit
=====*_Rendition_* 4-14=====
<!--a18ElectricChargeField_findE_4-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a.

The absolute value of the y component of the electric field at (x,y) =(1.1a, 1.2a) is βkQ/a², where β equals
-a) 1.95 x 10⁻¹ unit
-b) 2.36 x 10⁻¹ unit
-c) 2.86 x 10⁻¹ unit
+d) 3.47 x 10⁻¹ unit
-e) 4.2 x 10⁻¹ unit
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====*_Instructions_*====
Instructions are forthcoming

Transclusion from [[Quizbank/Instructions_0]]:
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===*_Quiz_*===
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{<!--a19ElectricPotentialField_Capacitance_1-->A parallel plate capacitor has both plates with an area of 1.05 m². The separation between the plates is   0.63mm. Applied to the plates is a potential difference of 2.85 kV. What is the capacitance?}
-a) 8.44 nF.
-b) 9.7 nF.
-c) 11.16 nF.
-d) 12.83 nF.
+e) 14.76 nF.

{<!--a19ElectricPotentialField_Capacitance_2-->The same parallel plate capacitor, with area 1.05 m², plate separation   0.63mm, and an applied voltage of 2.85 kV. How much charge is stored?}
-a) 24.05 μC.

-b) 27.65 μC.
-c) 31.8 μC.
-d) 36.57 μC.
+e) 42.06 μC.

{<!--a19ElectricPotentialField_Capacitance_3-->A 0.8 Farad capacitor is charged with 1.5 Coulombs. What is the value of the electric field if the plates are 0.7 mm apart?}
-a) 1.76 kV/m.
-b) 2.03 kV/m.
-c) 2.33 kV/m.
+d) 2.68 kV/m.
-e) 3.08 kV/m.

{<!--a19ElectricPotentialField_Capacitance_4-->A 0.8 Farad capacitor charged with 1.5 Coulombs. What is the energy stored in the capacitor if the plates are 0.7 mm apart?}
-a) 0.8 J.
-b) 0.92 J.
-c) 1.06 J.
-d) 1.22 J.
+e) 1.41 J.

{<!--a19ElectricPotentialField_Capacitance_5-->A 0.8 Farad capacitor charged with 1.5 Coulombs. What is the force between the plates if they are 0.7 mm apart?}
+a) 2009 N.
-b) 2310 N.
-c) 2657 N.
-d) 3055 N.
-e) 3514 N.

</quiz>

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Other renditions
<div class="mw-collapsible-content">
====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a19ElectricPotentialField_Capacitance_1-->A parallel plate capacitor has both plates with an area of 1.25 m². The separation between the plates is 0.83mm. Applied to the plates is a potential difference of 4.65 kV. What is the capacitance?
-a) 8.77 nF.
-b) 10.08 nF.
-c) 11.6 nF.
+d) 13.33 nF.
-e) 15.33 nF.
=====*_Rendition_* 1-3=====

<!--a19ElectricPotentialField_Capacitance_1-->A parallel plate capacitor has both plates with an area of 1.45 m². The separation between the plates is   1.53mm. Applied to the plates is a potential difference of 2.55 kV. What is the capacitance?
+a) 8.39 nF.
-b) 9.65 nF.
-c) 11.1 nF.
-d) 12.76 nF.
-e) 14.68 nF.
=====*_Rendition_* 1-4=====
<!--a19ElectricPotentialField_Capacitance_1-->A parallel plate capacitor has both plates with an area of 0.75 m². The separation between the plates is   1.53mm. Applied to the plates is a potential difference of 5.05 kV. What is the capacitance?
-a) 3.28 nF.
-b) 3.77 nF.
+c) 4.34 nF.
-d) 4.99 nF.
-e) 5.74 nF.
=====*_Rendition_* 1-5=====
<!--a19ElectricPotentialField_Capacitance_1-->A parallel plate capacitor has both plates with an area of 1.45 m². The separation between the plates is   0.93mm. Applied to the plates is a potential difference of 4.45 kV. What is the capacitance?
-a) 12 nF.
+b) 13.8 nF.
-c) 15.88 nF.
-d) 18.26 nF.
-e) 21 nF.
=====*_Rendition_* 1-6=====
<!--a19ElectricPotentialField_Capacitance_1-->A parallel plate capacitor has both plates with an area of 1.05 m². The separation between the plates is   0.63mm. Applied to the plates is a potential difference of 4.35 kV. What is the capacitance?
-a) 11.16 nF.
-b) 12.83 nF.
+c) 14.76 nF.
-d) 16.97 nF.
-e) 19.52 nF.
=====*_Rendition_* 1-7=====
<!--a19ElectricPotentialField_Capacitance_1-->A parallel plate capacitor has both plates with an area of 0.55 m². The separation between the plates is   0.53mm. Applied to the plates is a potential difference of 4.25 kV. What is the capacitance?
-a) 6.95 nF.
-b) 7.99 nF.
+c) 9.19 nF.
-d) 10.57 nF.
-e) 12.15 nF.
=====*_Rendition_* 1-8=====
<!--a19ElectricPotentialField_Capacitance_1-->A parallel plate capacitor has both plates with an area of 1.35 m². The

separation between the plates is   1.23mm. Applied to the plates is a potential difference of 2.65 kV. What is the capacitance?
-a) 7.35 nF.
-b) 8.45 nF.
+c) 9.72 nF.
-d) 11.18 nF.
-e) 12.85 nF.
=====*_Rendition_* 1-9=====
<!--a19ElectricPotentialField_Capacitance_1-->A parallel plate capacitor has both plates with an area of 1.15 m². The separation between the plates is   0.63mm. Applied to the plates is a potential difference of 2.25 kV. What is the capacitance?
+a) 16.16 nF.
-b) 18.59 nF.
-c) 21.37 nF.
-d) 24.58 nF.
-e) 28.27 nF.
=====*_Rendition_* 1-10=====
<!--a19ElectricPotentialField_Capacitance_1-->A parallel plate capacitor has both plates with an area of 0.75 m². The separation between the plates is   0.53mm. Applied to the plates is a potential difference of 3.55 kV. What is the capacitance?
-a) 7.16 nF.
-b) 8.24 nF.
-c) 9.47 nF.
-d) 10.9 nF.
+e) 12.53 nF.
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a19ElectricPotentialField_Capacitance_2-->The same parallel plate capacitor, with area 1.25 m², plate separation   0.83mm, and an applied voltage of 4.65 kV. How much charge is stored?
-a) 35.45 μC.
-b) 40.77 μC.
-c) 46.89 μC.
-d) 53.92 μC.
+e) 62.01 μC.
=====*_Rendition_* 2-3=====
<!--a19ElectricPotentialField_Capacitance_2-->The same parallel plate capacitor, with area 1.45 m², plate separation   1.53mm, and an applied voltage of 2.55 kV. How much charge is stored?
-a) 12.23 μC.
-b) 14.07 μC.
-c) 16.18 μC.
-d) 18.61 μC.
+e) 21.4 μC.
=====*_Rendition_* 2-4=====
<!--a19ElectricPotentialField_Capacitance_2-->The same parallel plate capacitor, with area 0.75 m², plate separation   1.53mm, and an applied voltage of 5.05 kV. How much charge is stored?
-a) 16.57 μC.
-b) 19.06 μC.

+c) 21.92 μC.
-d) 25.21 μC.
-e) 28.99 μC.
=====*_Rendition_* 2-5=====
<!--a19ElectricPotentialField_Capacitance_2-->The same parallel plate capacitor, with area 1.45 m², plate separation 0.93mm, and an applied voltage of 4.45 kV. How much charge is stored?
-a) 40.39 μC.
-b) 46.45 μC.
-c) 53.42 μC.
+d) 61.43 μC.
-e) 70.65 μC.
=====*_Rendition_* 2-6=====
<!--a19ElectricPotentialField_Capacitance_2-->The same parallel plate capacitor, with area 1.05 m², plate separation 0.63mm, and an applied voltage of 4.35 kV. How much charge is stored?
-a) 42.21 μC.
-b) 48.54 μC.
-c) 55.82 μC.
+d) 64.19 μC.
-e) 73.82 μC.
=====*_Rendition_* 2-7=====
<!--a19ElectricPotentialField_Capacitance_2-->The same parallel plate capacitor, with area 0.55 m², plate separation 0.53mm, and an applied voltage of 4.25 kV. How much charge is stored?
+a) 39.05 μC.
-b) 44.91 μC.
-c) 51.64 μC.
-d) 59.39 μC.
-e) 68.3 μC.
=====*_Rendition_* 2-8=====
<!--a19ElectricPotentialField_Capacitance_2-->The same parallel plate capacitor, with area 1.35 m², plate separation 1.23mm, and an applied voltage of 2.65 kV. How much charge is stored?
-a) 16.93 μC.
-b) 19.47 μC.
-c) 22.39 μC.
+d) 25.75 μC.
-e) 29.62 μC.
=====*_Rendition_* 2-9=====
<!--a19ElectricPotentialField_Capacitance_2-->The same parallel plate capacitor, with area 1.15 m², plate separation 0.63mm, and an applied voltage of 2.25 kV. How much charge is stored?
-a) 23.91 μC.
-b) 27.5 μC.
-c) 31.62 μC.
+d) 36.37 μC.
-e) 41.82 μC.
=====*_Rendition_* 2-10=====
<!--a19ElectricPotentialField_Capacitance_2-->The same parallel plate capacitor, with area 0.75 m², plate separation 0.53mm, and an applied voltage of 3.55 kV. How much charge is stored?

-a) 29.25 μC.
-b) 33.63 μC.
-c) 38.68 μC.
+d) 44.48 μC.
-e) 51.15 μC.
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a19ElectricPotentialField_Capacitance_3-->A 0.6 Farad capacitor is charged with 1.5 Coulombs. What is the value of the electric field if the plates are 0.8 mm apart?
+a) 3.13 kV/m.
-b) 3.59 kV/m.
-c) 4.13 kV/m.
-d) 4.75 kV/m.
-e) 5.47 kV/m.
=====*_Rendition_* 3-3=====
<!--a19ElectricPotentialField_Capacitance_3-->A 0.9 Farad capacitor is charged with 1.1 Coulombs. What is the value of the electric field if the plates are 0.3 mm apart?
-a) 2.68 kV/m.
-b) 3.08 kV/m.
-c) 3.54 kV/m.
+d) 4.07 kV/m.
-e) 4.69 kV/m.
=====*_Rendition_* 3-4=====
<!--a19ElectricPotentialField_Capacitance_3-->A 0.5 Farad capacitor is charged with 1.6 Coulombs. What is the value of the electric field if the plates are 0.7 mm apart?
-a) 3.46 kV/m.
-b) 3.98 kV/m.
+c) 4.57 kV/m.
-d) 5.26 kV/m.
-e) 6.05 kV/m.
=====*_Rendition_* 3-5=====
<!--a19ElectricPotentialField_Capacitance_3-->A 1.4 Farad capacitor is charged with 2.3 Coulombs. What is the value of the electric field if the plates are 0.6 mm apart?
-a) 1.57 kV/m.
-b) 1.8 kV/m.
-c) 2.07 kV/m.
-d) 2.38 kV/m.
+e) 2.74 kV/m.
=====*_Rendition_* 3-6=====
<!--a19ElectricPotentialField_Capacitance_3-->A 1.2 Farad capacitor is charged with 1.6 Coulombs. What is the value of the electric field if the plates are 0.4 mm apart?
-a) 1.91 kV/m.
-b) 2.19 kV/m.
-c) 2.52 kV/m.
-d) 2.9 kV/m.
+e) 3.33 kV/m.
=====*_Rendition_* 3-7=====

<!--a19ElectricPotentialField_Capacitance_3-->A 1.4 Farad capacitor is charged with 1.1 Coulombs. What is the value of the electric field if the plates are 0.6 mm apart?
-a) 0.86 kV/m.
-b) 0.99 kV/m.
-c) 1.14 kV/m.
+d) 1.31 kV/m.
-e) 1.51 kV/m.
=====*_Rendition_* 3-8=====
<!--a19ElectricPotentialField_Capacitance_3-->A 1.3 Farad capacitor is charged with 1.9 Coulombs. What is the value of the electric field if the plates are 0.3 mm apart?
-a) 3.2 kV/m.
-b) 3.68 kV/m.
-c) 4.24 kV/m.
+d) 4.87 kV/m.
-e) 5.6 kV/m.
=====*_Rendition_* 3-9=====
<!--a19ElectricPotentialField_Capacitance_3-->A 0.5 Farad capacitor is charged with 1.3 Coulombs. What is the value of the electric field if the plates are 0.7 mm apart?
+a) 3.71 kV/m.
-b) 4.27 kV/m.
-c) 4.91 kV/m.
-d) 5.65 kV/m.
-e) 6.5 kV/m.
=====*_Rendition_* 3-10=====
<!--a19ElectricPotentialField_Capacitance_3-->A 0.8 Farad capacitor is charged with 1.7 Coulombs. What is the value of the electric field if the plates are 0.5 mm apart?
-a) 2.43 kV/m.
-b) 2.79 kV/m.
-c) 3.21 kV/m.
-d) 3.7 kV/m.
+e) 4.25 kV/m.
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a19ElectricPotentialField_Capacitance_4-->A 0.6 Farad capacitor charged with 1.5 Coulombs. What is the energy stored in the capacitor if the plates are 0.8 mm apart?
-a) 1.07 J.
-b) 1.23 J.
-c) 1.42 J.
-d) 1.63 J.
+e) 1.88 J.
=====*_Rendition_* 4-3=====
<!--a19ElectricPotentialField_Capacitance_4-->A 0.9 Farad capacitor charged with 1.1 Coulombs. What is the energy stored in the capacitor if the plates are 0.3 mm apart?
-a) 0.44 J.
-b) 0.51 J.
-c) 0.58 J.

+d) 0.67 J.
-e) 0.77 J.
=====*_Rendition_* 4-4=====
<!--a19ElectricPotentialField_Capacitance_4-->A 0.5 Farad capacitor charged with 1.6 Coulombs. What is the energy stored in the capacitor if the plates are 0.7 mm apart?
-a) 2.23 J.
+b) 2.56 J.
-c) 2.94 J.
-d) 3.39 J.
-e) 3.89 J.
=====*_Rendition_* 4-5=====
<!--a19ElectricPotentialField_Capacitance_4-->A 1.4 Farad capacitor charged with 2.3 Coulombs. What is the energy stored in the capacitor if the plates are 0.6 mm apart?
-a) 1.08 J.
-b) 1.24 J.
-c) 1.43 J.
-d) 1.64 J.
+e) 1.89 J.
=====*_Rendition_* 4-6=====
<!--a19ElectricPotentialField_Capacitance_4-->A 1.2 Farad capacitor charged with 1.6 Coulombs. What is the energy stored in the capacitor if the plates are 0.4 mm apart?
-a) 0.81 J.
-b) 0.93 J.
+c) 1.07 J.
-d) 1.23 J.
-e) 1.41 J.
=====*_Rendition_* 4-7=====
<!--a19ElectricPotentialField_Capacitance_4-->A 1.4 Farad capacitor charged with 1.1 Coulombs. What is the energy stored in the capacitor if the plates are 0.6 mm apart?
-a) 0.38 J.
+b) 0.43 J.
-c) 0.5 J.
-d) 0.57 J.
-e) 0.66 J.
=====*_Rendition_* 4-8=====
<!--a19ElectricPotentialField_Capacitance_4-->A 1.3 Farad capacitor charged with 1.9 Coulombs. What is the energy stored in the capacitor if the plates are 0.3 mm apart?
-a) 0.91 J.
-b) 1.05 J.
-c) 1.21 J.
+d) 1.39 J.
-e) 1.6 J.
=====*_Rendition_* 4-9=====
<!--a19ElectricPotentialField_Capacitance_4-->A 0.5 Farad capacitor charged with 1.3 Coulombs. What is the energy stored in the capacitor if the plates are 0.7 mm apart?
-a) 1.28 J.

-b) 1.47 J.
+c) 1.69 J.
-d) 1.94 J.
-e) 2.24 J.
=====*_Rendition_* 4-10=====
<!--a19ElectricPotentialField_Capacitance_4-->A 0.8 Farad capacitor charged with 1.7 Coulombs. What is the energy stored in the capacitor if the plates are 0.5 mm apart?
+a) 1.81 J.
-b) 2.08 J.
-c) 2.39 J.
-d) 2.75 J.
-e) 3.16 J.
====*_Question_* 5====
=====*_Rendition_* 5-2=====
<!--a19ElectricPotentialField_Capacitance_5-->A 0.6 Farad capacitor charged with 1.5 Coulombs. What is the force between the plates if they are 0.8 mm apart?
-a) 1772 N.
-b) 2038 N.
+c) 2344 N.
-d) 2695 N.
-e) 3100 N.
=====*_Rendition_* 5-3=====
<!--a19ElectricPotentialField_Capacitance_5-->A 0.9 Farad capacitor charged with 1.1 Coulombs. What is the force between the plates if they are 0.3 mm apart?
-a) 1473 N.
-b) 1694 N.
-c) 1948 N.
+d) 2241 N.
-e) 2577 N.
=====*_Rendition_* 5-4=====
<!--a19ElectricPotentialField_Capacitance_5-->A 0.5 Farad capacitor charged with 1.6 Coulombs. What is the force between the plates if they are 0.7 mm apart?
-a) 3180 N.
+b) 3657 N.
-c) 4206 N.
-d) 4837 N.
-e) 5562 N.
=====*_Rendition_* 5-5=====
<!--a19ElectricPotentialField_Capacitance_5-->A 1.4 Farad capacitor charged with 2.3 Coulombs. What is the force between the plates if they are 0.6 mm apart?
-a) 2381 N.
-b) 2738 N.
+c) 3149 N.
-d) 3621 N.
-e) 4164 N.
=====*_Rendition_* 5-6=====
<!--a19ElectricPotentialField_Capacitance_5-->A 1.2 Farad capacitor

charged with 1.6 Coulombs. What is the force between the plates if they are 0.4 mm apart?
-a) 2319 N.
+b) 2667 N.
-c) 3067 N.
-d) 3527 N.
-e) 4056 N.
=====*_Rendition_* 5-7=====
<!--a19ElectricPotentialField_Capacitance_5-->A 1.4 Farad capacitor charged with 1.1 Coulombs. What is the force between the plates if they are 0.6 mm apart?
-a) 412 N.
-b) 474 N.
-c) 545 N.
-d) 626 N.
+e) 720 N.
=====*_Rendition_* 5-8=====
<!--a19ElectricPotentialField_Capacitance_5-->A 1.3 Farad capacitor charged with 1.9 Coulombs. What is the force between the plates if they are 0.3 mm apart?
-a) 4025 N.
+b) 4628 N.
-c) 5322 N.
-d) 6121 N.
-e) 7039 N.
=====*_Rendition_* 5-9=====
<!--a19ElectricPotentialField_Capacitance_5-->A 0.5 Farad capacitor charged with 1.3 Coulombs. What is the force between the plates if they are 0.7 mm apart?
-a) 1826 N.
-b) 2099 N.
+c) 2414 N.
-d) 2776 N.
-e) 3193 N.
=====*_Rendition_* 5-10=====
<!--a19ElectricPotentialField_Capacitance_5-->A 0.8 Farad capacitor charged with 1.7 Coulombs. What is the force between the plates if they are 0.5 mm apart?
-a) 2065 N.
-b) 2375 N.
-c) 2732 N.
-d) 3141 N.
+e) 3613 N.
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====*_Instructions_*====
Instructions are forthcoming

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{<!--a19ElectricPotentialField_KE_PE_1-->How fast is a 2642 eV electron moving?}
+a) 3 x 10⁷ m/s.
-b) 4.6 x 10⁷ m/s.
-c) 6.9 x 10⁷ m/s.
-d) 1 x 10⁸ m/s.
-e) 1.5 x 10⁸ m/s.

{<!--a19ElectricPotentialField_KE_PE_2-->A proton is accelerated (at rest) from a plate held at 45.3 volts to a plate at zero volts. What is the final speed?}
-a) 2.8 x 10⁴ m/s.
-b) 4.1 x 10⁴ m/s.
-c) 6.2 x 10⁴ m/s.
+d) 9.3 x 10⁴ m/s.
-e) 1.4 x 10⁵ m/s.

{<!--a19ElectricPotentialField_KE_PE_3-->What voltage is required accelerate an electron at rest to a speed of 9.4 x 10⁶ m/s?}
-a) 7.4 x 10¹ volts
-b) 1.1 x 10² volts
-c) 1.7 x 10² volts
+d) 2.5 x 10² volts
-e) 3.8 x 10² volts

{<!--a19ElectricPotentialField_KE_PE_4-->What voltage is required to stop a proton moving at a speed of 8.5 x 10⁴ m/s?}
-a) 7.4 x 10⁰ volts
-b) 1.1 x 10¹ volts
-c) 1.7 x 10¹ volts

-d) 2.5 x 10¹ volts
+e) 3.8 x 10¹ volts

</quiz>

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Other renditions
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====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a19ElectricPotentialField_KE_PE_1-->How fast is a 2212 eV electron moving?
-a) 8.3 x 10⁶ m/s.
-b) 1.2 x 10⁷ m/s.
-c) 1.9 x 10⁷ m/s.
+d) 2.8 x 10⁷ m/s.
-e) 4.2 x 10⁷ m/s.
=====*_Rendition_* 1-3=====
<!--a19ElectricPotentialField_KE_PE_1-->How fast is a 2928 eV electron moving?
-a) 6.3 x 10⁶ m/s.
-b) 9.5 x 10⁶ m/s.
-c) 1.4 x 10⁷ m/s.
-d) 2.1 x 10⁷ m/s.
+e) 3.2 x 10⁷ m/s.
=====*_Rendition_* 1-4=====
<!--a19ElectricPotentialField_KE_PE_1-->How fast is a 2952 eV electron moving?
-a) 6.4 x 10⁶ m/s.
-b) 9.5 x 10⁶ m/s.
-c) 1.4 x 10⁷ m/s.
-d) 2.1 x 10⁷ m/s.
+e) 3.2 x 10⁷ m/s.
=====*_Rendition_* 1-5=====
<!--a19ElectricPotentialField_KE_PE_1-->How fast is a 2355 eV electron moving?
-a) 1.9 x 10⁷ m/s.
+b) 2.9 x 10⁷ m/s.
-c) 4.3 x 10⁷ m/s.
-d) 6.5 x 10⁷ m/s.
-e) 9.7 x 10⁷ m/s.
=====*_Rendition_* 1-6=====
<!--a19ElectricPotentialField_KE_PE_1-->How fast is a 2672 eV electron moving?
-a) 6.1 x 10⁶ m/s.
-b) 9.1 x 10⁶ m/s.
-c) 1.4 x 10⁷ m/s.
-d) 2 x 10⁷ m/s.
+e) 3.1 x 10⁷ m/s.

=====*_Rendition_* 1-7=====
<!--a19ElectricPotentialField_KE_PE_1-->How fast is a 2663 eV electron moving?
+a) 3.1 x 10⁷ m/s.
-b) 4.6 x 10⁷ m/s.
-c) 6.9 x 10⁷ m/s.
-d) 1 x 10⁸ m/s.
-e) 1.5 x 10⁸ m/s.
=====*_Rendition_* 1-8=====
<!--a19ElectricPotentialField_KE_PE_1-->How fast is a 2493 eV electron moving?
-a) 1.3 x 10⁷ m/s.
-b) 2 x 10⁷ m/s.
+c) 3 x 10⁷ m/s.
-d) 4.4 x 10⁷ m/s.
-e) 6.7 x 10⁷ m/s.
=====*_Rendition_* 1-9=====
<!--a19ElectricPotentialField_KE_PE_1-->How fast is a 2648 eV electron moving?
+a) 3.1 x 10⁷ m/s.
-b) 4.6 x 10⁷ m/s.
-c) 6.9 x 10⁷ m/s.
-d) 1 x 10⁸ m/s.
-e) 1.5 x 10⁸ m/s.
=====*_Rendition_* 1-10=====
<!--a19ElectricPotentialField_KE_PE_1-->How fast is a 2758 eV electron moving?
-a) 9.2 x 10⁶ m/s.
-b) 1.4 x 10⁷ m/s.
-c) 2.1 x 10⁷ m/s.
+d) 3.1 x 10⁷ m/s.
-e) 4.7 x 10⁷ m/s.
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a19ElectricPotentialField_KE_PE_2-->A proton is accelerated (at rest) from a plate held at 552.1 volts to a plate at zero volts. What is the final speed?
+a) 3.3 x 10⁵ m/s.
-b) 4.9 x 10⁵ m/s.
-c) 7.3 x 10⁵ m/s.
-d) 1.1 x 10⁶ m/s.
-e) 1.6 x 10⁶ m/s.
=====*_Rendition_* 2-3=====
<!--a19ElectricPotentialField_KE_PE_2-->A proton is accelerated (at rest) from a plate held at 333.6 volts to a plate at zero volts. What is the final speed?
-a) 1.1 x 10⁵ m/s.
-b) 1.7 x 10⁵ m/s.
+c) 2.5 x 10⁵ m/s.
-d) 3.8 x 10⁵ m/s.
-e) 5.7 x 10⁵ m/s.
=====*_Rendition_* 2-4=====

<!--a19ElectricPotentialField_KE_PE_2-->A proton is accellerated (at rest) from a plate held at 767.8 volts to a plate at zero volts. What is the final speed?
-a) 1.1 x 10⁵ m/s.
-b) 1.7 x 10⁵ m/s.
-c) 2.6 x 10⁵ m/s.
+d) 3.8 x 10⁵ m/s.
-e) 5.8 x 10⁵ m/s.
=====*_Rendition_* 2-5=====
<!--a19ElectricPotentialField_KE_PE_2-->A proton is accellerated (at rest) from a plate held at 4.7 volts to a plate at zero volts. What is the final speed?
-a) 5.9 x 10³ m/s.
-b) 8.9 x 10³ m/s.
-c) 1.3 x 10⁴ m/s.
-d) 2 x 10⁴ m/s.
+e) 3 x 10⁴ m/s.
=====*_Rendition_* 2-6=====
<!--a19ElectricPotentialField_KE_PE_2-->A proton is accellerated (at rest) from a plate held at 318.6 volts to a plate at zero volts. What is the final speed?
-a) 1.6 x 10⁵ m/s.
+b) 2.5 x 10⁵ m/s.
-c) 3.7 x 10⁵ m/s.
-d) 5.6 x 10⁵ m/s.
-e) 8.3 x 10⁵ m/s.
=====*_Rendition_* 2-7=====
<!--a19ElectricPotentialField_KE_PE_2-->A proton is accellerated (at rest) from a plate held at 775.8 volts to a plate at zero volts. What is the final speed?
-a) 7.6 x 10⁴ m/s.
-b) 1.1 x 10⁵ m/s.
-c) 1.7 x 10⁵ m/s.
-d) 2.6 x 10⁵ m/s.
+e) 3.9 x 10⁵ m/s.
=====*_Rendition_* 2-8=====
<!--a19ElectricPotentialField_KE_PE_2-->A proton is accellerated (at rest) from a plate held at 39.7 volts to a plate at zero volts. What is the final speed?
-a) 3.9 x 10⁴ m/s.
-b) 5.8 x 10⁴ m/s.
+c) 8.7 x 10⁴ m/s.
-d) 1.3 x 10⁵ m/s.
-e) 2 x 10⁵ m/s.
=====*_Rendition_* 2-9=====
<!--a19ElectricPotentialField_KE_PE_2-->A proton is accellerated (at rest) from a plate held at 588.2 volts to a plate at zero volts. What is the final speed?
-a) 6.6 x 10⁴ m/s.
-b) 10 x 10⁴ m/s.
-c) 1.5 x 10⁵ m/s.
-d) 2.2 x 10⁵ m/s.

+e) 3.4 x 10⁵ m/s.
=====*_Rendition_* 2-10=====
<!--a19ElectricPotentialField_KE_PE_2-->A proton is accellerated (at rest) from a plate held at 729.8 volts to a plate at zero volts. What is the final speed?
-a) 1.7 x 10⁵ m/s.
-b) 2.5 x 10⁵ m/s.
+c) 3.7 x 10⁵ m/s.
-d) 5.6 x 10⁵ m/s.
-e) 8.4 x 10⁵ m/s.
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a19ElectricPotentialField_KE_PE_3-->What voltage is required accelerate an electron at rest to a speed of 9.7 x 10⁴ m/s?
-a) 1.8 x 10⁻² volts
+b) 2.7 x 10⁻² volts
-c) 4 x 10⁻² volts
-d) 6 x 10⁻² volts
-e) 9 x 10⁻² volts
=====*_Rendition_* 3-3=====
<!--a19ElectricPotentialField_KE_PE_3-->What voltage is required accelerate an electron at rest to a speed of 1.7 x 10⁵ m/s?
-a) 1.6 x 10⁻² volts
-b) 2.4 x 10⁻² volts
-c) 3.7 x 10⁻² volts
-d) 5.5 x 10⁻² volts
+e) 8.2 x 10⁻² volts
=====*_Rendition_* 3-4=====
<!--a19ElectricPotentialField_KE_PE_3-->What voltage is required accelerate an electron at rest to a speed of 3 x 10⁵ m/s?
-a) 1.7 x 10⁻¹ volts
+b) 2.6 x 10⁻¹ volts
-c) 3.8 x 10⁻¹ volts
-d) 5.8 x 10⁻¹ volts
-e) 8.6 x 10⁻¹ volts
=====*_Rendition_* 3-5=====
<!--a19ElectricPotentialField_KE_PE_3-->What voltage is required accelerate an electron at rest to a speed of 2.8 x 10³ m/s?
-a) 4.4 x 10⁻⁶ volts
-b) 6.6 x 10⁻⁶ volts
-c) 9.9 x 10⁻⁶ volts
-d) 1.5 x 10⁻⁵ volts
+e) 2.2 x 10⁻⁵ volts
=====*_Rendition_* 3-6=====
<!--a19ElectricPotentialField_KE_PE_3-->What voltage is required accelerate an electron at rest to a speed of 9.5 x 10⁶ m/s?

-a) 1.1 x 10² volts
-b) 1.7 x 10² volts
+c) 2.6 x 10² volts
-d) 3.8 x 10² volts
-e) 5.8 x 10² volts

=====*_Rendition_* 3-7=====
<!--a19ElectricPotentialField_KE_PE_3-->What voltage is required accelerate an electron at rest to a speed of 5.6 x 10⁴ m/s?
-a) 5.9 x 10⁻³ volts
+b) 8.9 x 10⁻³ volts
-c) 1.3 x 10⁻² volts
-d) 2 x 10⁻² volts
-e) 3 x 10⁻² volts
=====*_Rendition_* 3-8=====
<!--a19ElectricPotentialField_KE_PE_3-->What voltage is required accelerate an electron at rest to a speed of 7.6 x 10⁷ m/s?
-a) 3.2 x 10³ volts
-b) 4.9 x 10³ volts
-c) 7.3 x 10³ volts
-d) 1.1 x 10⁴ volts
+e) 1.6 x 10⁴ volts
=====*_Rendition_* 3-9=====
<!--a19ElectricPotentialField_KE_PE_3-->What voltage is required accelerate an electron at rest to a speed of 5.5 x 10⁵ m/s?
-a) 2.5 x 10⁻¹ volts
-b) 3.8 x 10⁻¹ volts
-c) 5.7 x 10⁻¹ volts
+d) 8.6 x 10⁻¹ volts
-e) 1.3 x 10⁰ volts
=====*_Rendition_* 3-10=====
<!--a19ElectricPotentialField_KE_PE_3-->What voltage is required accelerate an electron at rest to a speed of 1.5 x 10³ m/s?
-a) 1.9 x 10⁻⁶ volts
-b) 2.8 x 10⁻⁶ volts
-c) 4.3 x 10⁻⁶ volts
+d) 6.4 x 10⁻⁶ volts
-e) 9.6 x 10⁻⁶ volts
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a19ElectricPotentialField_KE_PE_4-->What voltage is required to stop a proton moving at a speed of 3 x 10⁴ m/s?
-a) 1.4 x 10⁰ volts
-b) 2.1 x 10⁰ volts
-c) 3.1 x 10⁰ volts
+d) 4.7 x 10⁰ volts
-e) 7 x 10⁰ volts
=====*_Rendition_* 4-3=====
<!--a19ElectricPotentialField_KE_PE_4-->What voltage is required to stop a proton moving at a speed of 8.1 x 10⁶ m/s?
-a) 2.3 x 10⁵ volts
+b) 3.4 x 10⁵ volts
-c) 5.1 x 10⁵ volts
-d) 7.7 x 10⁵ volts
-e) 1.2 x 10⁶ volts
=====*_Rendition_* 4-4=====
<!--a19ElectricPotentialField_KE_PE_4-->What voltage is required to stop a proton moving at a speed of 3.9 x 10³ m/s?

-a) 3.5 x 10⁻² volts
-b) 5.3 x 10⁻² volts
+c) 7.9 x 10⁻² volts
-d) 1.2 x 10⁻¹ volts
-e) 1.8 x 10⁻¹ volts
=====*_Rendition_* 4-5=====
<!--a19ElectricPotentialField_KE_PE_4-->What voltage is required to stop a proton moving at a speed of 7.6 x 10⁶ m/s?
+a) 3 x 10⁵ volts
-b) 4.5 x 10⁵ volts
-c) 6.8 x 10⁵ volts
-d) 1 x 10⁶ volts
-e) 1.5 x 10⁶ volts
=====*_Rendition_* 4-6=====
<!--a19ElectricPotentialField_KE_PE_4-->What voltage is required to stop a proton moving at a speed of 4.2 x 10³ m/s?
-a) 6.1 x 10⁻² volts
+b) 9.2 x 10⁻² volts
-c) 1.4 x 10⁻¹ volts
-d) 2.1 x 10⁻¹ volts
-e) 3.1 x 10⁻¹ volts
=====*_Rendition_* 4-7=====
<!--a19ElectricPotentialField_KE_PE_4-->What voltage is required to stop a proton moving at a speed of 8 x 10⁷ m/s?
+a) 3.3 x 10⁷ volts
-b) 5 x 10⁷ volts
-c) 7.5 x 10⁷ volts
-d) 1.1 x 10⁸ volts
-e) 1.7 x 10⁸ volts
=====*_Rendition_* 4-8=====
<!--a19ElectricPotentialField_KE_PE_4-->What voltage is required to stop a proton moving at a speed of 1.6 x 10⁴ m/s?
-a) 4 x 10⁻¹ volts
-b) 5.9 x 10⁻¹ volts
-c) 8.9 x 10⁻¹ volts
+d) 1.3 x 10⁰ volts
-e) 2 x 10⁰ volts
=====*_Rendition_* 4-9=====
<!--a19ElectricPotentialField_KE_PE_4-->What voltage is required to stop a proton moving at a speed of 8.1 x 10⁴ m/s?
+a) 3.4 x 10¹ volts
-b) 5.1 x 10¹ volts
-c) 7.7 x 10¹ volts
-d) 1.2 x 10² volts
-e) 1.7 x 10² volts
=====*_Rendition_* 4-10=====
<!--a19ElectricPotentialField_KE_PE_4-->What voltage is required to stop a proton moving at a speed of 5.2 x 10⁷ m/s?
-a) 9.4 x 10⁶ volts
+b) 1.4 x 10⁷ volts
-c) 2.1 x 10⁷ volts
-d) 3.2 x 10⁷ volts

-e) 4.8 x 10⁷ volts
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{<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 4 volt battery moves 27 Coulombs of charge in 2.6 hours. What is the power?}
-a) 7.86 x 10⁻³ W
-b) 9.52 x 10⁻³ W
+c) 1.15 x 10⁻² W
-d) 1.4 x 10⁻² W
-e) 1.69 x 10⁻² W

{<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 5.5 mm, and it carries a current of 76 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)}
-a) 1.35 x 10⁻⁴m/s
-b) 1.63 x 10⁻⁴m/s
-c) 1.98 x 10⁻⁴m/s
+d) 2.39 x 10⁻⁴m/s
-e) 2.9 x 10⁻⁴m/s

{<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 168 Watt DC

motor draws 0.3 amps of current. What is effective resistance?}
+a) 1.87 x 10³ Ω
-b) 2.26 x 10³ Ω
-c) 2.74 x 10³ Ω
-d) 3.32 x 10³ Ω
-e) 4.02 x 10³ Ω

{<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 113 watts of power to a 104 ohm resistor. What was the applied voltage?}
-a) 5.03 x 10¹ volts
-b) 6.1 x 10¹ volts
-c) 7.39 x 10¹ volts
-d) 8.95 x 10¹ volts
+e) 1.08 x 10² volts

</quiz>

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Other renditions
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=====*_Rendition_* 1-2=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 5.3 volt battery moves 11 Coulombs of charge in 2.1 hours. What is the power?
+a) 7.71 x 10⁻³ W
-b) 9.34 x 10⁻³ W
-c) 1.13 x 10⁻² W
-d) 1.37 x 10⁻² W
-e) 1.66 x 10⁻² W
=====*_Rendition_* 1-3=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 1.4 volt battery moves 87 Coulombs of charge in 2 hours. What is the power?
-a) 7.85 x 10⁻³ W
-b) 9.51 x 10⁻³ W
-c) 1.15 x 10⁻² W
-d) 1.4 x 10⁻² W
+e) 1.69 x 10⁻² W
=====*_Rendition_* 1-4=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 5.8 volt battery moves 95 Coulombs of charge in 0.3 hours. What is the power?
-a) 4.21 x 10⁻¹ W
+b) 5.1 x 10⁻¹ W
-c) 6.18 x 10⁻¹ W
-d) 7.49 x 10⁻¹ W
-e) 9.07 x 10⁻¹ W
=====*_Rendition_* 1-5=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 4.7 volt battery moves 50 Coulombs of charge in 1.3 hours. What is the power?

-a) 4.14 x 10⁻² W
+b) 5.02 x 10⁻² W
-c) 6.08 x 10⁻² W
-d) 7.37 x 10⁻² W
-e) 8.93 x 10⁻² W
=====*_Rendition_* 1-6=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 3.9 volt battery moves 90 Coulombs of charge in 2.2 hours. What is the power?
+a) 4.43 x 10⁻² W
-b) 5.37 x 10⁻² W
-c) 6.51 x 10⁻² W
-d) 7.88 x 10⁻² W
-e) 9.55 x 10⁻² W
=====*_Rendition_* 1-7=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 5.1 volt battery moves 43 Coulombs of charge in 1.5 hours. What is the power?
+a) 4.06 x 10⁻² W
-b) 4.92 x 10⁻² W
-c) 5.96 x 10⁻² W
-d) 7.22 x 10⁻² W
-e) 8.75 x 10⁻² W
=====*_Rendition_* 1-8=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 4 volt battery moves 19 Coulombs of charge in 1.3 hours. What is the power?
+a) 1.62 x 10⁻² W
-b) 1.97 x 10⁻² W
-c) 2.38 x 10⁻² W
-d) 2.89 x 10⁻² W
-e) 3.5 x 10⁻² W
=====*_Rendition_* 1-9=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 3.1 volt battery moves 52 Coulombs of charge in 1.7 hours. What is the power?
-a) 1.79 x 10⁻² W
-b) 2.17 x 10⁻² W
+c) 2.63 x 10⁻² W
-d) 3.19 x 10⁻² W
-e) 3.87 x 10⁻² W
=====*_Rendition_* 1-10=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 3.1 volt battery moves 40 Coulombs of charge in 0.9 hours. What is the power?
-a) 2.61 x 10⁻² W
-b) 3.16 x 10⁻² W
+c) 3.83 x 10⁻² W
-d) 4.64 x 10⁻² W
-e) 5.62 x 10⁻² W
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 1.7 mm, and it carries a current of 92 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)

-a) 2.07 x 10⁻³m/s
-b) 2.5 x 10⁻³m/s
+c) 3.03 x 10⁻³m/s
-d) 3.67 x 10⁻³m/s
-e) 4.45 x 10⁻³m/s
=====*_Rendition_* 2-3=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 8.7 mm, and it carries a current of 22 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
+a) 2.77 x 10⁻⁵m/s
-b) 3.36 x 10⁻⁵m/s
-c) 4.06 x 10⁻⁵m/s
-d) 4.92 x 10⁻⁵m/s
-e) 5.97 x 10⁻⁵m/s
=====*_Rendition_* 2-4=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 3.6 mm, and it carries a current of 52 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
+a) 3.82 x 10⁻⁴m/s
-b) 4.63 x 10⁻⁴m/s
-c) 5.61 x 10⁻⁴m/s
-d) 6.8 x 10⁻⁴m/s
-e) 8.24 x 10⁻⁴m/s
=====*_Rendition_* 2-5=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 9.9 mm, and it carries a current of 41 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
-a) 2.24 x 10⁻⁵m/s
-b) 2.72 x 10⁻⁵m/s
-c) 3.29 x 10⁻⁵m/s
+d) 3.99 x 10⁻⁵m/s
-e) 4.83 x 10⁻⁵m/s
=====*_Rendition_* 2-6=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 9.2 mm, and it carries a current of 64 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
-a) 4.91 x 10⁻⁵m/s
-b) 5.95 x 10⁻⁵m/s
+c) 7.2 x 10⁻⁵m/s
-d) 8.73 x 10⁻⁵m/s
-e) 1.06 x 10⁻⁴m/s
=====*_Rendition_* 2-7=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 3.8 mm, and it carries a current of 88 amps. What is

the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
-a) 2.7 x 10⁻⁴m/s
-b) 3.27 x 10⁻⁴m/s
-c) 3.96 x 10⁻⁴m/s
-d) 4.79 x 10⁻⁴m/s
+e) 5.81 x 10⁻⁴m/s
=====*_Rendition_* 2-8=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 1.9 mm, and it carries a current of 33 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
-a) 5.93 x 10⁻⁴m/s
-b) 7.19 x 10⁻⁴m/s
+c) 8.71 x 10⁻⁴m/s
-d) 1.06 x 10⁻³m/s
-e) 1.28 x 10⁻³m/s
=====*_Rendition_* 2-9=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 7.4 mm, and it carries a current of 38 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
-a) 3.07 x 10⁻⁵m/s
-b) 3.72 x 10⁻⁵m/s
-c) 4.5 x 10⁻⁵m/s
-d) 5.46 x 10⁻⁵m/s
+e) 6.61 x 10⁻⁵m/s
=====*_Rendition_* 2-10=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 8.3 mm, and it carries a current of 87 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
-a) 6.77 x 10⁻⁵m/s
-b) 8.2 x 10⁻⁵m/s
-c) 9.93 x 10⁻⁵m/s
+d) 1.2 x 10⁻⁴m/s
-e) 1.46 x 10⁻⁴m/s
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 164 Watt DC motor draws 0.25 amps of current. What is effective resistance?
-a) 1.22 x 10³ Ω
-b) 1.48 x 10³ Ω
-c) 1.79 x 10³ Ω
-d) 2.17 x 10³ Ω
+e) 2.62 x 10³ Ω
=====*_Rendition_* 3-3=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 162 Watt DC

motor draws 0.41 amps of current. What is effective resistance?
-a) 5.42 x 10² Ω
-b) 6.57 x 10² Ω
-c) 7.95 x 10² Ω
+d) 9.64 x 10² Ω
-e) 1.17 x 10³ Ω
=====*_Rendition_* 3-4=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 195 Watt DC motor draws 0.49 amps of current. What is effective resistance?
+a) 8.12 x 10² Ω
-b) 9.84 x 10² Ω
-c) 1.19 x 10³ Ω
-d) 1.44 x 10³ Ω
-e) 1.75 x 10³ Ω
=====*_Rendition_* 3-5=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 130 Watt DC motor draws 0.3 amps of current. What is effective resistance?
-a) 8.12 x 10² Ω
-b) 9.84 x 10² Ω
-c) 1.19 x 10³ Ω
+d) 1.44 x 10³ Ω
-e) 1.75 x 10³ Ω
=====*_Rendition_* 3-6=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 104 Watt DC motor draws 0.13 amps of current. What is effective resistance?
-a) 3.46 x 10³ Ω
-b) 4.19 x 10³ Ω
-c) 5.08 x 10³ Ω
+d) 6.15 x 10³ Ω
-e) 7.46 x 10³ Ω
=====*_Rendition_* 3-7=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 196 Watt DC motor draws 0.35 amps of current. What is effective resistance?
+a) 1.6 x 10³ Ω
-b) 1.94 x 10³ Ω
-c) 2.35 x 10³ Ω
-d) 2.85 x 10³ Ω
-e) 3.45 x 10³ Ω
=====*_Rendition_* 3-8=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 171 Watt DC motor draws 0.47 amps of current. What is effective resistance?
+a) 7.74 x 10² Ω
-b) 9.38 x 10² Ω
-c) 1.14 x 10³ Ω
-d) 1.38 x 10³ Ω
-e) 1.67 x 10³ Ω
=====*_Rendition_* 3-9=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 129 Watt DC motor draws 0.22 amps of current. What is effective resistance?
-a) 2.2 x 10³ Ω
+b) 2.67 x 10³ Ω
-c) 3.23 x 10³ Ω

-d) 3.91 x 10³ Ω
-e) 4.74 x 10³ Ω
=====*_Rendition_* 3-10=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 146 Watt DC motor draws 0.23 amps of current. What is effective resistance?
-a) 2.28 x 10³ Ω
+b) 2.76 x 10³ Ω
-c) 3.34 x 10³ Ω
-d) 4.05 x 10³ Ω
-e) 4.91 x 10³ Ω
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 149 watts of power to a 153 ohm resistor. What was the applied voltage?
-a) 8.49 x 10¹ volts
-b) 1.03 x 10² volts
-c) 1.25 x 10² volts
+d) 1.51 x 10² volts
-e) 1.83 x 10² volts
=====*_Rendition_* 4-3=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 101 watts of power to a 219 ohm resistor. What was the applied voltage?
+a) 1.49 x 10² volts
-b) 1.8 x 10² volts
-c) 2.18 x 10² volts
-d) 2.64 x 10² volts
-e) 3.2 x 10² volts
=====*_Rendition_* 4-4=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 145 watts of power to a 132 ohm resistor. What was the applied voltage?
-a) 6.42 x 10¹ volts
-b) 7.78 x 10¹ volts
-c) 9.43 x 10¹ volts
-d) 1.14 x 10² volts
+e) 1.38 x 10² volts
=====*_Rendition_* 4-5=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 145 watts of power to a 244 ohm resistor. What was the applied voltage?
+a) 1.88 x 10² volts
-b) 2.28 x 10² volts
-c) 2.76 x 10² volts
-d) 3.34 x 10² volts
-e) 4.05 x 10² volts
=====*_Rendition_* 4-6=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 138 watts of power to a 206 ohm resistor. What was the applied voltage?
-a) 1.39 x 10² volts

+b) 1.69 x 10² volts
-c) 2.04 x 10² volts
-d) 2.47 x 10² volts
-e) 3 x 10² volts
=====*_Rendition_* 4-7=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 187 watts of power to a 287 ohm resistor. What was the applied voltage?
+a) 2.32 x 10² volts
-b) 2.81 x 10² volts
-c) 3.4 x 10² volts
-d) 4.12 x 10² volts
-e) 4.99 x 10² volts
=====*_Rendition_* 4-8=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 169 watts of power to a 219 ohm resistor. What was the applied voltage?
-a) 8.93 x 10¹ volts
-b) 1.08 x 10² volts
-c) 1.31 x 10² volts
-d) 1.59 x 10² volts
+e) 1.92 x 10² volts
=====*_Rendition_* 4-9=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 110 watts of power to a 299 ohm resistor. What was the applied voltage?
-a) 8.42 x 10¹ volts
-b) 1.02 x 10² volts
-c) 1.24 x 10² volts
-d) 1.5 x 10² volts
+e) 1.81 x 10² volts
=====*_Rendition_* 4-10=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 114 watts of power to a 294 ohm resistor. What was the applied voltage?
-a) 1.25 x 10² volts
-b) 1.51 x 10² volts
+c) 1.83 x 10² volts
-d) 2.22 x 10² volts
-e) 2.69 x 10² volts
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{<!--a21CircuitsBioInstDC_circAnalQuiz1_1-->3 amps flow through a 1 Ohm resistor. What is the voltage?}
+ $3V$
- $1V$
- $\frac{1}{3}V$
- None these are correct.

{<!--a21CircuitsBioInstDC_circAnalQuiz1_10-->A 1 ohm resistor has 5 volts DC across its terminals. What is the current (I) and the power consumed?}
- I = 5A & P = 3W.
- I = 5A & P = 5W.
+ I = 5A & P = 25W.
- I = 5A & P = 9W

{<!--a21CircuitsBioInstDC_circAnalQuiz1_11-->The voltage across two resistors in series is 10 volts. One resistor is twice as large as the other. What is the voltage across the larger resistor? What is the voltage across the smaller one? }
- $V_{Big-Resistor} = 3.33V$ and$V_{small-Resistor} = 6.67V$.
- $V_{small-Resistor} = 5V$ and $V_{Big-Resistor} = 5V$.
+ $V_{Big-Resistor} = 6.67V$ and $V_{small-Resistor} = 3.33V$.
- None of these are true.

{<!--a21CircuitsBioInstDC_circAnalQuiz1_12-->A 1 ohm, 2 ohm, and 3 ohm resistor are connected in series. What is the total resistance?}
- $R_{Total} = 0.5454\Omega$.
- $R_{Total} = 3\Omega$.
+ $R_{Total} = 6\Omega$.
- None of these are true.

{<!--a21CircuitsBioInstDC_circAnalQuiz1_13-->Two identical resistors are connected in series. The voltage across both of them is 250 volts. What is the voltage across each one?}
- $R_1 = 150V$ and $R_2 = 100V$.
- None of these are true.
+ $R_1 = 125V$ and $R_2 = 125V$.
- $R_1 = 250V$ and $R_2 = 0V$.

{<!--a21CircuitsBioInstDC_circAnalQuiz1_14-->A 1 ohm, 2 ohm, and 3 ohm resistor are connected in ''parallel''. What is the total resistance?}

- $\frac{11}{6}\Omega$.
- $\frac{3}{6}\Omega$.
+ $\frac{6}{11}\Omega$.
- $\frac{6}{3}\Omega$.

{<!--a21CircuitsBioInstDC_circAnalQuiz1_15-->A 5 ohm and a 2 ohm resistor are connected in parallel. What is the total resistance?}
-   $\frac{6}{10}\Omega$.
- $\frac{7}{10}\Omega$.
- $\frac{10}{6}\Omega$.
+ $\frac{10}{7}\Omega$.

{<!--a21CircuitsBioInstDC_circAnalQuiz1_16-->A 7 ohm and a 3 ohm resistor are connected in parallel. What is the total resistance?}
+ $\frac{21}{10}\Omega$.
- $\frac{11}{7}\Omega$.
- $\frac{7}{11}\Omega$.
- $\frac{10}{21}\Omega$.

{<!--a21CircuitsBioInstDC_circAnalQuiz1_17-->Three 1 ohm resistors are connected in parallel. What is the total resistance?}
- 3Ω.
+ $\frac{1}{3}\Omega$.
- $\frac{3}{2}\Omega$.
- $\frac{2}{3}\Omega$.

{<!--a21CircuitsBioInstDC_circAnalQuiz1_18-->If you put an infinite number of resistors in parallel, what would the total resistance be?}
+ R_{total} would approach Zero as The No. of Resistors In parallel Approaches Infinity.
-   None of these are true.
- R_{total} would approach 1 as The No. of Resistors In parallel Approaches Infinity
- It is not possible to connect that Number of Resistors in parallel.

{<!--a21CircuitsBioInstDC_circAnalQuiz1_19-->What is the current through R1 and R2 in the figure shown? [[Image:Circuit1.JPG|right]]}
-   $I_1 = 0.1A$ and $I_2 = 0.1667A$.
-   $I_1 = 10A$ and $I_2 = 16.67A$.
- $I_1 = 1A$ and $I_2 = 25A$.
+ $I_1 = 1A$ and $I_2 = 1.667A$.

{<!--a21CircuitsBioInstDC_circAnalQuiz1_2-->Why do we say the "voltage across" or "the voltage with respect to?" Why can't we just say voltage?}
- It's an Electrical ''Cliche''.
- The other point could be Negative or positive.
- None these are correct
+ Voltage is a measure of Electric Potential difference between two electrical points.

{<!--a21CircuitsBioInstDC_circAnalQuiz1_20-->What is the current through R1, R2, R3, and R4 in the figure shown?
[[Image:Circuit3.PNG|right]]}
- $I_1 = 10A$; $I_2 = 50A$; $I_3 = 33A$; $I_4 = 25A$..
- $I_1 = 1A$; $I_2 = 5A$; $I_3 = 3.3A$; $I_4 = 2.5A$.
+ $I_1 = 1A$; $I_2 = 0.5A$; $I_3 = 0.33A$; $I_4 = 0.25A$.
- $I_1 = 0.25A$; $I_2 = 0.33A$; $I_3 = 0.5A$; $I_4 = 0.1A$.

{<!--a21CircuitsBioInstDC_circAnalQuiz1_21-->Two resistors are in parallel with a voltage source. How do their voltages compare?}
+ The voltage across both resistors is the same as the source.
- None of these are true.
- One has full voltage, the other has none.
- The voltage across both resistors is half the voltage of the source.

{<!--a21CircuitsBioInstDC_circAnalQuiz1_3-->A resistor consumes 5 watts, and its current is 10 amps. What is its voltage?}
- 2V.
- 10V.
+ 0.5V.
- 15V.

{<!--a21CircuitsBioInstDC_circAnalQuiz1_4-->A resistor has 10 volts across it and 4 amps going through it. What is its resistance?}
- None of these are true.
- $3.5\Omega.$
- $4.5\Omega.$
+ $2.5\Omega.$

{<!--a21CircuitsBioInstDC_circAnalQuiz1_5-->If you plot voltage vs. current in a circuit, and you get a linear line, what is the significance of the slope? }
- Power.
+ Resistance.
- Discriminant.
- None of these are true.

{<!--a21CircuitsBioInstDC_circAnalQuiz1_6-->A resistor has 3 volts

across it. Its resistance is 1.5 ohms. What is the current?}
- 12A
- 3A
+ 2A
- 1.5A

{<!--a21CircuitsBioInstDC_circAnalQuiz1_7-->A resistor has 8 volts across it and 3 Amps going through it. What is the power consumed?}
- 2.2W
+ 24W
- 8W
- 3W

{<!--a21CircuitsBioInstDC_circAnalQuiz1_8-->A resistor has a voltage of 5 volts and a resistance of 15 ohms. What is the power consumed? }
- None of these are ture.
- 11.67 Joules
+ 1.67 Watts
- 2.5 Watts

{<!--a21CircuitsBioInstDC_circAnalQuiz1_9-->A resistor is on for 5 seconds. It consumes power at a rate of 5 watts. How many joules are used?}
+ 25 Joules
- 3 Joules
- 5 Joules
- None of these are true

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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{<!--a21CircuitsBioInstDC_circuits_1-->An ideal 5.2 V voltage source is connected to two resistors in parallel. One is 1.2$k\Omega$, and the other is 2.8 $k\Omega$. What is the current through the larger resistor?}
-a) 0.7 mA.
-b) 0.9 mA.
-c) 1.1 mA.
+d) 1.3 mA.
-e) 1.5 mA.

{<!--a21CircuitsBioInstDC_circuits_2-->A 7.7 ohm resistor is connected in series to a pair of 5.8 ohm resistors that are in parallel. What is the net resistance?}
-a) 6.1 ohms.
-b) 7 ohms.
-c) 8 ohms.
-d) 9.2 ohms.
+e) 10.6 ohms.

{<!--a21CircuitsBioInstDC_circuits_3-->Two 8 ohm resistors are connected in parallel. This combination is then connected in series to a 6.6 ohm resistor. What is the net resistance?}
-a) 9.2 ohms.
+b) 10.6 ohms.
-c) 12.2 ohms.
-d) 14 ohms.
-e) 16.1 ohms.

{<!--a21CircuitsBioInstDC_circuits_4-->An ideal 7.9 volt battery is connected to a 0.09 ohm resistor. To measure the current an ammeter with a resistance of 20$m\Omega$ is used. What current does the ammeter actually read?}
+a) 71.8 A.
-b) 82.6 A.
-c) 95 A.
-d) 109.2 A.
-e) 125.6 A.

{<!--a21CircuitsBioInstDC_circuits_5-->A battery has an emf of 5.3 volts, and an internal resistance of 326 $k\Omega$. It is connected to a 3 $M\Omega$ resistor. What power is developed in the 3 $M\Omega$ resistor?}
-a) 5.01 μW.
-b) 5.76 μW.
-c) 6.62 μW.

+d) 7.62 μW.
-e) 8.76 μW.

</quiz>

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====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a21CircuitsBioInstDC_circuits_1-->An ideal 6.1 V voltage source
is connected to two resistors in parallel. One is
2.4$k\Omega$, and the other is 4.2 $k\Omega$.
What is the current through the larger resistor?
-a) 0.61 mA.
-b) 0.7 mA.
-c) 0.8 mA.
+d) 0.92 mA.
-e) 1.06 mA.
=====*_Rendition_* 1-3=====
<!--a21CircuitsBioInstDC_circuits_1-->An ideal 3.1 V voltage source
is connected to two resistors in parallel. One is
1.5$k\Omega$, and the other is 2.2 $k\Omega$.
What is the current through the larger resistor?
-a) 0.55 mA.
-b) 0.63 mA.
-c) 0.73 mA.
+d) 0.84 mA.
-e) 0.96 mA.
=====*_Rendition_* 1-4=====
<!--a21CircuitsBioInstDC_circuits_1-->An ideal 7.9 V voltage source
is connected to two resistors in parallel. One is
2.4$k\Omega$, and the other is 5.2 $k\Omega$.
What is the current through the larger resistor?
-a) 0.68 mA.
-b) 0.79 mA.
-c) 0.9 mA.
+d) 1.04 mA.
-e) 1.2 mA.
=====*_Rendition_* 1-5=====
<!--a21CircuitsBioInstDC_circuits_1-->An ideal 5.6 V voltage source
is connected to two resistors in parallel. One is
2.3$k\Omega$, and the other is 4.3 $k\Omega$.
What is the current through the larger resistor?
-a) 0.56 mA.
-b) 0.64 mA.
-c) 0.74 mA.
+d) 0.85 mA.
-e) 0.98 mA.

=====*_Rendition_* 1-6=====
<!--a21CircuitsBioInstDC_circuits_1-->An ideal 9.9 V voltage source is connected to two resistors in parallel. One is 0.9$k\Omega$, and the other is 1.8 $k\Omega$. What is the current through the larger resistor?
+a) 3.67 mA.
-b) 4.22 mA.
-c) 4.85 mA.
-d) 5.58 mA.
-e) 6.41 mA.
=====*_Rendition_* 1-7=====
<!--a21CircuitsBioInstDC_circuits_1-->An ideal 9.2 V voltage source is connected to two resistors in parallel. One is 1.1$k\Omega$, and the other is 2.4 $k\Omega$. What is the current through the larger resistor?
-a) 2.29 mA.
+b) 2.63 mA.
-c) 3.02 mA.
-d) 3.48 mA.
-e) 4 mA.
=====*_Rendition_* 1-8=====
<!--a21CircuitsBioInstDC_circuits_1-->An ideal 9.4 V voltage source is connected to two resistors in parallel. One is 2.1$k\Omega$, and the other is 4.3 $k\Omega$. What is the current through the larger resistor?
+a) 1.47 mA.
-b) 1.69 mA.
-c) 1.94 mA.
-d) 2.23 mA.
-e) 2.57 mA.
=====*_Rendition_* 1-9=====
<!--a21CircuitsBioInstDC_circuits_1-->An ideal 3.6 V voltage source is connected to two resistors in parallel. One is 2.2$k\Omega$, and the other is 4.2 $k\Omega$. What is the current through the larger resistor?
-a) 0.43 mA.
-b) 0.49 mA.
+c) 0.56 mA.
-d) 0.65 mA.
-e) 0.74 mA.
=====*_Rendition_* 1-10=====
<!--a21CircuitsBioInstDC_circuits_1-->An ideal 8.9 V voltage source is connected to two resistors in parallel. One is 2.1$k\Omega$, and the other is 4.4 $k\Omega$. What is the current through the larger resistor?
+a) 1.37 mA.
-b) 1.57 mA.
-c) 1.81 mA.
-d) 2.08 mA.
-e) 2.39 mA.
=====*_Rendition_* 1-11=====
<!--a21CircuitsBioInstDC_circuits_1-->An ideal 4.2 V voltage source

is connected to two resistors in parallel. One is
1.6$k\Omega$, and the other is 2.1 $k\Omega$.
What is the current through the larger resistor?
-a) 0.75 mA.
-b) 0.86 mA.
-c) 0.99 mA.
+d) 1.14 mA.
-e) 1.31 mA.
=====*_Rendition_* 1-12=====
<!--a21CircuitsBioInstDC_circuits_1-->An ideal 5.2 V voltage source
is connected to two resistors in parallel. One is
1.2$k\Omega$, and the other is 3.6 $k\Omega$.
What is the current through the larger resistor?
-a) 0.94 mA.
+b) 1.08 mA.
-c) 1.25 mA.
-d) 1.43 mA.
-e) 1.65 mA.
=====*_Rendition_* 1-13=====
<!--a21CircuitsBioInstDC_circuits_1-->An ideal 8.8 V voltage source
is connected to two resistors in parallel. One is
0.8$k\Omega$, and the other is 2.9 $k\Omega$.
What is the current through the larger resistor?
-a) 1.56 mA.
-b) 1.8 mA.
-c) 2.07 mA.
+d) 2.38 mA.
-e) 2.74 mA.
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a21CircuitsBioInstDC_circuits_2-->A 6 ohm resistor is connected in
series to a pair of 5 ohm resistors that are in parallel. What is
the net resistance?
-a) 7.4 ohms.
+b) 8.5 ohms.
-c) 9.8 ohms.
-d) 11.2 ohms.
-e) 12.9 ohms.
=====*_Rendition_* 2-3=====
<!--a21CircuitsBioInstDC_circuits_2-->A 8 ohm resistor is connected in
series to a pair of 5.6 ohm resistors that are in parallel. What is
the net resistance?
-a) 7.1 ohms.
-b) 8.2 ohms.
-c) 9.4 ohms.
+d) 10.8 ohms.
-e) 12.4 ohms.
=====*_Rendition_* 2-4=====
<!--a21CircuitsBioInstDC_circuits_2-->A 6.6 ohm resistor is connected
in series to a pair of 6.4 ohm resistors that are in parallel. What
is the net resistance?
-a) 6.4 ohms.

-b) 7.4 ohms.
-c) 8.5 ohms.
+d) 9.8 ohms.
-e) 11.3 ohms.
=====*_Rendition_* 2-5=====
<!--a21CircuitsBioInstDC_circuits_2-->A 5.9 ohm resistor is connected in series to a pair of 3 ohm resistors that are in parallel. What is the net resistance?
-a) 5.6 ohms.
-b) 6.4 ohms.
+c) 7.4 ohms.
-d) 8.5 ohms.
-e) 9.8 ohms.
=====*_Rendition_* 2-6=====
<!--a21CircuitsBioInstDC_circuits_2-->A 5.7 ohm resistor is connected in series to a pair of 3.8 ohm resistors that are in parallel. What is the net resistance?
-a) 5 ohms.
-b) 5.7 ohms.
-c) 6.6 ohms.
+d) 7.6 ohms.
-e) 8.7 ohms.
=====*_Rendition_* 2-7=====
<!--a21CircuitsBioInstDC_circuits_2-->A 6.4 ohm resistor is connected in series to a pair of 7.4 ohm resistors that are in parallel. What is the net resistance?
+a) 10.1 ohms.
-b) 11.6 ohms.
-c) 13.4 ohms.
-d) 15.4 ohms.
-e) 17.7 ohms.
=====*_Rendition_* 2-8=====
<!--a21CircuitsBioInstDC_circuits_2-->A 5.6 ohm resistor is connected in series to a pair of 7.2 ohm resistors that are in parallel. What is the net resistance?
-a) 7 ohms.
-b) 8 ohms.
+c) 9.2 ohms.
-d) 10.6 ohms.
-e) 12.2 ohms.
=====*_Rendition_* 2-9=====
<!--a21CircuitsBioInstDC_circuits_2-->A 8.1 ohm resistor is connected in series to a pair of 5.2 ohm resistors that are in parallel. What is the net resistance?
-a) 6.1 ohms.
-b) 7 ohms.
-c) 8.1 ohms.
-d) 9.3 ohms.
+e) 10.7 ohms.
=====*_Rendition_* 2-10=====
<!--a21CircuitsBioInstDC_circuits_2-->A 5.8 ohm resistor is connected in series to a pair of 2.8 ohm resistors that are in parallel. What

is the net resistance?
+a) 7.2 ohms.
-b) 8.3 ohms.
-c) 9.5 ohms.
-d) 11 ohms.
-e) 12.6 ohms.
=====*_Rendition_* 2-11=====
<!--a21CircuitsBioInstDC_circuits_2-->A 7 ohm resistor is connected in series to a pair of 3.4 ohm resistors that are in parallel. What is the net resistance?
-a) 6.6 ohms.
-b) 7.6 ohms.
+c) 8.7 ohms.
-d) 10 ohms.
-e) 11.5 ohms.
=====*_Rendition_* 2-12=====
<!--a21CircuitsBioInstDC_circuits_2-->A 6.3 ohm resistor is connected in series to a pair of 3.4 ohm resistors that are in parallel. What is the net resistance?
-a) 5.3 ohms.
-b) 6 ohms.
-c) 7 ohms.
+d) 8 ohms.
-e) 9.2 ohms.
=====*_Rendition_* 2-13=====
<!--a21CircuitsBioInstDC_circuits_2-->A 7.5 ohm resistor is connected in series to a pair of 7 ohm resistors that are in parallel. What is the net resistance?
-a) 8.3 ohms.
-b) 9.6 ohms.
+c) 11 ohms.
-d) 12.7 ohms.
-e) 14.5 ohms.
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a21CircuitsBioInstDC_circuits_3-->Two 8.8 ohm resistors are connected in parallel. This combination is then connected in series to a 2.8 ohm resistor. What is the net resistance?
-a) 6.3 ohms.
+b) 7.2 ohms.
-c) 8.3 ohms.
-d) 9.5 ohms.
-e) 11 ohms.
=====*_Rendition_* 3-3=====
<!--a21CircuitsBioInstDC_circuits_3-->Two 6.2 ohm resistors are connected in parallel. This combination is then connected in series to a 2.4 ohm resistor. What is the net resistance?
-a) 3.1 ohms.
-b) 3.6 ohms.
-c) 4.2 ohms.
-d) 4.8 ohms.
+e) 5.5 ohms.

=====*_Rendition_* 3-4=====
<!--a21CircuitsBioInstDC_circuits_3-->Two 6.6 ohm resistors are connected in parallel. This combination is then connected in series to a 3.4 ohm resistor. What is the net resistance?
-a) 4.4 ohms.
-b) 5.1 ohms.
-c) 5.8 ohms.
+d) 6.7 ohms.
-e) 7.7 ohms.
=====*_Rendition_* 3-5=====
<!--a21CircuitsBioInstDC_circuits_3-->Two 6.2 ohm resistors are connected in parallel. This combination is then connected in series to a 2.6 ohm resistor. What is the net resistance?
-a) 3.7 ohms.
-b) 4.3 ohms.
-c) 5 ohms.
+d) 5.7 ohms.
-e) 6.6 ohms.
=====*_Rendition_* 3-6=====
<!--a21CircuitsBioInstDC_circuits_3-->Two 6.4 ohm resistors are connected in parallel. This combination is then connected in series to a 6.6 ohm resistor. What is the net resistance?
-a) 8.5 ohms.
+b) 9.8 ohms.
-c) 11.3 ohms.
-d) 13 ohms.
-e) 14.9 ohms.
=====*_Rendition_* 3-7=====
<!--a21CircuitsBioInstDC_circuits_3-->Two 8.2 ohm resistors are connected in parallel. This combination is then connected in series to a 5.8 ohm resistor. What is the net resistance?
+a) 9.9 ohms.
-b) 11.4 ohms.
-c) 13.1 ohms.
-d) 15.1 ohms.
-e) 17.3 ohms.
=====*_Rendition_* 3-8=====
<!--a21CircuitsBioInstDC_circuits_3-->Two 6.2 ohm resistors are connected in parallel. This combination is then connected in series to a 3.4 ohm resistor. What is the net resistance?
+a) 6.5 ohms.
-b) 7.5 ohms.
-c) 8.6 ohms.
-d) 9.9 ohms.
-e) 11.4 ohms.
=====*_Rendition_* 3-9=====
<!--a21CircuitsBioInstDC_circuits_3-->Two 7 ohm resistors are connected in parallel. This combination is then connected in series to a 2.8 ohm resistor. What is the net resistance?
-a) 5.5 ohms.
+b) 6.3 ohms.
-c) 7.2 ohms.

-d) 8.3 ohms.
-e) 9.6 ohms.
=====*_Rendition_* 3-10=====
<!--a21CircuitsBioInstDC_circuits_3-->Two 9.4 ohm resistors are connected in parallel. This combination is then connected in series to a 2.4 ohm resistor. What is the net resistance?
-a) 5.4 ohms.
-b) 6.2 ohms.
+c) 7.1 ohms.
-d) 8.2 ohms.
-e) 9.4 ohms.
=====*_Rendition_* 3-11=====
<!--a21CircuitsBioInstDC_circuits_3-->Two 7.4 ohm resistors are connected in parallel. This combination is then connected in series to a 2.8 ohm resistor. What is the net resistance?
-a) 5.7 ohms.
+b) 6.5 ohms.
-c) 7.5 ohms.
-d) 8.6 ohms.
-e) 9.9 ohms.
=====*_Rendition_* 3-12=====
<!--a21CircuitsBioInstDC_circuits_3-->Two 8.2 ohm resistors are connected in parallel. This combination is then connected in series to a 5.8 ohm resistor. What is the net resistance?
+a) 9.9 ohms.
-b) 11.4 ohms.
-c) 13.1 ohms.
-d) 15.1 ohms.
-e) 17.3 ohms.
=====*_Rendition_* 3-13=====
<!--a21CircuitsBioInstDC_circuits_3-->Two 7.8 ohm resistors are connected in parallel. This combination is then connected in series to a 5.4 ohm resistor. What is the net resistance?
+a) 9.3 ohms.
-b) 10.7 ohms.
-c) 12.3 ohms.
-d) 14.1 ohms.
-e) 16.3 ohms.
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a21CircuitsBioInstDC_circuits_4-->An ideal 6 volt battery is connected to a 0.073 ohm resistor. To measure the current an ammeter with a resistance of 14$m\Omega$ is used. What current does the ammeter actually read?
-a) 60 A.
+b) 69 A.
-c) 79.3 A.
-d) 91.2 A.
-e) 104.9 A.
=====*_Rendition_* 4-3=====
<!--a21CircuitsBioInstDC_circuits_4-->An ideal 7.5 volt battery is connected to a 0.06 ohm resistor. To measure the current an ammeter

with a resistance of 19$m\Omega$ is used. What current does the ammeter actually read?
-a) 54.3 A.
-b) 62.4 A.
-c) 71.8 A.
-d) 82.6 A.
+e) 94.9 A.
=====*_Rendition_* 4-4=====
<!--a21CircuitsBioInstDC_circuits_4-->An ideal 7.3 volt battery is connected to a 0.071 ohm resistor. To measure the current an ammeter with a resistance of 27$m\Omega$ is used. What current does the ammeter actually read?
-a) 49 A.
-b) 56.3 A.
-c) 64.8 A.
+d) 74.5 A.
-e) 85.7 A.
=====*_Rendition_* 4-5=====
<!--a21CircuitsBioInstDC_circuits_4-->An ideal 6.4 volt battery is connected to a 0.071 ohm resistor. To measure the current an ammeter with a resistance of 21$m\Omega$ is used. What current does the ammeter actually read?
-a) 60.5 A.
+b) 69.6 A.
-c) 80 A.
-d) 92 A.
-e) 105.8 A.
=====*_Rendition_* 4-6=====
<!--a21CircuitsBioInstDC_circuits_4-->An ideal 6.8 volt battery is connected to a 0.096 ohm resistor. To measure the current an ammeter with a resistance of 29$m\Omega$ is used. What current does the ammeter actually read?
-a) 35.8 A.
-b) 41.1 A.
-c) 47.3 A.
+d) 54.4 A.
-e) 62.6 A.
=====*_Rendition_* 4-7=====
<!--a21CircuitsBioInstDC_circuits_4-->An ideal 6 volt battery is connected to a 0.06 ohm resistor. To measure the current an ammeter with a resistance of 25$m\Omega$ is used. What current does the ammeter actually read?
+a) 70.6 A.
-b) 81.2 A.
-c) 93.4 A.
-d) 107.4 A.
-e) 123.5 A.
=====*_Rendition_* 4-8=====
<!--a21CircuitsBioInstDC_circuits_4-->An ideal 7.5 volt battery is connected to a 0.084 ohm resistor. To measure the current an ammeter with a resistance of 14$m\Omega$ is used. What current does the ammeter actually read?

-a) 43.8 A.
-b) 50.3 A.
-c) 57.9 A.
-d) 66.5 A.
+e) 76.5 A.
=====*_Rendition_* 4-9=====
<!--a21CircuitsBioInstDC_circuits_4-->An ideal 7.4 volt battery is connected to a 0.074 ohm resistor. To measure the current an ammeter with a resistance of 12$m\Omega$ is used. What current does the ammeter actually read?
-a) 49.2 A.
-b) 56.6 A.
-c) 65.1 A.
-d) 74.8 A.
+e) 86 A.
=====*_Rendition_* 4-10=====
<!--a21CircuitsBioInstDC_circuits_4-->An ideal 5.9 volt battery is connected to a 0.059 ohm resistor. To measure the current an ammeter with a resistance of 24$m\Omega$ is used. What current does the ammeter actually read?
+a) 71.1 A.
-b) 81.7 A.
-c) 94 A.
-d) 108.1 A.
-e) 124.3 A.
=====*_Rendition_* 4-11=====
<!--a21CircuitsBioInstDC_circuits_4-->An ideal 7.8 volt battery is connected to a 0.064 ohm resistor. To measure the current an ammeter with a resistance of 17$m\Omega$ is used. What current does the ammeter actually read?
-a) 63.3 A.
-b) 72.8 A.
-c) 83.7 A.
+d) 96.3 A.
-e) 110.7 A.
=====*_Rendition_* 4-12=====
<!--a21CircuitsBioInstDC_circuits_4-->An ideal 5.7 volt battery is connected to a 0.091 ohm resistor. To measure the current an ammeter with a resistance of 23$m\Omega$ is used. What current does the ammeter actually read?
+a) 50 A.
-b) 57.5 A.
-c) 66.1 A.
-d) 76 A.
-e) 87.5 A.
=====*_Rendition_* 4-13=====
<!--a21CircuitsBioInstDC_circuits_4-->An ideal 5.7 volt battery is connected to a 0.054 ohm resistor. To measure the current an ammeter with a resistance of 13$m\Omega$ is used. What current does the ammeter actually read?
-a) 64.3 A.
-b) 74 A.

+c) 85.1 A.
-d) 97.8 A.
-e) 112.5 A.
====*_Question_* 5====
=====*_Rendition_* 5-2=====
<!--a21CircuitsBioInstDC_circuits_5-->A battery has an emf of 6.1 volts, and an internal resistance of 366 $k\Omega$. It is connected to a 3.6 $M\Omega$ resistor. What power is developed in the 3.6 $M\Omega$ resistor?
-a) 6.44 μW.
-b) 7.41 μW.
+c) 8.52 μW.
-d) 9.79 μW.
-e) 11.26 μW.
=====*_Rendition_* 5-3=====
<!--a21CircuitsBioInstDC_circuits_5-->A battery has an emf of 6.5 volts, and an internal resistance of 446 $k\Omega$. It is connected to a 3.5 $M\Omega$ resistor. What power is developed in the 3.5 $M\Omega$ resistor?
-a) 8.26 μW.
+b) 9.5 μW.
-c) 10.92 μW.
-d) 12.56 μW.
-e) 14.44 μW.
=====*_Rendition_* 5-4=====
<!--a21CircuitsBioInstDC_circuits_5-->A battery has an emf of 5.6 volts, and an internal resistance of 295 $k\Omega$. It is connected to a 4.1 $M\Omega$ resistor. What power is developed in the 4.1 $M\Omega$ resistor?
-a) 3.81 μW.
-b) 4.38 μW.
-c) 5.03 μW.
-d) 5.79 μW.
+e) 6.66 μW.
=====*_Rendition_* 5-5=====
<!--a21CircuitsBioInstDC_circuits_5-->A battery has an emf of 5.3 volts, and an internal resistance of 428 $k\Omega$. It is connected to a 2.3 $M\Omega$ resistor. What power is developed in the 2.3 $M\Omega$ resistor?
-a) 4.96 μW.
-b) 5.71 μW.
-c) 6.56 μW.
-d) 7.55 μW.
+e) 8.68 μW.
=====*_Rendition_* 5-6=====
<!--a21CircuitsBioInstDC_circuits_5-->A battery has an emf of 5.5 volts, and an internal resistance of 296 $k\Omega$. It is connected to a 3.3 $M\Omega$ resistor. What power is developed in the 3.3 $M\Omega$ resistor?
+a) 7.72 μW.
-b) 8.88 μW.
-c) 10.21 μW.

-d) 11.74 μW.
-e) 13.5 μW.
=====*_Rendition_* 5-7=====
<!--a21CircuitsBioInstDC_circuits_5-->A battery has an emf of 7.8 volts, and an internal resistance of 351 $k\Omega$. It is connected to a 4.2 $M\Omega$ resistor. What power is developed in the 4.2 $M\Omega$ resistor?
+a) 12.34 μW.
-b) 14.19 μW.
-c) 16.32 μW.
-d) 18.76 μW.
-e) 21.58 μW.
=====*_Rendition_* 5-8=====
<!--a21CircuitsBioInstDC_circuits_5-->A battery has an emf of 5.6 volts, and an internal resistance of 450 $k\Omega$. It is connected to a 2.7 $M\Omega$ resistor. What power is developed in the 2.7 $M\Omega$ resistor?
-a) 4.88 μW.
-b) 5.61 μW.
-c) 6.45 μW.
-d) 7.42 μW.
+e) 8.53 μW.
=====*_Rendition_* 5-9=====
<!--a21CircuitsBioInstDC_circuits_5-->A battery has an emf of 6.7 volts, and an internal resistance of 348 $k\Omega$. It is connected to a 3.8 $M\Omega$ resistor. What power is developed in the 3.8 $M\Omega$ resistor?
+a) 9.91 μW.
-b) 11.4 μW.
-c) 13.11 μW.
-d) 15.08 μW.
-e) 17.34 μW.
=====*_Rendition_* 5-10=====
<!--a21CircuitsBioInstDC_circuits_5-->A battery has an emf of 7.1 volts, and an internal resistance of 246 $k\Omega$. It is connected to a 3.3 $M\Omega$ resistor. What power is developed in the 3.3 $M\Omega$ resistor?
-a) 10 μW.
-b) 11.5 μW.
+c) 13.23 μW.
-d) 15.21 μW.
-e) 17.5 μW.
=====*_Rendition_* 5-11=====
<!--a21CircuitsBioInstDC_circuits_5-->A battery has an emf of 5.6 volts, and an internal resistance of 460 $k\Omega$. It is connected to a 2.4 $M\Omega$ resistor. What power is developed in the 2.4 $M\Omega$ resistor?
-a) 6.05 μW.
-b) 6.96 μW.
-c) 8 μW.
+d) 9.2 μW.
-e) 10.58 μW.

=====*_Rendition_* 5-12=====
<!--a21CircuitsBioInstDC_circuits_5-->A battery has an emf of 7 volts, and an internal resistance of 357 $k\Omega$. It is connected to a 2.9 $M\Omega$ resistor. What power is developed in the 2.9 $M\Omega$ resistor?
+a) 13.4 μW.
-b) 15.4 μW.
-c) 17.72 μW.
-d) 20.37 μW.
-e) 23.43 μW.
=====*_Rendition_* 5-13=====
<!--a21CircuitsBioInstDC_circuits_5-->A battery has an emf of 6.5 volts, and an internal resistance of 244 $k\Omega$. It is connected to a 4 $M\Omega$ resistor. What power is developed in the 4 $M\Omega$ resistor?
-a) 7.09 μW.
-b) 8.16 μW.
+c) 9.38 μW.
-d) 10.79 μW.
-e) 12.41 μW.
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Instructions are forthcoming

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<quiz display=simple>
{<!--a21CircuitsBioInstDC_RCdecaySimple_1-->A 621 mF capacitor is connected in series to a 628 kΩ resistor. If the capacitor is

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discharged, how long does it take to fall by a factor of
e<sup>3</sup>? (where e =2.7...)}
-a) 1.17 x 10<sup>5</sup> s.
-b) 3.7 x 10<sup>5</sup> s.
+c) 1.17 x 10<sup>6</sup> s.
-d) 3.7 x 10<sup>6</sup> s.
-e) 1.17 x 10<sup>7</sup> s.

{<!--a21CircuitsBioInstDC_RCdecaySimple_2-->A 784 &mu;F capacitor is
connected in series to a 543 k&Omega; resistor.  If the capacitor is
discharged, how long does it take to fall by a factor of
e<sup>3</sup>? (where e =2.7...)}
-a) 4.04 x 10<sup>1</sup> s.
-b) 1.28 x 10<sup>2</sup> s.
-c) 4.04 x 10<sup>2</sup> s.
+d) 1.28 x 10<sup>3</sup> s.
-e) 4.04 x 10<sup>3</sup> s.

{<!--a21CircuitsBioInstDC_RCdecaySimple_3-->A 354 mF capacitor is
connected in series to a 407 M&Omega; resistor.  If the capacitor is
discharged, how long does it take to fall by a factor of
e<sup>3</sup>? (where e =2.7...)}
-a) 4.32 x 10<sup>7</sup> s.
-b) 1.37 x 10<sup>8</sup> s.
+c) 4.32 x 10<sup>8</sup> s.
-d) 1.37 x 10<sup>9</sup> s.
-e) 4.32 x 10<sup>9</sup> s.

{<!--a21CircuitsBioInstDC_RCdecaySimple_4-->A 10 F capacitor is
connected in series to a 9&Omega; resistor.  If the capacitor is
discharged, how long does it take to fall by a factor of
e<sup>4</sup>? (where e =2.7...)}
+a) 3.6 x 10<sup>2</sup> s.
-b) 1.14 x 10<sup>3</sup> s.
-c) 3.6 x 10<sup>3</sup> s.
-d) 1.14 x 10<sup>4</sup> s.
-e) 3.6 x 10<sup>4</sup> s.

</quiz>

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Other renditions
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=====*_Rendition_* 1-2=====
<!--a21CircuitsBioInstDC_RCdecaySimple_1-->A 547 mF capacitor is
connected in series to a 2 k&Omega; resistor.  If the capacitor is
discharged, how long does it take to fall by a factor of
e<sup>4</sup>? (where e =2.7...)
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-a) 1.38 x 10³ s.
+b) 4.38 x 10³ s.
-c) 1.38 x 10⁴ s.
-d) 4.38 x 10⁴ s.
-e) 1.38 x 10⁵ s.
=====*_Rendition_* 1-3=====
<!--a21CircuitsBioInstDC_RCdecaySimple_1-->A 819 mF capacitor is connected in series to a 798 kΩ resistor. If the capacitor is discharged, how long does it take to fall by a factor of e⁴? (where e =2.7...)
-a) 8.27 x 10⁵ s.
+b) 2.61 x 10⁶ s.
-c) 8.27 x 10⁶ s.
-d) 2.61 x 10⁷ s.
-e) 8.27 x 10⁷ s.
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a21CircuitsBioInstDC_RCdecaySimple_2-->A 665 μF capacitor is connected in series to a 806 kΩ resistor. If the capacitor is discharged, how long does it take to fall by a factor of e²? (where e =2.7...)
-a) 3.39 x 10¹ s.
-b) 1.07 x 10² s.
-c) 3.39 x 10² s.
+d) 1.07 x 10³ s.
-e) 3.39 x 10³ s.
=====*_Rendition_* 2-3=====
<!--a21CircuitsBioInstDC_RCdecaySimple_2-->A 65 μF capacitor is connected in series to a 414 kΩ resistor. If the capacitor is discharged, how long does it take to fall by a factor of e⁴? (where e =2.7...)
-a) 1.08 x 10¹ s.
-b) 3.4 x 10¹ s.
+c) 1.08 x 10² s.
-d) 3.4 x 10² s.
-e) 1.08 x 10³ s.
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a21CircuitsBioInstDC_RCdecaySimple_3-->A 206 mF capacitor is connected in series to a 990 MΩ resistor. If the capacitor is discharged, how long does it take to fall by a factor of e⁴? (where e =2.7...)
+a) 8.16 x 10⁸ s.
-b) 2.58 x 10⁹ s.
-c) 8.16 x 10⁹ s.
-d) 2.58 x 10¹⁰ s.
-e) 8.16 x 10¹⁰ s.
=====*_Rendition_* 3-3=====
<!--a21CircuitsBioInstDC_RCdecaySimple_3-->A 727 mF capacitor is connected in series to a 860 MΩ resistor. If the capacitor is discharged, how long does it take to fall by a factor of e³? (where e =2.7...)

+a) 1.88 x 10⁹ s.
-b) 5.93 x 10⁹ s.
-c) 1.88 x 10¹⁰ s.
-d) 5.93 x 10¹⁰ s.
-e) 1.88 x 10¹¹ s.
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a21CircuitsBioInstDC_RCdecaySimple_4-->A 5 F capacitor is connected in series to a 8Ω resistor. If the capacitor is discharged, how long does it take to fall by a factor of e⁴? (where e =2.7...)
-a) 1.6 x 10¹ s.
-b) 5.06 x 10¹ s.
+c) 1.6 x 10² s.
-d) 5.06 x 10² s.
-e) 1.6 x 10³ s.
=====*_Rendition_* 4-3=====
<!--a21CircuitsBioInstDC_RCdecaySimple_4-->A 10 F capacitor is connected in series to a 10Ω resistor. If the capacitor is discharged, how long does it take to fall by a factor of e⁴? (where e =2.7...)
-a) 4 x 10⁰ s.
-b) 1.26 x 10¹ s.
-c) 4 x 10¹ s.
-d) 1.26 x 10² s.
+e) 4 x 10² s.
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Instructions are forthcoming

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{<!--a22Magnetism_forces_1-->A cosmic ray alpha particle encounters Earth's magnetic field at right angles to a field of 5.7 μT. The kinetic energy is 361 keV. What is the radius of particle's orbit?}
-a) 1.5 x 10² m.
-b) 4.8 x 10² m.
-c) 1.5 x 10³ m.
-d) 4.8 x 10³ m.
+e) 1.5 x 10⁴ m.

{<!--a22Magnetism_forces_2-->Two parallel wires are 7.2 meters long, and are separated by 6.9 mm. What is the force if both wires carry a current of 13.7 amps?}
-a) 1.24 x 10⁻² newtons
+b) 3.92 x 10⁻² newtons
-c) 1.24 x 10⁻¹ newtons
-d) 3.92 x 10⁻¹ newtons
-e) 1.24 x 10⁰ newtons

{<!--a22Magnetism_forces_3-->Blood is flowing at an average rate of 21.5 cm/s in an artery that has an inner diameter of 3.5 mm. What is the voltage across a hall probe placed across the inner diameter of the artery if the perpendicular magnetic field is 0.11 Tesla?}
-a) 8.28 x 10⁻⁶ Volts
-b) 2.62 x 10⁻⁵ Volts
+c) 8.28 x 10⁻⁵ Volts
-d) 2.62 x 10⁻⁴ Volts
-e) 8.28 x 10⁻⁴ Volts

{<!--a22Magnetism_forces_4-->An electron tube on Earth's surface is oriented horizontally towards magnetic north. The electron is traveling at 0.07c, and Earth's magnetic field makes an angle of 22.5 degrees with respect to the horizontal. To counter the magnetic force, a voltage is applied between two large parallel plates that are 54 mm apart. What must be the applied voltage if the magnetic field is 45μT?}
-a) 2 x 10⁻¹ volts
-b) 6.2 x 10⁻¹ volts
-c) 2 x 10⁰ volts
-d) 6.2 x 10⁰ volts
+e) 2 x 10¹ volts

</quiz>

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Other renditions

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=====*_Rendition_* 1-2=====
<!--a22Magnetism_forces_1-->A cosmic ray alpha particle encounters Earth's magnetic field at right angles to a field of 11.4 μT. The kinetic energy is 307 keV. What is the radius of particle's orbit?
-a) 7 x 10¹ m.
-b) 2.2 x 10² m.
-c) 7 x 10² m.
-d) 2.2 x 10³ m.
+e) 7 x 10³ m.
=====*_Rendition_* 1-3=====
<!--a22Magnetism_forces_1-->A cosmic ray alpha particle encounters Earth's magnetic field at right angles to a field of 7.4 μT. The kinetic energy is 437 keV. What is the radius of particle's orbit?
-a) 1.3 x 10² m.
-b) 4.1 x 10² m.
-c) 1.3 x 10³ m.
-d) 4.1 x 10³ m.
+e) 1.3 x 10⁴ m.
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a22Magnetism_forces_2-->Two parallel wires are 6.7 meters long, and are separated by 5.7 mm. What is the force if both wires carry a current of 13.3 amps?
-a) 4.16 x 10⁻⁴ newtons
-b) 1.32 x 10⁻³ newtons
-c) 4.16 x 10⁻³ newtons
-d) 1.32 x 10⁻² newtons
+e) 4.16 x 10⁻² newtons
=====*_Rendition_* 2-3=====
<!--a22Magnetism_forces_2-->Two parallel wires are 7.5 meters long, and are separated by 4.4 mm. What is the force if both wires carry a current of 14.8 amps?
-a) 2.36 x 10⁻³ newtons
-b) 7.47 x 10⁻³ newtons
-c) 2.36 x 10⁻² newtons
+d) 7.47 x 10⁻² newtons
-e) 2.36 x 10⁻¹ newtons
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a22Magnetism_forces_3-->Blood is flowing at an average rate of 20.5 cm/s in an artery that has an inner diameter of 4.5 mm. What is the voltage across a hall probe placed across the inner diameter of the artery if the perpendicular magnetic field is 0.12 Tesla?
-a) 3.5 x 10⁻⁵ Volts
+b) 1.11 x 10⁻⁴ Volts
-c) 3.5 x 10⁻⁴ Volts
-d) 1.11 x 10⁻³ Volts
-e) 3.5 x 10⁻³ Volts
=====*_Rendition_* 3-3=====
<!--a22Magnetism_forces_3-->Blood is flowing at an average rate of

24.5 cm/s in an artery that has an inner diameter of 3.9 mm. What is the voltage across a hall probe placed across the inner diameter of the artery if the perpendicular magnetic field is 0.17 Tesla?
-a) 5.14 x 10⁻⁵ Volts
+b) 1.62 x 10⁻⁴ Volts
-c) 5.14 x 10⁻⁴ Volts
-d) 1.62 x 10⁻³ Volts
-e) 5.14 x 10⁻³ Volts
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a22Magnetism_forces_4-->An electron tube on Earth's surface is oriented horizontally towards magnetic north. The electron is traveling at 0.07c, and Earth's magnetic field makes an angle of 47.5 degrees with respect to the horizontal. To counter the magnetic force, a voltage is applied between two large parallel plates that are 57 mm apart. What must be the applied voltage if the magnetic field is 46μT?
-a) 4.1 x 10⁰ volts
-b) 1.3 x 10¹ volts
+c) 4.1 x 10¹ volts
-d) 1.3 x 10² volts
-e) 4.1 x 10² volts
=====*_Rendition_* 4-3=====
<!--a22Magnetism_forces_4-->An electron tube on Earth's surface is oriented horizontally towards magnetic north. The electron is traveling at 0.06c, and Earth's magnetic field makes an angle of 48.5 degrees with respect to the horizontal. To counter the magnetic force, a voltage is applied between two large parallel plates that are 59 mm apart. What must be the applied voltage if the magnetic field is 45μT?
-a) 1.1 x 10⁰ volts
-b) 3.6 x 10⁰ volts
-c) 1.1 x 10¹ volts
+d) 3.6 x 10¹ volts
-e) 1.1 x 10² volts
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Instructions are forthcoming

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===*_Quiz_*===
<quiz display=simple>
{<!--a23InductionACcircuits_Q1_1-->Two orbiting satellites are orbiting at a speed of 85 km/s perpendicular to a magnetic field of 56 μT. They are connected by a cable that is 29 km long. A voltmeter is attached between a satellite and one end of the cable. The voltmeter's internal impedance far exceeds the net resistance through the ionosphere that completes the circuit. What is the measured voltage?}
-a) 7.76 x 10⁴ volts.
-b) 9.4 x 10⁴ volts.
-c) 1.14 x 10⁵ volts.
+d) 1.38 x 10⁵ volts.
-e) 1.67 x 10⁵ volts.

{<!--a23InductionACcircuits_Q1_4-->An loop of wire with 25 turns has a radius of 0.85 meters, and is oriented with its axis parallel to a magetic field of 0.58 Tesla. What is the induced voltage if this field is reduced to 49% of its original value in 1.5 seconds?}
-a) 9.24 x 10⁰ volts
+b) 1.12 x 10¹ volts
-c) 1.36 x 10¹ volts
-d) 1.64 x 10¹ volts
-e) 1.99 x 10¹ volts

</quiz>

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Other renditions
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=====*_Rendition_* 1-2=====
<!--a23InductionACcircuits_Q1_1-->Two orbiting satellites are orbiting at a speed of 77 km/s perpendicular to a magnetic field of 56 μT. They are connected by a cable that is 31 km long. A voltmeter is attached between a satellite and one end of the cable.

The voltmeter's internal impedance far exceeds the net resistance through the ionosphere that completes the circuit. What is the measured voltage?
-a) 1.1 x 10⁵ volts.
+b) 1.34 x 10⁵ volts.
-c) 1.62 x 10⁵ volts.
-d) 1.96 x 10⁵ volts.
-e) 2.38 x 10⁵ volts.
=====*_Rendition_* 1-3=====
<!--a23InductionACcircuits_Q1_1-->Two orbiting satellites are orbiting at a speed of 66 km/s perpendicular to a magnetic field of 64 μT. They are connected by a cable that is 37 km long. A voltmeter is attached between a satellite and one end of the cable. The voltmeter's internal impedance far exceeds the net resistance through the ionosphere that completes the circuit. What is the measured voltage?
-a) 1.29 x 10⁵ volts.
+b) 1.56 x 10⁵ volts.
-c) 1.89 x 10⁵ volts.
-d) 2.29 x 10⁵ volts.
-e) 2.78 x 10⁵ volts.
=====*_Rendition_* 1-4=====
<!--a23InductionACcircuits_Q1_1-->Two orbiting satellites are orbiting at a speed of 53 km/s perpendicular to a magnetic field of 58 μT. They are connected by a cable that is 29 km long. A voltmeter is attached between a satellite and one end of the cable. The voltmeter's internal impedance far exceeds the net resistance through the ionosphere that completes the circuit. What is the measured voltage?
-a) 7.36 x 10⁴ volts.
+b) 8.91 x 10⁴ volts.
-c) 1.08 x 10⁵ volts.
-d) 1.31 x 10⁵ volts.
-e) 1.59 x 10⁵ volts.
=====*_Rendition_* 1-5=====
<!--a23InductionACcircuits_Q1_1-->Two orbiting satellites are orbiting at a speed of 83 km/s perpendicular to a magnetic field of 57 μT. They are connected by a cable that is 23 km long. A voltmeter is attached between a satellite and one end of the cable. The voltmeter's internal impedance far exceeds the net resistance through the ionosphere that completes the circuit. What is the measured voltage?
-a) 8.98 x 10⁴ volts.
+b) 1.09 x 10⁵ volts.
-c) 1.32 x 10⁵ volts.
-d) 1.6 x 10⁵ volts.
-e) 1.93 x 10⁵ volts.
=====*_Rendition_* 1-6=====
<!--a23InductionACcircuits_Q1_1-->Two orbiting satellites are orbiting at a speed of 52 km/s perpendicular to a magnetic field of 41 μT. They are connected by a cable that is 33 km long. A voltmeter is attached between a satellite and one end of the cable.

The voltmeter's internal impedance far exceeds the net resistance through the ionosphere that completes the circuit. What is the measured voltage?
-a) 4.79 x 10⁴ volts.
-b) 5.81 x 10⁴ volts.
+c) 7.04 x 10⁴ volts.
-d) 8.52 x 10⁴ volts.
-e) 1.03 x 10⁵ volts.
=====*_Rendition_* 1-7=====
<!--a23InductionACcircuits_Q1_1-->Two orbiting satellites are orbiting at a speed of 58 km/s perpendicular to a magnetic field of 46 μT. They are connected by a cable that is 22 km long. A voltmeter is attached between a satellite and one end of the cable. The voltmeter's internal impedance far exceeds the net resistance through the ionosphere that completes the circuit. What is the measured voltage?
-a) 2.72 x 10⁴ volts.
-b) 3.3 x 10⁴ volts.
-c) 4 x 10⁴ volts.
-d) 4.84 x 10⁴ volts.
+e) 5.87 x 10⁴ volts.
=====*_Rendition_* 1-8=====
<!--a23InductionACcircuits_Q1_1-->Two orbiting satellites are orbiting at a speed of 70 km/s perpendicular to a magnetic field of 46 μT. They are connected by a cable that is 30 km long. A voltmeter is attached between a satellite and one end of the cable. The voltmeter's internal impedance far exceeds the net resistance through the ionosphere that completes the circuit. What is the measured voltage?
-a) 4.48 x 10⁴ volts.
-b) 5.43 x 10⁴ volts.
-c) 6.58 x 10⁴ volts.
-d) 7.97 x 10⁴ volts.
+e) 9.66 x 10⁴ volts.
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a23InductionACcircuits_Q1_4-->An loop of wire with 26 turns has a radius of 0.26 meters, and is oriented with its axis parallel to a magetic field of 0.75 Tesla. What is the induced voltage if this field is reduced to 13% of its original value in 1.8 seconds?
+a) 2 x 10⁰ volts
-b) 2.42 x 10⁰ volts
-c) 2.94 x 10⁰ volts
-d) 3.56 x 10⁰ volts
-e) 4.31 x 10⁰ volts
=====*_Rendition_* 2-3=====
<!--a23InductionACcircuits_Q1_4-->An loop of wire with 92 turns has a radius of 0.39 meters, and is oriented with its axis parallel to a magetic field of 0.97 Tesla. What is the induced voltage if this field is reduced to 16% of its original value in 1.4 seconds?

+a) 2.56 x 10¹ volts
-b) 3.1 x 10¹ volts
-c) 3.76 x 10¹ volts
-d) 4.55 x 10¹ volts
-e) 5.51 x 10¹ volts
=====*_Rendition_* 2-4=====
<!--a23InductionACcircuits_Q1_4-->An loop of wire with 80 turns has a radius of 0.52 meters, and is oriented with its axis parallel to a magetic field of 0.15 Tesla. What is the induced voltage if this field is reduced to 19% of its original value in 3.6 seconds?
-a) 1.06 x 10⁰ volts
-b) 1.29 x 10⁰ volts
-c) 1.56 x 10⁰ volts
-d) 1.89 x 10⁰ volts
+e) 2.29 x 10⁰ volts
=====*_Rendition_* 2-5=====
<!--a23InductionACcircuits_Q1_4-->An loop of wire with 43 turns has a radius of 0.27 meters, and is oriented with its axis parallel to a magetic field of 0.68 Tesla. What is the induced voltage if this field is reduced to 36% of its original value in 3.8 seconds?
-a) 6.34 x 10⁻¹ volts
-b) 7.68 x 10⁻¹ volts
-c) 9.31 x 10⁻¹ volts
+d) 1.13 x 10⁰ volts
-e) 1.37 x 10⁰ volts
=====*_Rendition_* 2-6=====
<!--a23InductionACcircuits_Q1_4-->An loop of wire with 54 turns has a radius of 0.8 meters, and is oriented with its axis parallel to a magetic field of 0.86 Tesla. What is the induced voltage if this field is reduced to 46% of its original value in 2.4 seconds?
-a) 1.43 x 10¹ volts
-b) 1.73 x 10¹ volts
+c) 2.1 x 10¹ volts
-d) 2.55 x 10¹ volts
-e) 3.08 x 10¹ volts
=====*_Rendition_* 2-7=====
<!--a23InductionACcircuits_Q1_4-->An loop of wire with 31 turns has a radius of 0.9 meters, and is oriented with its axis parallel to a magetic field of 0.83 Tesla. What is the induced voltage if this field is reduced to 35% of its original value in 1.7 seconds?
-a) 2.07 x 10¹ volts
+b) 2.5 x 10¹ volts
-c) 3.03 x 10¹ volts
-d) 3.67 x 10¹ volts
-e) 4.45 x 10¹ volts
=====*_Rendition_* 2-8=====
<!--a23InductionACcircuits_Q1_4-->An loop of wire with 33 turns has a radius of 0.55 meters, and is oriented with its axis

parallel to a magetic field of 0.74 Tesla. What is the induced voltage if this field is reduced to 32% of its original value in 2.4 seconds?
-a) 5.43 x 10⁰ volts
+b) 6.58 x 10⁰ volts
-c) 7.97 x 10⁰ volts
-d) 9.65 x 10⁰ volts
-e) 1.17 x 10¹ volts
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====*_Instructions_*====
Instructions are forthcoming

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===*_Quiz_*===
<quiz display=simple>
{<!--a25GeometricOptics_image_1-->[[File:lens1b.svg|260px|right]]
Shown is a corrective lens by a person who needs glasses. This ray diagram illustrates}
+ how a nearsighted person might see a distant object
- how a nearsighted person might see an object that is too close for comfort
- how a farsighted person might see an object that is too close for comfort
- how a farsighted person might see a distant object

{<!--a25GeometricOptics_image_2-->[[File:Lens1_leftRight_reversed.svg|260px|right]] Shown is a corrective lens by a person who needs glasses. This ray diagram illustrates}
- how a nearsighted person might see a distant object

- how a farsighted person might see a distant object
+ how a farsighted person might see an object that is too close for comfort
- how a nearsighted person might see an object that is too close for comfort

{<!--a25GeometricOptics_image_3-->In optics, '''normal''' means}
- to the left of the optical axis
- parallel to the surface
+ perpendicular to the surface
- to the right of the optical axis

{<!--a25GeometricOptics_image_4-->The law of reflection applies to}
- only light in a vacuum
- telescopes but not microscopes
- curved surfaces
+ both flat and curved surfaces
- flat surfaces

{<!--a25GeometricOptics_image_5-->When light passes from air to glass}
- the frequency decreases
- the frequency increases
- it bends away from the normal
+ it bends towards the normal
- it does not bend

{<!--a25GeometricOptics_image_6-->When light passes from glass to air}
- it does not bend
- the frequency decreases
- the frequency increases
- it bends towards the normal
+ it bends away from the normal

{<!--a25GeometricOptics_image_7-->An important principle that allows fiber optics to work is}
- the invariance of the speed of light
+ total internal reflection
- total external refraction
- partial internal absorption
- the Doppler shift

{<!--a25GeometricOptics_image_8-->The focal point is where}
- rays meet whenever they pass through a lens
+ rays meet if they were parallel to the optical axis before striking a lens
- rays meet whenever they are forming an image
- rays meet if they are parallel to each other
- the center of the lens

</quiz>

====*_Instructions_*====

Instructions are forthcoming

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===*_Quiz_*===
<quiz display=simple>
{<!--a25GeometricOptics_thinLenses_1-->An object is placed 5.8 cm to the left of a diverging lens with a focal length of 4.9 cm. How far is the image from the lens?}
-a) 4.72 x 10⁻¹ cm
-b) 8.4 x 10⁻¹ cm
-c) 1.49 x 10⁰ cm
+d) 2.66 x 10⁰ cm
-e) 4.72 x 10⁰ cm

{<!--a25GeometricOptics_thinLenses_2-->An object is placed 6.05 cm to the left of a converging lens with a focal length of 5.4 cm. How far is the image from the lens?}
+a) 5.03 x 10¹ cm
-b) 8.94 x 10¹ cm
-c) 1.59 x 10² cm
-d) 2.83 x 10² cm
-e) 5.03 x 10² cm

{<!--a25GeometricOptics_thinLenses_3-->An object of height 0.59 cm is placed 149 cm behind a diverging lens with a focal length of 57 cm. What is the height of the image?}
+a) 1.63 x 10⁻¹ cm
-b) 1.96 x 10⁻¹ cm
-c) 2.35 x 10⁻¹ cm

```
-d) 2.82 x 10<sup>-1</sup> cm
-e) 3.39 x 10<sup>-1</sup> cm

{<!--a25GeometricOptics_thinLenses_4-->An object is placed 12.1 cm to
the left of a diverging lens with a focal length of 15.4 cm.  On the
side, at a distance of 6.5 cm from the diverging lens is a converging
lens with focal length equal to 4 cm.  How far is the final image from
the converging lens?16.65}
+a) 5.72 x 10<sup>0</sup> cm
-b) 1.81 x 10<sup>1</sup> cm
-c) 5.72 x 10<sup>1</sup> cm
-d) 1.81 x 10<sup>2</sup> cm
-e) 5.72 x 10<sup>2</sup> cm

</quiz>

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Other renditions
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=====*_Rendition_* 1-2=====
<!--a25GeometricOptics_thinLenses_1-->An object is placed 8 cm to the
left of a diverging lens with a focal length of 4.3 cm.  How far is
the image from the lens?
+a) 2.8 x 10<sup>0</sup> cm
-b) 4.97 x 10<sup>0</sup> cm
-c) 8.84 x 10<sup>0</sup> cm
-d) 1.57 x 10<sup>1</sup> cm
-e) 2.8 x 10<sup>1</sup> cm
=====*_Rendition_* 1-3=====
<!--a25GeometricOptics_thinLenses_1-->An object is placed 6.3 cm to
the left of a diverging lens with a focal length of 8.9 cm.  How far
is the image from the lens?
-a) 1.17 x 10<sup>0</sup> cm
-b) 2.07 x 10<sup>0</sup> cm
+c) 3.69 x 10<sup>0</sup> cm
-d) 6.56 x 10<sup>0</sup> cm
-e) 1.17 x 10<sup>1</sup> cm
=====*_Rendition_* 1-4=====
<!--a25GeometricOptics_thinLenses_1-->An object is placed 7.8 cm to
the left of a diverging lens with a focal length of 3.6 cm.  How far
is the image from the lens?
-a) 7.79 x 10<sup>-1</sup> cm
-b) 1.39 x 10<sup>0</sup> cm
+c) 2.46 x 10<sup>0</sup> cm
-d) 4.38 x 10<sup>0</sup> cm
-e) 7.79 x 10<sup>0</sup> cm
=====*_Rendition_* 1-5=====
<!--a25GeometricOptics_thinLenses_1-->An object is placed 3.5 cm to
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the left of a diverging lens with a focal length of 5.6 cm. How far is the image from the lens?
-a) 2.15 x 10⁻¹ cm
-b) 3.83 x 10⁻¹ cm
-c) 6.81 x 10⁻¹ cm
-d) 1.21 x 10⁰ cm
+e) 2.15 x 10⁰ cm
=====*_Rendition_* 1-6=====
<!--a25GeometricOptics_thinLenses_1-->An object is placed 8.4 cm to the left of a diverging lens with a focal length of 6.2 cm. How far is the image from the lens?
-a) 2.01 x 10⁰ cm
+b) 3.57 x 10⁰ cm
-c) 6.34 x 10⁰ cm
-d) 1.13 x 10¹ cm
-e) 2.01 x 10¹ cm
=====*_Rendition_* 1-7=====
<!--a25GeometricOptics_thinLenses_1-->An object is placed 8.6 cm to the left of a diverging lens with a focal length of 6.3 cm. How far is the image from the lens?
-a) 3.64 x 10⁻¹ cm
-b) 6.47 x 10⁻¹ cm
-c) 1.15 x 10⁰ cm
-d) 2.04 x 10⁰ cm
+e) 3.64 x 10⁰ cm
=====*_Rendition_* 1-8=====
<!--a25GeometricOptics_thinLenses_1-->An object is placed 8.6 cm to the left of a diverging lens with a focal length of 9.1 cm. How far is the image from the lens?
-a) 2.49 x 10⁰ cm
+b) 4.42 x 10⁰ cm
-c) 7.86 x 10⁰ cm
-d) 1.4 x 10¹ cm
-e) 2.49 x 10¹ cm
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a25GeometricOptics_thinLenses_2-->An object is placed 4.15 cm to the left of a converging lens with a focal length of 3.6 cm. How far is the image from the lens?
-a) 8.59 x 10⁰ cm
-b) 1.53 x 10¹ cm
+c) 2.72 x 10¹ cm
-d) 4.83 x 10¹ cm
-e) 8.59 x 10¹ cm
=====*_Rendition_* 2-3=====
<!--a25GeometricOptics_thinLenses_2-->An object is placed 4.85 cm to the left of a converging lens with a focal length of 4 cm. How far is the image from the lens?
-a) 4.06 x 10⁰ cm
-b) 7.22 x 10⁰ cm
-c) 1.28 x 10¹ cm
+d) 2.28 x 10¹ cm

-e) 4.06 x 10¹ cm
=====*_Rendition_* 2-4=====
<!--a25GeometricOptics_thinLenses_2-->An object is placed 6.55 cm to the left of a converging lens with a focal length of 5.4 cm. How far is the image from the lens?
-a) 3.08 x 10⁰ cm
-b) 5.47 x 10⁰ cm
-c) 9.73 x 10⁰ cm
-d) 1.73 x 10¹ cm
+e) 3.08 x 10¹ cm
=====*_Rendition_* 2-5=====
<!--a25GeometricOptics_thinLenses_2-->An object is placed 4.65 cm to the left of a converging lens with a focal length of 6.2 cm. How far is the image from the lens?
-a) 1.86 x 10⁰ cm
-b) 3.31 x 10⁰ cm
-c) 5.88 x 10⁰ cm
-d) 1.05 x 10¹ cm
+e) 1.86 x 10¹ cm
=====*_Rendition_* 2-6=====
<!--a25GeometricOptics_thinLenses_2-->An object is placed 3.15 cm to the left of a converging lens with a focal length of 6.7 cm. How far is the image from the lens?
-a) 3.34 x 10⁰ cm
+b) 5.95 x 10⁰ cm
-c) 1.06 x 10¹ cm
-d) 1.88 x 10¹ cm
-e) 3.34 x 10¹ cm
=====*_Rendition_* 2-7=====
<!--a25GeometricOptics_thinLenses_2-->An object is placed 3.55 cm to the left of a converging lens with a focal length of 6.8 cm. How far is the image from the lens?
-a) 4.18 x 10⁰ cm
+b) 7.43 x 10⁰ cm
-c) 1.32 x 10¹ cm
-d) 2.35 x 10¹ cm
-e) 4.18 x 10¹ cm
=====*_Rendition_* 2-8=====
<!--a25GeometricOptics_thinLenses_2-->An object is placed 4.35 cm to the left of a converging lens with a focal length of 5.7 cm. How far is the image from the lens?
-a) 1.03 x 10¹ cm
+b) 1.84 x 10¹ cm
-c) 3.27 x 10¹ cm
-d) 5.81 x 10¹ cm
-e) 1.03 x 10² cm
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a25GeometricOptics_thinLenses_3-->An object of height 0.54 cm is placed 131 cm behind a diverging lens with a focal length of 71 cm. What is the height of the image?
-a) 9.15 x 10⁻² cm

-b) 1.1 x 10⁻¹ cm
-c) 1.32 x 10⁻¹ cm
-d) 1.58 x 10⁻¹ cm
+e) 1.9 x 10⁻¹ cm
=====*_Rendition_* 3-3=====
<!--a25GeometricOptics_thinLenses_3-->An object of height 0.67 cm is placed 106 cm behind a diverging lens with a focal length of 61 cm. What is the height of the image?
-a) 1.18 x 10⁻¹ cm
-b) 1.42 x 10⁻¹ cm
-c) 1.7 x 10⁻¹ cm
-d) 2.04 x 10⁻¹ cm
+e) 2.45 x 10⁻¹ cm
=====*_Rendition_* 3-4=====
<!--a25GeometricOptics_thinLenses_3-->An object of height 0.67 cm is placed 107 cm behind a diverging lens with a focal length of 70 cm. What is the height of the image?
+a) 2.65 x 10⁻¹ cm
-b) 3.18 x 10⁻¹ cm
-c) 3.82 x 10⁻¹ cm
-d) 4.58 x 10⁻¹ cm
-e) 5.49 x 10⁻¹ cm
=====*_Rendition_* 3-5=====
<!--a25GeometricOptics_thinLenses_3-->An object of height 0.68 cm is placed 140 cm behind a diverging lens with a focal length of 87 cm. What is the height of the image?
-a) 1.26 x 10⁻¹ cm
-b) 1.51 x 10⁻¹ cm
-c) 1.81 x 10⁻¹ cm
-d) 2.17 x 10⁻¹ cm
+e) 2.61 x 10⁻¹ cm
=====*_Rendition_* 3-6=====
<!--a25GeometricOptics_thinLenses_3-->An object of height 0.64 cm is placed 112 cm behind a diverging lens with a focal length of 65 cm. What is the height of the image?
-a) 1.36 x 10⁻¹ cm
-b) 1.63 x 10⁻¹ cm
-c) 1.96 x 10⁻¹ cm
+d) 2.35 x 10⁻¹ cm
-e) 2.82 x 10⁻¹ cm
=====*_Rendition_* 3-7=====
<!--a25GeometricOptics_thinLenses_3-->An object of height 0.7 cm is placed 117 cm behind a diverging lens with a focal length of 70 cm. What is the height of the image?
+a) 2.62 x 10⁻¹ cm
-b) 3.14 x 10⁻¹ cm
-c) 3.77 x 10⁻¹ cm
-d) 4.53 x 10⁻¹ cm
-e) 5.43 x 10⁻¹ cm
=====*_Rendition_* 3-8=====
<!--a25GeometricOptics_thinLenses_3-->An object of height 0.75 cm is placed 147 cm behind a diverging lens with a focal length of 86 cm.

What is the height of the image?
+a) 2.77 x 10⁻¹ cm
-b) 3.32 x 10⁻¹ cm
-c) 3.99 x 10⁻¹ cm
-d) 4.78 x 10⁻¹ cm
-e) 5.74 x 10⁻¹ cm
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a25GeometricOptics_thinLenses_4-->An object is placed 13.2 cm to the left of a diverging lens with a focal length of 17.1 cm. On the side, at a distance of 5.1 cm from the diverging lens is a converging lens with focal length equal to 4 cm. How far is the final image from the converging lens?
-a) 1.86 x 10⁻¹ cm
-b) 5.87 x 10⁻¹ cm
-c) 1.86 x 10⁰ cm
+d) 5.87 x 10⁰ cm
-e) 1.86 x 10¹ cm
=====*_Rendition_* 4-3=====
<!--a25GeometricOptics_thinLenses_4-->An object is placed 10.8 cm to the left of a diverging lens with a focal length of 15.6 cm. On the side, at a distance of 5.7 cm from the diverging lens is a converging lens with focal length equal to 4 cm. How far is the final image from the converging lens?
-a) 5.98 x 10⁻¹ cm
-b) 1.89 x 10⁰ cm
+c) 5.98 x 10⁰ cm
-d) 1.89 x 10¹ cm
-e) 5.98 x 10¹ cm
=====*_Rendition_* 4-4=====
<!--a25GeometricOptics_thinLenses_4-->An object is placed 12.1 cm to the left of a diverging lens with a focal length of 16.9 cm. On the side, at a distance of 6.7 cm from the diverging lens is a converging lens with focal length equal to 4 cm. How far is the final image from the converging lens?
+a) 5.64 x 10⁰ cm
-b) 1.78 x 10¹ cm
-c) 5.64 x 10¹ cm
-d) 1.78 x 10² cm
-e) 5.64 x 10² cm
=====*_Rendition_* 4-5=====
<!--a25GeometricOptics_thinLenses_4-->An object is placed 13.7 cm to the left of a diverging lens with a focal length of 17.7 cm. On the side, at a distance of 5.5 cm from the diverging lens is a converging lens with focal length equal to 4 cm. How far is the final image from the converging lens?
-a) 5.73 x 10⁻² cm
-b) 1.81 x 10⁻¹ cm
-c) 5.73 x 10⁻¹ cm
-d) 1.81 x 10⁰ cm
+e) 5.73 x 10⁰ cm
=====*_Rendition_* 4-6=====

<!--a25GeometricOptics_thinLenses_4-->An object is placed 10.2 cm to the left of a diverging lens with a focal length of 16.6 cm. On the side, at a distance of 5.6 cm from the diverging lens is a converging lens with focal length equal to 4 cm. How far is the final image from the converging lens?
-a) 6.02 x 10⁻¹ cm
-b) 1.9 x 10⁰ cm
+c) 6.02 x 10⁰ cm
-d) 1.9 x 10¹ cm
-e) 6.02 x 10¹ cm
=====*_Rendition_* 4-7=====
<!--a25GeometricOptics_thinLenses_4-->An object is placed 10.9 cm to the left of a diverging lens with a focal length of 16.4 cm. On the side, at a distance of 6.8 cm from the diverging lens is a converging lens with focal length equal to 4 cm. How far is the final image from the converging lens?
-a) 1.81 x 10⁻¹ cm
-b) 5.71 x 10⁻¹ cm
-c) 1.81 x 10⁰ cm
+d) 5.71 x 10⁰ cm
-e) 1.81 x 10¹ cm
=====*_Rendition_* 4-8=====
<!--a25GeometricOptics_thinLenses_4-->An object is placed 10.9 cm to the left of a diverging lens with a focal length of 16.3 cm. On the side, at a distance of 5.7 cm from the diverging lens is a converging lens with focal length equal to 4 cm. How far is the final image from the converging lens?
-a) 1.88 x 10⁰ cm
+b) 5.94 x 10⁰ cm
-c) 1.88 x 10¹ cm
-d) 5.94 x 10¹ cm
-e) 1.88 x 10² cm
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{<!--a25GeometricOptics_vision_1-->Which lens has the shorter focal length?}
+ [[File:Ray_drawing_eye_schematic.svg|140px]]
- [[File:Ray drawing eye schematic01.svg|140px]]
- They have the same focal lengh.

{<!--a25GeometricOptics_vision_2-->[[File:Ray drawing eye schematic01.svg|140px]] If this represents the eye looking at an object, where is this object?}
- One focal length in front of the eye
+ Two (of the other answers) are true
- very far away
- at infinity
- directly in front of the eye (almost touching)

{<!--a25GeometricOptics_vision_3-->After passing through a the lens of a camera or the eye, the focal point is defined as where the rays meet.}
- true
+ false

{<!--a25GeometricOptics_vision_4-->[[File:Ray drawing eye schematic01.svg|140px]] Mr. Smith is gazing at something as shown in the figure to the left. Suppose he does not refocus, but attempts to stare at the star shown in the figures below. Which diagram depicts how the rays from the star would travel if he does not refocus?}
- [[File:Ray_drawing_eye_schematic_alternate.svg|110px]]
- [[File:Ray drawing eye Wrong Answer.svg|110px]]
+ [[File:Ray drawing eye schematic02.svg|145px]]

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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<quiz display=simple>
{<!--AstroApparentRetroMotion_1--> ____ motion is in the usual direction, and _______ is motion that has temporarily reversed itself.
}
- direct; elliptical
- elliptical; retrograde
+ direct; retrograde
- indirect; direct
- retrograde; direct

{<!--AstroApparentRetroMotion_2--> Under what conditions would a planet not seem to rise in the east and set in the west? }
- if the planet is in retrograde motion
+ if the observer is near the north or south poles
- if the planet is in direct motion
- if the planet is in elliptical motion
- if the observer is below the equator

{<!--AstroApparentRetroMotion_3--> When the faster moving Earth overtakes a slower planet outside Earth's orbit}
+ retrograde motion occurs
- two of these are true
- all of these are true
- tidal forces can be observed on Earth
- tidal forces can be observed on the planet

{<!--AstroApparentRetroMotion_4--> Which planet spends more days in a given retrograde? }
+ Saturn
- It depends on the season
- They are all equal
- Earth
- Mars

{<!--AstroApparentRetroMotion_5--> Which planet has more days between two consecutive retrogrades? }
- Earth
+ Mars
- It depends on the season
- They are all equal
- Saturn

{<!--AstroApparentRetroMotion_6--> A planet that is very, very far from the Sun would be in retrograde for approximately ___ months.}
- 1
+ 6
- 24
- 12
- 3

{<!--AstroApparentRetroMotion_7--> If a planet that is very, very far from the Sun begins a retrograde, how many months must pass before it begins the next retrograde? }
+ 12
- 1
- 24
- 6
- 3

{<!--AstroApparentRetroMotion_8--> ''Planet'' comes from the Greek word for 'wanderer'. }
+ true
- false

{<!--AstroApparentRetroMotion_9--> We know that Galileo saw Neptune, but is not credited with its discovery because}
- he never published his drawing
- none of these are true
- he thought it was a moon of Saturn
+ it was in a transition between retrograde and direct motion
- it was too faint to be worth drawing

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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{<!--AstroAtmosphericLoss_1-->It is important to distinguish between molecules (collectively) in a gas and one individual molecule. This question is about an individual molecule. For a planet with a given mass, size, and density, which has the greater escape velocity? }
- the heavier molecule has the greater escape velocity
- the lighter molecule has the greater escape velocity
+ all molecules have the same escape velocity
- no molecules have escape velocity
- all molecules move at the escape velocity

{<!--AstroAtmosphericLoss_2-->It is important to distinguish between molecules (collectively) in a gas and one individual molecule. This question is about a typical molecule in the gas. For a planet with a given mass, size, and density, which type of gas is more likely to escape? }
+ atoms in a hotter gas is more likely to escape
- atoms in a denser gas are more likely to escape
- atoms in a gas with more atomic mass are more likely to escape
- all types of gas are equally likely to escape
- atoms in a colder gas are more likely to escape

{<!--AstroAtmosphericLoss_3-->Which type of gas is likely to have the faster particles?}
+ a hot gas with low mass atoms
- a hot gas with high mass atoms
- a cold gas with low mass atoms
- a cold gas with high mass atoms
- all gasses on a given planet have the same speed

{<!--AstroAtmosphericLoss_4-->What is it about the isotopes of Argon-36 and Argon-38 that causes their relative abundance to be so unusual on Mars?}
- different half-life
+ different speed
- different chemical properties

- identical mass
- identical abundance

{<!--AstroAtmosphericLoss_5-->In the formula, $\frac 1 2 m_\mathrm{atom}v_\mathrm{escape}^2=G_\mathrm{Newton}\frac{M_\mathrm{planet}m_\mathrm{atom}}{r_\mathrm{planet}}$, which of the following is FALSE?}
- v_{escape} is independent of m_{atom}
+ the formula is valid for all launch angles
- the formula is valid only if the particle is launched from the surface of planet of radius r_{planet}
- the formula can be used to estimate how fast an atom must move before exiting the planet
- the particle is assumed to have been launched vertically

{<!--AstroAtmosphericLoss_6-->What statement is FALSE about $\frac 1 2 m_\mathrm{atom}\langle v_\mathrm{atom}^2 \rangle_{ave}= \frac{1}{2} k_\mathrm{B}T$?}
- The kinetic energy is directly proportional to temperature.
- The average speed of a low mass particle is higher than the average speed of a high mass particle
- Temperature is measured in Kelvins
+ Temperature is measured in Centigrades
- This equation does not involve the size or mass of the planet.

{<!--AstroAtmosphericLoss_7-->$\frac 1 2 m_\mathrm{atom}\langle v_\mathrm{atom}^2 \rangle_{ave}= \frac{1}{2} k_\mathrm{B}T$, where ''T'' is temperature on the Kelvin scale. This formula describes:}
- The speed an atom needs to escape the planet, where m is the mass of the atom.
+ The speed of a typical atom, where m is the mass of the atom.
- The the speed an atom needs to escape the planet, where m is the mass planet.
- The speed of a typical atom, where m is the mass of the planet.
- The speed an atom needs to orbit the planet, where m is the mass of the atom.

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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<quiz display=simple>
{<!--AstroChasingPluto_1-->The trip by ''New Horizons'' from Earth to
Pluto took almost a}
- week
- month
- year
+ decade
- century

{<!--AstroChasingPluto_10-->The "Chasing Pluto" video showed a stellar
occultation that was observed in order to learn something about
Pluto's}
- mass
+ atmosphere
- size

{<!--AstroChasingPluto_11-->The "Chasing Pluto" video showed a stellar
occultation that was observed}
- from the [[w:W. M. Keck Observatory|Keck Observatory]] in 1994
- from the 200 inch [[w:Hale telescope|Hale Telescope]] in 1968
- from the [[w:Hubble Space Telescope|Hubble Space Telescope]]  in
1998
+ from a cargo plane in 1988

{<!--AstroChasingPluto_12-->A stellar occultation occurs when a planet
passes in front of a star}
+ true
- false

{<!--AstroChasingPluto_13-->A stellar occultation occurs when the
north or south pole of a planet is aligned with a star}
- true
+ false

{<!--AstroChasingPluto_14-->Stellar occultation tells something about
a planet because}
```

- blocking the nearby stars allows a better view of the planet
+ the star acts as a light source for the detection of planetary spectral lines that are absorption lines
- the star acts as a light source for the detection of planetary spectral lines that are emission lines
- the orientation of the planet's rotation about its axis can be precisely determined

{<!--AstroChasingPluto_15-->[[w:silicon carbide|Silicon carbide]] was used to construct the telescope ''LORRI'' because this material is}
- strong
- light
- not prone to warp at low temperature
+ all of these

{<!--AstroChasingPluto_16-->The darker portions of Pluto are believe to be from "snowflakes" of}
- silicates
- water
+ hydrocarbons
- nitrogen

{<!--AstroChasingPluto_17-->"Pepssi", "Rex", "Swap", "Lorri", "Alice" and "Ralf" are}
- named after friends of the cartoon charactor 'Pluto'
+ instruments on the ''New Horizon''
- asteroids discovered by ''New Horizon''
- the people responsible for calculating the orbit of ''New Horizon''
- Kuiper objects discovered by ''New Horizon''

{<!--AstroChasingPluto_18-->What was the concern about taking a telescope/camera to the cold environment near Pluto?}
+ the telescope might bend
- the the mirror might crack
- the plates might crack
- the electronics might fail

{<!--AstroChasingPluto_19-->As ''New Horizon's'' approaches Jupiter, it was essential that }
+ it approach Jupiter closely enough for Jupiter's gravity to pull ''New Horizons'' to a 20% higher speed
- avoid hitting the moons of Jupiter
- avoid going into the rings of Jupiter

{<!--AstroChasingPluto_2-->The time to reach __________ was shortened from 9 days to 3 hours due to the speed of the rocket that delivered ''New Horizons''}
+ the Moon
- Mars
- the asteroid belt
- Jupiter

{<!--AstroChasingPluto_20-->While close to Jupiter, ''New Horizons'' the most spectacular image was of}
- the great red spot
- Jupiter's rings
- a newly discovered moon
+ a live volcano

{<!--AstroChasingPluto_21-->The Kuiper belt has been described as a ___________ made of ___________}
- deep freeze ... rock and metal
- mystery band ... rock and ice
- mystery band ... rock and metal
+ deep freeze ... rock and ice

{<!--AstroChasingPluto_22-->For most of its nine-year journey, it was asleep, but once a week, the ''New Horizon's'' spacecraft }
- photographed EARTH
- photographed PLUTO
+ called MOM
- adjusted the ORBIT

{<!--AstroChasingPluto_23-->Clyde Tombaugh, who discovered Pluto back in the 1930s}
- privately funded the Lowell observatory
+ was self educated
- had resigned from a position at Yale to focus his efforts on discovering "Planet X"

{<!--AstroChasingPluto_24-->Clyde Tombaugh's reward for discovering Pluto was}
- a Nobel prize
+ a college education
- an invitation to teach at Yale

{<!--AstroChasingPluto_25-->The ''blink comparator'' compared}
- the atmosphere around an object with the object itself
- the size of two different objects
+ the location of an object on two different days

{<!--AstroChasingPluto_26-->A typical average radio station uses 50,000 watts to transmit a signal. The transmitter on ''New Horizons'' used }
+ 5 thousand times less power
- 5 thousand times more power
- 5 times less power
- 5 times more power
- almost the same amount of power

{<!--AstroChasingPluto_27-->Mike Brown's search for another Pluto-like object eventually led to the discovery of [[w:Eris|]] in 2005. What was the first clue that Eris was larger than Pluto?}
- It was brighter in the sky than Pluto

- it was surprisingly bright for an object moving that quickly
+ it was surprisingly bright for an object moving that slowly
- it had a surprisingly large influence on Pluto's orbit

{<!--AstroChasingPluto_28-->Pluto ceased to be called a planet in 2006, after the [[w:International Astronomical Union|IAU]] defined a planet of our Sun as an object that is (1) in orbit around the Sun, (2) roughly spherical due to it's mass, and (3): }
- lies in the same plane as the other nine planets
+ has cleared the neighborhood around its orbit.
- has a nearly circular orbit
- is larger than Earth's moon
- is more massive than Mercury

{<!--AstroChasingPluto_29-->The influence of Jupiter's gravity on Pluto is that Jupiter gradually pushes Pluto away }
+ true
- false

{<!--AstroChasingPluto_3-->When the discovery of the "ninth planet" was made in 1930, the name ''Pluto'' was chosen after a cartoon that was a common childhood experience shared by most astronomers of the day}
- true
+ false

{<!--AstroChasingPluto_30-->The influence of Jupiter's gravity on Pluto is that Jupiter gradually brings Pluto closer}
- true
+ false

{<!--AstroChasingPluto_31-->Which was NOT listed as one of the three things commonly considered necessary for the formation of life?}
+ sunlight
- water
- energy
- organic matter

{<!--AstroChasingPluto_32-->As ''New Horizon'' approached Jupiter, it looked for new Moons, and the ground crew was glad that}
- the ''New Horizon'' discovered three new moons
+ there were no new moons because moons are debris generators
- there were no new moons because moons are capable of capturing spacecraft

{<!--AstroChasingPluto_4-->[[File:Pluto_HST_lower_left.jpg|right|200px]]The image to the right corresponds to}
+ [[File:Pluto HST upper left.jpg|100px]]
- [[File:Pluto HST upper right.jpg|100px]]

{<!--AstroChasingPluto_5-->[[File:Pluto_HST_lower_right.jpg|right|200px]]The image to the right corresponds to}

```
- [[File:Pluto HST upper left.jpg|100px]]
+ [[File:Pluto HST upper right.jpg|100px]]

{<!--AstroChasingPluto_6-->[[File:Hst pluto1
derivative.png|right|200px]] These two images of Pluto represent:}
- a land-based telescope and the ''Hubble Space Telescope''
+ raw and processed images
- ''New Horizon'' near Earth and mid-way to Pluto
- ''New Horizon'' mid-way to Pluto and near Pluto
- ''New Horizon'' and the ''Hubble Space Telescope''

{<!--AstroChasingPluto_7-->The atmosphere of Pluto}
+ emerges when the surface thaws as it approaches the Sun
- emerges when the surface thaws due to tidal heating from the Moons
- emerges when the surface thaws due to tidal heating from Jupiter
- emerges when the surface thaws due to tidal heating from Neptune
- is mostly oxygen

{<!--AstroChasingPluto_8-->Energy for the ''New Horizon'' is provided
by}
- lithium batteries
- fuel cells
- solar power
+ nuclear power

{<!--AstroChasingPluto_9-->As it approached Pluto, ''New Horizon'' was
slightly larger than}
+ a grand piano
- the Hubble Space Telescope
- a 10 story building

</quiz>

====*_Instructions_*====
Instructions are forthcoming

Transclusion from [[Quizbank/Instructions_0]]:<br/>
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{<!--AstroGalileanMoons_1-->How does the density of a Galilean moon depend on its distance from Jupiter? }
- all the moons have nearly the same density
+ the more dense moon is closer to Jupiter (always)
- the density of the moons is unknown
- the less dense moon is closer to Jupiter (always)
- the most dense moon is neither the closest nor the most distant

{<!--AstroGalileanMoons_2-->How does the mass of a Galilean moon depend on its distance from the central body? }
- the less massive moon is closer to Jupiter (always)
- the mass of the moons is unknown
+ the most massive moon is neither the closest nor the most distant
- the more massive moon is closer to Jupiter (always)
- all the moons have nearly the same mass

{<!--AstroGalileanMoons_3-->Does Jupiter's moon Io have craters?   }
- no, the surface is too new
- yes, from impacts
+ yes, from volcanoes
- no, the surface is too old
- yes, about half from impacts and the others from volcanoes

{<!--AstroGalileanMoons_4-->The mechanism that heats the cores of the Galilean moons is   }
- radiation from the Sun and from Jupiter
- tides from Jupiter
- radioactive decay of heavy elements
+ tides from the other moons and Jupiter
- radiation from the Sun

{<!--AstroGalileanMoons_5-->Immediately after publication of Newton's laws of physics (Principia), it was possible to "calculate" the mass of Jupiter. What important caveat applied to this calculation?   }
- The different moons yielded slightly different values for the mass of Jupiter.
- The different moons yielded vastly different values for the mass of Jupiter.
+ Only the mass of Jupiter relative to that of the Sun could be determined.
- tides from the other moons and Jupiter.
- They needed to wait over a decade for Jupiter to make approximately

one revolution around the Sun.

{<!--AstroGalileanMoons_6-->Ganymede, Europa, and Io have ratios in __________ that are 1:2:4. }
- orbital period
- Argon isotope abundance
+ Two other answers are correct (making this the only true answer).
- density
- rotational period

{<!--AstroGalileanMoons_7-->Which of Jupiter's moons has an anhydrous core? }
- Europa
- Ganymede
- Two other answers are correct (making this the only true answer).
+ Io
- Ganymede

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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<quiz display=simple>
{<!--AstroJupiter_1-->[[File:Jupiter by Cassini-Huygens.jpg|right|300px]]

 The black spot in this image of Jupiter is}

- an electric storm
- a solar eclipse
+ Two other answers are correct (making this the only true answer).
- the shadow of a moon
- a magnetic storm

{<!--AstroJupiter_10-->Although there is some doubt as to who discovered Jupiter's great red spot, it is generally credited to}
- Tycho in
- Galileo in 1605
- Newton in 1668
+ Cassini in 1665
- Messier in 1771

{<!--AstroJupiter_11-->The bands in the atmosphere of Jupiter are associated with a patter of alternating wind velocities that are}
- easterly and westerly
- updrafts and downdrafts
+ both of these

{<!--AstroJupiter_12-->As one descends down to Jupiter's core, the temperature}
+ increases
- decreases
- stays about the same

{<!--AstroJupiter_2-->Which of the following statements is FALSE?}
- Jupiter has four large moons and many smaller ones
- The Great Red Spot is a storm that has raged for over 300 years
- Jupiter emits more energy than it receives from the Sun
+ Jupiter is the largest known planet
- Jupiter has a system of rings

{<!--AstroJupiter_3-->What is the mechanism that heats the interior of Jupiter? }
+ rain
- tides
- radioactivity
- magnetism
- electricity

{<!--AstroJupiter_4-->Why is Jupiter an oblate spheroid?}
- tides from other gas planets
- tides from the Sun
- tides from the Jupiter's moons
+ rotation about axis
- revolution around Sun

{<!--AstroJupiter_5-->What statement best describes the Wikipedia's explanation of the helium (He) content of Jupiter's upper atmosphere (relative to the hydrogen (H) content)?}
+ Jupiter's atmosphere has only 80% as much helium because the He fell

to the core.
- Jupiter's atmosphere has 80% more He because Jupiter's hydrogen escaped into space.
- Jupiter's atmosphere has only 80% as much helium because the He escaped into space.
- Jupiter's atmosphere has 80% more He because Jupiter's hydrogen fell to the core.
- Jupiter and the Sun have nearly the same ratio of He to H.

{<!--AstroJupiter_6-->Where is the Sun-Jupiter barycenter?}
+ Just above the Sun's surface
- Just above Jupiter's surface
- At the center of the Sun
- At the center of Jupiter
- The question remains unresolved

{<!--AstroJupiter_7-->The barycenter of two otherwise isolated celestial bodies is?}
- a place where two bodies exert equal and opposite gravitational forces
+ the focal point of two elliptical orbital paths
- both of these are true

{<!--AstroJupiter_8-->Knowing the barycenter of two stars is useful because it tells us the total mass}
- TRUE
+ FALSE

{<!--AstroJupiter_9-->Knowing the barycenter of two stars is useful because it tells us the ratio of the two masses}
+ TRUE
- FALSE

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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{<!--AstroKepler_1-->Kepler began his career as a teacher of}
+ mathematics
- history
- philosophy
- theology
- astronomy

{<!--AstroKepler_10-->As a child, Kepler's interest in astronomy grew as a result of }
+ two of these
- watching his uncle make a telescope
- a solar eclipse
- a lunar eclipse
- a comet

{<!--AstroKepler_11-->When Kepler's studies at the university were over, what he really wanted to do was }
+ become a minister
- work with Newton
- visit Athens
- visit Rome
- work with Tycho

{<!--AstroKepler_12-->Which of the following is NOT associated with Kepler's Laws}
- Earth orbits the sun
- planets speed up as they approach the sun
+ circular motions with epicycles
- planets farther from the Sun have longer orbital periods.
- elliptical paths for the planets

{<!--AstroKepler_13-->As a planet orbits the Sun, the Sun is situated at one focal point of the ellipse}
+ true
- false

{<!--AstroKepler_14-->As a planet orbits the Sun, the Sun is situated midway between the two focal points of the ellipse}
- true
+ false

{<!--AstroKepler_15-->Newton was able to use the motion of the Moon to calculate the universal constant of gravity, G }
- true
+ false

{<!--AstroKepler_16-->The force of (gravitational) attraction between you and a friend is small because neither of you possess significant mass }
+ true
- false

{<!--AstroKepler_17-->Cavendish finally measured G by carefully weighing the force between}
- Earth and Sun
- Sun and Moon
- Jupiter and moons
+ two lead balls
- Earth and Moon

{<!--AstroKepler_2-->Kepler is also known for his improvements to}
- a perpetual motion machine
+ the telescope
- translations of the Bible
- the abacus
- Ptolemy's star charts

{<!--AstroKepler_3-->In Kepler's era, astronomy was usually considered a part of natural philosophy}
- true
+ false

{<!--AstroKepler_4-->In Kepler's era, astronomy was usually considered a part of mathematics}
+ true
- false

{<!--AstroKepler_5-->In Kepler's era, astronomy closely linked to astrology}
+ true
- false

{<!--AstroKepler_6-->In Kepler's era, physics (how and why things moved) was usually considered a part of natural philosophy}
+ true
- false

{<!--AstroKepler_7-->Kepler incorporated religious arguments and reasoning into his work}
+ true
- false

{<!--AstroKepler_8-->Kepler avoided religious arguments and reasoning in his work}
- true
+ false

{<!--AstroKepler_9-->How would one describe the status of Kepler's family when he was a child?}
- neither wealthy nor of noble birth
+ of noble birth, but in poverty
- his father and grandfather were scientists
- wealth and of noble birth
- wealthy but not of noble birth

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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{<!--AstroLunarphasesAdvancedB_1-->At 6am a waning crescent moon would be}
- eastern horizon
- below the western horizon
- below the eastern horizon
- high in western sky
+ high in eastern sky

{<!--AstroLunarphasesAdvancedB_10-->At 3pm a third quarter moon would be}
- high in eastern sky
+ below the western horizon
- nadir
- overhead
- eastern horizon

{<!--AstroLunarphasesAdvancedB_13-->At noon a waning crescent moon would be}
- overhead
- high in eastern sky
- nadir
+ high in western sky
- eastern horizon

{<!--AstroLunarphasesAdvancedB_15-->At 9pm a waxing crescent moon would be}
- below the western horizon
- overhead
- eastern horizon
- high in eastern sky
+ western horizon

{<!--AstroLunarphasesAdvancedB_16-->At 9am a waxing crescent moon would be}
+ eastern horizon
- high in eastern sky
- overhead
- below the western horizon
- nadir

{<!--AstroLunarphasesAdvancedB_18-->At 3am a waxing crescent moon would be}
- below the eastern horizon
- below the western horizon
- overhead
- high in western sky
+ nadir

{<!--AstroLunarphasesAdvancedB_20-->At 3am a waning gibbous moon would be}
- nadir
+ overhead
- eastern horizon
- high in western sky
- western horizon

{<!--AstroLunarphasesAdvancedB_21-->At 9am a third quarter moon would be}
- high in eastern sky
+ high in western sky

- nadir
- western horizon
- below the eastern horizon

{<!--AstroLunarphasesAdvancedB_23-->At 9pm a 1st quarter moon would be}
- high in eastern sky
- overhead
+ high in western sky
- eastern horizon
- below the western horizon

{<!--AstroLunarphasesAdvancedB_24-->At 3pm a new moon would be}
- below the eastern horizon
+ high in western sky
- high in eastern sky
- nadir
- overhead

{<!--AstroLunarphasesAdvancedB_25-->At 3pm a waning crescent moon would be}
- nadir
- below the eastern horizon
- high in western sky
- high in eastern sky
+ western horizon

{<!--AstroLunarphasesAdvancedB_2-->At 9pm a waxing gibbous moon would be}
- below the western horizon
+ overhead
- high in western sky
- nadir
- below the eastern horizon

{<!--AstroLunarphasesAdvancedB_27-->At 3pm a waxing gibbous moon would be}
- below the eastern horizon
- below the western horizon
- high in western sky
+ eastern horizon
- high in eastern sky

{<!--AstroLunarphasesAdvancedB_30-->At midnight a waning gibbous moon would be}
+ high in eastern sky
- high in western sky
- western horizon
- eastern horizon
- below the western horizon

{<!--AstroLunarphasesAdvancedB_32-->At 6am a waxing crescent moon

would be}
- overhead
- below the western horizon
- eastern horizon
+ below the eastern horizon
- nadir

{<!--AstroLunarphasesAdvancedB_33-->At 9pm a new moon would be}
- western horizon
- high in western sky
+ below the western horizon
- below the eastern horizon
- nadir

{<!--AstroLunarphasesAdvancedB_36-->At 9pm a waning gibbous moon would be}
+ eastern horizon
- high in eastern sky
- high in western sky
- below the western horizon
- nadir

{<!--AstroLunarphasesAdvancedB_38-->At 3am a 1st quarter moon would be}
- nadir
- eastern horizon
- high in eastern sky
+ below the western horizon
- high in western sky

{<!--AstroLunarphasesAdvancedB_40-->At 3pm a waxing crescent moon would be}
- nadir
+ overhead
- eastern horizon
- high in eastern sky
- below the eastern horizon

{<!--AstroLunarphasesAdvancedB_41-->At 9am a new moon would be}
- overhead
- high in western sky
+ high in eastern sky
- below the western horizon
- eastern horizon

{<!--AstroLunarphasesAdvancedB_43-->At 9am a waning crescent moon would be}
+ overhead
- eastern horizon
- below the eastern horizon
- western horizon
- nadir

{<!--AstroLunarphasesAdvancedB_44-->At 9am a waxing gibbous moon would be}
- western horizon
- high in eastern sky
+ nadir
- high in western sky
- eastern horizon

{<!--AstroLunarphasesAdvancedB_3-->At 3am a waning crescent moon would be}
- overhead
- nadir
- high in eastern sky
+ eastern horizon
- western horizon

{<!--AstroLunarphasesAdvancedB_46-->At midnight a waning crescent moon would be}
- below the western horizon
- western horizon
- overhead
+ below the eastern horizon
- nadir

{<!--AstroLunarphasesAdvancedB_47-->At 9pm a full moon would be}
- overhead
- nadir
+ high in eastern sky
- below the western horizon
- eastern horizon

{<!--AstroLunarphasesAdvancedB_48-->At 6am a waning gibbous moon would be}
- nadir
- below the western horizon
+ high in western sky
- below the eastern horizon
- eastern horizon

{<!--AstroLunarphasesAdvancedB_49-->At 3pm a full moon would be}
- below the western horizon
- nadir
- high in eastern sky
+ below the eastern horizon
- western horizon

{<!--AstroLunarphasesAdvancedB_50-->At midnight a waxing gibbous moon would be}
- below the western horizon
- below the eastern horizon
- overhead

+ high in western sky
- high in eastern sky

{<!--AstroLunarphasesAdvancedB_51-->At 9am a waning gibbous moon would be}
- nadir
- overhead
+ western horizon
- high in western sky
- high in eastern sky

{<!--AstroLunarphasesAdvancedB_52-->At 3am a waxing gibbous moon would be}
- below the eastern horizon
- nadir
+ western horizon
- overhead
- high in western sky

{<!--AstroLunarphasesAdvancedB_53-->At 6pm a waning crescent moon would be}
- eastern horizon
- nadir
- western horizon
+ below the western horizon
- below the eastern horizon

{<!--AstroLunarphasesAdvancedB_54-->At 3am a new moon would be}
- overhead
- eastern horizon
- nadir
+ below the eastern horizon
- high in eastern sky

{<!--AstroLunarphasesAdvancedB_55-->At noon a waxing gibbous moon would be}
- overhead
+ below the eastern horizon
- high in western sky
- nadir
- high in eastern sky

{<!--AstroLunarphasesAdvancedB_4-->At 9am a 1st quarter moon would be}

- western horizon
+ below the eastern horizon
- below the western horizon
- nadir
- high in western sky

{<!--AstroLunarphasesAdvancedB_56-->At 3pm a waning gibbous moon would be}

+ nadir
- high in western sky
- western horizon
- overhead
- eastern horizon

{<!--AstroLunarphasesAdvancedB_57-->At 9am a full moon would be}
- overhead
- eastern horizon
- western horizon
- below the eastern horizon
+ below the western horizon

{<!--AstroLunarphasesAdvancedB_58-->At 6pm a waxing gibbous moon would be}
+ high in eastern sky
- eastern horizon
- western horizon
- below the western horizon
- nadir

{<!--AstroLunarphasesAdvancedB_59-->At 9pm a third quarter moon would be}
- high in western sky
- high in eastern sky
- nadir
+ below the eastern horizon
- below the western horizon

{<!--AstroLunarphasesAdvancedB_60-->At 9pm a waning crescent moon would be}
- eastern horizon
- high in eastern sky
- high in western sky
+ nadir
- below the eastern horizon

{<!--AstroLunarphasesAdvancedB_61-->At noon a waxing crescent moon would be}
- nadir
- eastern horizon
- high in western sky
- overhead
+ high in eastern sky

{<!--AstroLunarphasesAdvancedB_62-->At 3am a third quarter moon would be}
- below the eastern horizon
- nadir
+ high in eastern sky
- below the western horizon
- eastern horizon

{<!--AstroLunarphasesAdvancedB_63-->At 3am a full moon would be}
- below the western horizon
- nadir
- high in eastern sky
+ high in western sky
- western horizon

{<!--AstroLunarphasesAdvancedB_64-->At 6pm a waxing crescent moon would be}
+ high in western sky
- overhead
- nadir
- eastern horizon
- western horizon

{<!--AstroLunarphasesAdvancedB_5-->At 3pm a 1st quarter moon would be}

- below the western horizon
+ high in eastern sky
- western horizon
- below the eastern horizon
- high in western sky

{<!--AstroLunarphasesAdvancedB_6-->At noon a waning gibbous moon would be}
- western horizon
+ below the western horizon
- overhead
- nadir
- high in western sky

{<!--AstroLunarphasesAdvancedB_7-->At midnight a waxing crescent moon would be}
- eastern horizon
- high in eastern sky
+ below the western horizon
- high in western sky
- overhead

{<!--AstroLunarphasesAdvancedB_8-->At 6am a waxing gibbous moon would be}
- nadir
- high in eastern sky
- below the eastern horizon
+ below the western horizon
- eastern horizon

{<!--AstroLunarphasesAdvancedB_9-->At 6pm a waning gibbous moon would be}
+ below the eastern horizon
- western horizon

- high in western sky
- below the western horizon
- high in eastern sky

</quiz>

====*_Instructions_*====
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*_See_* [[User:Guy vandegrift]]
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- western horizon
- eastern horizon
- overhead
+ below the horizon

{<!--AstroLunarphasesSimple_10-->At midnight a full moon would be }
- below the horizon
+ overhead
- eastern horizon
- western horizon

{<!--AstroLunarphasesSimple_11-->At 6pm a third quarter moon would be }
- overhead
- eastern horizon
- western horizon

+ below the horizon

{<!--AstroLunarphasesSimple_12-->At 6am a 1st quarter moon would be }
- eastern horizon
- western horizon
- overhead
+ below the horizon

{<!--AstroLunarphasesSimple_13-->At noon a full moon would be }
- western horizon
+ below the horizon
- eastern horizon
- overhead

{<!--AstroLunarphasesSimple_14-->At 6pm a full moon would be }
- western horizon
- overhead
- below the horizon
+ eastern horizon

{<!--AstroLunarphasesSimple_15-->At 6pm a 1st quarter moon would be }
- below the horizon
+ overhead
- western horizon
- eastern horizon

{<!--AstroLunarphasesSimple_16-->At 6am a full moon would be }
- overhead
+ western horizon
- below the horizon
- eastern horizon

{<!--AstroLunarphasesSimple_2-->At noon a third quarter moon would be
}
- overhead
+ western horizon
- below the horizon
- eastern horizon

{<!--AstroLunarphasesSimple_3-->At noon a 1st quarter moon would be }
- western horizon
+ eastern horizon
- overhead
- below the horizon

{<!--AstroLunarphasesSimple_4-->At noon a new moon would be }
- below the horizon
+ overhead
- western horizon
- eastern horizon

{<!--AstroLunarphasesSimple_5-->At 6pm a new moon would be }

- eastern horizon
+ western horizon
- overhead
- below the horizon

{<!--AstroLunarphasesSimple_6-->At 6am a third quarter moon would be}
+ overhead
- eastern horizon
- western horizon
- below the horizon

{<!--AstroLunarphasesSimple_7-->At midnight a third quarter moon would be }
- below the horizon
+ eastern horizon
- western horizon
- overhead

{<!--AstroLunarphasesSimple_8-->At midnight a 1st quarter moon would be }
- below the horizon
- overhead
- eastern horizon
+ western horizon

{<!--AstroLunarphasesSimple_9-->At 6am a new moon would be }
- overhead
- western horizon
+ eastern horizon
- below the horizon

</quiz>

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*_See_* [[User:Guy vandegrift]]
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{<!--AstroMars_1--> {{Multiple image|direction=vertical|width=200|image1=Karte Mars Schiaparelli MKL1888.png|image2=Lowell Mars channels.jpg|caption1=Giovanni Schiaparelli 1877 |caption2=Lowell circa 1914.}} These drawings by Schiaparelli and Lowell were ultimately shown to be:

 }
- slip faults
- subduction zones
- rilles
+ optical illusions
- rift valleys

{<!--AstroMars_2-->Antipodal to the Tharsis bulge is}
+ What Wikipedia contends IS an impact basin
- What Wikipedia contends MIGHT BE an impact basin
- What Wikipedia contends IS an active volcano
- What Wikipedia contends MIGHT BE an active volcano
- the northern lowlands

{<!--AstroMars_3-->[[File:Lava flow from Arsia Mons in Daedalia Planum.jpg|thumb|160px|Martian lobate feature]] The lobate feature shown in the figure is evidence of

}
- dust storms
- plate tectonics
- water flow
+ lava flow
- wind erosion

{<!--AstroMars_4-->The Martian dichotomy separates}
- Valles Marineris from Olympus Mons
- the rift valley from the volcanoes
+ the highlands from the lowlands
- the Tharsus buldge from Hellas basin
- the crust from the mantle

{<!--AstroMars_5-->According to Wikipedia, ______ was formed due to swelling of the Tharsis bulge which caused the crust to collapse}
+ Valles Marineris
- Elysium
- the southern lowlands
- Hellas basin
- the northern lowlands

{<!--AstroMars_6-->[[File:Nasa mars opportunity rock water 150 eng 02mar04.jpg|200px|thumb|gray hematite]]What is this [[w:hematite|hematite]]?

}
+ evidence that Mars once had oceans
- irrefutable evidence that Mars once had life
- controversial evidence that Mars once had life
- evidence that Mars once had active volcanoes
- evidence that Mars now has active volcanoes

{<!--AstroMars_7-->The polar ice caps on Mars are ___}
- caused by geysers
- actually clouds above the surface of Mars
- a nearly equal mix of water and carbon dioxide
+ mostly water
- mostly carbon dioxide

{<!--AstroMars_8-->Liquid water cannot exist on Mars due to ___}
- high pressure
+ low pressure
- high temperature
- low temperature
- the solar wind

{<!--AstroMars_9-->[[File:ALH84001 structures.jpg|thumb|magnified Martian meteorite]] What is at the center of this magnified image of a Martian meteorite? fragment?

}
- evidence that Mars once had oceans
- irrefutable evidence that Mars once had life
+ controversial evidence that Mars once had life
- evidence that Mars once had active volcanoes
- evidence that Mars now has active volcanoes

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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*_See_* [[User:Guy vandegrift]]
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<quiz display=simple>
{<!--AstroMercury_1-->[[Image:Discovery Rupes (rotated).jpg|thumb|horizontal crack|400px]] The horizontal crack along the center of figure is a}
- antipodal
- propodal
- meander
+ scarp
- rille

{<!--AstroMercury_2-->Antipodal to Caloris Basin is}
- an iron/nickel deposit
+ weird terrain
- a scarp
- a water deposits
- a silicon deposits

{<!--AstroMercury_3-->A volatile is a substance that }
- reacts violently with acids
- reacts violently with water
- reacts violently with oxygen
- melts or evaporates at high temperature
+ melts or evaporates at low temperature

{<!--AstroMercury_4-->The four smaller inner planets, Mercury, Venus, Earth and Mars, also called the terrestrial planets, are primarily composed of ___ and ___. }
- ice and gas
- carbon and oxygen
- ice and water
- ice and rock
+ metal and rock

{<!--AstroMercury_5-->If the universe is mostly hydrogen, why aren't terrestrial planets made of mostly hydrogen?}
+ thermonuclear fusion in the protosun turned the hydrogen into helium
- These planets lie inside the frost line for hydrogen
- tidal forces from the Sun prevented accretion
- tidal forces between the terrestrial planets prevented accretion
- tidal forces from Jupiter prevented accretion

{<!--AstroMercury_6-->Mercury's atmosphere consists mostly of}
+ hydrogen
- helium
- oxygen
- nitrogen
- carbon dioxide

{<!--AstroMercury_7-->In what sequence did Mercury's weird terrain and Caloris basin form?}
- The were formed at exactly the same time
+ The weird terrain was formed almost immediately after the Caloris basin
- The weird terrain was formed a few millions years after the Caloris basin
- The weird terrain was formed approximately 2 billions years after the Caloris basin
- The weird terrain was formed approximately 2 billions years before the Caloris basin

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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*_See_* [[User:Guy vandegrift]]
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<quiz display=simple>
{<!--AstroMirandaTitan_1-->The 1982 Voyager flyby of Miranda (a moon of Uranus) established that _____ }

- Miranda has the largest active volcano in the solar system
- Miranda has geysers.
- Miranda probably has an iron core
- Two other answers are correct (making this the only true answer).
+ inspired a theory a previous incarnation was destroyed by a collision

{<!--AstroMirandaTitan_2-->It has been suggested that Miranda's "racetrack" }
- is antipodal to an impact crater
+ Two other answers are correct (making this the only true answer).
- is associated with tidal heating
- is an impact crater
- is a series of rifts created by an upwelling of warm ice

{<!--AstroMirandaTitan_3-->According to Wikipedia, the largest lakes on Titan are probably fed by }
- rivers from the highlands
- methane rain
- geysers
- liquid water rain
+ underground aquifers

{<!--AstroMirandaTitan_4-->[[File:PIA12481 Titan specular reflection.jpg|right|240px]]

The bright spot on Saturn's moon Titan is }
- a volcano
- lightening
- aurora borealis (northern lights)
+ a lake
- solar wind particles striking the atmosphere

{<!--AstroMirandaTitan_5-->One "year" on Saturn's largest moon Titan lasts }
- 3 hours
- 3 years
- 30 hours
+ 30 years
- 300 days

{<!--AstroMirandaTitan_6-->[[File:Titan dunes crop.png|right|240px]]

The photographs compare }
- summer windstorms and winter doldrums
- northern and southern hemispheres
- winter windstorms and summer doldrums
+ Titan and Earth
- wet and dry seasons

{<!--AstroMirandaTitan_7-->The liquid water ocean of Saturn's largest moon Titan, }
- Two other answers are correct

- is less than one meter in depth
+ explains how the elevation of a smooth planet seems to rise and fall
- is postulated to cover 15-30% of its surface
- is known to contain life

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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*_See_* [[User:Guy vandegrift]]
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{<!--AstroPlanetaryScience_1-->[[File:Apollo15DunaTisza.jpg|thumb|240px|incomplete rim]]The incomplete rims seen in the figure are caused by:}
- meteorite erosion
- micrometeorite erosion
- rilles
+ vulcanism
- low surface gravity

{<!--AstroPlanetaryScience_2-->Rilles are caused by}
- meteors
- meteorites
- water
- impacts
+ lava

{<!--AstroPlanetaryScience_3-->In the Wikipedia excerpt on "Planetary Astronomy" the mechanism by which a meander grows over time was discussed. Which of the the following is best describes why meanders grow? (Pick only one best answer) }
+ a combination of deposition and erosion
- combination of deposition and underlying bedrock strength
- combination of erosion and underlying bedrock strength
- occasional periods of intense flooding
- wind erosion

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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*_See_* [[User:Guy vandegrift]]
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{<!--AstroPluto and planetary mass_1-->Which of the following is NOT used to measure the mass of a planet}
+ the rotation of the planet about its axis
- the motion of an artificial satellite
- the motion of a moon
- the motion of a neighboring planet
- all of these have been used

{<!--AstroPluto and planetary mass_2-->What is unusual about calculations of the mass of Pluto made in the early part of the 20th century?}

- The estimates were correct to within less than 10%
- The estimates were too low. Pluto was actually more massive than they thought.
+ The estimates were high. Pluto was less massive than they calculated
- It was the first time a moon was used to calculate the mass of a planet
- It was the first time a planet's period of orbit around the sun was used to calculate the planet's mass

{<!--AstroPluto and planetary mass_3-->Why was the discovery of Pluto peculiar?}
- It was discovered during a survey looking for stars
- It was seen by Galileo, who thought it was a star
+ It was discovered by a calculation based on flawed assumptions
- It was seen by Halley, who was looking for comets
- It was the first time a planet's period of orbit around the sun was used to calculate the planet's mass

{<!--AstroPluto and planetary mass_4-->Which of the following is NOT used to measure the mass of a planet}
- the motion of an artificial satellite
- the motion of a moon
- the motion of a neighboring planet
+ all of these have been used

{<!--AstroPluto and planetary mass_5-->Which statement describes the relation between Pluto and Neptune}
- Pluto's orbit lies outside Neptune's orbit
- Pluto's orbit intersects Neptune's orbit an the two bodies will eventually collide
- Pluto's orbit intersects Neptune's orbit but they avoid each other because Pluto's mass is too small
+ Pluto's orbit intersects Neptune's orbit but they don't collide because of an orbital resonance between the two

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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{<!--AstroPtolCopTycho_1-->The Ptolemaic system was geocentric.}
+ TRUE
- FALSE

{<!--AstroPtolCopTycho_10-->An argument used to support the geocentric model held that heavenly bodies, while perhaps large, were able to move quickly.}
+ TRUE
- FALSE

{<!--AstroPtolCopTycho_11-->Tycho tended to favor religious arguments over scientific arguments when justifying his opinions about the geocentric/heliocentric controversy.}
- TRUE
+ FALSE

{<!--AstroPtolCopTycho_12-->Tycho was the first to propose an earth-orbiting sun had planets in orbit around the Sun.}
- TRUE
+ FALSE

{<!--AstroPtolCopTycho_2-->The Ptolemaic system was heliocentric.}
- TRUE
+ FALSE

{<!--AstroPtolCopTycho_3-->Most ancient Roman and most medieval scholars thought the Earth was flat.}
- TRUE
+ FALSE

{<!--AstroPtolCopTycho_4-->Evidence for the Copernican system is that the Earth does not seem to move.}
- TRUE
+ FALSE

{<!--AstroPtolCopTycho_5-->The ancient Greeks believed in circular orbits, causing them to devise the epicycle and the deferent.}

+ TRUE
- FALSE

{<!--AstroPtolCopTycho_6-->Copernicus was a university-trained Catholic priest dedicated to astronomy.}
+ TRUE
- FALSE

{<!--AstroPtolCopTycho_7-->In the late 16th century, Tycho Brahe invented his system to resolve philosophical and what he called “physical" problems with the geocentric theory.}
- TRUE
+ FALSE

{<!--AstroPtolCopTycho_8-->Copernicus shared his heliocentric theory with colleagues decades before he died.}
+ TRUE
- FALSE

{<!--AstroPtolCopTycho_9-->In the late 16th century, Tycho Brahe invented his system to resolve philosophical and what he called “physical" problems with the heliocentric theory.}
+ TRUE
- FALSE

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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*_See_* [[User:Guy vandegrift]]
</div></div>
===*_Quiz_*===
<quiz display=simple>
{<!--AstroSizeWhitdwrfNeutstarQSO_1-->At the center of the Crab nebula is }
+a) all of these is correct
-b) a pulsar
-c) none of these is correct
-d) a neutron star
-e) the remnants of a supernova

{<!--AstroSizeWhitdwrfNeutstarQSO_10-->One way to determine the distance to a nebula or small cluster of clouds is to compare the angular expansion to the spectroscopic Doppler shift. Two clusters (A and B) have the same spectroscopically measured velocity. Cluster A is moving towards the observer and exhibits the greater angular expansion. Which cluster is closer? }
+ cluster A, because it exhibits greater angular expansion
- cluster B, because it exhibits less angular expansion
- cluster A, because it exhibits a blue Doppler shift
- cluster B, because it exhibits a red Doppler shift
- either cluster might be more distant

{<!--AstroSizeWhitdwrfNeutstarQSO_11-->What causes the "finger-like" filamentary structure in the Crab nebula?}
- cyclotron motion, causing the electrons to strike oxygen molecules
- a heavy (high density) fluid underneath a light (low density) fluid, like a lava lamp
+ a light(low density) fluid underneath a heavy(high density) fluid, like a lava lamp
- electrons striking oxygen molecules, like a lava lamp
- electrons striking hydrogen molecules, like a lava lamp

{<!--AstroSizeWhitdwrfNeutstarQSO_12-->$KE=\frac{4\pi^2}{5}\frac{MR^2}{P^2}$ is the kinetic energy of a solid rotating ball, where M is mass, R is radius, and P is period. And, $power=\frac{energy}{time}$.
You are banging espressos in a little coffeehouse with your astronomy friends, talking about a new SN remnant that closely resembles the Crab. You have observed the pulsar, and wonder what the total power output of the nebula might be. You know both the period of the pulsar, as well as τ, which represents the amount of time you think the pulsar will continue pulsing if it continues slowing down at its present rate. What formula do you write on your napkin?}
- $power=\frac{4\tau\pi^2}{5}\frac{MR^2}{P^2}$
+ $power=\frac{4\pi^2}{5\tau}\frac{MR^2}{P^2}$
- $power=\frac{5}{4\tau\pi^2}\frac{MR^2}{P^2}$
- $power=\frac{4\pi^2}{5\tau^2}\frac{MR^2}{P^2}$
- $power=\frac{4\pi^2}{5}\frac{MR^2}{P^2}\tau^4$

{<!--AstroSizeWhitdwrfNeutstarQSO_13-->In one respect, the universie

is arguably "young", considering how much complexity it contains. This is often illustrated by a calculation of}
- recalibration of supernovae luminosity
- recalibration of supernovae relative magnitude
- cosmic expansion
+ chimps typing Shakespeare
- cosmic redshift

{<!--AstroSizeWhitdwrfNeutstarQSO_14-->Comparing Hubble's original (1929) plot of redshift versus distance with the later one in 2007, the latter extends farther into space by a factor of}
+ 10
- 100
- 1000
- 10,000
- 100,000

{<!--AstroSizeWhitdwrfNeutstarQSO_15-->The course materials present two cosmic expansion plots.   Hubble's original (1929) plot used}
- Cepheid variables
- red giants
- novae
- supernovae
+ entire galaxies

{<!--AstroSizeWhitdwrfNeutstarQSO_16-->The course materials present two cosmic expansion plots.   The more recent (2007) plot used}
- Cepheid variables
- red giants
- novae
+ supernovae
- entire galaxies

{<!--AstroSizeWhitdwrfNeutstarQSO_17-->Place yourself in an expanding raisinbread model of Hubble expansion. A raisin originally situated at a distance of 4 cm expands out to 12 cm. To what distance would a raisin originally situated at a distance of 2 cm expand?}
- 2
- 3
- 4
+ 6
- 8

{<!--AstroSizeWhitdwrfNeutstarQSO_18-->You at the center raisin of an expanding raisinbread model of Hubble expansion, and from your location a raisin originally situated at a distance of 1 cm expands out to a distance of 4 cm. The nearest raisin with intelligent life is situated exactly halfway between your (central) location and the edge. How would this second "intelligent" raisin view an expansion of a raisin 1 cm away?}
- expansion from 1 cm to 8 cm (twice yours).
+ expansion from 1 cm to 4 cm (just like yours).

- expansion from 1 cm to 2 cm (half of yours)
- expansion from 1 cm to 3 cm (since 3-1=2)
- expansion from 1 cm to 9 cm (since 5-1=4)

{<!--AstroSizeWhitdwrfNeutstarQSO_19-->Place yourself in an expanding raisinbread model of Hubble expansion. A raisin originally situated at a distance of 2 cm expands out to 4 cm. To what distance would a raisin originally situated at a distance of 4 cm expand?}
- 2
- 3
- 4
- 6
+ 8

{<!--AstroSizeWhitdwrfNeutstarQSO_2-->Aside from its location on the HR diagram, evidence that the white dwarf has a small radius can be found from}
- the expansion of the universe
- the mass as measured by Kepler's third law (modified by Newton)
- the doppler shift
- the temperature
+ the gravitational redshift

{<!--AstroSizeWhitdwrfNeutstarQSO_20-->[[File:Light-clock.png|thumb]]This light clock is associated with }
- all of these are true
- gravitational shift
- doppler shift
+ special relativity
- general relativity

{<!--AstroSizeWhitdwrfNeutstarQSO_21-->[[File:Light-clock.png|thumb]]Suppose the light clock involved a ball being tossed back and forth on a train going just under the speed of sound. In contrast to the situation for light reflecting back and forth on a train going just under the speed of light, there is virtually no time dilation. Why?}
- The observer on the ground would perceive the width the train to be greater.
+ The observer on the ground would perceive the ball to be travelling faster.
- The observer on the ground would perceive the ball to be travelling more slowly.
- The observer on the ground would perceive the width the train to be smaller.
- Special relativity is valid only for objects travelling in a vacuum.

{<!--AstroSizeWhitdwrfNeutstarQSO_3-->[[Image:A0V-blackbody SPD comparison.png|240px|right]]

This spectrum of the star Vega suggests that}
- it is an approximate black body
- if is not really a black body
+ all of these are true

- it's surface can be associated with a range of temperatures
- it can be associated with an "effective" temperature

{<!--AstroSizeWhitdwrfNeutstarQSO_4-->Which of the following is NOT an essential piece of a a strong argument that a white dwarf is not only the size of the earth, but typically has the same mass as the Sun. }
- the wobble of Sirius A
- the distance to Sirius A
+ all of these are true
- the "color" (spectral class) of Sirius B
- the relative magnitude of Sirius B

{<!--AstroSizeWhitdwrfNeutstarQSO_5-->The course materials presented three arguments suggesting that a white dwarf is roughly the size of the earth. Which best summarizes them?}
- doppler-shift...period-of-pulsation...temperature-luminosity
+ temperature-luminosity...redshift...quantum-theory-of-solids
- x-ray-emmission...doppler-shift...rotation-rate
- HR-diagram-location...X-ray-emmision...spectral-lines
- all of these are true

{<!--AstroSizeWhitdwrfNeutstarQSO_6-->As of 2008, the percent uncertainty in the distance to the Crab nebula is approximately, }
- 0.1%
- 1%
- 10%
+ 25%
- 100%

{<!--AstroSizeWhitdwrfNeutstarQSO_7-->What was Messier doing when he independently rediscovered the Crab in 1758? }
- Trying to measure the orbital radius of a planet
+ Looking for a comet that he knew would be appearing in that part of the sky.
- Looking for lobsters
- Attempting one of the first star charts
- Attempting to count asteroids

{<!--AstroSizeWhitdwrfNeutstarQSO_8-->[[File:Gravitational red-shifting2.png|thumb|180px]]

What best explains this figure?}
- The photon loses energy, not speed. By c=fλ , it loses frequency, and by E=hf it increases wavelength and turns red.
- The photon slows down, by the Doppler shift, E=hf, and therefore by c=f&;lambda it turns red.
- The photon slows down, by the Doppler shift, c=fλ, and therefore by E=hf it turns red.
- The photon slows down as it goes uphill, and by c=fλ it increases wavelength therefore by E=hf, it turns red.
+ The photon loses energy, not speed. By E=hf, it loses frequency, and by c=fλ it increases wavelength and turns red.

{<!--AstroSizeWhitdwrfNeutstarQSO_9-->What causes the blue glow of the Crab nebula?}
+ the curving motion of electrons in a magnetic field; such motion resembles a radio antenna
- the same emission found in a Lava lamp (ultra-violet)
- the curving motion of electrons in a magnetic field; such motion traps ultra-violet and blue light
- the Doppler blue shift
- the Gravitational blue shift

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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*_See_* [[User:Guy vandegrift]]
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<quiz display=simple>
{<!--AstroStarCluster_1-->A grouping with 100 thousand stars would probably be a}
- elliptical galaxy
- dwarf galaxy
- A-B association
- open cluster
+ globular cluster

{<!--AstroStarCluster_10-->Many stars in a typical open cluster are nearly as old as the universe}
- True

+ False

{<!--AstroStarCluster_11-->Many stars in a typical globular cluster are nearly as old as the universe}
+ True
- False

{<!--AstroStarCluster_12-->The number of globular clusters in the Milky way galaxy is about}
- 1,500
+ 150
- 15 thousand
- 15 million

{<!--AstroStarCluster_13-->The location of open clusters can be described as}
- uniformly distributed in a sphere centered at the Milky Way's center
+ in the spiral arms
- between the spiral arms
- uniformly distributed within the galactic disk

{<!--AstroStarCluster_14-->Stars can "evaporate" from a cluster. What does this mean?}
- The gravitational attraction between stars evaporates the gas from stars
- The solar wind from neighboring stars blows the atmosphere away
+ Close encounters between 3 or more cluster members gives one star enough speed to leave the cluster

{<!--AstroStarCluster_2-->A grouping with a hundred stars is probably a}
- elliptical galaxy
- dwarf galaxy
- A-B association
+ open cluster
- globular cluster

{<!--AstroStarCluster_3-->I gravity is what holds stars in a cluster together, what is the most important process that causes them to spread apart?}
+ random motion
- solar wind
- magnetism
- anti-gravity
- supernovae

{<!--AstroStarCluster_4-->Members of an open cluster feel significant forces only due to gravitational interaction with each other}
- True
+ False

{<!--AstroStarCluster_5-->Members of an open cluster feel significant forces from nearby giant molecular clouds}
+ True
- False

{<!--AstroStarCluster_6-->Members of a globular cluster tend to be}
- young
+ old
- of all ages

{<!--AstroStarCluster_7-->Members of a globular cluster tend to have}
+ low mass
- high mass
- a wide range of masses

{<!--AstroStarCluster_8-->In 1917, the astronomer Harlow Shapley was able to estimate the Sun's distance from the galactic centre using}
- open clusters
+ goblular clusters
- a combination of open and globular clusters

{<!--AstroStarCluster_9-->Most globular clusters that we see in the sky orbit _____ and have ______ orbits}
- the center of the Milky way ... nearly circular
+ the center of the Milky way ... elliptic orbits
- within the disk of the Milky way ... nearly circular
- within the disk of the Milky way ... elliptic orbits

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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*_See_* [[User:Guy vandegrift]]
</div></div>
===*_Quiz_*===
<quiz display=simple>
{<!--AstroStellarMeasurements_1-->Stellar parallax is }
+ an annual change in angular position of a star as seen from Earth
- an astronomical object with known luminosity.
- the total amount of energy emitted per unit time.
- a numerical measure of brightness as seen from Earth
- a numerical measure of brightness as seen from a distance of approximately 33 light-years

{<!--AstroStellarMeasurements_10-->A star that is increasing it's temperature while maintaining constant luminosity is}
+ getting smaller in size
- turning red
- in the process of dying
- on the verge of becoming a supernovae
-e) getting larger in size

{<!--AstroStellarMeasurements_11-->The range of wavelength for visible light is between}
+ 400 and 700 nanometers
- 1 and 10 nanometers
- 600 and 1200 nanometers
- 0.1 and 10 nanometers
- 5000 and 6000 nanometers

{<!--AstroStellarMeasurements_12-->Based on the HR diagrams and images in stars shown in the materials, a very large red supergiant has a diameter that is about ____ greater than a small white dwarf.}
- 3x10³
- 3x10⁹
- 3x10¹¹
- 3x10⁷
+ 3x10⁵

{<!--AstroStellarMeasurements_2-->Luminosity is }
- an annual change in angular position of a star as seen from Earth
- an astronomical object with known luminosity.
+ the total amount of energy emitted per unit time.
- a numerical measure of brightness as seen from Earth
- a numerical measure of brightness as seen from a distance of approximately 33 light-years

{<!--AstroStellarMeasurements_3-->A standard candle is}
- an annual change in angular position of a star as seen from Earth
+ an astronomical object with known luminosity.
- the total amount of energy emitted per unit time.

- a numerical measure of brightness as seen from Earth
- a numerical measure of brightness as seen from a distance of approximately 33 light-years

{<!--AstroStellarMeasurements_4-->Absolute magnitude is }
- an annual change in angular position of a star as seen from Earth
- an astronomical object with known luminosity.
- the total amount of energy emitted per unit time.
- a numerical measure of brightness as seen from Earth
+ a numerical measure of brightness as seen from a distance of approximately 33 light-years

{<!--AstroStellarMeasurements_5-->Relative magnitude is}
- an annual change in angular position of a star as seen from Earth
- an astronomical object with known luminosity.
- the total amount of energy emitted per unit time.
+ a numerical measure of brightness as seen from Earth
- a numerical measure of brightness as seen from a distance of approximately 33 light-years

{<!--AstroStellarMeasurements_6-->In 1989 the satellite [[w:Hipparcos|Hipparcos]] was launched primarily for obtaining parallaxes and [[w:proper motion|proper motions]] allowing measurements of stellar parallax for stars up to about 500 parsecs away, which is about ____ times the diameter of the [[w:Milky_Way|Milky Way Galaxy]].}
+ .015
- 0.15
- 1.5
- 15
- 150

{<!--AstroStellarMeasurements_7-->An object emits thermal (blackbody) radiation with a peak wavelength of 250nm. How does its temperature compare with the Sun? }
- The temperature is the same
- 2 times colder than the Sun
+ 2 times hotter than the Sun
- 5 times colder than the Sun
- 5 times hotter than the Sun

{<!--AstroStellarMeasurements_8-->The "normalized intensity" of a Sun-like star situated one parsec from Earth would be 4πI = 1. What is 4πI for a star with 100 times the Sun's energy output that is situated 10pc from Earth?}
- 10⁻²
- 10⁻³
- 10⁻¹
- 10⁻⁴
+ 1

{<!--AstroStellarMeasurements_9-->An orbiting satellite makes a

circular orbit 5 AU from the Sun. It measures a parallax angle of 0.2 of an arcsecond (each way from the average position). What is the star's distance? }
- 10 parsecs
+ 25 parsecs
- 5 parsecs
- 1 parsec
- 50 parsecs

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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<quiz display=simple>
{<!--AstroVenus_1-->When imaged in visible light Venus appears like ______ rather than ______.}
- an asteroid ... a terrestrial planet
+ a gas dwarf ... a rocky planet
- Mars ... Venus
- Venus ... Mars

{<!--AstroVenus_10-->The clouds on Venus are made of}
- water
- steam
- carbon dioxide
- nitrogen

+ sulfuric acid

{<!--AstroVenus_11-->The geology of Venus is predominantly}
+ Basalt
- Andesite
- Picrite

{<!----AstroVenus_12---->Basalt is what type of rock?}
+ Igneous
- Sedimentary
- Metamorphic

{<!----AstroVenus_13---->The rocks on Venus are mostly}
+ from volcanoes
- from the seabed of a now non-existent ocean
- associated with plate tectonics

{<!--AstroVenus_2-->The rocky surface of the planet Venus can be detected when Venus is observed using infrared astronomy.}
- TRUE
+ FALSE

{<!--AstroVenus_3-->When Venus is viewed in the ultraviolet, its color appears brownish.}
- TRUE
+ FALSE

{<!--AstroVenus_4-->Moldavite is a mineral that may be associated with what radiation astronomy phenomenon?}
- lightening strikes
+ meteorite impacts and fireballs
- evidence that Venus was once a comet
- predicting when currently dormant volcanoes will erupt

{<!--AstroVenus_5-->According to Wikipedia, a "mineral" is a naturally occurring solid that}
- is heterogeneous
- has useful value
+ is by a chemical formula
- contains carbon
- does not contain carbon

{<!--AstroVenus_6-->Which types of radiation astronomy directly observe the rocky-object surface of Venus?}
- X-ray astronomy
- ultraviolet astronomy
- visual astronomy
- infrared astronomy
+ radio astronomy

{<!--AstroVenus_7-->One reason that Venus's atmosphere has more carbon dioxide than Earth's is that}

- the mass of Venus is slightly higher
+ Venus was too hot for oceans that could absorb the carbon dioxide
- Venus is exposed to a stronger solar wind strips away the other gasses
- Venus has a lower magnetic field that disassociates carbon dioxide

{<!--AstroVenus_8-->The surface temperature of Venus is about}
+ 850 Fahrenheit (730 Kelvin or 230 Celsius)
+ 450 Fahrenheit (500 Kelvin or 66 Celsius)
+ 150 Fahrenheit (340 Kelvin or 66 Celsius)

{<!--AstroVenus_9-->The Venetian atmosphere consists of mostly carbon dioxide and}
- oxygen
- helium
- hydrogen
+ nitrogen
- sulfuric acid

</quiz>

====*_Instructions_*====
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===*_Quiz_*===
<quiz display=simple>
{<!--Ast_WPAstronomy1_1-->When did astronomy split between theoretical and observational branches?}

- In the 19th century
+ In the 20th century
- After Galileo
- In the last decade
- In the 18th century

{<!--Ast_WPAstronomy1_10-->According to the Wikipedia Astronomy article, the first known efforts in the mathematical and scientific study of Astronomy began}
+ among the Babylonians
- among the Chinese
- in south America
- in ancient Greece
- in central America

{<!--Ast_WPAstronomy1_11-->How many years did it take before Europe made a device as sophisticated as Antikythera?}
- 300 years
- 3000 years
- 30 years
+ 1500 years
- 15,000 years

{<!--Ast_WPAstronomy1_12-->The saro cycle was about repeating cycles of}
- planets
+ eclipses
- seasons

{<!--Ast_WPAstronomy1_13-->[[File:Galileo moon phases.jpg|right|200px]]Who drew these sketches?

}
- Kepler
- Aristotle
- Ptolemy
+ Galileo
- Copernicus

{<!--Ast_WPAstronomy1_14-->In what century was parallax first used to measure the distance to a Star (other than our Sun)?}
- 17th century
+ 19th century
- 18th century
- 20th century
- 16th century

{<!--Ast_WPAstronomy1_15-->The largest galaxy in the local group is}
- ant-galexy
+ Andromeda
- M52
- Milky way
- M-31

{<!--Ast_WPAstronomy1_16-->What two names are associated with the first new planet found (after those known by the ancients using the naked eye)}
- Neptune and the Alabama Streaker
- Mercury and Friendship
+ Uranus and George's Star
- Mars and the Candy Bar
- Pluto and Goofy

{<!--Ast_WPAstronomy1_17-->The historical record shows that in 1066 AD a supernovae was discovered by astronomers in _____ and _____}
- China and South America
- Greece and North America
- Greece and China
- Greece and Central America
+ Egypt and China

{<!--Ast_WPAstronomy1_2-->What does the Wikipedia 'Astronomy' call astrology? }
- the study of planetary cores
- the belief that all people should learn astronomy
+ the belief system which claims that human affairs are correlated with the positions of celestial objects.
- the study of planetary atmospheres
- the study of comets and asteroids

{<!--Ast_WPAstronomy1_3-->Cosmology is the study of}
+ the universe as a whole
- the birth and death of stars
- the oceans
- the formation of the solar system
- planetary atmospheres

{<!--Ast_WPAstronomy1_4-->What does the Wikipedia 'Astronomy' article say about astronomy and astrophysics}
- They are often in conflict
- They must be in agreement or the result cannot be trusted
- They often yield different results
+ They are often considered to be synonymous
- They are often considered to be opposites

{<!--Ast_WPAstronomy1_5-->The goecentric theory put the Sun}
- orbiting around the Moon
- none of the above or below are true
- at the center of the universe
- at the center of the solar system
+ in orbit around Earth

{<!--Ast_WPAstronomy1_6-->In the 3rd century BC, Aristarchus of Samos estimated the size of }
+ the Moon and Sun

- the Sun
- Earth and the Sun
- Earth and the Moon
- the Moon

{<!--Ast_WPAstronomy1_7-->In the 19th century Fraunhoffer and Kirchoff studied light from the Sun and found}
- Mercury's shadow
- a wobble that led to the discovery of new planets
+ spectral lines and concluded that they were caused by the elements
- sunspots and the sunspot cycle
- a golden ring

{<!--Ast_WPAstronomy1_8-->The ancient Greeks discovered (named) most of the constellations}
- in the southern hemisphere
+ in the northern hemisphere
- in both all hemispheres
- in the western hemisphere
- in the eastern hemisphere

{<!--Ast_WPAstronomy1_9-->When did astronmers establish that the Milky way is only one of many billions of galaxies in the universe?}
- 14th century
- 18th century
+ 20th century
- 16th century

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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<quiz display=simple>
{<!--Ast_WPAstronomy2_1-->[[File:Ant Nebula.jpg|220px|right]]What is
this? }
- the magnetic field of Venus
- colliding galaxies
- a supernovae remnant
- the magnetic field of Saturn
+ a dying star

{<!--Ast_WPAstronomy2_10-->An active galaxy is emitting a significant
amount of its energy from _____}
- magnetism
+ gravity
- nuclear fusion
- nuclear fission
- exploding stars

{<!--Ast_WPAstronomy2_2-->Wihlem Conrad Rontgen, a pioneer in X-rays
is famous for his photo of }
- a double star
+ his wife
- Barnard's star
- The Sun
- a supernovae

{<!--Ast_WPAstronomy2_3-->Earth based infrared observatories tend to
be located in}
- underground
- where the air is cold
+ where the air is dry
- near the equator
- near the north and south poles

{<!--Ast_WPAstronomy2_4-->The shortest wavelength of electromagnetic
radiation is associated with}
- X-rays
- blue light
- infrared
+ gamma rays
- ultra violet

{<!--Ast_WPAstronomy2_5-->[[File:grav.lens1.arp.750pix.jpg|right|200px
]]What are the blue things in this figure?<br/></br>}
- a globular cluster
- an open cluster of stars
- a cluster of galaxy
```

+ one galaxy
- none of these is correct

{<!--Ast_WPAstronomy2_6-->Most of the ______ that astronomers observe from Earth is seen in the form of synchrotron radiation, which is produced when electrons oscillate around magnetic fields.}
- meteors
- photons
+ radio waves
- energy
- meteorites

{<!--Ast_WPAstronomy2_7-->Most gamma rays are}
+ in bursts
- from cold stars
- from the Sun
- the Andromeda galaxy
- from hot stars

{<!--Ast_WPAstronomy2_8-->Studies in the infrared are useful for objects that are}
- associated with supernovae
- in our own galaxy
+ cold
- inside the solar system
- in other galaxies

{<!--Ast_WPAstronomy2_9-->The best place to observe neutrinos is }
+ underground
- near the north and south poles
- near the equator
- where the air is dry
- where the air is cold

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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<quiz display=simple>
{<!--AstroWikipSidereNunc_1-->The Wikipedia article ''Sidereus Nuncius'' suggests that the inventor of the telescope was likely to be}
+ a lensmaker
- a Chinese scientist
- Galileo
- A Greek scholar
- none of these

{<!--AstroWikipSidereNunc_10-->When the German astronomy Marius provided evidence that he (Marius) had first seen the moons of Jupiter, Galileo}
+ won the argument using his knowledge of calendars
- pointed out that the telescope Marius was using could not have seen the Moons
- used his political contacts to ensure that he (Galileo) would get credit
- appealed to the Pope
- didn't care; he was a true scientist

{<!--AstroWikipSidereNunc_11-->Prior to the publication of Sidereus Nuncius, the Church }
- had outlawed all discussion of the Copernican heliocentric system
- had given Galileo a commission to look into the Copernican heliocentric system
- was unaware of any controversy concerning the Copernican heliocentric system
+ accepted the Copernican heliocentric system as strictly mathematical and hypothetical
- none of these are true (according to the Wikpedia permalink to ''Sidereus Nuncius''.)

{<!--AstroWikipSidereNunc_2-->Galileo called his telescope }
- a mistake
- a double magnifying glass
- the magic eye
- the liberator
+ an optical cannon

{<!--AstroWikipSidereNunc_3-->The "terminator" for Galileo was }
- the equator
+ sunrise or sunset
- the division between east and west
- the most distant star he could see
- his trial for heresy

{<!--AstroWikipSidereNunc_4-->Galileo used the terminator to}
- deduce the color beneath the dust layer
+ correlate color with whether the region had mountains
- compensate for stellar parallax
- observe the wobble of the Moon's orbit
- none of these

{<!--AstroWikipSidereNunc_5-->Galileo used the terminator to }
- correlate dark and light regions with terrain
- measure the height of mountains
- compensate for stellar parallax
- publicize his ideas
+ two of these

{<!--AstroWikipSidereNunc_6-->What statement is FALSE about Galileo and the Median Stars }
- they were lined up
+ they were described by Aristotle
- they are actually moons
- motion could be observed after observing a moon for just one hour
- Galileo named them after a famous and wealthy family

{<!--AstroWikipSidereNunc_7-->The title of Galileo's book, ''Sidereus Nuncius'', is often translated as ____, but it is probably more proper to translate it as _______ }
- the motion of the earth - - the location of the earth
+ Starry messenger - - Starry message
- the motion of the stars - - the location of the stars
- the Moon close up - - the Moon through a telescope
- the moons of Jupiter

{<!--AstroWikipSidereNunc_8-->The Wikipedia article, ''Sidereus Nuncius'', points out that what the ancient Greek scientist thought was a cloudy star was really }
- a planetary nebula
- a supernovae remnant
- the rings of Saturn
- a comet
+ many faint stars

{<!--AstroWikipSidereNunc_9-->Galileo's naming of the "Medicean Stars"}
- caused his house arrest
- was controversial because stars were supposed to be named after Roman gods

- might have earned him a promotion
- broke an agreement he made with the Pope to stop writing about astronomy
+ two of these are true

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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<quiz display=simple>
{<!--AstroWikipSolSys1_1-->Very far from the sun, the heliosphere}
- becomes the magnetosphere
- reverses direction
+ becomes weaker than the interstellar wind
- spins in the opposite direction
- never ends

{<!--AstroWikipSolSys1_12-->According to Wikipedia, if all the mass of the asteroid belt were combined to one object, it's mass would _______ times less than Earth's mass.}
- 1
- 10
- 100
+ 1,000
- 10,000

{<!--AstroWikipSolSys1_13-->[[File:The_View_from_Within_AU_Microscopii's_Disk.jpg|200px|thumb|planetary disk]]In this hypothetical image of a sun-like star we see a bright band of dust that we on Earth call zodiacal light. It is due to sunlight reflecting off dust in the}
- magnetic sun's magnetic field
- Oort Cloude
- Kuiper belt
- Van Allen belt
+ ecliptic plane

{<!--AstroWikipSolSys1_14-->In planetary science, the frost line refers to a distance away from }
+ the star in the middle
- the north pole of a planet
- the south pole of a planet
- either pole of a planet
- ecliptic plane

{<!--AstroWikipSolSys1_15-->Oort's cloud was hypothesized to explain the source of }
- planets
- asteroids
+ comets
- water inside the frost line
- water outside the frost line

{<!--AstroWikipSolSys1_16-->According to Wikipedia _______ and ______ are referred to as volatiles. }
- electrons and protons
+ ices and gasses
- acids and bases
- planets and moons
- asteroids and terrestrial planets

{<!--AstroWikipSolSys1_17-->Which of the following list is properly ranked, starting with objects closest to the Sun?}
- Kuiper belt, Oort's cloud, Asteroid belt
- Oort's cloud, Asteroid belt, Kuiper belt
+ Asteroid belt, Kuiper belt, Oort's cloud
- Asteroid belt, Oort's cloud, Kuiper belt
- Kuiper belt, Asteroid belt, Oort's cloud

{<!--AstroWikipSolSys1_18-->When the sun turns into a red giant, }
+ surface temperature decreases; energy output increases
- surface temperature increases; energy output increases
- surface temperature decreases; energy output decreases
- surface temperature increases; energy output decreases
- The sun will not turn into a red giant

{<!--AstroWikipSolSys1_2-->A volatile is a substance that}
- reacts violently with acids
- reacts violently with water

- reacts violently with oxygen
- melts or evaporates at high temperature
+ melts or evaporates at low temperature

{<!--AstroWikipSolSys1_4-->All planets lie within a nearly flat disc called the __________ plane}
- interstellar
- retrograde
+ ecliptic
- angular
- fissile

{<!--AstroWikipSolSys1_5-->The AU is}
- a measure of the brightness of a planet
- the size of Oort's cloud
- the most distant Kuiper object from the Sun
- the distance from Earth to the Moon
+ the distance from the Sun to Earth

{<!--AstroWikipSolSys1_6-->The Sun and Earth are about}
- 5 million years old
- 50 million years old
- 500 million years old
+ 5 billion years old
- 50 billion years old

{<!--AstroWikipSolSys1_7-->The universe is about}
- 15 million years old
- 150 million years old
- 1.5 billion years old
+ 15 billion years old
- 150 billion years old

{<!--AstroWikipSolSys1_8-->Roughly how much bigger is a gas planet than a terrestrial planet?}
- 3
+ 10
- 30
- 100
- 300

{<!--AstroWikipSolSys1_9-->Roughly how much bigger is a the Sun than a gas planet?}
- 3
+ 10
- 30
- 100
- 300

</quiz>

====*_Instructions_*====

Instructions are forthcoming

Transclusion from [[Quizbank/Instructions_0]]:
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<quiz display=simple>
{<!--AstroWikipSolSys2_1-->In astrophysics, what is accretion? }
+ the growth of a massive object by gravitationally attracting more matter
- the growth in size of a massive star as its outer atmosphere expands
- the growth of a comet's tail as it comes close to the Sun
- the increase in temperature and pressure of a star as it collapses from its own gravity
- the condensation of volatiles as a gas cools

{<!--AstroWikipSolSys2_2-->Dwarf planets are defined as objects orbiting the Sun and smaller than planets, that? }
+ have been rounded by their own gravity
- possess an atmosphere
- lack an atmosphere
- are too far from the Sun to be planets
- lie in the asteroid belt

{<!--AstroWikipSolSys2_3-->Dwarf planets have no natural satellites, }
- true
+ false

{<!--AstroWikipSolSys2_4-->Pluto is classified as }
+ a dwarf planet and a trans-Neptunian object.
- an asteroid belt object

- a dwarf planet with no natural satellites
- a natural satellite of Neptune
- a natural satellite of Uranus

{<!--AstroWikipSolSys2_5-->How many of the outer planets have rings?
}
+ 4
- 3
- 2
- 1

{<!--AstroWikipSolSys2_6-->Currently there are 7 billion people on Earth, if that ever increases to 10 billion people, for every person on Earth there will be ____ stars in the Milky Way galaxy. }
+ 20
- 2
- 200
- 2000

{<!--AstroWikipSolSys2_7-->The revolution of Haley's comet around the Sun is nearly circular. }
- true
+ false

{<!--AstroWikipSolSys2_8-->The revolution of Haley's comet around the Sun is opposite that of the 8 planets.}
+ true
- false

{<!--AstroWikipSolSys2_9-->The frost line is situated approximately }
+ 5 times as far from the Sun as the Earth is from the Sun
- 10 times as far from the Sun as the Earth is from the Sun
- 5 times as far from the Earth as the Earth's surface is from its center
- 10 times as far from the Earth as the Earth's surface is from its center

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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===*_Quiz_*===
<quiz display=simple>
{<!--AstroWikipStar_1-->Why is a star made of plasma? }
+ it is so hot that electrons are stripped away from the protons
- the intense gravity liquifies the substance, just as red blood cells liquify plasma in the body
- the interstellar gas was mostly plasma
- plasma is always present when there are strong magnetic fields
- plasma is generic word for "important"

{<!--AstroWikipStar_10-->Pre–main sequence stars are often surrounded by a protoplanetary disk and powered mainly by }
- the fission of Carbon from Helium
- the fusion of Helium to Carbon
+ the release of gravitational energy
- collisions between protoplanets
- chemical reactions

{<!--AstroWikipStar_11-->Stars that begin with more than 50 solar masses will typically lose _______ while on the main sequence. }
- 1% their mass
+ 50% their mass
- 10% of their magnetic field
- 10% their mass
- all of their magnetic field

{<!--AstroWikipStar_12-->The Hayashi and Henyey tracks refer to how T Tauri of different masses will move }
- through an HR diagram as they die
- through a cluster as they die
- through a cluster as they are born
- Two of these are true
+ through an HR diagram as they are born

{<!--AstroWikipStar_13-->How do low-mass stars change as they are born?[[File:PMS evolution tracks.svg|thumb|Birth of stars HR path tracks]] }
- Increasing temperature with no change in luminosity

- Increasing luminosity with no change in temperature
- Decreasing temperature and increasing luminosity
- Decreasing temperature with no change in luminosity
+ Decreasing luminosity with no change in temperature

{<!--AstroWikipStar_14-->When a star with more than 10 solar masses ceases fuse hydrogen to helium, it }
- it fuses helium to carbon to iron (and other elements), then continues to release more energy by fusing the iron to heavier elements such as uranium.
- it fuses elements up to uranium, and continues to produce energy by the fission of uranium.
+ it fuses helium to carbon and other elements up to iron and then ceases to produce more energy
- it fuses helium to carbon and then ceases to produce more energy
- ceases to convert nuclear energy.

{<!--AstroWikipStar_15-->Many supernovae begin as a shock wave in the core that was caused by }
+ electrons being driven into protons to form neutrons
- all of these processes contribute to the shock wave
- iron fusing into heavier elements such as uranium
- the conversion of carbon into diamonds,
- carbon and other elements fusing into iron

{<!--AstroWikipStar_16-->A dying star with more than 1.4 solar masses becomes a ______, and those with more than 5 solar masses becomes a _____ }
+ neutron star....black hole
- white dwarf....black hole
- white dwarf....neutron star
- blue giant....red giant
- white dwarf...red dwarf

{<!--AstroWikipStar_17-->According to Wikipedia, a star with over 20 solar masses converts its Hyrogen to Helium in about 8 billion years, but the conversion of Oxygen to heavier elements take about _____ }
- 1 thousand years
+ 1 year
- 1 billion years
- 1 million years
- 10 billion years

{<!--AstroWikipStar_2-->What is the difference between a constellation and an asterism? }
+ constellations represent regions of the sky, like state boundaries on a map of the USA
- asterisms are smaller than constellations
- asterisms are larger than constellations
- none of these is correct
- constellations consist of never more than ten stars.

{<!--AstroWikipStar_3-->Stellar parallax is }
- None of these is correct.
+ Two of these is correct
- Triangulation to deduce the distance to nearby stars
- Using spectral lines to deduce the distance to nearby stars
- Using changes in the angular position of a star to deduce the star’s distance

{<!--AstroWikipStar_4-->Giant molecular clouds with sufficient conditions to form a star cluster would have formed them long ago. Any stellar births in the past couple of billions years probably resulted from _____ between clouds. }
- None of these is correct.
+ collisions
- photon exchange
- ion exchange
- Two of these are correct

{<!--AstroWikipStar_5-->A starburst galaxy. }
- All of these are correct
+ Two of these are correct
- has only dead or dying stars
- is a region of active stellar birth
- usually is a result of collisions between galaxies

{<!--AstroWikipStar_6-->Which of the following expresses Jean's criterion for the collapse of a giant molecular cloud of mass, M, radius, R, and temperature T, and pressure P? (Here ? is some constant) }
- P>?MT
+ M>?RT
- R>?MT
- P>?MR
- T>?RM

{<!--AstroWikipStar_7-->Which of the following changes in the properties of a giant molecular cloud might cause it to collapse? }
- Decrease mass at fixed temperature and size
- Increase size at fixed pressure and mass
- Two of these are correct
- Increase temperature at fixed mass and size
+ Increase mass at fixed temperature and size

{<!--AstroWikipStar_8-->What happens if you increase the size of a giant molecular cloud while keeping temperature and mass fixed? }
- It is less likely to collapse because temperature can never be kept fixed
- It is more likely to collapse because this will increase the temperature
- It is more likely to collapse because larger things have more gravity
+ It is less likely to collapse spreading it out weakens the force of

gravity
- It is equally likely to collapse because size is not part of the Jean's criterion.

{<!--AstroWikipStar_9-->What is a Bok globule in the formation of stellar systems? }
- A supernovae precurser that attracts more gas atoms
- A cluster of giant molecular clouds that coalesce to form a solar system
- A small planet that formed before any stars have formed
- A black hole that enters a cloud and triggers the collapse
+ A small portion of a giant cloud that collapses

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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<quiz display=simple>
{<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 4 volt battery moves 27 Coulombs of charge in 2.6 hours. What is the power?}
-a) 7.86 x 10⁻³ W
-b) 9.52 x 10⁻³ W
+c) 1.15 x 10⁻² W
-d) 1.4 x 10⁻² W
-e) 1.69 x 10⁻² W

{<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 5.5 mm, and it carries a current of 76 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)}
-a) 1.35 x 10⁻⁴m/s
-b) 1.63 x 10⁻⁴m/s
-c) 1.98 x 10⁻⁴m/s
+d) 2.39 x 10⁻⁴m/s
-e) 2.9 x 10⁻⁴m/s

{<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 168 Watt DC motor draws 0.3 amps of current. What is effective resistance?}
+a) 1.87 x 10³ Ω
-b) 2.26 x 10³ Ω
-c) 2.74 x 10³ Ω
-d) 3.32 x 10³ Ω
-e) 4.02 x 10³ Ω

{<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 113 watts of power to a 104 ohm resistor. What was the applied voltage?}
-a) 5.03 x 10¹ volts
-b) 6.1 x 10¹ volts
-c) 7.39 x 10¹ volts
-d) 8.95 x 10¹ volts
+e) 1.08 x 10² volts

</quiz>

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Other renditions
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=====*_Rendition_* 1-2=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 5.3 volt battery moves 11 Coulombs of charge in 2.1 hours. What is the power?
+a) 7.71 x 10⁻³ W
-b) 9.34 x 10⁻³ W
-c) 1.13 x 10⁻² W
-d) 1.37 x 10⁻² W
-e) 1.66 x 10⁻² W
=====*_Rendition_* 1-3=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 1.4 volt battery moves 87 Coulombs of charge in 2 hours. What is the power?
-a) 7.85 x 10⁻³ W
-b) 9.51 x 10⁻³ W
-c) 1.15 x 10⁻² W

-d) 1.4 x 10⁻² W
+e) 1.69 x 10⁻² W
=====*_Rendition_* 1-4=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 5.8 volt battery moves 95 Coulombs of charge in 0.3 hours. What is the power?
-a) 4.21 x 10⁻¹ W
+b) 5.1 x 10⁻¹ W
-c) 6.18 x 10⁻¹ W
-d) 7.49 x 10⁻¹ W
-e) 9.07 x 10⁻¹ W
=====*_Rendition_* 1-5=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 4.7 volt battery moves 50 Coulombs of charge in 1.3 hours. What is the power?
-a) 4.14 x 10⁻² W
+b) 5.02 x 10⁻² W
-c) 6.08 x 10⁻² W
-d) 7.37 x 10⁻² W
-e) 8.93 x 10⁻² W
=====*_Rendition_* 1-6=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 3.9 volt battery moves 90 Coulombs of charge in 2.2 hours. What is the power?
+a) 4.43 x 10⁻² W
-b) 5.37 x 10⁻² W
-c) 6.51 x 10⁻² W
-d) 7.88 x 10⁻² W
-e) 9.55 x 10⁻² W
=====*_Rendition_* 1-7=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 5.1 volt battery moves 43 Coulombs of charge in 1.5 hours. What is the power?
+a) 4.06 x 10⁻² W
-b) 4.92 x 10⁻² W
-c) 5.96 x 10⁻² W
-d) 7.22 x 10⁻² W
-e) 8.75 x 10⁻² W
=====*_Rendition_* 1-8=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 4 volt battery moves 19 Coulombs of charge in 1.3 hours. What is the power?
+a) 1.62 x 10⁻² W
-b) 1.97 x 10⁻² W
-c) 2.38 x 10⁻² W
-d) 2.89 x 10⁻² W
-e) 3.5 x 10⁻² W
=====*_Rendition_* 1-9=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 3.1 volt battery moves 52 Coulombs of charge in 1.7 hours. What is the power?
-a) 1.79 x 10⁻² W
-b) 2.17 x 10⁻² W
+c) 2.63 x 10⁻² W
-d) 3.19 x 10⁻² W
-e) 3.87 x 10⁻² W
=====*_Rendition_* 1-10=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 3.1 volt

battery moves 40 Coulombs of charge in 0.9 hours. What is the power?
-a) 2.61 x 10⁻² W
-b) 3.16 x 10⁻² W
+c) 3.83 x 10⁻² W
-d) 4.64 x 10⁻² W
-e) 5.62 x 10⁻² W
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 1.7 mm, and it carries a current of 92 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
-a) 2.07 x 10⁻³m/s
-b) 2.5 x 10⁻³m/s
+c) 3.03 x 10⁻³m/s
-d) 3.67 x 10⁻³m/s
-e) 4.45 x 10⁻³m/s
=====*_Rendition_* 2-3=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 8.7 mm, and it carries a current of 22 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
+a) 2.77 x 10⁻⁵m/s
-b) 3.36 x 10⁻⁵m/s
-c) 4.06 x 10⁻⁵m/s
-d) 4.92 x 10⁻⁵m/s
-e) 5.97 x 10⁻⁵m/s
=====*_Rendition_* 2-4=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 3.6 mm, and it carries a current of 52 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
+a) 3.82 x 10⁻⁴m/s
-b) 4.63 x 10⁻⁴m/s
-c) 5.61 x 10⁻⁴m/s
-d) 6.8 x 10⁻⁴m/s
-e) 8.24 x 10⁻⁴m/s
=====*_Rendition_* 2-5=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 9.9 mm, and it carries a current of 41 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
-a) 2.24 x 10⁻⁵m/s
-b) 2.72 x 10⁻⁵m/s
-c) 3.29 x 10⁻⁵m/s
+d) 3.99 x 10⁻⁵m/s
-e) 4.83 x 10⁻⁵m/s
=====*_Rendition_* 2-6=====

<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 9.2 mm, and it carries a current of 64 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
-a) 4.91 x 10⁻⁵m/s
-b) 5.95 x 10⁻⁵m/s
+c) 7.2 x 10⁻⁵m/s
-d) 8.73 x 10⁻⁵m/s
-e) 1.06 x 10⁻⁴m/s
=====*_Rendition_* 2-7=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 3.8 mm, and it carries a current of 88 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
-a) 2.7 x 10⁻⁴m/s
-b) 3.27 x 10⁻⁴m/s
-c) 3.96 x 10⁻⁴m/s
-d) 4.79 x 10⁻⁴m/s
+e) 5.81 x 10⁻⁴m/s
=====*_Rendition_* 2-8=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 1.9 mm, and it carries a current of 33 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
-a) 5.93 x 10⁻⁴m/s
-b) 7.19 x 10⁻⁴m/s
+c) 8.71 x 10⁻⁴m/s
-d) 1.06 x 10⁻³m/s
-e) 1.28 x 10⁻³m/s
=====*_Rendition_* 2-9=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 7.4 mm, and it carries a current of 38 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
-a) 3.07 x 10⁻⁵m/s
-b) 3.72 x 10⁻⁵m/s
-c) 4.5 x 10⁻⁵m/s
-d) 5.46 x 10⁻⁵m/s
+e) 6.61 x 10⁻⁵m/s
=====*_Rendition_* 2-10=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 8.3 mm, and it carries a current of 87 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
-a) 6.77 x 10⁻⁵m/s
-b) 8.2 x 10⁻⁵m/s
-c) 9.93 x 10⁻⁵m/s

+d) 1.2 x 10⁻⁴m/s
-e) 1.46 x 10⁻⁴m/s
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 164 Watt DC motor draws 0.25 amps of current. What is effective resistance?
-a) 1.22 x 10³ Ω
-b) 1.48 x 10³ Ω
-c) 1.79 x 10³ Ω
-d) 2.17 x 10³ Ω
+e) 2.62 x 10³ Ω
=====*_Rendition_* 3-3=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 162 Watt DC motor draws 0.41 amps of current. What is effective resistance?
-a) 5.42 x 10² Ω
-b) 6.57 x 10² Ω
-c) 7.95 x 10² Ω
+d) 9.64 x 10² Ω
-e) 1.17 x 10³ Ω
=====*_Rendition_* 3-4=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 195 Watt DC motor draws 0.49 amps of current. What is effective resistance?
+a) 8.12 x 10² Ω
-b) 9.84 x 10² Ω
-c) 1.19 x 10³ Ω
-d) 1.44 x 10³ Ω
-e) 1.75 x 10³ Ω
=====*_Rendition_* 3-5=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 130 Watt DC motor draws 0.3 amps of current. What is effective resistance?
-a) 8.12 x 10² Ω
-b) 9.84 x 10² Ω
-c) 1.19 x 10³ Ω
+d) 1.44 x 10³ Ω
-e) 1.75 x 10³ Ω
=====*_Rendition_* 3-6=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 104 Watt DC motor draws 0.13 amps of current. What is effective resistance?
-a) 3.46 x 10³ Ω
-b) 4.19 x 10³ Ω
-c) 5.08 x 10³ Ω
+d) 6.15 x 10³ Ω
-e) 7.46 x 10³ Ω
=====*_Rendition_* 3-7=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 196 Watt DC motor draws 0.35 amps of current. What is effective resistance?
+a) 1.6 x 10³ Ω
-b) 1.94 x 10³ Ω
-c) 2.35 x 10³ Ω
-d) 2.85 x 10³ Ω
-e) 3.45 x 10³ Ω
=====*_Rendition_* 3-8=====

<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 171 Watt DC motor draws 0.47 amps of current. What is effective resistance?
+a) 7.74 x 10² Ω
-b) 9.38 x 10² Ω
-c) 1.14 x 10³ Ω
-d) 1.38 x 10³ Ω
-e) 1.67 x 10³ Ω
=====*_Rendition_* 3-9=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 129 Watt DC motor draws 0.22 amps of current. What is effective resistance?
-a) 2.2 x 10³ Ω
+b) 2.67 x 10³ Ω
-c) 3.23 x 10³ Ω
-d) 3.91 x 10³ Ω
-e) 4.74 x 10³ Ω
=====*_Rendition_* 3-10=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 146 Watt DC motor draws 0.23 amps of current. What is effective resistance?
-a) 2.28 x 10³ Ω
+b) 2.76 x 10³ Ω
-c) 3.34 x 10³ Ω
-d) 4.05 x 10³ Ω
-e) 4.91 x 10³ Ω
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 149 watts of power to a 153 ohm resistor. What was the applied voltage?
-a) 8.49 x 10¹ volts
-b) 1.03 x 10² volts
-c) 1.25 x 10² volts
+d) 1.51 x 10² volts
-e) 1.83 x 10² volts
=====*_Rendition_* 4-3=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 101 watts of power to a 219 ohm resistor. What was the applied voltage?
+a) 1.49 x 10² volts
-b) 1.8 x 10² volts
-c) 2.18 x 10² volts
-d) 2.64 x 10² volts
-e) 3.2 x 10² volts
=====*_Rendition_* 4-4=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 145 watts of power to a 132 ohm resistor. What was the applied voltage?
-a) 6.42 x 10¹ volts
-b) 7.78 x 10¹ volts
-c) 9.43 x 10¹ volts
-d) 1.14 x 10² volts
+e) 1.38 x 10² volts
=====*_Rendition_* 4-5=====

<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 145 watts of power to a 244 ohm resistor. What was the applied voltage?
+a) 1.88 x 10² volts
-b) 2.28 x 10² volts
-c) 2.76 x 10² volts
-d) 3.34 x 10² volts
-e) 4.05 x 10² volts
=====*_Rendition_* 4-6=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 138 watts of power to a 206 ohm resistor. What was the applied voltage?
-a) 1.39 x 10² volts
+b) 1.69 x 10² volts
-c) 2.04 x 10² volts
-d) 2.47 x 10² volts
-e) 3 x 10² volts
=====*_Rendition_* 4-7=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 187 watts of power to a 287 ohm resistor. What was the applied voltage?
+a) 2.32 x 10² volts
-b) 2.81 x 10² volts
-c) 3.4 x 10² volts
-d) 4.12 x 10² volts
-e) 4.99 x 10² volts
=====*_Rendition_* 4-8=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 169 watts of power to a 219 ohm resistor. What was the applied voltage?
-a) 8.93 x 10¹ volts
-b) 1.08 x 10² volts
-c) 1.31 x 10² volts
-d) 1.59 x 10² volts
+e) 1.92 x 10² volts
=====*_Rendition_* 4-9=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 110 watts of power to a 299 ohm resistor. What was the applied voltage?
-a) 8.42 x 10¹ volts
-b) 1.02 x 10² volts
-c) 1.24 x 10² volts
-d) 1.5 x 10² volts
+e) 1.81 x 10² volts
=====*_Rendition_* 4-10=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 114 watts of power to a 294 ohm resistor. What was the applied voltage?
-a) 1.25 x 10² volts
-b) 1.51 x 10² volts
+c) 1.83 x 10² volts
-d) 2.22 x 10² volts

```
-e) 2.69 x 10<sup>2</sup> volts
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Instructions are forthcoming

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{<!--b_antikythera_1-->A mechanical '''[[w:analog computer|analog
computer]]''' uses pulleys, levers, wheels or some other motion to
solve problems of a mathematical nature.}
+ true
- false

{<!--b_antikythera_10-->As the Sun, Moon, and planets seem to move
around the Earth, they remain close to a circle, called the
'''[[w:ecliptic|ecliptic]]''', that can be drawn on paper or imagined
in the sky.  The Babylonians divided this circle into 12 equal
sections of 30 degrees each, and labeled the sections after the
zodiacal constellations.}
+ true
- false

{<!--b_antikythera_11-->As the Sun, Moon, and planets seem to move
around the Earth, they remain close to a circle, called the
'''[[w:ecliptic|ecliptic]]''', that can be drawn on paper or imagined
in the sky.  The Babylonians divided this circle into 12 unequal
sections of approximately 30 degrees each, and labeled the sections
after the zodiacal constellations.}
```

- true
+ false

{<!--b_antikythera_12-->Sothic calendar was an Egyptian calendar with twelve months of 30 days plus five [[wikt:intercalary|intercalary]] days to keep the year synchronous with the four seasons. }
+ true
- false

{<!--b_antikythera_13-->Sothic calendar was an Egyptian calendar with twelve months of 30 days plus five [[wikt:intercalary|intercalary]] days to keep the year synchronous with the Saros cycle.}
- true
+ false

{<!--b_antikythera_14-->Sothic calendar was an Egyptian calendar with twelve months of 30 days plus five [[wikt:intercalary|intercalary]] days to keep the year synchronous with the Lunar phases.}
- true
+ false

{<!--b_antikythera_15-->The Sothic calendar of 365 days did not include an extra day every four years. As a consequence, it advanced by _____ days in 12 years}
+ 3
- 1
- 2
- 4

{<!--b_antikythera_16-->The Sothic calendar of 365 days did not include an extra day every four years. As a consequence, it advanced by _____ days in 8 years}
- 3
- 1
+ 2
- 4

{<!--b_antikythera_17-->The months of the Antikythera device are labeled with Egyptian names ''[[wikt:transcribe|transcribed]]'' into Greek}
+ true
- false

{<!--b_antikythera_18-->The months of the Antikythera device are labeled with Greek names ''[[wikt:transcribe|transcribed]]'' into Egyptian hieroglyphs.}
- true
+ false

{<!--b_antikythera_19-->'''[[w:Eclipse seasons|Eclipse seasons]]''' last for approximately ______ and repeat just short of ______}
+ 34 days;   six months

- 7 days;   one month
- six months;   18 years
- one month;   18 years
- six months;   54 years

{<!--b_antikythera_2-->How many years did it take before Europe made a device as sophisticated as the '''[[w:Antikythera_mechanism|Antikythera mechanism]]'''?}
-300 years
-3000 years
-30 years
+1500 years
-15,000 years

{<!--b_antikythera_20-->[[File:Crown_gear.png|140px|right]]A ____________ is a gear which has teeth that projects at right angles to the face of the wheel.}
+ '''[[w:crown gear|crown gear]]'''
- '''[[w:Spiral_bevel_gear|spiral bevel gear]]'''
- '''[[w:Epicyclic gearing|epicycle gear]]'''

{<!--b_antikythera_21-->Evidence suggests that it was not possible to set the Antikythera device without referring to a written table to ascertain the dial settings for a given date.}
+ true
- false

{<!--b_antikythera_22-->How did the Antikythera mechanism compensate for leap years?}
+ Two concentric dials were independently adjusted by hand; one dial marked a 365 day calendar, and the other marked the position of the Sun with respect to the ecliptic.
- Two concentric dials were independently adjusted by a differential gear; one dial marked a 365 day calendar, and the other marked the position of the Sun with respect to the ecliptic.
- There was no need to compensate for the leap year because the Sothic calendar included a leap year every four years.

{<!--b_antikythera_3-->The Antikythera device was dated to approximately}
+ 100-150 BC
- 300-350 BC
- 300-350 AD
- 500-550 BC

{<!--b_antikythera_4-->The '''[[w:Antikythera wreck|Antikythera wreck]]''' was situated closer to Rome than to Greece.}
- true
+ false

{<!--b_antikythera_5-->The '''[[w:Antikythera wreck|Antikythera wreck]]''' was discovered by _________ in ________.}

```
+ sponge divers;   1900
- Jacques-Yves Cousteau;   1976

{<!--b_antikythera_6-->What clue is cited to suggest that the
Antikythera device was not the first of its kind?}
+ The quality of its manufacture.
- Other boxes in the wreck seemed to have held similar devices.
- Chemical analysis of the bronze.
- Instructions for making other devices were found at the wreck site.

{<!--b_antikythera_7-->'''[[w:Bronze|Bronze]]''' is an alloy
consisting primarily of ______, with other metals included ______}
+ copper;   to make it hard.
- copper;   to make it withstand corrosion.
- iron;   as impurities that served little or no purpose.
- copper;   as impurities that served little or no purpose.

{<!--b_antikythera_8-->Chemical analysis of the bronze used in the
gears of the Antikythera device }
+ was not possible due to the degree of corrosion.
- suggested that Roman technology was used.
- suggested that Greek technology was used.
- suggested that a number of such devices had been produced.

{<!--b_antikythera_9-->Which of the following was NOT used as evidence
in an effort to guess where the Antikythera device originated?}
- Some of the astronomical events associated with the device could
have only have been seen from Corinth, a region associated with
Archimedes.
- Coins at the site seemed to originate from Pergamon, where an
important library was situated.
+ The Library of Alexandria, where Ptolemy would later work, would
have been a likely destination or origin for the ship.
- Vases found at the site suggest an origin near the trading port of
Rhodes, where Hipparchus was believed to have worked.

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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<quiz display=simple>
{<!--b_busyBeaver_1-->If the machine is at A: 000<u>0</u>00, what's next?[[File:2-state 2-symbol busy beaver.svg|right|120px]]}
- B: 000<u>0</u>10
+ B: 0001<u>0</u>0
- A: 0001<u>0</u>0
- A: 0000<u>1</u>0

{<!--b_busyBeaver_2-->If the machine is at B: 0001<u>0</u>0, what's next?[[File:2-state 2-symbol busy beaver.svg|right|120px]]}
- B: 000<u>1</u>10
- A: 001<u>1</u>00
- B: 0001<u>1</u>0
+ A: 000<u>1</u>10

{<!--b_busyBeaver_3-->If the machine is at A: 000<u>1</u>10, what's next?[[File:2-state 2-symbol busy beaver.svg|right|120px]]}
- B: 0011<u>0</u>0
+ B: 00<u>0</u>110
- A: 00<u>0</u>110
- A: 0011<u>1</u>0

{<!--b_busyBeaver_4-->If the machine is at B: 00<u>0</u>110 , what's next?[[File:2-state 2-symbol busy beaver.svg|right|120px]]}
- B: 0001<u>1</u>1
- B: 0<u>0</u>1110
- A: 00<u>1</u>110
+ A: 0<u>0</u>1110

{<!--b_busyBeaver_5-->If the machine is at A: 0<u>0</u>1110, what's next?[[File:2-state 2-symbol busy beaver.svg|right|120px]]}
+ B: 01<u>1</u>110
- H: 01<u>1</u>110
- A: 01<u>1</u>110
- H: 011<u>1</u>10

{<!--b_busyBeaver_6-->If the machine is at B: 01<u>1</u>110, what's next?[[File:2-state 2-symbol busy beaver.svg|right|120px]]}

```
- B: 011<u>1</u>10
+ H: 011<u>1</u>10
- A: 01<u>1</u>110
- H: 01<u>1</u>110

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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{<!--b_ComputerWikipedia_1-->The first English-language usage of the
word "computer" referred to}
- counting rods
- an abacus
- Roman numerals
+ a person

{<!--b_ComputerWikipedia_10-->The [[w:Turing machine|Turing machine]]
permitted a solution to the [[w:halting problem|halting problem]]}
+ true
- false

{<!--b_ComputerWikipedia_11-->The [[w:Turing machine| Turing machine]]
could not have been invented until after the [[w:halting
problem|halting problem]] was solved.}
- true
```

+ false

{<!--b_ComputerWikipedia_12-->The [[w:Turing machine|Turing machine]] was a(n) ______ device}
- digital
- electromechanical
- prototype
+ conceptual
- analog

{<!--b_ComputerWikipedia_13-->This algorithm halts if it starts at 0:
 * Add 3
 * If the number is divisible by 10, divide by 10
 * Stop if the number exceeds 100
 * Go to top}
- true
+ false

{<!--b_ComputerWikipedia_14-->This algorithm halts if it starts at 0:
 * Add 3
 * If the number is divisible by 10, add 10
 * Stop if the number exceeds 100
 * Go to top}
+ true
- false

{<!--b_ComputerWikipedia_15-->In London (circa 1935) thousands of vacuum tubes were used to}
- calculate the value of π
+ control a telephone exchange
- count votes in an election
- control a textile mill

{<!--b_ComputerWikipedia_16-->The [[w:Bombe|Bombe]] was a(n) ______________ device used (circa 1940) to defeat the Enigma machine in World War II.}
- mechanical
- electric digital programmable
- Turing-complete
+ electromechanical

{<!--b_ComputerWikipedia_17-->The Colossus, used to defeat the German Enigma machine during World War II in 1944, was}
- Turing-complete
- mechanical
+ electric digital programmable
- electromechanical

{<!--b_ComputerWikipedia_18-->The chronological order by which electronic computers advanced is:}
- transistors, integrated circuits, and then tubes
+ tubes, transistors, and then integrated circuits
- integrated circuits, tubes, and then transistors
- tubes, integrated circuits and then transistors

{<!--b_ComputerWikipedia_2-->Babbage's account of the origin of the

difference engine in the 1820s was that he was working to satisfy the Astronomical Society's desire to improve The Nautical Almanac.}
+ true
- false

{<!--b_ComputerWikipedia_3-->Babbage's account of the origin of the difference engine in the 1820s was that he was working to satisfy the Astronomical Society's desire to predict lunar eclipses}
- true
+ false

{<!--b_ComputerWikipedia_4-->Babbage's use of punch cards in the 1930s to solve a problem posed by the Astronomical Society was later adopted to the Jacquard loom.}
- true
+ false

{<!--b_ComputerWikipedia_5-->Babbage's use of punch cards in the 1930s to solve a problem posed by the Astronomical Society was preceded by such use on the Jacquard loom.}
+ true
- false

{<!--b_ComputerWikipedia_6-->A system that uses levers, pulleys, or other mechanical device to perform calculations is called an analog computer}
+ true
- false

{<!--b_ComputerWikipedia_7-->A system that uses tables of numbers is called an analog computer}
- true
+ false

{<!--b_ComputerWikipedia_8-->Analog computers were phased out by the dawn of the twentieth century (circa 1900)}
- true
+ false

{<!--b_ComputerWikipedia_9-->Analog computers continued to be developed into the twentieth century}
+ true
- false

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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<quiz display=simple>
{<!--b_ecliptic_quiz1_1-->The '''[[w:ecliptic|ecliptic]]''' is the set of all points on the celestial sphere}
- occupied by the Moon over the course of one month.
- occupied by the Sun and Moon during eclipse season.
+ occupied by the Sun over the course of a year.
- occupied by the Sun over the course of one day.
- occupied by the Moon over the course of one day.

{<!--b_ecliptic_quiz1_10-->$\frac{360\,\text{degrees}}{30\,\text{days}}=\frac{36}{3} \,$, calculates that the Moon moves approximately 13 ______}
- degrees per hour across the sky
- degrees per hour compared to the fixed stars
+ degrees per day compared to the fixed stars
- degrees per day across the sky

{<!--b_ecliptic_quiz1_2-->Two '''[[w:Great circle|great circles]]''' on a sphere meet at ______ point(s)}
- 0
- 1
+ 2
- 3
- 4

{<!--b_ecliptic_quiz1_3-->A star in any of the 12 [[w:zodiac|zodiacal]] constellations rises and sets near where the Sun rises and sets, except that the cycle is repeated every 24 hours minus approximately 4 minutes.}
+ true

- false

{<!--b_ecliptic_quiz1_4-->Four minutes times 365 is approximately one}
+ day
- year
- month
- week

{<!--b_ecliptic_quiz1_5-->As the Sun rises and sets it typically spends 4 minutes in each constellation of the Zodiac}
- true
+ false

{<!--b_ecliptic_quiz1_6-->One minute of arc describes and angle 60 times smaller than one degree, which is NOT equal to the observed angular motion of a star in one minute.}
+ true
- false

{<!--b_ecliptic_quiz1_7-->One minute of arc describes and angle 60 times smaller than one degree, which nearly equals the observed angular motion of a star in one minute.}
- true
+ false

{<!--b_ecliptic_quiz1_8-->In the course of a year, the Sun is always in or near one of the 12 zodiacal constellations}
+ true
- false

{<!--b_ecliptic_quiz1_9-->$\frac{360}{24}=\frac{36\cdot 10}{12\cdot 2}=\frac{12\cdot 3\cdot 5\cdot 2}{12\cdot 2\,}$, calculates that the Sun moves 15}
- degrees per day compared to the fixed stars
+ degrees per hour across the sky
- degrees per hour compared to the fixed stars
- degrees per day across the sky

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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<quiz display=simple>
{<!--b_globalWarming_1_1-->The lede's graph of the "[[:File:Global_Temperature_Anomaly.svg|Global Land Ocean Temperature Index (1880-2013)]]" shows little or no temperature rise over the last ____ years}
- 30
- 3
- 100
+ 10
- 300

{<!--b_globalWarming_1_10-->The lede's "[[:File:Global_Warming_Observed_CO2_Emissions_from_fossil_fuel_burning_vs_IPCC_scenarios.svg|CO2 Emissions per Year]]" graph (1990-2010) shows solid straight lines that represent}
+ estimates made in the year 2000 of what would happen in the future
- estimates of the contributions from everything except fossil fuels
- estimates of the contributions from fossil fuels alone
- estimates of the impact on land temperatures

{<!--b_globalWarming_1_11-->In climate science, mitigation refers to:}
- climate engineering
- adaptation to the effects of global warming
+ reduction of green house emissions
- building systems resilient to the effects of global warming

{<!--b_globalWarming_1_12-->Anthropogenic means something that}
- humans can repair
+ human caused
- humans cannot repair
- will hurt humans

{<!--b_globalWarming_1_2-->Since 1971, 90% of earth's increased energy caused by global warming has been stored in the _____________, mostly _____________}
+ sea; in the top kilometer

- sea; in the bottom kilometer
- land; near the poles
- land; near the equators
- air; in the water vapor

{<!--b_globalWarming_1_3-->The lede's graph of the "[[:File:Global_Temperature_Anomaly.svg|Global Land Ocean Temperature Index (1880-2013)]]" shows that since 1920, there has never been a decade of overall cooling}
- true
+ false

{<!--b_globalWarming_1_4-->The largest temperature increases (from 2000-2009) have occurred }
- on the ocean surface
+ near the poles
- near the equator
- in the western hemisphere

{<!--b_globalWarming_1_5-->The 2007 IPCC report stated that most global warming was likely being caused by increasing concentrations of greenhouse gases produced by human activities. Among the science academies of the major industrialized nations, this finding was recognized by}
- 90% of the academies of science
+ all of the academies of science
- all but the US academy of science
- 60% of the academies of science

{<!--b_globalWarming_1_6--> in 2013, the IPCC stated that the largest driver of global warming is carbon dioxide (CO2) emissions from fossil fuel combustion. Other important sources of CO2 are}
- population growth and waste disposal
- cement production and waste disposal
+ cement production and land use changes
- population growth

{<!--b_globalWarming_1_7-->The lede's graphs of the "[[:File:Global_Temperature_Anomaly.svg|Global Land Ocean Temperature Index (1880-2013)]]" indicates that from 1960 to 2012 the average temperature increased by approximately}
- 16° Celsius
+ 0.6° Celsius
- 0.06° Celsius
- 0.16° Celsius
- 1.6° Celsius

{<!--b_globalWarming_1_8-->Which statement is FALSE about the lede's [[:File:GISS_temperature_2000-09_lrg.png|map of the temperature anomaly]] (2000-2009)? }
+ all portions of Antarctica have warmed
- Northern Asia has warmed more than southern Asia

- Central Europe has warmed more than the continental United States
- The United States has warmed more than Australia

{<!--b_globalWarming_1_9-->The lede's
"[[:File:Global_Warming_Observed_CO2_Emissions_from_fossil_fuel_burning_vs_IPCC_scenarios.svg|CO2 Emissions per Year]]" graph (1990-2010)
shows dips and rises that are caused by changes in}
- worldwide efforts to curtail emissions
- the earth's distance from the sun
- the sun's energy output
+ the world economy

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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<quiz display=simple>
{<!--b_globalWarming_2_1-->The Earth's average surface temperature
rose by approximately _______ per decade over the period 1906–2005.}
- 7.0°C
- 0.7°C
+ 0.07°C

{<!--b_globalWarming_2_10-->A rise in the sea level is associated with
global warming because}
- ice and snow melts

+ both of these are true
- water tends to expand as it warms

{<!--b_globalWarming_2_11-->What happens when water is heated?}
- it expands at temperatures below 3.98°C and contracts above 3.98°C
+ it expands at temperatures above 3.98°C and contracts below 3.98°C
- it absorbs CO2

{<!--b_globalWarming_2_12-->No direct method exists that permits an independent measurement of the heat content of the oceans, other than the fact that the air is warming}
- true
+ false

{<!--b_globalWarming_2_13-->Ocean temperatures are increasing more slowly than land temperatures because oceans have more heat capacity and because evaporation cools the water.}
+ true
- false

{<!--b_globalWarming_2_14-->Ocean temperatures are increasing more slowly than land temperatures because the oceans are absorbing less heat energy from the sun}
- true
+ false

{<!--b_globalWarming_2_2-->In the twentieth century, the rate of earth's average temperature rise was closest to}
- 0.7 °C per decade
- 0.7 °C per year
+ 0.7 °C per century

{<!--b_globalWarming_2_3-->Compared with the first half of the twentieth century, the rate of earth's average temperature rise during the second (latter) half was }
- half as much
- about the same
+ twice as much

{<!--b_globalWarming_2_4-->Compared with the second half of the twentieth century, the rate of earth's average temperature rise during the first half was}
- twice as much
+ half as much
- about the same

{<!--b_globalWarming_2_5-->The urban heat island effect refers to the fact that urban areas tend to be hotter than rural areas. The urban heat island effect is estimated to account for approximately _____ of the temperature rise over the past century.}

- 0%
- 30%
- 0.3%
+ 3%

{<!--b_globalWarming_2_6-->Proxy temperatures measurements are defined as indirect inferences gathered from ice cores, tree rings, and so forth}
+ true
-false

{<!--b_globalWarming_2_7-->Proxy temperatures measurements are defined as measurements made using measurements from space.}
- true
+ false

{<!--b_globalWarming_2_8-->The [[:File:2000_Year_Temperature_Comparison.png|Reconstructed Temperature]] (0-2000 AD) plot in "Observed Temperature Changes" shows temperature measurements. The solid black line represents}
- tree proxy measurements
+ thermometer measurements
- the Little Ice Age
- the Medieval Warming Period
- a 10 year average

{<!--b_globalWarming_2_9-->The [[:File:2000_Year_Temperature_Comparison.png|Reconstructed Temperature]] (0-2000 AD) plot in "Observed Temperature Changes" shows temperature measurements, as well as what curious feature? (See also [[w:Divergence problem|Divergence problem]])}
- the Little Ice Age being less prominent than the Medieval Warming period
- a divergence between the tree and pollen proxy measurements
+ a tiny gap at the end of the proxy measurements
- the fact that the different proxy measurements deviate considerably from the average of all proxy measurements

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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<quiz display=simple>
{<!--b_globalWarming_3_1-->The
"[[:File:Greenhouse_Effect.svg|Greenhouse effect schematic]]" in the section on "Temperature changes..." indicates that most of the energy from the Sun is absorbed by the earth's atmosphere.}
- true
+ false

{<!--b_globalWarming_3_10-->Emissions scenarios are}
+ estimates of changes in future emission levels of greenhouse gases
- estimates of how greenhouse gasses are absorbed and emitted by nature
- estimates of how greenhouse gasses are absorbed and emitted by the world's oceans
- estimates of how greenhouse gasses are absorbed and emitted by agriculture

{<!--b_globalWarming_3_11-->It is expected that carbon emissions will begin to diminish in the 21st century as fossil fuel reserves begin to dwindle.}
- true
+ false

{<!--b_globalWarming_3_12-->The [[w:carbon cycle|carbon cycle]] }
- is a proposal to trade carbon credits.
+ describes how carbon is absorbed and emitted by the oceans, soil, plants, etc.
- is an effort to store carbon in underground caves.

{<!--b_globalWarming_3_13-->Global dimming, caused by air-born particulates produced by volcanoes and human made pollutants}
- exerts a heating effect by absorbing infra-red radiation from earth's surface
- is more related to the ozone problem than to global warming
+ exerts a cooling effect by increasing the reflection of incoming sunlight

{<!--b_globalWarming_3_14-->Soot tends to warm the earth when it accumulates in atmospheric brown clouds.}
- true
+ false

{<!--b_globalWarming_3_15-->Soot tends to cool the earth when it accumulates in atmospheric brown clouds.}
+ true
- false

{<!--b_globalWarming_3_16-->In the arctic, soot tends to cool the earth.}
- true
+ false

{<!--b_globalWarming_3_17-->In the arctic, soot tends to warm the earth.}
+ true
- false

{<!--b_globalWarming_3_18-->Approximately what percent of global warming can be attributed to a long-term trend (since 1978) in the sun's energy?}
- 50%
+ 0%
- 10%
- 30%

{<!--b_globalWarming_3_19-->Greenhouse warming acts to cool the stratosphere}
+ true
- false

{<!--b_globalWarming_3_2-->The "[[:File:Greenhouse_Effect.svg|Greenhouse effect schematic]]" in the section on "Temperature changes..." indicates that most of the energy from the Sun is absorbed at the earth's surface.}
+ true
- false

{<!--b_globalWarming_3_20-->Greenhouse warming acts to warm the stratosphere}
- true
+ false

{<!--b_globalWarming_3_21-->The distinction between the urban heat island effect and land use changes is that the latter involves the earth's average temperature while the former involves only the temperature near weather stations where the measurements are made}
+ true
- false

{<!--b_globalWarming_3_22-->Depleting the ozone layer cools the stratosphere because ozone allows UV radiation to penetrate.}
- true
+ false

{<!--b_globalWarming_3_23-->Depleting the ozone layer cools the stratosphere because ozone absorbs UV energy from the sun that heats the stratosphere.}
+ true
- false

{<!--b_globalWarming_3_3-->Which external force plays the smallest role in current efforts to model global warming?}
- greenhouse gasses
- solar luminosity (i.e. variations in energy from the sun)
- volcanic eruptions
+ orbital cycles

{<!--b_globalWarming_3_4-->"External forcings" refer to effects that can increase, but not decrease, the Earth's temperature.}
- true
+ false

{<!--b_globalWarming_3_5-->"External forcings" refer to effects that can either increase or decrease, the Earth's temperature.}
- true
+ false

{<!--b_globalWarming_3_6-->Water vapor contributes more to the greenhouse effect than does carbon dioxide.}
+ true
- false

{<!--b_globalWarming_3_7-->Carbon dioxide contributes more to the greenhouse effect than does water vapor.}
- true
+ false

{<!--b_globalWarming_3_8-->The [[:File:Mauna_Loa_Carbon_Dioxide_Apr2013.svg|Keeling curve]] shows that carbon dioxide concentrations}
+ show a steady rise in CO2 levels, with increasing slope, and regular and predictable annual fluctuations
- show a steady rise in CO2 levels, at constant slope, and regular and predictable annual fluctuations
- show a steady rise in CO2 levels, at constant slope, and irregular fluctuations due associated with El Ninos and La Ninas.

{<!--b_globalWarming_3_9-->The climate change community is divided between those who believe the goal should be to eliminate the earth's greenhouse effect altogether, and those who argue that we should

attempt to minimize earth's greenhouse effect.}
- true
+ false

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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<quiz display=simple>
{<!--b_globalWarming_4_1-->Changes in ice-albedo refers to changes in}
- how much CO2 is absorbed by the sun
+ how much the Earth's surface absorbs or reflects incoming sunlight
- how much ice is melted during the summer months

{<!--b_globalWarming_4_10-->The [[w:cryosphere|cryosphere]] refers to}
- the north and south poles
- the upper atmosphere
- the highest mountains
+ two of these are true

{<!--b_globalWarming_4_11-->While computer modeling indicate that the warming since 1970 is dominated by man-made greenhouse gas emissions, they are unable to conclusively ascertain whether the warming from 1910 to 1945 was anthropogenic.}
+ true
- false

{<!--b_globalWarming_4_12-->Computer modeling has conclusively established that anthropogenic warming has occurred since 1910.}
- true
+ false

{<!--b_globalWarming_4_13-->How is the validity of a computer model typically tested?}
- by verifying its ability to calculate past climate conditions.
+ all of these are true
- by verifying its ability to calculate current climate conditions.
- by making predictions about future years and seeing if they come true.

{<!--b_globalWarming_4_2-->The Stefan-Boltzmann law plays a central role in establishing a planets temperature as the sun heats the planet until the thermal (infra-red) radiation away the planet rises to match the solar radiation onto the planet}
+ true
- false

{<!--b_globalWarming_4_3-->The Stefan-Boltzmann law plays a central role in establishing a planets temperature as the sun heats the planet with thermal (infra-red) radiation adding to the other solar radiation onto the planet}
- true
+ false

{<!--b_globalWarming_4_4-->Stefan-Boltzmann radiation is called a negative feedback mechanism because if the sun's radiation increases, the Stefan-Boltzmann law ensures that more heat is lost from the planet to compensate.}
+ true
- false

{<!--b_globalWarming_4_5-->Stefan-Boltzmann radiation is called a negative feedback mechanism because if the sun's radiation increases, the Stefan-Boltzmann law ensures that this heat is retained by the planet.}
- true
+ false

{<!--b_globalWarming_4_6-->Computer models accurately model feedback mechanisms associated with the role of clouds as a feedback mechanism.}
- true
+ false

{<!--b_globalWarming_4_7-->Computer models accurately model feedback mechanisms associated with how the soil will retain or release CO2 as the earth warms.}
- true

+ false

{<!--b_globalWarming_4_8-->Analysis of the uncertainties associated with feedback suggests that the "worst-case" scenario is easier to model.}
- true
+ false

{<!--b_globalWarming_4_9-->Analysis of the uncertainties associated with feedback suggests that the "worst-case" scenario is more difficult to model.}
+ true
- false

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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<quiz display=simple>
{<!--b_industrialRevolution_1-->The Industrial Revolution began shortly before}
- World War I (1914)
+ the American revolution (1776)
- the American civil war (1861)

{<!--b_industrialRevolution_10-->Cartwright built two textile

factories. One of them}
- burned down
+ two of these are true
- is still in use today
- was transported to Germany
- was sabotaged by workers

{<!--b_industrialRevolution_11-->The purpose of Eli Whitney's cotton gin was to}
- clean cotton
+ remove seeds
- weave cotton
- pick cotton
- spin cotton

{<!--b_industrialRevolution_12-->Manchester acquired the nickname __________ during the early 19th century owing to its sprawl of ______}
- Coalopolis, coal mines
- Weavopolis, Weaving factories
+ Cottonopolis, textile factories
- Cokopolis, coke processing plants

{<!--b_industrialRevolution_13-->A major change in the metal industries during the era of the Industrial Revolution was the replacement of wood and other bio-fuels with coal. Compared to wood, coal required }
- about the same labour to mine, but was more abundant than wood.
+ less labour to mine and was also more abundant.
- less labour to mine, but was less abundant (until the Rineland coal fields were discovered).

{<!--b_industrialRevolution_14-->Henry Cort developed rolling, which is 15 times _____ than ______}
+ faster, hammering
- faster, puddling
- cheaper, hammering
- cheaper, puddling

{<!--b_industrialRevolution_15-->Puddling involved }
- stirring with a long rod and became much cheaper when steam engines replaced manual stirring
- the use of coke instead of coal greatly reduced the cost of producing pig iron
- the use of coke instead of coal and led to much strong iron
+ stirring with a long rod and was never successfully mechanised.

{<!--b_industrialRevolution_16-->For most of the period of the Industrial Revolution, the majority of industrial power was supplied by}
- steam and wind.
- water and steam.

+ water and wind.

{<!--b_industrialRevolution_17-->The ''Miner's Friend''}
- provided ventilation
- transported miners
+ pumped water
- was electrical lighting

{<!--b_industrialRevolution_18-->According to Wikipedia, the first large machine tool was used to}
- drill coal mines
- shape plates for ship hulls
+ bore cylinders for steam engines steam engines.
- plane rails for railroads

{<!--b_industrialRevolution_19-->During the Industrial Revolution, the cost of producing sulfuric acid greatly improved by}
+ replacing glass containers with lead containers
- replacing iron containers with glass containers
- replacing glass containers with iron containers
- replacing lead containers with glass containers

{<!--b_industrialRevolution_2-->The Industrial Revolution lasted just under _____ years}
- 200
- 300
- 400
- 500
+ 100

{<!--b_industrialRevolution_20-->Early uses for sulphuric acid included}
- making cement and bleaching cloth
- producing dyes and bleaching cloth
- removing rust and making cement
- producing dyes and making cement
+ removing rust and bleaching cloth

{<!--b_industrialRevolution_21-->During the Industrial Revolution, the best Chemists were trained in}
- Great Britain
+ Germany
- United States
- Italy
- Sweden

{<!--b_industrialRevolution_3-->The dominant industry of the Industrial Revolution in terms of employment, output and invested capital was}
- railroads
- military spending
- farm equipment

- ship building
+ textiles

{<!--b_industrialRevolution_4-->What impact did the industrial revolution have on living standards of ordinary people, ''according to Wikipedia?''}
+ the question is a subject of controversy
- little or no growth in the first half, but enormous growth in the second half of the industrial revolution.
- sustained growth, for the first time in history
- little or no growth until much later (19th and 20th centuries)

{<!--b_industrialRevolution_5-->The industrial revolution began in}
- simultaneously in a variety of European nations
- Germany
- simultaneously in Europe and the United States
+ Great Britain
- United States

{<!--b_industrialRevolution_6-->Which is NOT one of the three areas of development that helped initiate the industrial revolution?}
+ assembly lines
- textiles
- iron making
- steam power

{<!--b_industrialRevolution_7-->The Calico Acts were initially designed to protect}
- domestic cotton production
+ the woollen industry
- small manufacturers
- large manufacturers

{<!--b_industrialRevolution_8-->On the eve of the Industrial Revolution, when the textile industry was largely a cottage industry, women did the ______ and men did the _______. If a loom was used, the work done by the women required ______ person hours.}
+ spinning, weaving, more
- spinning, weaving, fewer
- weaving, spinning, more
- weaving, spinning, fewer

{<!--b_industrialRevolution_9-->On the eve of the Industrial Revolution, when the textile industry was largely a cottage industry, men did the ______ and women did the _______. If a loom was used, the work done by the men required ______ person hours.}
- spinning, weaving, fewer
+ weaving, spinning, fewer
- weaving, spinning, more
- spinning, weaving, more

</quiz>

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Instructions are forthcoming

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<quiz display=simple>
{<!--b_motionSimpleArithmetic_1-->Mr. Smith starts from rest and
accelerates to 4 m/s in 3 seconds.  How far did he travel?}
- 3.0  meters
- 4.0  meters
- 5.0  meters
+ 6.0  meters
- 7.0  meters

{<!--b_motionSimpleArithmetic_10-->Mr. Smith starts from rest and
accelerates to 4 m/s in 5 seconds.  How far did he travel?}
- 7.0  meters
- 8.0  meters
- 9.0  meters
+ 10.0  meters
- 11.0  meters

{<!--b_motionSimpleArithmetic_11-->Mr. Smith is driving at a speed of
7 m/s, when he slows down to a speed of 5 m/s, when he hits a wall at
this speed, after travelling for 2 seconds.  How far did he travel? }
- 8.0  meters
- 9.0  meters
- 10.0  meters
```

- 11.0 meters
+ 12.0 meters

{<!--b_motionSimpleArithmetic_12-->Mr. Smith starts at rest and accelerates to a speed of 2 m/s, in 2 seconds. He then travels at this speed for an additional 1 seconds. Then he decelerates uniformly, taking 2 seconds to come to rest. How far did he travel?}
- 5.0 meters
+ 6.0 meters
- 7.0 meters
- 8.0 meters
- 9.0 meters

{<!--b_motionSimpleArithmetic_2-->Mr. Smith is driving at a speed of 4 m/s, when he slows down to a speed of 1 m/s, when he hits a wall at this speed, after travelling for 4 seconds. How far did he travel? }
- 7.0 meters
- 8.0 meters
- 9.0 meters
+ 10.0 meters
- 11.0 meters

{<!--b_motionSimpleArithmetic_3-->Mr. Smith starts at rest and accelerates to a speed of 4 m/s, in 2 seconds. He then travels at this speed for an additional 3 seconds. Then he decelerates uniformly, taking 2 seconds to come to rest. How far did he travel?}
- 19.0 meters
+ 20.0 meters
- 21.0 meters
- 22.0 meters
- 23.0 meters

{<!--b_motionSimpleArithmetic_4-->Mr. Smith starts from rest and accelerates to 2 m/s in 3 seconds. How far did he travel?}
+ 3.0 meters
- 4.0 meters
- 5.0 meters
- 6.0 meters
- 7.0 meters

{<!--b_motionSimpleArithmetic_5-->Mr. Smith is driving at a speed of 5 m/s, when he slows down to a speed of 4 m/s, when he hits a wall at this speed, after travelling for 2 seconds. How far did he travel? }
- 8.0 meters
+ 9.0 meters
- 10.0 meters
- 11.0 meters
- 12.0 meters

{<!--b_motionSimpleArithmetic_6-->Mr. Smith starts at rest and accelerates to a speed of 2 m/s, in 6 seconds. He then travels at this speed for an additional 3 seconds. Then he decelerates

uniformly, taking 4 seconds to come to rest. How far did he travel?}
+ 16.0 meters
- 17.0 meters
- 18.0 meters
- 19.0 meters
- 20.0 meters

{<!--b_motionSimpleArithmetic_7-->Mr. Smith starts from rest and accelerates to 3 m/s in 2 seconds. How far did he travel?}
- 1.0 meters
- 2.0 meters
+ 3.0 meters
- 4.0 meters
- 5.0 meters

{<!--b_motionSimpleArithmetic_8-->Mr. Smith is driving at a speed of 7 m/s, when he slows down to a speed of 5 m/s, when he hits a wall at this speed, after travelling for 4 seconds. How far did he travel? }
- 23.0 meters
+ 24.0 meters
- 25.0 meters
- 26.0 meters
- 27.0 meters

{<!--b_motionSimpleArithmetic_9-->Mr. Smith starts at rest and accelerates to a speed of 2 m/s, in 6 seconds. He then travels at this speed for an additional 3 seconds. Then he decelerates uniformly, taking 4 seconds to come to rest. How far did he travel?}
- 13.0 meters
- 14.0 meters
- 15.0 meters
+ 16.0 meters
- 17.0 meters

</quiz>

====*_Instructions_*====
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<quiz display=simple>
{<!--b_nuclearPower_1_1-->What fraction of the world's electricity was produced by nuclear power in 2012?}
- 63%
+ 13%
- 3%
- 33%

{<!--b_nuclearPower_1_10-->Chadwicks discovery of the neutron was significant because}
+ neutrons permit induced radiation
- neutrons are stable
- neutrons are slow

{<!--b_nuclearPower_1_11-->Neutrons and protons both have "strong" short range interactions with the nucleus. Why can't slow protons be used to cause nuclei to undergo fission?}
+ protons are positively charged
- slow protons can induce fission but they are too expensive to produce
- slow protons are attracted to the nucleus
- protons move at the speed of light

{<!--b_nuclearPower_1_12-->Fermi used _______ to create what he thought was _______}
- slow neutrons;   "moonshine"
- "moonshine";   fast neutrons
+ slow neutrons;   a new element heavier than uranium (called a transuranic element)
- transuranic (heavy) elements;   a new source of slow neutrons

{<!--b_nuclearPower_1_13-->Fermi thought he had discovered ________, when he actually discovered ________}
- fusion;   hesparium
+ hesperium;   fission
- hesperium;   fusion
- fission;   hesparium

{<!--b_nuclearPower_1_14-->Which was developed first, nuclear power generation or nuclear weapons?}

- they were developed simultaneously
+ nuclear weapons
- nuclear power generation

{<!--b_nuclearPower_1_15-->The Manhattan project made}
- plutonium and enriched hesparium
+ plutonium and enriched uranium
- uranium and enriched plutonium

{<!--b_nuclearPower_1_16-->The Atomic Age, published in 1945, predicted ... }
- nuclear war
- a world government to prevent nuclear war
+ that fossil fuels would go unused
- widespread radiation poisoning

{<!--b_nuclearPower_1_17-->In 1953, "Atoms for Peace" was}
- a presidential speech warning of the need for nuclear arms agreements
- a congressional committee
- a protest movement centered in US universities
+ a presidential speech promoting nuclear energy production

{<!--b_nuclearPower_1_18-->The first nuclear power plant to contribute to the grid was situated in}
+ Russia
- Oak Ridge
- Virginia
- Great Britain

{<!--b_nuclearPower_1_19-->According to Wikipedia, the prediction made in 1954 that electricity would someday be "too cheap to meter" was}
- an argument that fossil fuels are so abundant that we don't need nuclear energy
- an effort to promote nuclear fission as an energy source
+ an effort to promote nuclear fusion as an energy source

{<!--b_nuclearPower_1_2-->How does Wikipedia assess the prospects of commercial fusion power production before 2050?}
- likely
+ unlikely
- impossible
- expected

{<!--b_nuclearPower_1_20-->The third worst nuclear disaster occurred in Russia (1957) and was kept secret for 30 years }
+ true
- false

{<!--b_nuclearPower_1_21-->More US nuclear submarines sank due to nuclear accidents than did Russian submarines}
- true

+ false

{<!--b_nuclearPower_1_22-->The worst nuclear disaster on record occurred in Russia}
- true
+ false

{<!--b_nuclearPower_1_23-->The worldwide number of nuclear reactors and their net capacity grew steadily from 1960, and}
- fluctuated randomly but with a strong correlation with the world economy and price of oil
+ leveled off between Three Mile Island (1979) and Chernobyl (1986).
- did not begin to level off until Chernobyl (1986)
- briefly fell sharply after Three Mile Island (1979), rose again, and again fell after Chernobyl (1986)

{<!--b_nuclearPower_1_3-->In terms of lives lost per unit of energy generated, evidence suggests that nuclear power has caused ______ fatalities per unit of energy generated than the other major sources of energy.}
+ comparable
- less
- more

{<!--b_nuclearPower_1_4-->According to Wikipedia, the amount of green house gasses associated with the construction and maintenance of nuclear power plants is ________ than the emissions associated with other renewable sources (wind, solar, and hydro power.)}
+ about the same
- less
- greater

{<!--b_nuclearPower_1_5-->Estimates of additional nuclear generating capacity to be built by 2035 fell by ______ percent after the Fukushima nuclear accident in 2011.}
+ 50
- 10
- 90

{<!--b_nuclearPower_1_6-->From the figure depicting percentage of power produced by nuclear power plants, we see that the proper ranking from greatest to least reliance on nuclear power for three nations is}
+ France, United States, with Turkey least reliant.
- France ,Turkey , with the United States least reliant.
- United States, France, with Turkey least reliant.
- United States, Turkey, France least reliant.

{<!--b_nuclearPower_1_7-->It was discovered that radioactive elements released immense amounts of energy according to the principle of mass–energy equivalence in the ______ }
- late 19th century
+ early 20th century

- early 19th century

{<!--b_nuclearPower_1_8-->Chadwick's discovery of the neutron was significant because neutrons}
- are an excellent fuel for nuclear power
- are not radioactive
+ can be used to create radioactive material at a low price

{<!--b_nuclearPower_1_9-->Ernest Rutherford's "moonshine" was}
- what called neutrons
+ what he called the idea of harnessing nuclear power
- what he called the idea of relying on fossil fuels
- what he called alpha particles

</quiz>

====*_Instructions_*====
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<quiz display=simple>
{<!--b_nuclearPower_2_1-->In a PWR reactor, the water is kept under high pressure }
+ to prevent it from boiling
- only in the reactor core
- to slow down the neutrons
- to reduce the heat required to boil it

{<!--b_nuclearPower_2_10-->A 2008 report from Oak Ridge National Laboratory concluded that the dose to the public from radiation from properly run nuclear plants is ___________ the radiation created by burning coal}
+ 100 times less than
- 100 times more than
- 10 times less than
- 10 times more than
- about the same as

{<!--b_nuclearPower_2_11-->One concern is that long term nuclear waste management is now being performed by a number of private waste management companies}
- true
+ false

{<!--b_nuclearPower_2_12-->The Waste Isolation Pilot Plant in New Mexico }
- can no longer nuclear waste from production reactors because it is full
+ is currently taking nuclear waste from production reactors
- was originally a research and development facility but is now under private ownership

{<!--b_nuclearPower_2_13-->In the United States, reprocessing of spent Uranium}
- provides 5% of our fuel needs which is consumed within the United states
+ is not allowed due to nuclear weapon proliferation concerns
- is not allowed due to waste management concerns
- provides 20% of our fuel needs and allows the United States to export nuclear fuel

{<!--b_nuclearPower_2_14-->The reprocessing of spent Uranium worsens the problem of long term waste storage}
- true
+ false

{<!--b_nuclearPower_2_15-->The reprocessing of spent Uranium helps alleviate the problem of long term waste storage}
+ true
- false

{<!--b_nuclearPower_2_16-->Nuclear power plants typically have}
- low capital costs and high fuel costs
+ high capital costs and low fuel costs
- high capital costs and high fuel costs
- low capital costs and low fuel costs

{<!--b_nuclearPower_2_17-->How many latent (cancer) deaths are estimated to result from the Three Mile Island accident?}

+ zero
- from 4000 to 25,000
- from 0 to 1000

{<!--b_nuclearPower_2_18-->It has been estimated that if Japan had never adopted nuclear power, the use of other fuels would have caused more lost years of life.}
+ true
- false

{<!--b_nuclearPower_2_19-->It has been estimated that farmland lost due to Fukushima accident will be again useful for farming in 40-60 years}
- true
+ false

{<!--b_nuclearPower_2_2-->Fuel rods spend typically ______ total now inside the reactor, generally until _____ of their uranium has been fissioned}
+ 6 years;   3%
- 6 months;   30%
- 6 months;   3%
- 6 years;   30%

{<!--b_nuclearPower_2_20-->It has been estimated that farmland lost due to Fukushima accident will not be farmed for centuries}
+ true
- false

{<!--b_nuclearPower_2_21-->The Megatons to Megawatts Program}
- purchases spent fuel that could otherwise be used to make weapons, and is considered a failure
- converts weapons grade uranium into fuel for commercial reactors, and is considered a failure
+ converts weapons grade uranium into fuel for commercial reactors, and is considered a success
- purchases spent fuel that could otherwise be used to make weapons, and is considered a success

{<!--b_nuclearPower_2_3-->After about __________ in a spent fuel pool the spent fuel can be moved to dry storage casks or reprocessed.}
- 5 months
- 50 years
+ 5 years

{<!--b_nuclearPower_2_4-->Uranium is approximately ______________ than silver in the Earth's crust.}
- 40 times less common
- 4 times more common
+ 40 times more common
- 4 times less common

{<!--b_nuclearPower_2_5-->Reactors that use natural (unenriched) uranium are}
- considered impossible
+ are already in use
- are likely to emerge in the next few decades

{<!--b_nuclearPower_2_6-->Fast breeder reactors use uranium-238, an isotope which constitutes _____ of naturally occurring uranium}
- 30%
- 3%
- 1 %
+ 99%
- 60%

{<!--b_nuclearPower_2_7-->One concern about fast breeder reactors is that the uranium reserves will be exhausted more quickly}
- true
+ false

{<!--b_nuclearPower_2_8-->High-level radioactive waste management is a daunting problem because}
- they cannot be stored underground
+ the isotopes are long-lived
- the isotopes are short-lived

{<!--b_nuclearPower_2_9-->A 2008 report from Oak Ridge National Laboratory concluded that the dose to the public from radiation from coal plants is ___________ the radiation nuclear plants (excluding the possibility of accidental discharges of radioactive material}
- 10 times less than
- about the same as
+ 100 times more than
- 10 times more than
- 100 times less than

</quiz>

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{<!--b_photoelectricEffect_1-->If the electron behaved as a classical (non-quantum) particle and '''NOT''' somehow connected to a spring inside the metal, then one would expect that photoelectrons would be emitted _______}
+ above a threshold intensity
- above a threshold wavelength
- above a threshold frequency
- at a specific frequency

{<!--b_photoelectricEffect_2--> If the electron behaved as a classical (non-quantum) particle and the electron '''was''' somehow connected to a spring inside the metal, then one would expect that photoelectrons would be emitted _______}
- above a threshold intensity
- above a threshold wavelength
- above a thresholdfrequency
+ at a specific frequency

{<!--b_photoelectricEffect_3--> In the photoelectric effect, how was the maximum kinetic energy measured?}
+ by measuring the voltage required to prevent the electrons from passing between the two electrodes.
- by measuring the wavelength of the light
- by measuring the distance between the electrodes

</quiz>

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{<!--b_QuantumTimeline_1-->Excepting cases where where quantum jumps in energy are induced in another object (i.e., using only the uncertainty principle), which would NOT put a classical particle into the quantum regime?}
+ high speed
- confinement to a small space
- low speed
- low mass

{<!--b_QuantumTimeline_10-->How does the Bohr atom differ from Newton's theory of planetary orbits?}
- The force between proton and electron is not attractive for the atom, but it is for planets and the sun.
- The force between planets and the sun is not attractive for the atom, but it is for proton and electron.
+ planets make elliptical orbits while the electron makes circular orbits
- electrons make elliptical orbits while planets make circular orbits

{<!--b_QuantumTimeline_2-->What are the units of Plank's constant?}
- mass x velocity x distance
- energy x time
- momentum x distance
+ all of the above
- none of the above

{<!--b_QuantumTimeline_3-->What are the units of Plank's constant?}
- mass x velocity
- energy x time
- momentum x distance x mass
+ all of the above
- none of the above

{<!--b_QuantumTimeline_4-->How would you describe Old Quantum Theory}

- complete and self-consistent
- complete but not self-consistent
- self-consistent but not complete
+ neither complete nor self-consistent

{<!--b_QuantumTimeline_5-->The first paper that introduced quantum mechanics was the study of }
+ light
- electrons
- protons
- energy

{<!--b_QuantumTimeline_6-->What are examples of energy?}
- $\frac{1}{2}mv^2$
- mgh where m is mass, g is gravity, and h is height
- heat
+ all of the above

{<!--b_QuantumTimeline_7-->What are examples of energy?}
- $\frac{1}{2}mv$
- momentum
- heat
+ all of the above

{<!--b_QuantumTimeline_8-->What was Plank's understanding of the significance of his work on blackbody radiation?}
- he was afraid to publish it for fear of losing his reputation
- he eventually convinced his dissertation committee that the theory was correct
+ the thought it was some sort of mathematical trick
- he knew it would someday win him a Nobel prize

{<!--b_QuantumTimeline_9-->What was "spooky" about Taylor's 1909 experiment with wave interference?}
- The light was so dim that the photoelectric effect couldn't occur
- The light was dim, but it didn't matter because he was blind.
+ The light was so dim that only one photon at a time was near the slits.
- The interference pattern mysteriously disappeared.

</quiz>

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{<!--b_saros_quiz1_1-->Saros (or Sar) was the Babylonian word for the Saros cycle.}
- true
+ false

{<!--b_saros_quiz1_10-->Your best friend's pet lizard is thirsty every 2 days, hungry every 3 days, and frisky every 5 days. If she is thirsty, hungry, and frisky today, whe will be thirsty, hungry, and frisky _____ days later}
- 10
+ 30
- 15
- 40

{<!--b_saros_quiz1_11-->Between any given eclipse and the one that occurs one Saros (roughly 18 years) later, there will be approximately ________ lunar and solar eclipses.}
+ 40
- 1
- 2
- 10
- 20

{<!--b_saros_quiz1_2-->While the Babylonians invented what we call the Saros cycle, they did not call it by that name.}
+ true
- false

{<!--b_saros_quiz1_3-->Suppose that you see a full moon, but no eclipse. You can be certain that a full moon will also occur exactly one Saros later.}
+ true
- false

{<!--b_saros_quiz1_4-->The name "saros" (Greek: σαρος) was first given to the eclipse cycle by}
- an unknown Babylonian
- Hipparchus (Greek astronomer: 190 BC-120 BC)
+ Edmond Halley (A friend and colleage of Newton: 1656 AD-1742 AD)
- Ptolemy (Greek astronomer who lived in Egypt: 90 AD-168 AD)

{<!--b_saros_quiz1_5-->The Saros cycle is 18 years plus either 10.321 or 11.321 days. The reason for the variable number of days has to do with}
+ leap years
- precession of the equinoxes
- precession of the Moon's orbit
- a wobble in the Moon's orbit

{<!--b_saros_quiz1_6-->If an eclipse occurs, a simlar eclipse will occur at the next Saros(roughly 18 years later). At this eclipse, the ______ will be the same. (Pick the best answer.)}
- day of the month
- time of day
+ season of the year

{<!--b_saros_quiz1_7-->What is so special about 3 Saros cycles (triple Saros)?}
+ this eclipse will occur at the same time of day
- this eclipse terminates the Saros (and a new Saros number is assigned.)
- this eclipse will occur at the same day of the month (plus or minus one day)
- this eclipse will occur with the Moon in the same position on the zodiac.

{<!--b_saros_quiz1_8-->What remains nearly the same after a single saros cycle has occured?}
+ phase of moon and earth-moon distance
- phase of moon and position of moon relative to the background stars (i.e. zodiacal location)
- phase of moon and position of sun relative to background stars (i.e. zodiacal location)

{<!--b_saros_quiz1_9-->Your pet lizard is thirsty every 3 days and hungry every 5 days. If she is both thirsty and hungry today, she will be both thirsty and hungry ____ days later}
+ 15
- 5
- 8
- 30

</quiz>

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====*_Instructions_*====
Instructions are forthcoming

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7851
*_See_* [[User:Guy vandegrift]]
</div></div>
===*_Quiz_*===
<quiz display=simple>
{<!--b_velocityAcceleration_1-->When a table cloth is quickly pulled
out from under dishes, they hardly move.  This is because}
- the cloth is more slippery when it is pulled quickly
+ the cloth is accelerating for such a brief time that there is little
motion
- objects don't begin to accelerate until after the force has been
applied

{<!--b_velocityAcceleration_10-->If you toss a coin into the air, the
acceleration while it as its highest point is}
- up
+ down
- zero

{<!--b_velocityAcceleration_11-->If you toss a coin into the air, the
velocity on the way up is}
- zero
- down
+ up

{<!--b_velocityAcceleration_12-->If you toss a coin into the air, the
velocity on the way down is}
```

+ down
- zero
- up

{<!--b_velocityAcceleration_13-->If you toss a coin into the air, the velocity while it as its highest point is}
- up
+ zero
- down

{<!--b_velocityAcceleration_14-->A car is headed due north and increasing its speed. It is also turning left because it is also traveling in a perfect circle. The acceleration vector points}
+ northwest
- south
- southwest
- north
- northeast

{<!--b_velocityAcceleration_15-->A car is headed due north and increasing its speed. It is also turning right because it is also traveling in a perfect circle. The acceleration vector points}
- southwest
- south
- northwest
- north
+ northeast

{<!--b_velocityAcceleration_16-->A car is headed due north and increasing its speed. It is also turning left because it is also traveling in a perfect circle. The velocity vector points}
- northeast
- southeast
- northeast
- northwest
+ north

{<!--b_velocityAcceleration_17-->A car is headed due north and increasing its speed. It is also turning right because it is also traveling in a perfect circle. The velocity vector points}
+ north
- northwest
- south
- northeast
- southwest

{<!--b_velocityAcceleration_18-->A car is headed due north and decreasing its speed. It is also turning left because it is also traveling in a perfect circle. The acceleration vector points}
- west
- northwest
+ southwest

- southeast
- south

{<!--b_velocityAcceleration_19-->A car is headed due north and decreasing its speed. It is also turning right because it is also traveling in a perfect circle. The acceleration vector points}
- northwest
- north
- south
- northeast
+ southeast

{<!--b_velocityAcceleration_2-->A car is traveling west and slowing down. The acceleration is}
- zero
+ to the east
- to the west

{<!--b_velocityAcceleration_3-->A car is traveling east and slowing down. The acceleration is}
- zero
- to the east
+ to the west

{<!--b_velocityAcceleration_4-->A car is traveling east and speeding up. The acceleration is}
+ to the east
- to the west
- zero

{<!--b_velocityAcceleration_5-->If you toss a coin into the air, the acceleration on the way up is}
+ down
- zero
- up

{<!--b_velocityAcceleration_6-->A car is traveling in a perfect circle at constant speed. If the car is headed north while turning west, the acceleration is}
+ west
- zero
- south
- north
- east

{<!--b_velocityAcceleration_7-->A car is traveling in a perfect circle at constant speed. If the car is headed north while turning east, the acceleration is}
+ east
- south
- north
- zero

- west

{<!--b_velocityAcceleration_8-->As the Moon circles Earth, the acceleration of the Moon is}
- away from Earth
+ towards Earth
- opposite the direction of the Moon's velocity
- in the same direction as the Moon's velocity
- zero

{<!--b_velocityAcceleration_9-->If you toss a coin into the air, the acceleration on the way down is}
- up
+ down
- zero

</quiz>

====*_Instructions_*====
Instructions are forthcoming

Transclusion from [[Quizbank/Instructions_0]]:
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[[Category:QB/Conceptual]]
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https://en.wikiversity.org/w/index.php?title=How_things_work_college_course/Waves_(Physics_Classroom)&oldid=1409885
*_See_* [[User:Guy vandegrift]]
</div></div>
===*_Quiz_*===
<quiz display=simple>
{<!--b_waves_PC_1-->[[File:Pulse interference 1.svg|120px]]These two pulses will collide and produce}
+ positive interference
- negative interference
- positive diffraction

- negative diffraction

{<!--b_waves_PC_10-->If a source of sound is moving towards you, the pitch becomes}
+ higher
- lower
- unchanged

{<!--b_waves_PC_11-->Why do rough walls give a concert hall a “fuller” sound, compared to smooth walls?}
- Rough walls make for a louder sound.
+ The difference in path lengths creates more reverberation.
- The difference in path lengths creates more echo.

{<!--b_waves_PC_12-->People don't usually perceive an echo when}
+ it arrives less than a tenth of a second after the original sound
- it arrives at exactly the same pitch
- it arrives at a higher pitch
- it arrives at a lower pitch
- it takes more than a tenth of a second after the original sound to arrive

{<!--b_waves_PC_13-->A dense rope is connected to a rope with less density (i.e. fewer kilograms per meter). If the rope is stretched and a wave is sent along high density rope,}
- the low density rope supports a wave with a higher frequency
- the low density rope supports a wave with a lower frequency
+ the low density rope supports a wave with a higher speed
- the low density rope supports a wave with a lower speed

{<!--b_waves_PC_14-->What happens to the wavelength on a wave on a stretched string if the wave passes from lightweight (low density) region of the rope to a heavy (high density) rope?}
+ the wavelength gets longer
- the wavelength stays the same
- the wavelength gets shorter

{<!--b_waves_PC_15-->When a wave is reflected off a stationary barrier, the reflected wave}
+ has lower amplitude than the incident wave
- has higher frequency than the incident wave
- both of these are true

{<!--b_waves_PC_16-->Comparing a typical church to a professional baseball stadium, the church is likely to have}
+ reverberation instead of echo
- echo instead of reverberation
- both reverberation and echo
- neither reverberation nor echo

{<!--b_waves_PC_2-->[[File:Pulse interference 2.svg|120px]]These two pulses will collide and produce}

- positive interference
+ negative interference
- positive diffraction
- negative diffraction

{<!--b_waves_PC_3-->[[File:Pulse interference 4.svg|120px]]These two pulses will collide and produce}
+ positive interference
- negative interference
- positive diffraction
- negative diffraction

{<!--b_waves_PC_4-->[[File:Octave notes graphed.svg |200px]] Two signals (dashed) add to a solid}
+ octave
- fifth
- dissonance

{<!--b_waves_PC_5-->[[File:Dissonant pitches graphed.svg |200px]] Two signals (dashed) add to a solid}
- octave
- fifth
+ dissonance

{<!--b_waves_PC_6-->[[File:Perfect fifth notes graphed.svg |200px]] Two signals (dashed) add to a solid}
- octave
+ fifth
- dissonance

{<!--b_waves_PC_7-->Why don't we hear beats when two different notes on a piano are played at the same time?}
+ The beats happen so many times per second you can't hear them.
- The note is over by the time the first beat is heard
- Reverberation usually stifles the beats
- Echo usually stifles the beats

{<!--b_waves_PC_8-->A tuning fork with a frequency of 440 Hz is played simultaneously with a tuning fork of 442 Hz. How many beats are heard in 10 seconds?}
+ 20
- 30
- 40
- 50
- 60

{<!--b_waves_PC_9-->If you start moving towards a source of sound, the pitch becomes}
+ higher
- lower
- unchanged

</quiz>

====*_Instructions_*====
Instructions are forthcoming

Transclusion from [[Quizbank/Instructions_0]]:
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[[Category:QB/Conceptual]]
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*_See_* [[User:Guy vandegrift]]
</div></div>
===*_Quiz_*===
<quiz display=simple>
{<!--b_WhyIsSkyDarkAtNight_1-->Approximately how often does a supernovae occur in a typical galaxy?}
- once a 5 months
- once every 5 years
+ once every 50 years

{<!--b_WhyIsSkyDarkAtNight_2-->If a star were rushing towards Earth at a high speed}
+ there would be a blue shift in the spectral lines
- there would be a red shift in the spectral lines
- there would be no shift in the spectral lines

{<!--b_WhyIsSkyDarkAtNight_3-->An example of a standard candle is}
- any part of the nighttime sky that is giving off light
- any part of the nighttime sky that is dark
+ a supernova in a distant galaxy
- all of these are standard candles

{<!--b_WhyIsSkyDarkAtNight_4-->If a galaxy that is 10 Mpc away is receding at 700km/s, how far would a galaxy be receding if it were 20 Mpc away?}

- 350km/s
- 700km/s
+ 1400km/s

{<!--b_WhyIsSkyDarkAtNight_5-->The "apparent" magnitude of a star is}
- How bright it would be if you were exactly one light year away
- How bright it would be if it were not receding due to Hubble expansion
+ How bright it is as viewed from Earth

{<!--b_WhyIsSkyDarkAtNight_6-->In the essay "Why the sky is dark at night", a graph of velocity versus distance is shown. What is odd about those galaxies in the Virgo cluster (circled in the graph)?}
- they all have nearly the same speed
+ they have a wide variety of speeds
- they are not receding away from us
- the cluster is close to us

{<!--b_WhyIsSkyDarkAtNight_7-->Why was it important to observe supernovae in galaxies that are close to us?}
+ we have other ways of knowing the distances to the nearby galaxies; this gives us the opportunity to study supernovae of known distance and ascertain their absolute magnitude.
- they have less of a red-shift, and interstellar gas absorbs red light
- it is easier to measure the doppler shift, and that is not always easy to measure.
- because supernovea are impossible to see in distant galaxies

{<!--b_WhyIsSkyDarkAtNight_8-->What if clouds of dust blocked the light from distant stars? Could that allow for an infinite and static universe?}
+ No, the clouds would get hot
- No, if there were clouds, we wouldn't see the distant galaxies
- No, there are clouds, but they remain too cold to resolve the paradox
- Yes, that is an actively pursued hypothesis

</quiz>

====*_Instructions_*====
Instructions are forthcoming

Transclusion from [[Quizbank/Instructions_0]]:
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[[Category:QB/Conceptual]]
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*_See_* [[User:Guy vandegrift]]
</div></div>
===*_Quiz_*===
<quiz display=simple>
{<!--c07energy_lineIntegral_1-->Integrate the line integral of, $\vec F = 9xy\hat x + 9.5y^3\hat y$, along the y axis from y = 5 to y = 14}
- a) 7.33E+04
- b) 7.84E+04
- c) 8.39E+04
+ d) 8.98E+04
- e) 9.60E+04

{<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^7\theta^9\hat r + r^7\theta^ 5\hat \theta$, along the first quadrant of a circle of radius 8}
- a) 3.43E+07
- b) 3.67E+07
- c) 3.93E+07
+ d) 4.20E+07
- e) 4.49E+07

{<!--c07energy_lineIntegral_3-->Integrate the line integral of $\vec F = 4xy\hat x + 7.7x\hat y$ from the origin to the point at x = 2.5 and y = 3.3}
+ a) 5.93E+01
- b) 6.34E+01
- c) 6.78E+01
- d) 7.26E+01
- e) 7.77E+01

{<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^2y^2\hat x + x^2y^3\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule}
- a) 4.45E-01
- b) 4.76E-01
- c) 5.10E-01
- d) 5.45E-01

+ e) 5.83E-01

</quiz>

<div class="toccolours mw-collapsible mw-collapsed"
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Other renditions
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====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of,
$\vec F = 9.4xy\hat x + 7.5y^3\hat y$, along the y axis
from y = 4 to y = 17
- a) 1.19E+05
- b) 1.27E+05
- c) 1.36E+05
- d) 1.46E+05
+ e) 1.56E+05
=====*_Rendition_* 1-3=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of,
$\vec F = 8.2xy\hat x + 7.4y^3\hat y$, along the y axis
from y = 5 to y = 12
- a) 3.25E+04
- b) 3.48E+04
+ c) 3.72E+04
- d) 3.98E+04
- e) 4.26E+04
=====*_Rendition_* 1-4=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of,
$\vec F = 7.4xy\hat x + 9.3y^3\hat y$, along the y axis
from y = 6 to y = 16
+ a) 1.49E+05
- b) 1.60E+05
- c) 1.71E+05
- d) 1.83E+05
- e) 1.96E+05
=====*_Rendition_* 1-5=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of,
$\vec F = 5.6xy\hat x + 7.9y^3\hat y$, along the y axis
from y = 5 to y = 15
+ a) 9.88E+04
- b) 1.06E+05
- c) 1.13E+05
- d) 1.21E+05
- e) 1.29E+05
=====*_Rendition_* 1-6=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of,
$\vec F = 7.9xy\hat x + 8.1y^3\hat y$, along the y axis
from y = 5 to y = 12
- a) 3.32E+04

- b) 3.56E+04
- c) 3.81E+04
+ d) 4.07E+04
- e) 4.36E+04
=====*_Rendition_* 1-7=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of,
$\vec F = 8.9xy\hat x + 6.5y^3\hat y$, along the y axis
from y = 5 to y = 13
+ a) 4.54E+04
- b) 4.86E+04
- c) 5.20E+04
- d) 5.56E+04
- e) 5.95E+04
=====*_Rendition_* 1-8=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of,
$\vec F = 9xy\hat x + 5.4y^3\hat y$, along the y axis
from y = 3 to y = 19
- a) 1.54E+05
- b) 1.64E+05
+ c) 1.76E+05
- d) 1.88E+05
- e) 2.01E+05
=====*_Rendition_* 1-9=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of,
$\vec F = 7.9xy\hat x + 9.7y^3\hat y$, along the y axis
from y = 3 to y = 18
- a) 1.94E+05
- b) 2.08E+05
- c) 2.22E+05
- d) 2.38E+05
+ e) 2.54E+05
=====*_Rendition_* 1-10=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of,
$\vec F = 6.1xy\hat x + 5.9y^3\hat y$, along the y axis
from y = 6 to y = 12
+ a) 2.87E+04
- b) 3.07E+04
- c) 3.28E+04
- d) 3.51E+04
- e) 3.76E+04
=====*_Rendition_* 1-11=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of,
$\vec F = 6.8xy\hat x + 7y^3\hat y$, along the y axis
from y = 3 to y = 17
- a) 1.28E+05
- b) 1.36E+05
+ c) 1.46E+05
- d) 1.56E+05
- e) 1.67E+05
=====*_Rendition_* 1-12=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of,
$\vec F = 9.9xy\hat x + 6.1y^3\hat y$, along the y axis

from y = 7 to y = 16
- a) 7.86E+04
- b) 8.41E+04
- c) 9.00E+04
+ d) 9.63E+04
- e) 1.03E+05
=====*_Rendition_* 1-13=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of,
$\vec F = 6.9xy\hat x + 7.4y^3\hat y$, along the y axis
from y = 3 to y = 18
- a) 1.69E+05
- b) 1.81E+05
+ c) 1.94E+05
- d) 2.08E+05
- e) 2.22E+05
=====*_Rendition_* 1-14=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of,
$\vec F = 8.3xy\hat x + 8.6y^3\hat y$, along the y axis
from y = 4 to y = 16
- a) 1.31E+05
+ b) 1.40E+05
- c) 1.50E+05
- d) 1.61E+05
- e) 1.72E+05
=====*_Rendition_* 1-15=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of,
$\vec F = 8.9xy\hat x + 5.4y^3\hat y$, along the y axis
from y = 7 to y = 17
+ a) 1.10E+05
- b) 1.17E+05
- c) 1.25E+05
- d) 1.34E+05
- e) 1.44E+05
=====*_Rendition_* 1-16=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of,
$\vec F = 9.4xy\hat x + 9.3y^3\hat y$, along the y axis
from y = 6 to y = 18
- a) 2.11E+05
- b) 2.25E+05
+ c) 2.41E+05
- d) 2.58E+05
- e) 2.76E+05
=====*_Rendition_* 1-17=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of,
$\vec F = 6.9xy\hat x + 5.5y^3\hat y$, along the y axis
from y = 7 to y = 18
+ a) 1.41E+05
- b) 1.51E+05
- c) 1.61E+05
- d) 1.73E+05
- e) 1.85E+05
=====*_Rendition_* 1-18=====

<!--c07energy_lineIntegral_1-->Integrate the line integral of, $\vec F = 8.4xy\hat x + 8.3y^3\hat y$, along the y axis from y = 5 to y = 15
- a) 9.70E+04
+ b) 1.04E+05
- c) 1.11E+05
- d) 1.19E+05
- e) 1.27E+05
=====*_Rendition_* 1-19=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of, $\vec F = 7.3xy\hat x + 5.2y^3\hat y$, along the y axis from y = 5 to y = 11
+ a) 1.82E+04
- b) 1.95E+04
- c) 2.09E+04
- d) 2.23E+04
- e) 2.39E+04
=====*_Rendition_* 1-20=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of, $\vec F = 7.8xy\hat x + 8y^3\hat y$, along the y axis from y = 6 to y = 13
- a) 4.45E+04
- b) 4.76E+04
- c) 5.10E+04
+ d) 5.45E+04
- e) 5.83E+04
=====*_Rendition_* 1-21=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of, $\vec F = 8.5xy\hat x + 7.5y^3\hat y$, along the y axis from y = 7 to y = 18
- a) 1.68E+05
- b) 1.80E+05
+ c) 1.92E+05
- d) 2.06E+05
- e) 2.20E+05
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^6\theta^8\hat r + r^7\theta^ 6\hat \theta$, along the first quadrant of a circle of radius 5
- a) 1.15E+06
- b) 1.23E+06
+ c) 1.32E+06
- d) 1.41E+06
- e) 1.51E+06
=====*_Rendition_* 2-3=====
<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^6\theta^6\hat r + r^8\theta^ 7\hat \theta$, along the first quadrant of a circle of radius 3
- a) 6.96E+04
- b) 7.44E+04
- c) 7.97E+04

- d) 8.52E+04
+ e) 9.12E+04
=====*_Rendition_* 2-4=====
<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^4\theta^6\hat r + r^7\theta^ 8\hat \theta$, along the first quadrant of a circle of radius 6
+ a) 1.09E+07
- b) 1.16E+07
- c) 1.24E+07
- d) 1.33E+07
- e) 1.42E+07
=====*_Rendition_* 2-5=====
<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^8\theta^9\hat r + r^8\theta^ 5\hat \theta$, along the first quadrant of a circle of radius 6
- a) 2.06E+07
- b) 2.20E+07
- c) 2.36E+07
+ d) 2.52E+07
- e) 2.70E+07
=====*_Rendition_* 2-6=====
<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^7\theta^8\hat r + r^9\theta^ 4\hat \theta$, along the first quadrant of a circle of radius 8
- a) 1.68E+09
- b) 1.79E+09
- c) 1.92E+09
+ d) 2.05E+09
- e) 2.20E+09
=====*_Rendition_* 2-7=====
<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^9\theta^3\hat r + r^8\theta^ 7\hat \theta$, along the first quadrant of a circle of radius 4
- a) 1.14E+06
+ b) 1.21E+06
- c) 1.30E+06
- d) 1.39E+06
- e) 1.49E+06
=====*_Rendition_* 2-8=====
<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^5\theta^7\hat r + r^4\theta^ 4\hat \theta$, along the first quadrant of a circle of radius 9
- a) 1.06E+05
+ b) 1.13E+05
- c) 1.21E+05
- d) 1.29E+05
- e) 1.38E+05
=====*_Rendition_* 2-9=====
<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^3\theta^4\hat r + r^6\theta^ 5\hat \theta$, along the first quadrant of a circle of radius 9
- a) 1.12E+07

+ b) 1.20E+07
- c) 1.28E+07
- d) 1.37E+07
- e) 1.47E+07
=====*_Rendition_* 2-10=====
<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^4\theta^3\hat r + r^6\theta^ 7\hat \theta$, along the first quadrant of a circle of radius 7
- a) 3.33E+06
- b) 3.57E+06
+ c) 3.82E+06
- d) 4.08E+06
- e) 4.37E+06
=====*_Rendition_* 2-11=====
<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^3\theta^7\hat r + r^7\theta^ 4\hat \theta$, along the first quadrant of a circle of radius 4
- a) 1.02E+05
- b) 1.09E+05
- c) 1.17E+05
+ d) 1.25E+05
- e) 1.34E+05
=====*_Rendition_* 2-12=====
<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^5\theta^4\hat r + r^5\theta^ 8\hat \theta$, along the first quadrant of a circle of radius 5
- a) 8.25E+04
- b) 8.83E+04
- c) 9.45E+04
+ d) 1.01E+05
- e) 1.08E+05
=====*_Rendition_* 2-13=====
<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^6\theta^8\hat r + r^8\theta^ 9\hat \theta$, along the first quadrant of a circle of radius 3
- a) 1.37E+05
- b) 1.47E+05
- c) 1.57E+05
- d) 1.68E+05
+ e) 1.80E+05
=====*_Rendition_* 2-14=====
<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^8\theta^5\hat r + r^4\theta^ 6\hat \theta$, along the first quadrant of a circle of radius 4
- a) 2.63E+03
- b) 2.82E+03
- c) 3.01E+03
- d) 3.23E+03
+ e) 3.45E+03
=====*_Rendition_* 2-15=====
<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^5\theta^3\hat r + r^6\theta^ 6\hat \theta$, along the first

quadrant of a circle of radius 3
- a) 6.44E+03
- b) 6.89E+03
+ c) 7.37E+03
- d) 7.89E+03
- e) 8.44E+03
=====*_Rendition_* 2-16=====
<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^7\theta^4\hat r + r^5\theta^ 6\hat \theta$, along the first quadrant of a circle of radius 7
- a) 3.03E+05
- b) 3.24E+05
- c) 3.46E+05
- d) 3.71E+05
+ e) 3.97E+05
=====*_Rendition_* 2-17=====
<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^9\theta^6\hat r + r^4\theta^ 4\hat \theta$, along the first quadrant of a circle of radius 7
- a) 2.45E+04
- b) 2.62E+04
- c) 2.81E+04
- d) 3.00E+04
+ e) 3.21E+04
=====*_Rendition_* 2-18=====
<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^9\theta^4\hat r + r^7\theta^ 8\hat \theta$, along the first quadrant of a circle of radius 8
- a) 8.86E+07
- b) 9.48E+07
- c) 1.01E+08
+ d) 1.09E+08
- e) 1.16E+08
=====*_Rendition_* 2-19=====
<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^9\theta^5\hat r + r^8\theta^ 7\hat \theta$, along the first quadrant of a circle of radius 4
- a) 1.14E+06
+ b) 1.21E+06
- c) 1.30E+06
- d) 1.39E+06
- e) 1.49E+06
=====*_Rendition_* 2-20=====
<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^7\theta^3\hat r + r^4\theta^ 7\hat \theta$, along the first quadrant of a circle of radius 3
- a) 1.05E+03
+ b) 1.13E+03
- c) 1.20E+03
- d) 1.29E+03
- e) 1.38E+03
=====*_Rendition_* 2-21=====

<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^6\theta^5\hat r + r^9\theta^ 7\hat \theta$, along the first quadrant of a circle of radius 3
- a) 2.09E+05
- b) 2.23E+05
- c) 2.39E+05
- d) 2.56E+05
+ e) 2.74E+05
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of $\vec F = 3xy\hat x + 6.9x\hat y$ from the origin to the point at x = 2.3 and y = 3.8
- a) 4.70E+01
+ b) 5.03E+01
- c) 5.38E+01
- d) 5.75E+01
- e) 6.16E+01
=====*_Rendition_* 3-3=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of $\vec F = 2.9xy\hat x + 7.3x\hat y$ from the origin to the point at x = 2.3 and y = 3.8
- a) 4.48E+01
- b) 4.80E+01
+ c) 5.13E+01
- d) 5.49E+01
- e) 5.88E+01
=====*_Rendition_* 3-4=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of $\vec F = 1.3xy\hat x + 6.4x\hat y$ from the origin to the point at x = 2.2 and y = 3.6
- a) 3.07E+01
+ b) 3.29E+01
- c) 3.52E+01
- d) 3.77E+01
- e) 4.03E+01
=====*_Rendition_* 3-5=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of $\vec F = 2.6xy\hat x + 8.6x\hat y$ from the origin to the point at x = 2.9 and y = 3.7
+ a) 7.31E+01
- b) 7.82E+01
- c) 8.37E+01
- d) 8.96E+01
- e) 9.58E+01
=====*_Rendition_* 3-6=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of $\vec F = 4xy\hat x + 9.8x\hat y$ from the origin to the point at x = 2.6 and y = 3.9
- a) 7.93E+01
+ b) 8.48E+01
- c) 9.08E+01

- d) 9.71E+01
- e) 1.04E+02
=====*_Rendition_* 3-7=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of $\vec F = 3.8xy\hat x + 5.1x\hat y$ from the origin to the point at x = 2.5 and y = 3.2
- a) 4.27E+01
+ b) 4.57E+01
- c) 4.89E+01
- d) 5.24E+01
- e) 5.60E+01
=====*_Rendition_* 3-8=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of $\vec F = 1.6xy\hat x + 8x\hat y$ from the origin to the point at x = 2.6 and y = 3.4
+ a) 4.76E+01
- b) 5.10E+01
- c) 5.45E+01
- d) 5.83E+01
- e) 6.24E+01
=====*_Rendition_* 3-9=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of $\vec F = 1.2xy\hat x + 5.3x\hat y$ from the origin to the point at x = 2.1 and y = 3.1
- a) 1.73E+01
- b) 1.85E+01
- c) 1.98E+01
- d) 2.12E+01
+ e) 2.27E+01
=====*_Rendition_* 3-10=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of $\vec F = 3.3xy\hat x + 8.7x\hat y$ from the origin to the point at x = 2.1 and y = 3.2
- a) 4.18E+01
+ b) 4.48E+01
- c) 4.79E+01
- d) 5.12E+01
- e) 5.48E+01
=====*_Rendition_* 3-11=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of $\vec F = 3.8xy\hat x + 9.8x\hat y$ from the origin to the point at x = 2.9 and y = 3.4
- a) 7.90E+01
+ b) 8.45E+01
- c) 9.05E+01
- d) 9.68E+01
- e) 1.04E+02
=====*_Rendition_* 3-12=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of $\vec F = 1.6xy\hat x + 8.7x\hat y$ from the origin to the point at x = 2.7 and y = 3.2
- a) 4.37E+01

- b) 4.68E+01
+ c) 5.00E+01
- d) 5.35E+01
- e) 5.73E+01
=====*_Rendition_* 3-13=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of $\vec F = 1.2xy\hat x + 8.3x\hat y$ from the origin to the point at x = 2.8 and y = 3.8
- a) 4.58E+01
- b) 4.90E+01
- c) 5.24E+01
+ d) 5.61E+01
- e) 6.00E+01
=====*_Rendition_* 3-14=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of $\vec F = 2.4xy\hat x + 6.8x\hat y$ from the origin to the point at x = 2.1 and y = 3.8
+ a) 4.05E+01
- b) 4.34E+01
- c) 4.64E+01
- d) 4.97E+01
- e) 5.31E+01
=====*_Rendition_* 3-15=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of $\vec F = 1.1xy\hat x + 6.4x\hat y$ from the origin to the point at x = 2.9 and y = 3.7
- a) 4.28E+01
+ b) 4.57E+01
- c) 4.89E+01
- d) 5.24E+01
- e) 5.60E+01
=====*_Rendition_* 3-16=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of $\vec F = 3.7xy\hat x + 8.4x\hat y$ from the origin to the point at x = 2.6 and y = 3.4
- a) 5.00E+01
- b) 5.34E+01
- c) 5.72E+01
- d) 6.12E+01
+ e) 6.55E+01
=====*_Rendition_* 3-17=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of $\vec F = 3.6xy\hat x + 5.1x\hat y$ from the origin to the point at x = 2.2 and y = 3.5
- a) 3.49E+01
- b) 3.73E+01
+ c) 4.00E+01
- d) 4.28E+01
- e) 4.58E+01
=====*_Rendition_* 3-18=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of $\vec F = 2xy\hat x + 7.2x\hat y$ from the origin to the

point at x = 2.4 and y = 3.2
- a) 3.05E+01
- b) 3.26E+01
- c) 3.49E+01
- d) 3.73E+01
+ e) 3.99E+01

=====*_Rendition_* 3-19=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of $\vec F = 2.2xy\hat x + 9.2x\hat y$ from the origin to the point at x = 2.1 and y = 3.4
+ a) 4.38E+01
- b) 4.69E+01
- c) 5.02E+01
- d) 5.37E+01
- e) 5.75E+01

=====*_Rendition_* 3-20=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of $\vec F = 2xy\hat x + 9.7x\hat y$ from the origin to the point at x = 2.8 and y = 3.2
- a) 5.26E+01
- b) 5.62E+01
+ c) 6.02E+01
- d) 6.44E+01
- e) 6.89E+01

=====*_Rendition_* 3-21=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of $\vec F = 2xy\hat x + 9.5x\hat y$ from the origin to the point at x = 2.1 and y = 3.8
+ a) 4.91E+01
- b) 5.25E+01
- c) 5.62E+01
- d) 6.01E+01
- e) 6.43E+01

====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^2y^3\hat x + x^2y^4\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
- a) 4.66E-01
- b) 4.98E-01
+ c) 5.33E-01
- d) 5.71E-01
- e) 6.11E-01

=====*_Rendition_* 4-3=====
<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^3y^5\hat x + x^2y^3\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
- a) 3.81E-01
- b) 4.08E-01
- c) 4.37E-01

- d) 4.67E-01
+ e) 5.00E-01
=====*_Rendition_* 4-4=====
<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^5y^2\hat x + x^5y^3\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
- a) 3.64E-01
- b) 3.89E-01
+ c) 4.17E-01
- d) 4.46E-01
- e) 4.77E-01
=====*_Rendition_* 4-5=====
<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^4y^4\hat x + x^5y^4\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
- a) 3.27E-01
- b) 3.49E-01
- c) 3.74E-01
+ d) 4.00E-01
- e) 4.28E-01
=====*_Rendition_* 4-6=====
<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^3y^5\hat x + x^5y^2\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
- a) 4.76E-01
- b) 5.10E-01
- c) 5.45E-01
+ d) 5.83E-01
- e) 6.24E-01
=====*_Rendition_* 4-7=====
<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^5y^4\hat x + x^5y^4\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
+ a) 3.67E-01
- b) 3.92E-01
- c) 4.20E-01
- d) 4.49E-01
- e) 4.81E-01
=====*_Rendition_* 4-8=====
<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^4y^5\hat x + x^3y^3\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
- a) 4.21E-01
+ b) 4.50E-01
- c) 4.82E-01
- d) 5.15E-01
- e) 5.51E-01

=====*_Rendition_* 4-9=====
<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^5y^3\hat x + x^5y^4\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
- a) 3.43E-01
+ b) 3.67E-01
- c) 3.92E-01
- d) 4.20E-01
- e) 4.49E-01
=====*_Rendition_* 4-10=====
<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^2y^2\hat x + x^4y^3\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
- a) 5.10E-01
- b) 5.45E-01
+ c) 5.83E-01
- d) 6.24E-01
- e) 6.68E-01
=====*_Rendition_* 4-11=====
<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^2y^5\hat x + x^2y^4\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
+ a) 5.33E-01
- b) 5.71E-01
- c) 6.11E-01
- d) 6.53E-01
- e) 6.99E-01
=====*_Rendition_* 4-12=====
<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^3y^4\hat x + x^4y^4\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
- a) 3.43E-01
- b) 3.67E-01
- c) 3.93E-01
- d) 4.21E-01
+ e) 4.50E-01
=====*_Rendition_* 4-13=====
<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^2y^4\hat x + x^4y^5\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
- a) 4.08E-01
- b) 4.37E-01
- c) 4.67E-01
+ d) 5.00E-01
- e) 5.35E-01
=====*_Rendition_* 4-14=====
<!--c07energy_lineIntegral_4-->Integrate the function, <math>\vec F =

-x^5y^2\hat x + x^2y^4\hat y</math>, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
- a) 3.43E-01
+ b) 3.67E-01
- c) 3.92E-01
- d) 4.20E-01
- e) 4.49E-01
=====*_Rendition_* 4-15=====
<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^4y^2\hat x + x^4y^5\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
+ a) 3.67E-01
- b) 3.92E-01
- c) 4.20E-01
- d) 4.49E-01
- e) 4.81E-01
=====*_Rendition_* 4-16=====
<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^3y^2\hat x + x^2y^4\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
- a) 3.43E-01
- b) 3.67E-01
- c) 3.93E-01
- d) 4.21E-01
+ e) 4.50E-01
=====*_Rendition_* 4-17=====
<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^4y^2\hat x + x^3y^4\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
- a) 3.74E-01
+ b) 4.00E-01
- c) 4.28E-01
- d) 4.58E-01
- e) 4.90E-01
=====*_Rendition_* 4-18=====
<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^2y^4\hat x + x^4y^3\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
- a) 5.10E-01
- b) 5.45E-01
+ c) 5.83E-01
- d) 6.24E-01
- e) 6.68E-01
=====*_Rendition_* 4-19=====
<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^4y^2\hat x + x^2y^3\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule

direction is out of the paper by the right hand rule
+ a) 4.50E-01
- b) 4.82E-01
- c) 5.15E-01
- d) 5.51E-01
- e) 5.90E-01
=====*_Rendition_* 4-20=====
<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^5y^5\hat x + x^5y^5\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
- a) 3.12E-01
+ b) 3.33E-01
- c) 3.57E-01
- d) 3.82E-01
- e) 4.08E-01
=====*_Rendition_* 4-21=====
<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^3y^2\hat x + x^5y^3\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
+ a) 5.00E-01
- b) 5.35E-01
- c) 5.72E-01
- d) 6.13E-01
- e) 6.55E-01
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====*_Instructions_*====
Instructions are forthcoming

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*_See_* [[User:Guy vandegrift]]
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===*_Quiz_*===
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{<!--c16OscillationsWaves_calculus_1-->If a particle's position is given by ''x(t) = 7sin(3t-π/6)'', what is the velocity?}
- ''v(t) = 21sin(3t-π/6)''
- ''v(t) = 7cos(3t-π/6)''
+ ''v(t) = 21cos(3t-π/6)''
- ''v(t) = -21sin(3t-π/6)''
- ''v(t) = -21cos(3t-π/6)''

{<!--c16OscillationsWaves_calculus_2-->If a particle's position is given by ''x(t) = 7sin(3t-π/6)'', what is the acceleration?}
+ ''a(t) = -63sin(3t-π/6)''
- ''a(t) = +63sin(3t-π/6)''
- ''a(t) = -21cos(3t-π/6)''
- ''a(t) = -21sin(3t-π/6)''
- ''a(t) = +21sin(3t-π/6)''

{<!--c16OscillationsWaves_calculus_3-->If a particle's position is given by ''x(t) = 5cos(4t-π/6)'', what is the velocity?}
- ''v(t) = 5sin(4t-π/6)''
+ ''v(t) = -20sin(4t-π/6)''
- ''v(t) = 20sin(4t-π/6)''
- ''v(t) = -20cos(4t-π/6)''
- ''v(t) = 20cos(4t-π/6)''

{<!--c16OscillationsWaves_calculus_4-->If a particle's position is given by ''x(t) = 5sin(4t-π/6)'', what is the velocity?}
- ''v(t) = 20sin(4t-π/6)''
+ ''v(t) = 20cos(4t-π/6)''
- ''v(t) = -20cos(4t-π/6)''
- ''v(t) = 5cos(4t-π/6)''
- ''v(t) = -20sin(4t-π/6)''

{<!--c16OscillationsWaves_calculus_5-->If a particle's position is given by ''x(t) = 7cos(3t-π/6)'', what is the velocity?}
- ''v(t) = 7sin(3t-π/6)''
- ''v(t) = -21cos(3t-π/6)''
+ ''v(t) = -21sin(3t-π/6)''
- ''v(t) = 21sin(3t-π/6)''
- ''v(t) = 21cos(3t-π/6)''

{<!--c16OscillationsWaves_calculus_6-->If a particle's position is given by ''x(t) = 5sin(4t-π/6)'', what is the acceleration?}
+ ''a(t) = -80sin(4t-π/6)''
- ''a(t) = +80sin(4t-π/6)''
- ''a(t) = -100cos(4t-π/6)''
- ''a(t) = -100sin(4t-π/6)''
- ''a(t) = +20sin(4t-π/6)''

</quiz>

====*_Instructions_*====
Instructions are forthcoming

Transclusion from [[Quizbank/Instructions_0]]:
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*_See_* [[User:Guy vandegrift]]
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===*_Quiz_*===
<quiz display=simple>
{<!--c18ElectricChargeField_lineCharges_1-->A line of charge density λ situated on the y axis extends from y = -3 to y = 2. What is the y component of the electric field at the point (3, 7)?
$Answer$ (assuming $\mathcal B > \mathcal A$) $is: \frac{1}{4\pi\epsilon_0}\int_\mathcal A^\mathcal B\frac{ \mathcal C\;\lambda ds}{\left[\mathcal D^2+\mathcal E^2\right]^\mathcal F\;}$, where $\mathcal B=$}
- −7
- −3
- −3
- 3
+ 2

{<!--c18ElectricChargeField_lineCharges_10-->A line of charge density λ situated on the y axis extends from y = 4 to y = 6. What is the y component of the electric field at the point (5, 1)?
$Answer$ (assuming $\mathcal B > \mathcal A$) $is: \frac{1}{4\pi\epsilon_0}\int_\mathcal A^\mathcal B\frac{ \mathcal C\;\lambda ds}{\left[\mathcal D^2+\mathcal E^2\right]^\mathcal F\;}$, where $\mathcal C=$:}
- a) 5

- b) s−4
- c) 5−s
+ d) 1−s
- e) s−1

{<!--c18ElectricChargeField_lineCharges_11-->A line of charge density λ situated on the y axis extends from y = 4 to y = 6. What is the y component of the electric field at the point (5, 1)?
$Answer$ (assuming $\mathcal B > \mathcal A$) $is: \frac{1}{4\pi\epsilon_0}\int_\mathcal A^\mathcal B\frac{ \mathcal C\;\lambda ds}{\left[\mathcal D^2+\mathcal E^2\right]^\mathcal F\;}$, where $\mathcal F=$:}
- 1/2
- 2/3
- 2
+ 3/2
- 3

{<!--c18ElectricChargeField_lineCharges_12-->A line of charge density λ situated on the x axis extends from x = 3 to x = 7. What is the x component of the electric field at the point (7, 8)?
$Answer$ (assuming $\mathcal B > \mathcal A$) $is: \frac{1}{4\pi\epsilon_0}\int_\mathcal A^\mathcal B\frac{ \mathcal C\;\lambda ds}{\left[\mathcal D^2+\mathcal E^2\right]^\mathcal F\;}$, where $\mathcal C=$:}
- s−3
- 3−s
- 8
- s−7
+ 7−s

{<!--c18ElectricChargeField_lineCharges_13-->A line of charge density λ situated on the x axis extends from x = 3 to x = 7. What is the x component of the electric field at the point (7, 8)?
$Answer$ (assuming $\mathcal B > \mathcal A$) $is: \frac{1}{4\pi\epsilon_0}\int_\mathcal A^\mathcal B\frac{ \mathcal C\;\lambda ds}{\left[\mathcal D^2+\mathcal E^2\right]^\mathcal F\;}$, where $\mathcal D^2 + \mathcal E^2=$:}
- 7² + (8−s)²
- 7² + 8²
+ (7-s)² + 8²
- 7² + (3−s)²
- 3² + 8²

{<!--c18ElectricChargeField_lineCharges_2-->A line of charge density λ situated on the y axis extends from y = -3 to y = 2. What is the y component of the electric field at the point (3, 7)?
$Answer$ (assuming $\mathcal B > \mathcal A$) $is: \frac{1}{4\pi\epsilon_0}\int_\mathcal A^\mathcal B\frac{ \mathcal C\;\lambda ds}{\left[\mathcal D^2+\mathcal E^2\right]^\mathcal F\;}$, where $\mathcal C=$}

- 3−s
- 3
- s−7
+ 7−s
- s−3

{<!--c18ElectricChargeField_lineCharges_3-->A line of charge density
λ situated on the y axis extends from y = -3 to y = 2. What is
the y component of the electric field at the point (3,
7)?
$Answer$ (assuming <math>\mathcal B > \mathcal
A</math>) <math> is: \frac{1}{4\pi\epsilon_0}\int_\mathcal A^\mathcal
B\frac{ \mathcal C\;\lambda ds}{\left[\mathcal D^2+\mathcal
E^2\right]^\mathcal F\;}</math>, where$\mathcal F=$}
- 2
- 3
+ 3/2
- 1/2

{<!--c18ElectricChargeField_lineCharges_4-->A line of charge density
λ situated on the y axis extends from y = 2 to y = 7. What is
the y component of the electric field at the point (2, 9)?
$Answer$ (assuming $\mathcal B > \mathcal A$)
<math> is: \frac{1}{4\pi\epsilon_0}\int_\mathcal A^\mathcal B\frac{
\mathcal C\;\lambda ds}{\left[\mathcal D^2+\mathcal
E^2\right]^\mathcal F\;}</math>, where $\mathcal C=$:}
- 2
- s − 2
- 2 − s
- s − 9
+ 9 − s

{<!--c18ElectricChargeField_lineCharges_5-->A line of charge density
λ situated on the y axis extends from y = 2 to y = 7. What is
the y component of the electric field at the point (2, 9)?
$Answer$ (assuming $\mathcal B > \mathcal A$)
<math> is: \frac{1}{4\pi\epsilon_0}\int_\mathcal A^\mathcal B\frac{
\mathcal C\;\lambda ds}{\left[\mathcal D^2+\mathcal
E^2\right]^\mathcal F\;}</math>, where <math>\mathcal D^2 + \mathcal
E^2=</math>:}
- 9² + (7-s)²
- 9² + (2-s)²
- 7² + (2-s)²
- 2² + (7-s)²
+ 2² + (9-s)²

{<!--c18ElectricChargeField_lineCharges_6-->A line of charge density
λ situated on the x axis extends from x = 4 to x = 8. What is
the y component of the electric field at the point (8, 4)?
$Answer$ (assuming $\mathcal B > \mathcal A$)
<math> is: \frac{1}{4\pi\epsilon_0}\int_\mathcal A^\mathcal B\frac{
\mathcal C\;\lambda ds}{\left[\mathcal D^2+\mathcal
E^2\right]^\mathcal F\;}</math>, where $\mathcal A=$:}

- 1/2
+ 4
- 2
- 8

{<!--c18ElectricChargeField_lineCharges_7-->A line of charge density λ situated on the x axis extends from x = 4 to x = 8. What is the y component of the electric field at the point (8, 4)?
$Answer$ (assuming $\mathcal B > \mathcal A$) $is: \frac{1}{4\pi\epsilon_0}\int_\mathcal A^\mathcal B\frac{ \mathcal C\;\lambda ds}{\left[\mathcal D^2+\mathcal E^2\right]^\mathcal F\;}$, where $\mathcal C=$:}
- s−8
- 8−s
- s−4
- 4−s
+ 4

{<!--c18ElectricChargeField_lineCharges_8-->A line of charge density λ situated on the x axis extends from x = 4 to x = 8. What is the x component of the electric field at the point (8, 4)?
$Answer$ (assuming $\mathcal B > \mathcal A$) $is: \frac{1}{4\pi\epsilon_0}\int_\mathcal A^\mathcal B\frac{ \mathcal C\;\lambda ds}{\left[\mathcal D^2+\mathcal E^2\right]^\mathcal F\;}$, where $\mathcal C=$:}
- s−8
+ 8−s
- s−4
- 4−s
- 4

{<!--c18ElectricChargeField_lineCharges_9-->A line of charge density λ situated on the y axis extends from y = 4 to y = 6. What is the x component of the electric field at the point (5, 1)?
$Answer$ (assuming $\mathcal B > \mathcal A$) $is: \frac{1}{4\pi\epsilon_0}\int_\mathcal A^\mathcal B\frac{ \mathcal C\;\lambda ds}{\left[\mathcal D^2+\mathcal E^2\right]^\mathcal F\;}$, where $\mathcal C=$:}
+ 5
- s−4
- 5−s
- 1−s
- s−1

</quiz>

====*_Instructions_*====
Instructions are forthcoming

Transclusion from [[Quizbank/Instructions_0]]:
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*_See_* [[User:Guy vandegrift]]
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===*_Quiz_*===
<quiz display=simple>
{<!--c19ElectricPotentialField_GaussLaw_1-->A cylinder of radius, R, and height H has a uniform charge density of ρ. The height is much less than the radius: {{nowrap|H << R}}. The electric field at the center vanishes. What formula describes the electric field at a distance, z, on axis from the center if z > H/2?}
- $\varepsilon_0 E=   \rho z$
-b) $\varepsilon_0 E=   H\rho$
-c) $\varepsilon_0 E=   H\rho z$
-d) none of these are correct
+e) $\varepsilon_0 E = H\rho /2$

{<!--c19ElectricPotentialField_GaussLaw_2-->A cylinder of radius, R, and height H has a uniform charge density of ρ. The height is much less than the radius: {{nowrap|H << R}}. The electric field at the center vanishes. What formula describes the electric field at a distance, z, on axis from the center if z < H/2?}
- $\varepsilon_0 E = H\rho /2$
-b) none of these are correct
+c) $\varepsilon_0 E=   \rho z$
-d) $\varepsilon_0 E=   H\rho$
-e) $\varepsilon_0 E=   H\rho z$

{<!--c19ElectricPotentialField_GaussLaw_3-->A sphere has a uniform charge density of ρ, and a radius or R. What formula describes the electric field at a distance r > R?}
- none of these are correct
-b) $r^2\varepsilon_0 E=R^3\rho /2$
-c) $r^2\varepsilon_0 E= r^3\rho/3$
-d) $r^2\varepsilon_0 E=r^3\rho /2$

```
+e) <math> r^2\varepsilon_0 E=R^3\rho /3</math>

{<!--c19ElectricPotentialField_GaussLaw_4-->A sphere has a uniform
charge density of <math>\rho</math>, and a radius equal to R.  What
formula describes the electric field at a distance r < R?}
- <math> r^2\varepsilon_0 E=r^3\rho /2</math>
-b) <math> r^2\varepsilon_0 E=R^3\rho /3</math>
-c) none of these are correct
+d) <math> r^2\varepsilon_0 E=r^3\rho /3</math>
-e) <math> r^2\varepsilon_0 E=R^3\rho /2</math>

{<!--c19ElectricPotentialField_GaussLaw_5-->A cylinder of radius, R,
and height H has a uniform charge density of <math>\rho</math>.  The
height is much greater than the radius: {{nowrap|H >> R}}. The
electric field at the center vanishes.  What formula describes the
electric field at a distance, r, radially from the center if
r < R? }
- <math>2R\varepsilon_0 E=   r^2\rho </math>
-b) <math>2r\varepsilon_0 E =  R^2\rho </math>
+c) <math>2\varepsilon_0 E =  r\rho </math>
-d) none of these are correct
-e) <math>2r^2\varepsilon_0 E=  R^3  \rho </math>

{<!--c19ElectricPotentialField_GaussLaw_6-->A cylinder of radius, R,
and height H has a uniform charge density of <math>\rho</math>.  The
height is much greater than the radius: {{nowrap|H >> R}}. The
electric field at the center vanishes.  What formula describes the
electric field at a distance, r, radially from the center if
r > R?}
- <math>2R\varepsilon_0 E=   r^2\rho </math>
-b) <math>2\varepsilon_0 E =  r\rho </math>
+c) <math>2r\varepsilon_0 E =  R^2\rho </math>
-d) none of these are correct
-e) <math>2r^2\varepsilon_0 E=  R^3  \rho </math>

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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*_See_* [[User:Guy vandegrift]]
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===*_Quiz_*===
<quiz display=simple>
{<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of radius, r=3, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.35+2.57z)\rho^3\hat\rho +7.45z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{top}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the top surface of the cylinder.}
-a) 1.148E+03
-b) 1.391E+03
+c) 1.685E+03
-d) 2.042E+03
-e) 2.473E+03

{<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=3, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.35+2.57z)\rho^3\hat\rho +7.45z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.}
-a) 2.221E+03
-b) 2.690E+03
-c) 3.259E+03
-d) 3.949E+03
+e) 4.784E+03

{<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of radius, r=3, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.35+2.57z)\rho^3\hat\rho +7.45z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\oint\vec\mathfrak F\cdot\hat n dA\right|\,$
over the entire surface of the cylinder.}
-a) 4.59E+03

-b) 5.56E+03
-c) 6.73E+03
+d) 8.15E+03
-e) 9.88E+03

</quiz>

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Other renditions
<div class="mw-collapsible-content">
====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of radius, r=3, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.05+2.59z)\rho^2\hat\rho +7.4z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{top}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the top surface of the cylinder.
-a) 6.908E+02
+b) 8.369E+02
-c) 1.014E+03
-d) 1.228E+03
-e) 1.488E+03
=====*_Rendition_* 1-3=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.12+1.85z)\rho^3\hat\rho +8.88z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{top}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the top surface of the cylinder.
-a) 3.041E+02
-b) 3.684E+02
+c) 4.464E+02
-d) 5.408E+02
-e) 6.552E+02
=====*_Rendition_* 1-4=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2+1.45z)\rho^2\hat\rho +8.02z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{top}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the top surface of the cylinder.
-a) 3.742E+02

-b) 4.534E+02
-c) 5.493E+02
-d) 6.655E+02
+e) 8.063E+02
=====*_Rendition_* 1-5=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.14+2.8z)\rho^2\hat\rho +9.94z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{top}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the top surface of the cylinder.
-a) 2.810E+02
-b) 3.404E+02
-c) 4.124E+02
+d) 4.996E+02
-e) 6.053E+02
=====*_Rendition_* 1-6=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (1.85+1.33z)\rho^3\hat\rho +7.52z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{top}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the top surface of the cylinder.
-a) 1.304E+03
-b) 1.579E+03
+c) 1.914E+03
-d) 2.318E+03
-e) 2.809E+03
=====*_Rendition_* 1-7=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.07+2.87z)\rho^2\hat\rho +9.56z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{top}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the top surface of the cylinder.
-a) 7.933E+02
+b) 9.611E+02
-c) 1.164E+03
-d) 1.411E+03
-e) 1.709E+03
=====*_Rendition_* 1-8=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.17+1.5z)\rho^2\hat\rho +8.75z^2\hat z$
 Let <math>\hat

n</math> be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{top}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the top surface of the cylinder.
-a) 3.630E+02
+b) 4.398E+02
-c) 5.329E+02
-d) 6.456E+02
-e) 7.821E+02
=====*_Rendition_* 1-9=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.28+1.72z)\rho^3\hat\rho +7.33z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{top}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the top surface of the cylinder.
-a) 2.597E+03
-b) 3.147E+03
-c) 3.812E+03
-d) 4.619E+03
+e) 5.596E+03
=====*_Rendition_* 1-10=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of radius, r=3, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.04+1.66z)\rho^2\hat\rho +7.54z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{top}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the top surface of the cylinder.
+a) 8.528E+02
-b) 1.033E+03
-c) 1.252E+03
-d) 1.516E+03
-e) 1.837E+03
=====*_Rendition_* 1-11=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.21+1.16z)\rho^2\hat\rho +7.96z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{top}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the top surface of the cylinder.
-a) 3.417E+03
-b) 4.140E+03
-c) 5.016E+03
+d) 6.077E+03
-e) 7.362E+03
=====*_Rendition_* 1-12=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of

radius, r=3, and height, h=6, is centered at the origin and oriented
along the z axis. A vector field can be expressed in cylindrical
coordinates as,
 <math>\vec\mathfrak F =
(2.12+1.68z)\rho^2\hat\rho +8.83z^3\hat z </math>
 Let <math>\hat
n</math> be the outward unit normal to this cylinder and evaluate ,
 <math>\left |\int_{top}\vec\mathfrak F\cdot\hat n
dA\right|\,</math>
over the top surface of the cylinder.
-a) 4.593E+03
-b) 5.564E+03
+c) 6.741E+03
-d) 8.167E+03
-e) 9.894E+03
=====*_Rendition_* 1-13=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of
radius, r=2, and height, h=4, is centered at the origin and oriented
along the z axis. A vector field can be expressed in cylindrical
coordinates as,
 <math>\vec\mathfrak F =
(2.05+2.05z)\rho^2\hat\rho +9.62z^3\hat z </math>
 Let <math>\hat
n</math> be the outward unit normal to this cylinder and evaluate ,
 <math>\left |\int_{top}\vec\mathfrak F\cdot\hat n
dA\right|\,</math>
over the top surface of the cylinder.
-a) 4.489E+02
-b) 5.438E+02
-c) 6.589E+02
-d) 7.983E+02
+e) 9.671E+02
=====*_Rendition_* 1-14=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of
radius, r=2, and height, h=6, is centered at the origin and oriented
along the z axis. A vector field can be expressed in cylindrical
coordinates as,
 <math>\vec\mathfrak F =
(1.93+2.31z)\rho^3\hat\rho +7.21z^2\hat z </math>
 Let <math>\hat
n</math> be the outward unit normal to this cylinder and evaluate ,
 <math>\left |\int_{top}\vec\mathfrak F\cdot\hat n
dA\right|\,</math>
over the top surface of the cylinder.
-a) 6.731E+02
+b) 8.154E+02
-c) 9.879E+02
-d) 1.197E+03
-e) 1.450E+03
=====*_Rendition_* 1-15=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of
radius, r=2, and height, h=6, is centered at the origin and oriented
along the z axis. A vector field can be expressed in cylindrical
coordinates as,
 <math>\vec\mathfrak F =
(2.24+1.11z)\rho^3\hat\rho +8.16z^3\hat z </math>
 Let <math>\hat
n</math> be the outward unit normal to this cylinder and evaluate ,
 <math>\left |\int_{top}\vec\mathfrak F\cdot\hat n
dA\right|\,</math>
over the top surface of the cylinder.
+a) 2.769E+03
-b) 3.354E+03
-c) 4.064E+03

-d) 4.923E+03
-e) 5.965E+03
=====*_Rendition_* 1-16=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (1.96+2.52z)\rho^2\hat\rho +7.11z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{top}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the top surface of the cylinder.
-a) 4.522E+02
-b) 5.478E+02
-c) 6.637E+02
+d) 8.041E+02
-e) 9.742E+02
=====*_Rendition_* 1-17=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (1.86+2.43z)\rho^2\hat\rho +9.75z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{top}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the top surface of the cylinder.
-a) 6.201E+02
-b) 7.513E+02
-c) 9.102E+02
+d) 1.103E+03
-e) 1.336E+03
=====*_Rendition_* 1-18=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.24+2.08z)\rho^2\hat\rho +8.93z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{top}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the top surface of the cylinder.
-a) 1.704E+03
-b) 2.064E+03
-c) 2.501E+03
+d) 3.030E+03
-e) 3.671E+03
=====*_Rendition_* 1-19=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (1.89+1.31z)\rho^3\hat\rho +8.35z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 <math>\left |\int_{top}\vec\mathfrak F\cdot\hat n

dA\right|\,</math>
over the top surface of the cylinder.
-a) 5.311E+02
-b) 6.434E+02
-c) 7.795E+02
+d) 9.444E+02
-e) 1.144E+03
=====*_Rendition_* 1-20=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of radius, r=3, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.37+2.6z)\rho^2\hat\rho +8.84z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{top}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the top surface of the cylinder.
-a) 1.362E+03
-b) 1.650E+03
+c) 2.000E+03
-d) 2.423E+03
-e) 2.935E+03
=====*_Rendition_* 1-21=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.45+2.26z)\rho^2\hat\rho +8.92z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{top}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the top surface of the cylinder.
-a) 5.043E+02
-b) 6.109E+02
-c) 7.402E+02
+d) 8.967E+02
-e) 1.086E+03
=====*_Rendition_* 1-22=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (1.88+1.29z)\rho^2\hat\rho +7.2z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{top}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the top surface of the cylinder.
-a) 1.248E+03
-b) 1.512E+03
+c) 1.832E+03
-d) 2.220E+03
-e) 2.689E+03
=====*_Rendition_* 1-23=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical

coordinates as,
 $\vec\mathfrak F = (2.44+2.86z)\rho^2\hat\rho +7.42z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{top}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the top surface of the cylinder.
+a) 5.664E+03
-b) 6.863E+03
-c) 8.314E+03
-d) 1.007E+04
-e) 1.220E+04
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=3, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.05+2.59z)\rho^2\hat\rho +7.4z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.
-a) 6.457E+02
-b) 7.823E+02
-c) 9.477E+02
-d) 1.148E+03
+e) 1.391E+03
=====*_Rendition_* 2-3=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.12+1.85z)\rho^3\hat\rho +8.88z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.
+a) 8.525E+02
-b) 1.033E+03
-c) 1.251E+03
-d) 1.516E+03
-e) 1.837E+03
=====*_Rendition_* 2-4=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2+1.45z)\rho^2\hat\rho +8.02z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.
+a) 4.021E+02
-b) 4.872E+02
-c) 5.902E+02
-d) 7.151E+02

-e) 8.663E+02
=====*_Rendition_* 2-5=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.14+2.8z)\rho^2\hat\rho +9.94z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.
-a) 2.420E+02
-b) 2.931E+02
-c) 3.551E+02
+d) 4.303E+02
-e) 5.213E+02
=====*_Rendition_* 2-6=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (1.85+1.33z)\rho^3\hat\rho +7.52z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.
-a) 2.622E+03
-b) 3.177E+03
-c) 3.849E+03
-d) 4.663E+03
+e) 5.649E+03
=====*_Rendition_* 2-7=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.07+2.87z)\rho^2\hat\rho +9.56z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.
+a) 4.162E+02
-b) 5.042E+02
-c) 6.109E+02
-d) 7.401E+02
-e) 8.967E+02
=====*_Rendition_* 2-8=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.17+1.5z)\rho^2\hat\rho +8.75z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.

-a) 2.454E+02
-b) 2.973E+02
-c) 3.601E+02
+d) 4.363E+02
-e) 5.286E+02
=====*_Rendition_* 2-9=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.28+1.72z)\rho^3\hat\rho +7.33z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.
-a) 3.232E+03
-b) 3.915E+03
-c) 4.743E+03
-d) 5.747E+03
+e) 6.962E+03
=====*_Rendition_* 2-10=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=3, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.04+1.66z)\rho^2\hat\rho +7.54z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.
-a) 9.431E+02
-b) 1.143E+03
+c) 1.384E+03
-d) 1.677E+03
-e) 2.032E+03
=====*_Rendition_* 2-11=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.21+1.16z)\rho^2\hat\rho +7.96z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.
-a) 1.533E+03
-b) 1.857E+03
+c) 2.250E+03
-d) 2.725E+03
-e) 3.302E+03
=====*_Rendition_* 2-12=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 <math>\vec\mathfrak F =

(2.12+1.68z)\rho^2\hat\rho +8.83z^3\hat z </math>
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.
+a) 2.158E+03
-b) 2.614E+03
-c) 3.167E+03
-d) 3.837E+03
-e) 4.649E+03
=====*_Rendition_* 2-13=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.05+2.05z)\rho^2\hat\rho +9.62z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.
-a) 2.318E+02
-b) 2.808E+02
-c) 3.402E+02
+d) 4.122E+02
-e) 4.994E+02
=====*_Rendition_* 2-14=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (1.93+2.31z)\rho^3\hat\rho +7.21z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.
-a) 6.546E+02
-b) 7.931E+02
-c) 9.609E+02
+d) 1.164E+03
-e) 1.410E+03
=====*_Rendition_* 2-15=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.24+1.11z)\rho^3\hat\rho +8.16z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.
-a) 9.205E+02
-b) 1.115E+03
+c) 1.351E+03
-d) 1.637E+03
-e) 1.983E+03
=====*_Rendition_* 2-16=====

<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (1.96+2.52z)\rho^2\hat\rho +7.11z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.
-a) 4.027E+02
-b) 4.879E+02
+c) 5.911E+02
-d) 7.162E+02
-e) 8.676E+02
=====*_Rendition_* 2-17=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (1.86+2.43z)\rho^2\hat\rho +9.75z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.
+a) 5.610E+02
-b) 6.796E+02
-c) 8.234E+02
-d) 9.975E+02
-e) 1.209E+03
=====*_Rendition_* 2-18=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.24+2.08z)\rho^2\hat\rho +8.93z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.
-a) 3.799E+02
-b) 4.603E+02
-c) 5.576E+02
+d) 6.756E+02
-e) 8.185E+02
=====*_Rendition_* 2-19=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (1.89+1.31z)\rho^3\hat\rho +8.35z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.
-a) 6.411E+02
-b) 7.767E+02

-c) 9.410E+02
+d) 1.140E+03
-e) 1.381E+03
=====*_Rendition_* 2-20=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=3, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.37+2.6z)\rho^2\hat\rho +8.84z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.
-a) 7.465E+02
-b) 9.044E+02
-c) 1.096E+03
-d) 1.327E+03
+e) 1.608E+03
=====*_Rendition_* 2-21=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.45+2.26z)\rho^2\hat\rho +8.92z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.
-a) 3.356E+02
-b) 4.066E+02
+c) 4.926E+02
-d) 5.968E+02
-e) 7.230E+02
=====*_Rendition_* 2-22=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (1.88+1.29z)\rho^2\hat\rho +7.2z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.
-a) 1.579E+03
+b) 1.914E+03
-c) 2.318E+03
-d) 2.809E+03
-e) 3.403E+03
=====*_Rendition_* 2-23=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.44+2.86z)\rho^2\hat\rho +7.42z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 <math>\left |\int_{side}\vec\mathfrak F\cdot\hat n
dA\right|\,</math>
over the curved side surface of the cylinder.
-a) 1.692E+03
-b) 2.050E+03
+c) 2.484E+03
-d) 3.009E+03
-e) 3.645E+03
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of
radius, r=3, and height, h=4, is centered at the origin and oriented
along the z axis. A vector field can be expressed in cylindrical
coordinates as,
 <math>\vec\mathfrak F =
(2.05+2.59z)\rho^2\hat\rho +7.4z^2\hat z </math>
 Let <math>\hat
n</math> be the outward unit normal to this cylinder and evaluate ,
 <math>\left |\oint\vec\mathfrak F\cdot\hat n
dA\right|\,</math>
over the entire surface of the cylinder.
-a) 6.46E+02
-b) 7.82E+02
-c) 9.48E+02
-d) 1.15E+03
+e) 1.39E+03
=====*_Rendition_* 3-3=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of
radius, r=2, and height, h=4, is centered at the origin and oriented
along the z axis. A vector field can be expressed in cylindrical
coordinates as,
 <math>\vec\mathfrak F =
(2.12+1.85z)\rho^3\hat\rho +8.88z^2\hat z </math>
 Let <math>\hat
n</math> be the outward unit normal to this cylinder and evaluate ,
 <math>\left |\oint\vec\mathfrak F\cdot\hat n
dA\right|\,</math>
over the entire surface of the cylinder.
-a) 3.96E+02
-b) 4.79E+02
-c) 5.81E+02
-d) 7.04E+02
+e) 8.53E+02
=====*_Rendition_* 3-4=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of
radius, r=2, and height, h=4, is centered at the origin and oriented
along the z axis. A vector field can be expressed in cylindrical
coordinates as,
 <math>\vec\mathfrak F =
(2+1.45z)\rho^2\hat\rho +8.02z^3\hat z </math>
 Let <math>\hat
n</math> be the outward unit normal to this cylinder and evaluate ,
 <math>\left |\oint\vec\mathfrak F\cdot\hat n
dA\right|\,</math>
over the entire surface of the cylinder.
-a) 1.13E+03
-b) 1.37E+03
-c) 1.66E+03
+d) 2.01E+03
-e) 2.44E+03
=====*_Rendition_* 3-5=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of

radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.14+2.8z)\rho^2\hat\rho +9.94z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\oint\vec\mathfrak F\cdot\hat n dA\right|\,$
over the entire surface of the cylinder.
-a) 2.93E+02
-b) 3.55E+02
+c) 4.30E+02
-d) 5.21E+02
-e) 6.32E+02
=====*_Rendition_* 3-6=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (1.85+1.33z)\rho^3\hat\rho +7.52z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\oint\vec\mathfrak F\cdot\hat n dA\right|\,$
over the entire surface of the cylinder.
-a) 3.18E+03
-b) 3.85E+03
-c) 4.66E+03
+d) 5.65E+03
-e) 6.84E+03
=====*_Rendition_* 3-7=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.07+2.87z)\rho^2\hat\rho +9.56z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\oint\vec\mathfrak F\cdot\hat n dA\right|\,$
over the entire surface of the cylinder.
-a) 1.59E+03
-b) 1.93E+03
+c) 2.34E+03
-d) 2.83E+03
-e) 3.43E+03
=====*_Rendition_* 3-8=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.17+1.5z)\rho^2\hat\rho +8.75z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\oint\vec\mathfrak F\cdot\hat n dA\right|\,$
over the entire surface of the cylinder.
-a) 3.60E+02
+b) 4.36E+02
-c) 5.29E+02

-d) 6.40E+02
-e) 7.76E+02
=====*_Rendition_* 3-9=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.28+1.72z)\rho^3\hat\rho +7.33z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\oint\vec\mathfrak F\cdot\hat n dA\right|\,$
over the entire surface of the cylinder.
-a) 1.50E+04
+b) 1.82E+04
-c) 2.20E+04
-d) 2.66E+04
-e) 3.23E+04
=====*_Rendition_* 3-10=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of radius, r=3, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.04+1.66z)\rho^2\hat\rho +7.54z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\oint\vec\mathfrak F\cdot\hat n dA\right|\,$
over the entire surface of the cylinder.
-a) 9.43E+02
-b) 1.14E+03
+c) 1.38E+03
-d) 1.68E+03
-e) 2.03E+03
=====*_Rendition_* 3-11=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.21+1.16z)\rho^2\hat\rho +7.96z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\oint\vec\mathfrak F\cdot\hat n dA\right|\,$
over the entire surface of the cylinder.
-a) 6.69E+03
-b) 8.10E+03
-c) 9.81E+03
-d) 1.19E+04
+e) 1.44E+04
=====*_Rendition_* 3-12=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.12+1.68z)\rho^2\hat\rho +8.83z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 <math>\left |\oint\vec\mathfrak F\cdot\hat n

dA\right|\,</math>
over the entire surface of the cylinder.
-a) 1.29E+04
+b) 1.56E+04
-c) 1.89E+04
-d) 2.30E+04
-e) 2.78E+04
=====*_Rendition_* 3-13=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.05+2.05z)\rho^2\hat\rho +9.62z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\oint\vec\mathfrak F\cdot\hat n dA\right|\,$
over the entire surface of the cylinder.
-a) 1.09E+03
-b) 1.32E+03
-c) 1.60E+03
-d) 1.94E+03
+e) 2.35E+03
=====*_Rendition_* 3-14=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (1.93+2.31z)\rho^3\hat\rho +7.21z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\oint\vec\mathfrak F\cdot\hat n dA\right|\,$
over the entire surface of the cylinder.
-a) 5.40E+02
-b) 6.55E+02
-c) 7.93E+02
-d) 9.61E+02
+e) 1.16E+03
=====*_Rendition_* 3-15=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.24+1.11z)\rho^3\hat\rho +8.16z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\oint\vec\mathfrak F\cdot\hat n dA\right|\,$
over the entire surface of the cylinder.
-a) 4.69E+03
-b) 5.69E+03
+c) 6.89E+03
-d) 8.35E+03
-e) 1.01E+04
=====*_Rendition_* 3-16=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical

coordinates as,
 <math>\vec\mathfrak F =
(1.96+2.52z)\rho^2\hat\rho +7.11z^2\hat z </math>
 Let <math>\hat
n</math> be the outward unit normal to this cylinder and evaluate ,
 <math>\left |\oint\vec\mathfrak F\cdot\hat n
dA\right|\,</math>
over the entire surface of the cylinder.
+a) 5.91E+02
-b) 7.16E+02
-c) 8.68E+02
-d) 1.05E+03
-e) 1.27E+03
=====*_Rendition_* 3-17=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of
radius, r=2, and height, h=6, is centered at the origin and oriented
along the z axis. A vector field can be expressed in cylindrical
coordinates as,
 <math>\vec\mathfrak F =
(1.86+2.43z)\rho^2\hat\rho +9.75z^2\hat z </math>
 Let <math>\hat
n</math> be the outward unit normal to this cylinder and evaluate ,
 <math>\left |\oint\vec\mathfrak F\cdot\hat n
dA\right|\,</math>
over the entire surface of the cylinder.
-a) 4.63E+02
+b) 5.61E+02
-c) 6.80E+02
-d) 8.23E+02
-e) 9.98E+02
=====*_Rendition_* 3-18=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of
radius, r=2, and height, h=6, is centered at the origin and oriented
along the z axis. A vector field can be expressed in cylindrical
coordinates as,
 <math>\vec\mathfrak F =
(2.24+2.08z)\rho^2\hat\rho +8.93z^3\hat z </math>
 Let <math>\hat
n</math> be the outward unit normal to this cylinder and evaluate ,
 <math>\left |\oint\vec\mathfrak F\cdot\hat n
dA\right|\,</math>
over the entire surface of the cylinder.
-a) 3.13E+03
-b) 3.79E+03
-c) 4.59E+03
-d) 5.56E+03
+e) 6.74E+03
=====*_Rendition_* 3-19=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of
radius, r=2, and height, h=6, is centered at the origin and oriented
along the z axis. A vector field can be expressed in cylindrical
coordinates as,
 <math>\vec\mathfrak F =
(1.89+1.31z)\rho^3\hat\rho +8.35z^2\hat z </math>
 Let <math>\hat
n</math> be the outward unit normal to this cylinder and evaluate ,
 <math>\left |\oint\vec\mathfrak F\cdot\hat n
dA\right|\,</math>
over the entire surface of the cylinder.
-a) 9.41E+02
+b) 1.14E+03
-c) 1.38E+03
-d) 1.67E+03
-e) 2.03E+03

=====*_Rendition_* 3-20=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of radius, r=3, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.37+2.6z)\rho^2\hat\rho +8.84z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\oint\vec\mathfrak F\cdot\hat n dA\right|\,$
over the entire surface of the cylinder.
-a) 4.63E+03
+b) 5.61E+03
-c) 6.79E+03
-d) 8.23E+03
-e) 9.97E+03
=====*_Rendition_* 3-21=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.45+2.26z)\rho^2\hat\rho +8.92z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\oint\vec\mathfrak F\cdot\hat n dA\right|\,$
over the entire surface of the cylinder.
-a) 1.29E+03
-b) 1.56E+03
-c) 1.89E+03
+d) 2.29E+03
-e) 2.77E+03
=====*_Rendition_* 3-22=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (1.88+1.29z)\rho^2\hat\rho +7.2z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\oint\vec\mathfrak F\cdot\hat n dA\right|\,$
over the entire surface of the cylinder.
-a) 1.08E+03
-b) 1.30E+03
-c) 1.58E+03
+d) 1.91E+03
-e) 2.32E+03
=====*_Rendition_* 3-23=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.44+2.86z)\rho^2\hat\rho +7.42z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\oint\vec\mathfrak F\cdot\hat n dA\right|\,$
over the entire surface of the cylinder.
-a) 9.41E+03

-b) 1.14E+04
+c) 1.38E+04
-d) 1.67E+04
-e) 2.03E+04
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====*_Instructions_*====
Instructions are forthcoming

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{<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 8.5A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 4.7m.}
-a) 2.69E+01 m
+b) 2.95E+01 m
-c) 3.24E+01 m
-d) 3.55E+01 m
-e) 3.89E+01 m

{<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 4.7m from a wire carrying a current of 8.5A?}
-a) 2.63E-01 A/m

+b) 2.88E-01 A/m
-c) 3.16E-01 A/m
-d) 3.46E-01 A/m
-e) 3.79E-01 A/m

{<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (3.4389,3.2037) if a current of 8.5A flows through a wire that runs along the z axis?}
-a) 1.46E-01 A/m
-b) 1.60E-01 A/m
-c) 1.75E-01 A/m
-d) 1.92E-01 A/m
+e) 2.11E-01 A/m

{<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 1331 turns and is 140 meters long. The wire carrys a current of 9.6A. What is the magnetic field in the center?}
-a) 8.70E-05 Tesla
-b) 9.54E-05 Tesla
-c) 1.05E-04 Tesla
+d) 1.15E-04 Tesla
-e) 1.26E-04 Tesla

{<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 1770 turns and is 140 meters long. The wire carrys a current of 9.6A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 25 meters from the center and stops 98 meters from the center?}
-a) 4.54E+03 A
-b) 4.98E+03 A
+c) 5.46E+03 A
-d) 5.99E+03 A
-e) 6.57E+03 A

{<!--dummy_1-->[[File:KaisekiGairon-371-3.svg|right|240px|KaisekiGairon-371-3]]A torus is centered around the x-y plane, with major radius, a = 1.56 m, and minor radius, r = 0.65m. A wire carrying 4.4A is uniformly wrapped with 890 turns. If B=μ₀H is the magnetic field, what is H inside the torus, at a point on the xy plane that is 0.26m from the outermost edge of the torus?}
-a) 2.22E+02 amps per meter
+b) 2.40E+02 amps per meter
-c) 2.59E+02 amps per meter
-d) 2.79E+02 amps per meter
-e) 3.02E+02 amps per meter

</quiz>

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=====*_Rendition_* 1-2=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 8.2A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 9.6m.
+a) 6.03E+01 m
-b) 6.61E+01 m
-c) 7.25E+01 m
-d) 7.95E+01 m
-e) 8.72E+01 m
=====*_Rendition_* 1-3=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 7.9A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 4.2m.
-a) 1.83E+01 m
-b) 2.00E+01 m
-c) 2.19E+01 m
-d) 2.41E+01 m
+e) 2.64E+01 m
=====*_Rendition_* 1-4=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 6.9A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 9.9m.
+a) 6.22E+01 m
-b) 6.82E+01 m
-c) 7.48E+01 m
-d) 8.20E+01 m
-e) 8.99E+01 m
=====*_Rendition_* 1-5=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 7.3A flows upward along the z axis. Noting that

for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 8.3m.
-a) 4.76E+01 m
+b) 5.22E+01 m
-c) 5.72E+01 m
-d) 6.27E+01 m
-e) 6.87E+01 m
=====*_Rendition_* 1-6=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 9.6A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 9.8m.
-a) 4.26E+01 m
-b) 4.67E+01 m
-c) 5.12E+01 m
-d) 5.62E+01 m
+e) 6.16E+01 m
=====*_Rendition_* 1-7=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 7.2A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 8.2m.
-a) 4.70E+01 m
+b) 5.15E+01 m
-c) 5.65E+01 m
-d) 6.19E+01 m
-e) 6.79E+01 m
=====*_Rendition_* 1-8=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 8.6A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 8.8m.
-a) 3.83E+01 m
-b) 4.19E+01 m
-c) 4.60E+01 m
-d) 5.04E+01 m
+e) 5.53E+01 m
=====*_Rendition_* 1-9=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for

[[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 7.4A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 6.3m.
-a) 2.74E+01 m
-b) 3.00E+01 m
-c) 3.29E+01 m
-d) 3.61E+01 m
+e) 3.96E+01 m
=====*_Rendition_* 1-10=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 6.9A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 9.8m.
+a) 6.16E+01 m
-b) 6.75E+01 m
-c) 7.40E+01 m
-d) 8.12E+01 m
-e) 8.90E+01 m
=====*_Rendition_* 1-11=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 9.8A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 4.6m.
+a) 2.89E+01 m
-b) 3.17E+01 m
-c) 3.47E+01 m
-d) 3.81E+01 m
-e) 4.18E+01 m
=====*_Rendition_* 1-12=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 5.8A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 4.4m.
-a) 2.30E+01 m
-b) 2.52E+01 m
+c) 2.76E+01 m

-d) 3.03E+01 m
-e) 3.32E+01 m
=====*_Rendition_* 1-13=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 4.8A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 7.7m.
+a) 4.84E+01 m
-b) 5.30E+01 m
-c) 5.82E+01 m
-d) 6.38E+01 m
-e) 6.99E+01 m
=====*_Rendition_* 1-14=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 4.7A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 6.5m.
-a) 3.10E+01 m
-b) 3.40E+01 m
-c) 3.72E+01 m
+d) 4.08E+01 m
-e) 4.48E+01 m
=====*_Rendition_* 1-15=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 5A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 5.4m.
-a) 3.09E+01 m
+b) 3.39E+01 m
-c) 3.72E+01 m
-d) 4.08E+01 m
-e) 4.47E+01 m
=====*_Rendition_* 1-16=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 6.8A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for

a circle of radius 7.9m.
+a) 4.96E+01 m
-b) 5.44E+01 m
-c) 5.97E+01 m
-d) 6.54E+01 m
-e) 7.17E+01 m
=====*_Rendition_* 1-17=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 4.9A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 4.2m.
-a) 2.00E+01 m
-b) 2.19E+01 m
-c) 2.41E+01 m
+d) 2.64E+01 m
-e) 2.89E+01 m
=====*_Rendition_* 1-18=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 6.9A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 4.4m.
-a) 2.10E+01 m
-b) 2.30E+01 m
-c) 2.52E+01 m
+d) 2.76E+01 m
-e) 3.03E+01 m
=====*_Rendition_* 1-19=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 5.8A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 6.1m.
+a) 3.83E+01 m
-b) 4.20E+01 m
-c) 4.61E+01 m
-d) 5.05E+01 m
-e) 5.54E+01 m
=====*_Rendition_* 1-20=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current

enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 6.7A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 4.1m.
+a) 2.58E+01 m
-b) 2.82E+01 m
-c) 3.10E+01 m
-d) 3.40E+01 m
-e) 3.72E+01 m
=====*_Rendition_* 1-21=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 4.8A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 6.2m.
-a) 2.70E+01 m
-b) 2.96E+01 m
-c) 3.24E+01 m
-d) 3.55E+01 m
+e) 3.90E+01 m
=====*_Rendition_* 1-22=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 5.7A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 9.2m.
-a) 4.38E+01 m
-b) 4.81E+01 m
-c) 5.27E+01 m
+d) 5.78E+01 m
-e) 6.34E+01 m
=====*_Rendition_* 1-23=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 6.5A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 6.8m.
+a) 4.27E+01 m
-b) 4.68E+01 m
-c) 5.14E+01 m
-d) 5.63E+01 m
-e) 6.18E+01 m

====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 9.6m from a wire carrying a current of 8.2A?
-a) 1.24E-01 A/m
+b) 1.36E-01 A/m
-c) 1.49E-01 A/m
-d) 1.63E-01 A/m
-e) 1.79E-01 A/m
=====*_Rendition_* 2-3=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 4.2m from a wire carrying a current of 7.9A?
-a) 2.73E-01 A/m
+b) 2.99E-01 A/m
-c) 3.28E-01 A/m
-d) 3.60E-01 A/m
-e) 3.95E-01 A/m
=====*_Rendition_* 2-4=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 9.9m from a wire carrying a current of 6.9A?
+a) 1.11E-01 A/m
-b) 1.22E-01 A/m
-c) 1.33E-01 A/m
-d) 1.46E-01 A/m
-e) 1.60E-01 A/m
=====*_Rendition_* 2-5=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 8.3m from a wire carrying a current of 7.3A?
+a) 1.40E-01 A/m
-b) 1.53E-01 A/m
-c) 1.68E-01 A/m
-d) 1.85E-01 A/m
-e) 2.02E-01 A/m
=====*_Rendition_* 2-6=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 9.8m from a wire carrying a current of 9.6A?
-a) 1.30E-01 A/m
-b) 1.42E-01 A/m
+c) 1.56E-01 A/m
-d) 1.71E-01 A/m
-e) 1.87E-01 A/m
=====*_Rendition_* 2-7=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 8.2m from a wire carrying a current of 7.2A?
-a) 9.67E-02 A/m
-b) 1.06E-01 A/m

-c) 1.16E-01 A/m
-d) 1.27E-01 A/m
+e) 1.40E-01 A/m
=====*_Rendition_* 2-8=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 8.8m from a wire carrying a current of 8.6A?
+a) 1.56E-01 A/m
-b) 1.71E-01 A/m
-c) 1.87E-01 A/m
-d) 2.05E-01 A/m
-e) 2.25E-01 A/m
=====*_Rendition_* 2-9=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 6.3m from a wire carrying a current of 7.4A?
+a) 1.87E-01 A/m
-b) 2.05E-01 A/m
-c) 2.25E-01 A/m
-d) 2.46E-01 A/m
-e) 2.70E-01 A/m
=====*_Rendition_* 2-10=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 9.8m from a wire carrying a current of 6.9A?
-a) 1.02E-01 A/m
+b) 1.12E-01 A/m
-c) 1.23E-01 A/m
-d) 1.35E-01 A/m
-e) 1.48E-01 A/m
=====*_Rendition_* 2-11=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 4.6m from a wire carrying a current of 9.8A?
-a) 2.57E-01 A/m
-b) 2.82E-01 A/m
-c) 3.09E-01 A/m
+d) 3.39E-01 A/m
-e) 3.72E-01 A/m
=====*_Rendition_* 2-12=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 4.4m from a wire carrying a current of 5.8A?
-a) 1.91E-01 A/m
+b) 2.10E-01 A/m
-c) 2.30E-01 A/m
-d) 2.52E-01 A/m
-e) 2.77E-01 A/m
=====*_Rendition_* 2-13=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 7.7m from a wire carrying a current of 4.8A?

+a) 9.92E-02 A/m
-b) 1.09E-01 A/m
-c) 1.19E-01 A/m
-d) 1.31E-01 A/m
-e) 1.43E-01 A/m
=====*_Rendition_* 2-14=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 6.5m from a wire carrying a current of 4.7A?
-a) 7.96E-02 A/m
-b) 8.73E-02 A/m
-c) 9.57E-02 A/m
-d) 1.05E-01 A/m
+e) 1.15E-01 A/m
=====*_Rendition_* 2-15=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 5.4m from a wire carrying a current of 5A?
-a) 1.34E-01 A/m
+b) 1.47E-01 A/m
-c) 1.62E-01 A/m
-d) 1.77E-01 A/m
-e) 1.94E-01 A/m
=====*_Rendition_* 2-16=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 7.9m from a wire carrying a current of 6.8A?
-a) 1.14E-01 A/m
-b) 1.25E-01 A/m
+c) 1.37E-01 A/m
-d) 1.50E-01 A/m
-e) 1.65E-01 A/m
=====*_Rendition_* 2-17=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 4.2m from a wire carrying a current of 4.9A?
-a) 1.28E-01 A/m
-b) 1.41E-01 A/m
-c) 1.54E-01 A/m
-d) 1.69E-01 A/m
+e) 1.86E-01 A/m
=====*_Rendition_* 2-18=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 4.4m from a wire carrying a current of 6.9A?
-a) 2.28E-01 A/m
+b) 2.50E-01 A/m
-c) 2.74E-01 A/m
-d) 3.00E-01 A/m
-e) 3.29E-01 A/m
=====*_Rendition_* 2-19=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where

B is magnetic field, what is H at a distance of 6.1m from a wire carrying a current of 5.8A?
-a) 1.38E-01 A/m
+b) 1.51E-01 A/m
-c) 1.66E-01 A/m
-d) 1.82E-01 A/m
-e) 1.99E-01 A/m
=====*_Rendition_* 2-20=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 4.1m from a wire carrying a current of 6.7A?
+a) 2.60E-01 A/m
-b) 2.85E-01 A/m
-c) 3.13E-01 A/m
-d) 3.43E-01 A/m
-e) 3.76E-01 A/m
=====*_Rendition_* 2-21=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 6.2m from a wire carrying a current of 4.8A?
-a) 9.35E-02 A/m
-b) 1.02E-01 A/m
-c) 1.12E-01 A/m
+d) 1.23E-01 A/m
-e) 1.35E-01 A/m
=====*_Rendition_* 2-22=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 9.2m from a wire carrying a current of 5.7A?
-a) 7.48E-02 A/m
-b) 8.20E-02 A/m
-c) 8.99E-02 A/m
+d) 9.86E-02 A/m
-e) 1.08E-01 A/m
=====*_Rendition_* 2-23=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 6.8m from a wire carrying a current of 6.5A?
-a) 1.39E-01 A/m
+b) 1.52E-01 A/m
-c) 1.67E-01 A/m
-d) 1.83E-01 A/m
-e) 2.01E-01 A/m
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (8.6443,4.1757) if a current of 8.2A flows through a wire that runs along the z axis?
-a) 8.47E-02 A/m
-b) 9.29E-02 A/m
-c) 1.02E-01 A/m

-d) 1.12E-01 A/m
+e) 1.22E-01 A/m
=====*_Rendition_* 3-3=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (2.0898,3.6432) if a current of 7.9A flows through a wire that runs along the z axis?
-a) 1.36E-01 A/m
+b) 1.49E-01 A/m
-c) 1.63E-01 A/m
-d) 1.79E-01 A/m
-e) 1.96E-01 A/m
=====*_Rendition_* 3-4=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (6.1539,7.7549) if a current of 6.9A flows through a wire that runs along the z axis?
-a) 5.23E-02 A/m
-b) 5.74E-02 A/m
-c) 6.29E-02 A/m
+d) 6.90E-02 A/m
-e) 7.56E-02 A/m
=====*_Rendition_* 3-5=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (7.9293,2.4528) if a current of 7.3A flows through a wire that runs along the z axis?
-a) 1.11E-01 A/m
-b) 1.22E-01 A/m
+c) 1.34E-01 A/m
-d) 1.47E-01 A/m
-e) 1.61E-01 A/m
=====*_Rendition_* 3-6=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (8.0883,5.5335) if a current of 9.6A flows through a wire that runs along the z axis?
-a) 8.90E-02 A/m
-b) 9.76E-02 A/m
-c) 1.07E-01 A/m
-d) 1.17E-01 A/m
+e) 1.29E-01 A/m
=====*_Rendition_* 3-7=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (7.8338,2.4233) if a current of 7.2A flows through a wire that runs along the z axis?
-a) 1.01E-01 A/m
-b) 1.11E-01 A/m
-c) 1.22E-01 A/m
+d) 1.34E-01 A/m
-e) 1.46E-01 A/m

=====*_Rendition_* 3-8=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (8.407,2.6006) if a current of 8.6A flows through a wire that runs along the z axis?
-a) 1.13E-01 A/m
-b) 1.24E-01 A/m
-c) 1.36E-01 A/m
+d) 1.49E-01 A/m
-e) 1.63E-01 A/m
=====*_Rendition_* 3-9=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (5.6728,2.7403) if a current of 7.4A flows through a wire that runs along the z axis?
-a) 1.28E-01 A/m
-b) 1.40E-01 A/m
-c) 1.54E-01 A/m
+d) 1.68E-01 A/m
-e) 1.85E-01 A/m
=====*_Rendition_* 3-10=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (9.3623,2.8961) if a current of 6.9A flows through a wire that runs along the z axis?
-a) 8.90E-02 A/m
-b) 9.76E-02 A/m
+c) 1.07E-01 A/m
-d) 1.17E-01 A/m
-e) 1.29E-01 A/m
=====*_Rendition_* 3-11=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (2.8594,3.6033) if a current of 9.8A flows through a wire that runs along the z axis?
-a) 1.75E-01 A/m
-b) 1.92E-01 A/m
+c) 2.11E-01 A/m
-d) 2.31E-01 A/m
-e) 2.53E-01 A/m
=====*_Rendition_* 3-12=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (3.2194,2.9992) if a current of 5.8A flows through a wire that runs along the z axis?
-a) 1.06E-01 A/m
-b) 1.16E-01 A/m
-c) 1.28E-01 A/m
-d) 1.40E-01 A/m
+e) 1.54E-01 A/m
=====*_Rendition_* 3-13=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where

B is magnetic field, what is H_y at the point (6.3551,4.3477) if a current of 4.8A flows through a wire that runs along the z axis?
+a) 8.19E-02 A/m
-b) 8.98E-02 A/m
-c) 9.84E-02 A/m
-d) 1.08E-01 A/m
-e) 1.18E-01 A/m
=====*_Rendition_* 3-14=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (6.2097,1.9209) if a current of 4.7A flows through a wire that runs along the z axis?
-a) 8.34E-02 A/m
-b) 9.14E-02 A/m
-c) 1.00E-01 A/m
+d) 1.10E-01 A/m
-e) 1.21E-01 A/m
=====*_Rendition_* 3-15=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (5.1588,1.5958) if a current of 5A flows through a wire that runs along the z axis?
+a) 1.41E-01 A/m
-b) 1.54E-01 A/m
-c) 1.69E-01 A/m
-d) 1.86E-01 A/m
-e) 2.03E-01 A/m
=====*_Rendition_* 3-16=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (5.7803,5.3849) if a current of 6.8A flows through a wire that runs along the z axis?
-a) 6.93E-02 A/m
-b) 7.60E-02 A/m
-c) 8.34E-02 A/m
-d) 9.14E-02 A/m
+e) 1.00E-01 A/m
=====*_Rendition_* 3-17=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (2.0898,3.6432) if a current of 4.9A flows through a wire that runs along the z axis?
-a) 6.39E-02 A/m
-b) 7.01E-02 A/m
-c) 7.68E-02 A/m
-d) 8.43E-02 A/m
+e) 9.24E-02 A/m
=====*_Rendition_* 3-18=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (1.5944,4.101) if a current of 6.9A flows through a wire that

runs along the z axis?
-a) 6.86E-02 A/m
-b) 7.52E-02 A/m
-c) 8.25E-02 A/m
+d) 9.04E-02 A/m
-e) 9.92E-02 A/m
=====*_Rendition_* 3-19=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (2.2104,5.6854) if a current of 5.8A flows through a wire that runs along the z axis?
-a) 4.16E-02 A/m
-b) 4.56E-02 A/m
-c) 5.00E-02 A/m
+d) 5.48E-02 A/m
-e) 6.01E-02 A/m
=====*_Rendition_* 3-20=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (2.5486,3.2116) if a current of 6.7A flows through a wire that runs along the z axis?
-a) 1.23E-01 A/m
-b) 1.34E-01 A/m
-c) 1.47E-01 A/m
+d) 1.62E-01 A/m
-e) 1.77E-01 A/m
=====*_Rendition_* 3-21=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (3.854,4.8566) if a current of 4.8A flows through a wire that runs along the z axis?
-a) 6.37E-02 A/m
-b) 6.99E-02 A/m
+c) 7.66E-02 A/m
-d) 8.40E-02 A/m
-e) 9.21E-02 A/m
=====*_Rendition_* 3-22=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (5.7188,7.2066) if a current of 5.7A flows through a wire that runs along the z axis?
+a) 6.13E-02 A/m
-b) 6.72E-02 A/m
-c) 7.37E-02 A/m
-d) 8.08E-02 A/m
-e) 8.86E-02 A/m
=====*_Rendition_* 3-23=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (6.4963,2.0095) if a current of 6.5A flows through a wire that runs along the z axis?
-a) 1.33E-01 A/m

+b) 1.45E-01 A/m
-c) 1.59E-01 A/m
-d) 1.75E-01 A/m
-e) 1.92E-01 A/m
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 2705 turns and is 134 meters long. The wire carrys a current of 8.2A. What is the magnetic field in the center?
-a) 1.90E-04 Tesla
+b) 2.08E-04 Tesla
-c) 2.28E-04 Tesla
-d) 2.50E-04 Tesla
-e) 2.74E-04 Tesla
=====*_Rendition_* 4-3=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 1254 turns and is 164 meters long. The wire carrys a current of 9.3A. What is the magnetic field in the center?
-a) 7.43E-05 Tesla
-b) 8.15E-05 Tesla
+c) 8.94E-05 Tesla
-d) 9.80E-05 Tesla
-e) 1.07E-04 Tesla
=====*_Rendition_* 4-4=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 2543 turns and is 166 meters long. The wire carrys a current of 9.2A. What is the magnetic field in the center?
-a) 1.34E-04 Tesla
-b) 1.47E-04 Tesla
-c) 1.62E-04 Tesla
+d) 1.77E-04 Tesla
-e) 1.94E-04 Tesla
=====*_Rendition_* 4-5=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 2762 turns and is 142 meters long. The wire carrys a current of 9.7A. What is the magnetic field in the center?
+a) 2.37E-04 Tesla
-b) 2.60E-04 Tesla
-c) 2.85E-04 Tesla
-d) 3.13E-04 Tesla
-e) 3.43E-04 Tesla
=====*_Rendition_* 4-6=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 1070 turns and is 122 meters long. The wire carrys a current of 8.4A. What is the magnetic field in the center?
-a) 7.02E-05 Tesla
-b) 7.70E-05 Tesla
-c) 8.44E-05 Tesla
+d) 9.26E-05 Tesla
-e) 1.02E-04 Tesla
=====*_Rendition_* 4-7=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 2647

turns and is 180 meters long. The wire carrys a current of 9.3A. What is the magnetic field in the center?
+a) 1.72E-04 Tesla
-b) 1.88E-04 Tesla
-c) 2.07E-04 Tesla
-d) 2.27E-04 Tesla
-e) 2.48E-04 Tesla
=====*_Rendition_* 4-8=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 1634 turns and is 122 meters long. The wire carrys a current of 9.5A. What is the magnetic field in the center?
+a) 1.60E-04 Tesla
-b) 1.75E-04 Tesla
-c) 1.92E-04 Tesla
-d) 2.11E-04 Tesla
-e) 2.31E-04 Tesla
=====*_Rendition_* 4-9=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 1016 turns and is 136 meters long. The wire carrys a current of 7.6A. What is the magnetic field in the center?
-a) 5.41E-05 Tesla
-b) 5.93E-05 Tesla
-c) 6.51E-05 Tesla
+d) 7.13E-05 Tesla
-e) 7.82E-05 Tesla
=====*_Rendition_* 4-10=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 1992 turns and is 162 meters long. The wire carrys a current of 8.7A. What is the magnetic field in the center?
-a) 1.02E-04 Tesla
-b) 1.12E-04 Tesla
-c) 1.23E-04 Tesla
+d) 1.34E-04 Tesla
-e) 1.47E-04 Tesla
=====*_Rendition_* 4-11=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 1946 turns and is 144 meters long. The wire carrys a current of 9A. What is the magnetic field in the center?
-a) 1.06E-04 Tesla
-b) 1.16E-04 Tesla
-c) 1.27E-04 Tesla
-d) 1.39E-04 Tesla
+e) 1.53E-04 Tesla
=====*_Rendition_* 4-12=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 1656 turns and is 144 meters long. The wire carrys a current of 8.4A. What is the magnetic field in the center?
-a) 8.40E-05 Tesla
-b) 9.21E-05 Tesla
-c) 1.01E-04 Tesla
-d) 1.11E-04 Tesla
+e) 1.21E-04 Tesla

=====*_Rendition_* 4-13=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 2066 turns and is 156 meters long. The wire carrys a current of 7.6A. What is the magnetic field in the center?
-a) 8.75E-05 Tesla
-b) 9.59E-05 Tesla
-c) 1.05E-04 Tesla
-d) 1.15E-04 Tesla
+e) 1.26E-04 Tesla
=====*_Rendition_* 4-14=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 2979 turns and is 170 meters long. The wire carrys a current of 8.1A. What is the magnetic field in the center?
+a) 1.78E-04 Tesla
-b) 1.96E-04 Tesla
-c) 2.14E-04 Tesla
-d) 2.35E-04 Tesla
-e) 2.58E-04 Tesla
=====*_Rendition_* 4-15=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 2662 turns and is 182 meters long. The wire carrys a current of 9.2A. What is the magnetic field in the center?
-a) 1.54E-04 Tesla
+b) 1.69E-04 Tesla
-c) 1.85E-04 Tesla
-d) 2.03E-04 Tesla
-e) 2.23E-04 Tesla
=====*_Rendition_* 4-16=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 2175 turns and is 134 meters long. The wire carrys a current of 7.6A. What is the magnetic field in the center?
-a) 1.29E-04 Tesla
-b) 1.41E-04 Tesla
+c) 1.55E-04 Tesla
-d) 1.70E-04 Tesla
-e) 1.86E-04 Tesla
=====*_Rendition_* 4-17=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 1744 turns and is 146 meters long. The wire carrys a current of 9.5A. What is the magnetic field in the center?
+a) 1.43E-04 Tesla
-b) 1.56E-04 Tesla
-c) 1.71E-04 Tesla
-d) 1.88E-04 Tesla
-e) 2.06E-04 Tesla
=====*_Rendition_* 4-18=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 1518 turns and is 156 meters long. The wire carrys a current of 8.9A. What is the magnetic field in the center?
-a) 8.26E-05 Tesla
-b) 9.05E-05 Tesla
-c) 9.93E-05 Tesla

+d) 1.09E-04 Tesla
-e) 1.19E-04 Tesla
=====*_Rendition_* 4-19=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 2890 turns and is 134 meters long. The wire carrys a current of 7.7A. What is the magnetic field in the center?
-a) 1.90E-04 Tesla
+b) 2.09E-04 Tesla
-c) 2.29E-04 Tesla
-d) 2.51E-04 Tesla
-e) 2.75E-04 Tesla
=====*_Rendition_* 4-20=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 1982 turns and is 154 meters long. The wire carrys a current of 9.1A. What is the magnetic field in the center?
-a) 1.12E-04 Tesla
-b) 1.22E-04 Tesla
-c) 1.34E-04 Tesla
+d) 1.47E-04 Tesla
-e) 1.61E-04 Tesla
=====*_Rendition_* 4-21=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 1259 turns and is 154 meters long. The wire carrys a current of 9A. What is the magnetic field in the center?
+a) 9.25E-05 Tesla
-b) 1.01E-04 Tesla
-c) 1.11E-04 Tesla
-d) 1.22E-04 Tesla
-e) 1.34E-04 Tesla
=====*_Rendition_* 4-22=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 2806 turns and is 118 meters long. The wire carrys a current of 9.7A. What is the magnetic field in the center?
-a) 2.41E-04 Tesla
-b) 2.64E-04 Tesla
+c) 2.90E-04 Tesla
-d) 3.18E-04 Tesla
-e) 3.48E-04 Tesla
=====*_Rendition_* 4-23=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 1727 turns and is 138 meters long. The wire carrys a current of 8.1A. What is the magnetic field in the center?
-a) 9.66E-05 Tesla
-b) 1.06E-04 Tesla
-c) 1.16E-04 Tesla
+d) 1.27E-04 Tesla
-e) 1.40E-04 Tesla
====*_Question_* 5====
=====*_Rendition_* 5-2=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 1223 turns and is 134 meters long. The wire carrys a current of 8.2A. If this solenoid is sufficiently thin, what is the line integral

of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 28 meters from the center and stops 93 meters from the center?
-a) 2.21E+03 A
-b) 2.43E+03 A
-c) 2.66E+03 A
+d) 2.92E+03 A
-e) 3.20E+03 A
=====*_Rendition_* 5-3=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 2850 turns and is 164 meters long. The wire carrys a current of 9.3A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 47 meters from the center and stops 108 meters from the center?
-a) 5.16E+03 A
+b) 5.66E+03 A
-c) 6.20E+03 A
-d) 6.80E+03 A
-e) 7.46E+03 A
=====*_Rendition_* 5-4=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 1880 turns and is 166 meters long. The wire carrys a current of 9.2A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 48 meters from the center and stops 102 meters from the center?
+a) 3.65E+03 A
-b) 4.00E+03 A
-c) 4.38E+03 A
-d) 4.81E+03 A
-e) 5.27E+03 A
=====*_Rendition_* 5-5=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 1016 turns and is 142 meters long. The wire carrys a current of 9.7A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 27 meters from the center and stops 84 meters from the center?
+a) 3.05E+03 A
-b) 3.35E+03 A
-c) 3.67E+03 A
-d) 4.03E+03 A
-e) 4.41E+03 A
=====*_Rendition_* 5-6=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 1292 turns and is 122 meters long. The wire carrys a current of 8.4A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 39 meters from the center and stops 75 meters from the center?
-a) 1.63E+03 A
-b) 1.78E+03 A
+c) 1.96E+03 A
-d) 2.15E+03 A
-e) 2.35E+03 A
=====*_Rendition_* 5-7=====

<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 2994 turns and is 180 meters long. The wire carrys a current of 9.3A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 43 meters from the center and stops 101 meters from the center?
-a) 6.63E+03 A
+b) 7.27E+03 A
-c) 7.97E+03 A
-d) 8.74E+03 A
-e) 9.58E+03 A
=====*_Rendition_* 5-8=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 1513 turns and is 122 meters long. The wire carrys a current of 9.5A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 34 meters from the center and stops 89 meters from the center?
-a) 2.41E+03 A
-b) 2.65E+03 A
-c) 2.90E+03 A
+d) 3.18E+03 A
-e) 3.49E+03 A
=====*_Rendition_* 5-9=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 1965 turns and is 136 meters long. The wire carrys a current of 7.6A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 43 meters from the center and stops 88 meters from the center?
+a) 2.75E+03 A
-b) 3.01E+03 A
-c) 3.30E+03 A
-d) 3.62E+03 A
-e) 3.97E+03 A
=====*_Rendition_* 5-10=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 1847 turns and is 162 meters long. The wire carrys a current of 8.7A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 42 meters from the center and stops 103 meters from the center?
-a) 2.68E+03 A
-b) 2.93E+03 A
-c) 3.22E+03 A
-d) 3.53E+03 A
+e) 3.87E+03 A
=====*_Rendition_* 5-11=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 2918 turns and is 144 meters long. The wire carrys a current of 9A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 38 meters from the center and stops 89 meters from the center?
+a) 6.20E+03 A
-b) 6.80E+03 A
-c) 7.45E+03 A

-d) 8.17E+03 A
-e) 8.96E+03 A
=====*_Rendition_* 5-12=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 2472 turns and is 144 meters long. The wire carrys a current of 8.4A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 43 meters from the center and stops 87 meters from the center?
-a) 3.17E+03 A
-b) 3.48E+03 A
-c) 3.81E+03 A
+d) 4.18E+03 A
-e) 4.59E+03 A
=====*_Rendition_* 5-13=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 2376 turns and is 156 meters long. The wire carrys a current of 7.6A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 49 meters from the center and stops 102 meters from the center?
-a) 2.32E+03 A
-b) 2.55E+03 A
-c) 2.79E+03 A
-d) 3.06E+03 A
+e) 3.36E+03 A
=====*_Rendition_* 5-14=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 1409 turns and is 170 meters long. The wire carrys a current of 8.1A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 37 meters from the center and stops 100 meters from the center?
-a) 2.94E+03 A
+b) 3.22E+03 A
-c) 3.53E+03 A
-d) 3.87E+03 A
-e) 4.25E+03 A
=====*_Rendition_* 5-15=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 2240 turns and is 182 meters long. The wire carrys a current of 9.2A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 47 meters from the center and stops 109 meters from the center?
-a) 4.14E+03 A
-b) 4.54E+03 A
+c) 4.98E+03 A
-d) 5.46E+03 A
-e) 5.99E+03 A
=====*_Rendition_* 5-16=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 2219 turns and is 134 meters long. The wire carrys a current of 7.6A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 44 meters from the center and stops 86 meters from the center?

-a) 2.41E+03 A
-b) 2.64E+03 A
+c) 2.89E+03 A
-d) 3.17E+03 A
-e) 3.48E+03 A
=====*_Rendition_* 5-17=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 2682 turns and is 146 meters long. The wire carrys a current of 9.5A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 44 meters from the center and stops 86 meters from the center?
-a) 3.84E+03 A
-b) 4.21E+03 A
-c) 4.62E+03 A
+d) 5.06E+03 A
-e) 5.55E+03 A
=====*_Rendition_* 5-18=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 1259 turns and is 156 meters long. The wire carrys a current of 8.9A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 35 meters from the center and stops 90 meters from the center?
-a) 2.82E+03 A
+b) 3.09E+03 A
-c) 3.39E+03 A
-d) 3.71E+03 A
-e) 4.07E+03 A
=====*_Rendition_* 5-19=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 2763 turns and is 134 meters long. The wire carrys a current of 7.7A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 34 meters from the center and stops 86 meters from the center?
-a) 3.97E+03 A
-b) 4.36E+03 A
-c) 4.78E+03 A
+d) 5.24E+03 A
-e) 5.74E+03 A
=====*_Rendition_* 5-20=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 2774 turns and is 154 meters long. The wire carrys a current of 9.1A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 38 meters from the center and stops 94 meters from the center?
-a) 4.42E+03 A
-b) 4.85E+03 A
-c) 5.32E+03 A
-d) 5.83E+03 A
+e) 6.39E+03 A
=====*_Rendition_* 5-21=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 1397 turns and is 154 meters long. The wire carrys a current of 9A. If

this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 31 meters from the center and stops 93 meters from the center?
+a) 3.76E+03 A
-b) 4.12E+03 A
-c) 4.52E+03 A
-d) 4.95E+03 A
-e) 5.43E+03 A
=====*_Rendition_* 5-22=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 2006 turns and is 118 meters long. The wire carrys a current of 9.7A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 30 meters from the center and stops 78 meters from the center?
+a) 4.78E+03 A
-b) 5.24E+03 A
-c) 5.75E+03 A
-d) 6.30E+03 A
-e) 6.91E+03 A
=====*_Rendition_* 5-23=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 1295 turns and is 138 meters long. The wire carrys a current of 8.1A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 22 meters from the center and stops 90 meters from the center?
-a) 2.97E+03 A
-b) 3.26E+03 A
+c) 3.57E+03 A
-d) 3.92E+03 A
-e) 4.30E+03 A
====*_Question_* 6====
=====*_Rendition_* 6-2=====
<!--dummy_1-->What is the sum of 5.2 apples plus 76 apples?
-a) 7.41E+01 apples
+b) 8.12E+01 apples
-c) 8.90E+01 apples
-d) 9.76E+01 apples
-e) 1.07E+02 apples
=====*_Rendition_* 6-3=====
<!--dummy_1-->What is the sum of 3.4 apples plus 62 apples?
-a) 4.96E+01 apples
-b) 5.44E+01 apples
-c) 5.96E+01 apples
+d) 6.54E+01 apples
-e) 7.17E+01 apples
=====*_Rendition_* 6-4=====
<!--dummy_1-->[[File:KaisekiGairon-371-3.svg|right|240px|KaisekiGairon-371-3]]A torus is centered around the x-y plane, with major radius, a = 3.24 m, and minor radius, r = 1.35m. A wire carrying 4.9A is uniformly wrapped with 731 turns. If B=μ₀H is the magnetic field, what is H inside the torus, at a point on the xy plane that is 0.81m from the outermost edge of the torus?

+a) 1.11E+02 amps per meter
-b) 1.20E+02 amps per meter
-c) 1.30E+02 amps per meter
-d) 1.40E+02 amps per meter
-e) 1.51E+02 amps per meter
=====*_Rendition_* 6-5=====
<!--dummy_1-->What is the sum of 6.6 apples plus 33 apples?
-a) 3.61E+01 apples
+b) 3.96E+01 apples
-c) 4.34E+01 apples
-d) 4.76E+01 apples
-e) 5.22E+01 apples
=====*_Rendition_* 6-6=====
<!--dummy_1-->What is the sum of 0.2 apples plus 57 apples?
+a) 5.72E+01 apples
-b) 6.27E+01 apples
-c) 6.88E+01 apples
-d) 7.54E+01 apples
-e) 8.27E+01 apples
=====*_Rendition_* 6-7=====
<!--dummy_1-->[[File:KaisekiGairon-371-3.svg|right|240px|KaisekiGairon-371-3]]A torus is centered around the x-y plane, with major radius, a = 6.48 m, and minor radius, r = 2.16m. A wire carrying 5A is uniformly wrapped with 930 turns. If B=μ₀H is the magnetic field, what is H inside the torus, at a point on the xy plane that is 0.54m from the outermost edge of the torus?
-a) 5.31E+01 amps per meter
-b) 5.73E+01 amps per meter
-c) 6.19E+01 amps per meter
-d) 6.68E+01 amps per meter
+e) 7.21E+01 amps per meter
=====*_Rendition_* 6-8=====
<!--dummy_1-->What is the sum of 0.8 apples plus 18 apples?
-a) 1.56E+01 apples
-b) 1.71E+01 apples
+c) 1.88E+01 apples
-d) 2.06E+01 apples
-e) 2.26E+01 apples
=====*_Rendition_* 6-9=====
<!--dummy_1-->What is the sum of 7.2 apples plus 9 apples?
+a) 1.62E+01 apples
-b) 1.78E+01 apples
-c) 1.95E+01 apples
-d) 2.14E+01 apples
-e) 2.34E+01 apples
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====*_Instructions_*====
Instructions are forthcoming

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{<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by, B=μ₀H, where B is magnetic field. A current of 48A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,6.7){{nowrap end}} to the point {{nowrap begin}}(6.7,0){{nowrap end}}.}
-a) 9.10E+00 amps
-b) 9.98E+00 amps
-c) 1.09E+01 amps
+d) 1.20E+01 amps
-e) 1.32E+01 amps

{<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by, B=μ₀H, where B is magnetic field. A current of 67A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(<big>-</big>6.1, 6.1){{nowrap end}} to the point {{nowrap begin}}(6.1, 6.1){{nowrap end}}.}
-a) 1.27E+01 amps
-b) 1.39E+01 amps
-c) 1.53E+01 amps
+d) 1.68E+01 amps
-e) 1.84E+01 amps

{<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by, B=μ₀H, where B is magnetic field. A current of 84A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,9.3){{nowrap end}} to the point {{nowrap

begin}}(9.3,9.3){{nowrap end}}.}
+a) 1.05E+01 amps
-b) 1.15E+01 amps
-c) 1.26E+01 amps
-d) 1.38E+01 amps
-e) 1.52E+01 amps

{<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by, B=μ₀H, where B is magnetic field. A current of 81A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from {{nowrap begin}}(<big>-∞</big>,6.4){{nowrap end}} to {{nowrap begin}}(+<big>∞</big>,6.4){{nowrap end}}.}
-a) 3.37E+01 amps
-b) 3.69E+01 amps
+c) 4.05E+01 amps
-d) 4.44E+01 amps
-e) 4.87E+01 amps

</quiz>

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Other renditions
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====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by, B=μ₀H, where B is magnetic field. A current of 52A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,7.5){{nowrap end}} to the point {{nowrap begin}}(7.5,0){{nowrap end}}.
-a) 1.19E+01 amps
+b) 1.30E+01 amps
-c) 1.43E+01 amps
-d) 1.56E+01 amps
-e) 1.71E+01 amps
=====*_Rendition_* 1-3=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by, B=μ₀H, where B is magnetic field. A current of 78A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,4.6){{nowrap end}} to the point {{nowrap begin}}(4.6,0){{nowrap end}}.
-a) 1.62E+01 amps
-b) 1.78E+01 amps
+c) 1.95E+01 amps
-d) 2.14E+01 amps
-e) 2.34E+01 amps

=====*_Rendition_* 1-4=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by, B=μ₀H, where B is magnetic field. A current of 83A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,7.4){{nowrap end}} to the point {{nowrap begin}}(7.4,0){{nowrap end}}.
-a) 1.89E+01 amps
+b) 2.08E+01 amps
-c) 2.28E+01 amps
-d) 2.49E+01 amps
-e) 2.74E+01 amps
=====*_Rendition_* 1-5=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by, B=μ₀H, where B is magnetic field. A current of 37A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,8.4){{nowrap end}} to the point {{nowrap begin}}(8.4,0){{nowrap end}}.
-a) 8.44E+00 amps
+b) 9.25E+00 amps
-c) 1.01E+01 amps
-d) 1.11E+01 amps
-e) 1.22E+01 amps
=====*_Rendition_* 1-6=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by, B=μ₀H, where B is magnetic field. A current of 92A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,6.4){{nowrap end}} to the point {{nowrap begin}}(6.4,0){{nowrap end}}.
-a) 2.10E+01 amps
+b) 2.30E+01 amps
-c) 2.52E+01 amps
-d) 2.77E+01 amps
-e) 3.03E+01 amps
=====*_Rendition_* 1-7=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by, B=μ₀H, where B is magnetic field. A current of 87A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,9.3){{nowrap end}} to the point {{nowrap begin}}(9.3,0){{nowrap end}}.
+a) 2.18E+01 amps
-b) 2.38E+01 amps
-c) 2.61E+01 amps
-d) 2.87E+01 amps
-e) 3.14E+01 amps
=====*_Rendition_* 1-8=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by, B=μ₀H, where B is magnetic field. A current of 47A passes along the z-axis. Use symmetry to find the integral,

$\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,9){{nowrap end}} to the point {{nowrap begin}}(9,0){{nowrap end}}.
-a) 8.91E+00 amps
-b) 9.77E+00 amps
-c) 1.07E+01 amps
+d) 1.18E+01 amps
-e) 1.29E+01 amps
=====*_Rendition_* 1-9=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by, B=μ₀H, where B is magnetic field. A current of 55A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,8.7){{nowrap end}} to the point {{nowrap begin}}(8.7,0){{nowrap end}}.
+a) 1.38E+01 amps
-b) 1.51E+01 amps
-c) 1.65E+01 amps
-d) 1.81E+01 amps
-e) 1.99E+01 amps
=====*_Rendition_* 1-10=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by, B=μ₀H, where B is magnetic field. A current of 92A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,7.1){{nowrap end}} to the point {{nowrap begin}}(7.1,0){{nowrap end}}.
+a) 2.30E+01 amps
-b) 2.52E+01 amps
-c) 2.77E+01 amps
-d) 3.03E+01 amps
-e) 3.32E+01 amps
=====*_Rendition_* 1-11=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by, B=μ₀H, where B is magnetic field. A current of 40A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,6.7){{nowrap end}} to the point {{nowrap begin}}(6.7,0){{nowrap end}}.
-a) 8.32E+00 amps
-b) 9.12E+00 amps
+c) 1.00E+01 amps
-d) 1.10E+01 amps
-e) 1.20E+01 amps
=====*_Rendition_* 1-12=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by, B=μ₀H, where B is magnetic field. A current of 54A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,5.4){{nowrap end}} to the point {{nowrap begin}}(5.4,0){{nowrap end}}.
-a) 9.34E+00 amps

-b) 1.02E+01 amps
-c) 1.12E+01 amps
-d) 1.23E+01 amps
+e) 1.35E+01 amps
=====*_Rendition_* 1-13=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by, B=μ₀H, where B is magnetic field. A current of 48A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,9.3){{nowrap end}} to the point {{nowrap begin}}(9.3,0){{nowrap end}}.
-a) 9.98E+00 amps
-b) 1.09E+01 amps
+c) 1.20E+01 amps
-d) 1.32E+01 amps
-e) 1.44E+01 amps
=====*_Rendition_* 1-14=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by, B=μ₀H, where B is magnetic field. A current of 74A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,4.1){{nowrap end}} to the point {{nowrap begin}}(4.1,0){{nowrap end}}.
-a) 1.28E+01 amps
-b) 1.40E+01 amps
-c) 1.54E+01 amps
-d) 1.69E+01 amps
+e) 1.85E+01 amps
=====*_Rendition_* 1-15=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by, B=μ₀H, where B is magnetic field. A current of 91A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,7.3){{nowrap end}} to the point {{nowrap begin}}(7.3,0){{nowrap end}}.
+a) 2.28E+01 amps
-b) 2.49E+01 amps
-c) 2.74E+01 amps
-d) 3.00E+01 amps
-e) 3.29E+01 amps
=====*_Rendition_* 1-16=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by, B=μ₀H, where B is magnetic field. A current of 94A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,8.4){{nowrap end}} to the point {{nowrap begin}}(8.4,0){{nowrap end}}.
-a) 1.63E+01 amps
-b) 1.78E+01 amps
-c) 1.95E+01 amps
-d) 2.14E+01 amps
+e) 2.35E+01 amps

=====*_Rendition_* 1-17=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by, B=μ₀H, where B is magnetic field. A current of 63A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,4.6){{nowrap end}} to the point {{nowrap begin}}(4.6,0){{nowrap end}}.
-a) 1.31E+01 amps
-b) 1.44E+01 amps
+c) 1.58E+01 amps
-d) 1.73E+01 amps
-e) 1.89E+01 amps
=====*_Rendition_* 1-18=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by, B=μ₀H, where B is magnetic field. A current of 43A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,7.1){{nowrap end}} to the point {{nowrap begin}}(7.1,0){{nowrap end}}.
-a) 8.15E+00 amps
-b) 8.94E+00 amps
-c) 9.80E+00 amps
+d) 1.08E+01 amps
-e) 1.18E+01 amps
=====*_Rendition_* 1-19=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by, B=μ₀H, where B is magnetic field. A current of 99A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,6.2){{nowrap end}} to the point {{nowrap begin}}(6.2,0){{nowrap end}}.
+a) 2.48E+01 amps
-b) 2.71E+01 amps
-c) 2.98E+01 amps
-d) 3.26E+01 amps
-e) 3.58E+01 amps
=====*_Rendition_* 1-20=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by, B=μ₀H, where B is magnetic field. A current of 85A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,9.8){{nowrap end}} to the point {{nowrap begin}}(9.8,0){{nowrap end}}.
-a) 1.77E+01 amps
-b) 1.94E+01 amps
+c) 2.13E+01 amps
-d) 2.33E+01 amps
-e) 2.55E+01 amps
=====*_Rendition_* 1-21=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by, B=μ₀H, where B is magnetic field. A current of 40A passes along the z-axis. Use symmetry to find the integral,

$\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,6.6){{nowrap end}} to the point {{nowrap begin}}(6.6,0){{nowrap end}}.
+a) 1.00E+01 amps
-b) 1.10E+01 amps
-c) 1.20E+01 amps
-d) 1.32E+01 amps
-e) 1.45E+01 amps
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by, B=μ₀H, where B is magnetic field. A current of 96A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(<big>-</big>6.6, 6.6){{nowrap end}} to the point {{nowrap begin}}(6.6, 6.6){{nowrap end}}.
-a) 1.82E+01 amps
-b) 2.00E+01 amps
-c) 2.19E+01 amps
+d) 2.40E+01 amps
-e) 2.63E+01 amps
=====*_Rendition_* 2-3=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by, B=μ₀H, where B is magnetic field. A current of 91A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(<big>-</big>9.6, 9.6){{nowrap end}} to the point {{nowrap begin}}(9.6, 9.6){{nowrap end}}.
-a) 1.73E+01 amps
-b) 1.89E+01 amps
-c) 2.07E+01 amps
+d) 2.28E+01 amps
-e) 2.49E+01 amps
=====*_Rendition_* 2-4=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by, B=μ₀H, where B is magnetic field. A current of 74A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(<big>-</big>5.7, 5.7){{nowrap end}} to the point {{nowrap begin}}(5.7, 5.7){{nowrap end}}.
-a) 1.54E+01 amps
-b) 1.69E+01 amps
+c) 1.85E+01 amps
-d) 2.03E+01 amps
-e) 2.22E+01 amps
=====*_Rendition_* 2-5=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by, B=μ₀H, where B is magnetic field. A current of 33A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(<big>-</big>6.6, 6.6){{nowrap end}} to the point {{nowrap begin}}(6.6, 6.6){{nowrap end}}.

-a) 5.71E+00 amps
-b) 6.26E+00 amps
-c) 6.86E+00 amps
-d) 7.52E+00 amps
+e) 8.25E+00 amps
=====*_Rendition_* 2-6=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by, B=μ₀H, where B is magnetic field. A current of 74A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(<big>-</big>7.4, 7.4){{nowrap end}} to the point {{nowrap begin}}(7.4, 7.4){{nowrap end}}.
-a) 1.69E+01 amps
+b) 1.85E+01 amps
-c) 2.03E+01 amps
-d) 2.22E+01 amps
-e) 2.44E+01 amps
=====*_Rendition_* 2-7=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by, B=μ₀H, where B is magnetic field. A current of 96A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(<big>-</big>6.4, 6.4){{nowrap end}} to the point {{nowrap begin}}(6.4, 6.4){{nowrap end}}.
-a) 2.00E+01 amps
-b) 2.19E+01 amps
+c) 2.40E+01 amps
-d) 2.63E+01 amps
-e) 2.89E+01 amps
=====*_Rendition_* 2-8=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by, B=μ₀H, where B is magnetic field. A current of 65A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(<big>-</big>4.9, 4.9){{nowrap end}} to the point {{nowrap begin}}(4.9, 4.9){{nowrap end}}.
-a) 1.23E+01 amps
-b) 1.35E+01 amps
-c) 1.48E+01 amps
+d) 1.63E+01 amps
-e) 1.78E+01 amps
=====*_Rendition_* 2-9=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by, B=μ₀H, where B is magnetic field. A current of 40A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(<big>-</big>9.4, 9.4){{nowrap end}} to the point {{nowrap begin}}(9.4, 9.4){{nowrap end}}.
-a) 7.59E+00 amps
-b) 8.32E+00 amps
-c) 9.12E+00 amps
+d) 1.00E+01 amps

-e) 1.10E+01 amps
=====*_Rendition_* 2-10=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 77A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap
begin}}(<big>-</big>9.8, 9.8){{nowrap end}} to the point {{nowrap
begin}}(9.8, 9.8){{nowrap end}}.
-a) 1.60E+01 amps
-b) 1.76E+01 amps
+c) 1.93E+01 amps
-d) 2.11E+01 amps
-e) 2.31E+01 amps
=====*_Rendition_* 2-11=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 70A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap
begin}}(<big>-</big>8.7, 8.7){{nowrap end}} to the point {{nowrap
begin}}(8.7, 8.7){{nowrap end}}.
-a) 1.21E+01 amps
-b) 1.33E+01 amps
-c) 1.46E+01 amps
-d) 1.60E+01 amps
+e) 1.75E+01 amps
=====*_Rendition_* 2-12=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 87A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap
begin}}(<big>-</big>6.1, 6.1){{nowrap end}} to the point {{nowrap
begin}}(6.1, 6.1){{nowrap end}}.
-a) 1.50E+01 amps
-b) 1.65E+01 amps
-c) 1.81E+01 amps
-d) 1.98E+01 amps
+e) 2.18E+01 amps
=====*_Rendition_* 2-13=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 94A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap
begin}}(<big>-</big>5.8, 5.8){{nowrap end}} to the point {{nowrap
begin}}(5.8, 5.8){{nowrap end}}.
-a) 1.78E+01 amps
-b) 1.95E+01 amps
-c) 2.14E+01 amps
+d) 2.35E+01 amps
-e) 2.58E+01 amps
=====*_Rendition_* 2-14=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 63A

passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(<big>-</big>9.3, 9.3){{nowrap end}} to the point {{nowrap begin}}(9.3, 9.3){{nowrap end}}.
-a) 1.19E+01 amps
-b) 1.31E+01 amps
-c) 1.44E+01 amps
+d) 1.58E+01 amps
-e) 1.73E+01 amps
=====*_Rendition_* 2-15=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by, B=μ₀H, where B is magnetic field. A current of 82A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(<big>-</big>9.3, 9.3){{nowrap end}} to the point {{nowrap begin}}(9.3, 9.3){{nowrap end}}.
+a) 2.05E+01 amps
-b) 2.25E+01 amps
-c) 2.46E+01 amps
-d) 2.70E+01 amps
-e) 2.96E+01 amps
=====*_Rendition_* 2-16=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by, B=μ₀H, where B is magnetic field. A current of 51A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(<big>-</big>7, 7){{nowrap end}} to the point {{nowrap begin}}(7, 7){{nowrap end}}.
-a) 9.67E+00 amps
-b) 1.06E+01 amps
-c) 1.16E+01 amps
+d) 1.28E+01 amps
-e) 1.40E+01 amps
=====*_Rendition_* 2-17=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by, B=μ₀H, where B is magnetic field. A current of 88A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(<big>-</big>8.1, 8.1){{nowrap end}} to the point {{nowrap begin}}(8.1, 8.1){{nowrap end}}.
-a) 2.01E+01 amps
+b) 2.20E+01 amps
-c) 2.41E+01 amps
-d) 2.64E+01 amps
-e) 2.90E+01 amps
=====*_Rendition_* 2-18=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by, B=μ₀H, where B is magnetic field. A current of 51A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(<big>-</big>6.8, 6.8){{nowrap end}} to the point {{nowrap begin}}(6.8, 6.8){{nowrap end}}.

-a) 1.06E+01 amps
-b) 1.16E+01 amps
+c) 1.28E+01 amps
-d) 1.40E+01 amps
-e) 1.53E+01 amps
=====*_Rendition_* 2-19=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by, B=μ₀H, where B is magnetic field. A current of 74A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(<big>-</big>6.4, 6.4){{nowrap end}} to the point {{nowrap begin}}(6.4, 6.4){{nowrap end}}.
-a) 1.28E+01 amps
-b) 1.40E+01 amps
-c) 1.54E+01 amps
-d) 1.69E+01 amps
+e) 1.85E+01 amps
=====*_Rendition_* 2-20=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by, B=μ₀H, where B is magnetic field. A current of 71A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(<big>-</big>8.6, 8.6){{nowrap end}} to the point {{nowrap begin}}(8.6, 8.6){{nowrap end}}.
-a) 1.62E+01 amps
+b) 1.78E+01 amps
-c) 1.95E+01 amps
-d) 2.13E+01 amps
-e) 2.34E+01 amps
=====*_Rendition_* 2-21=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by, B=μ₀H, where B is magnetic field. A current of 68A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(<big>-</big>6.4, 6.4){{nowrap end}} to the point {{nowrap begin}}(6.4, 6.4){{nowrap end}}.
-a) 1.55E+01 amps
+b) 1.70E+01 amps
-c) 1.86E+01 amps
-d) 2.04E+01 amps
-e) 2.24E+01 amps
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by, B=μ₀H, where B is magnetic field. A current of 33A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,9.5){{nowrap end}} to the point {{nowrap begin}}(9.5,9.5){{nowrap end}}.
-a) 3.43E+00 amps
-b) 3.76E+00 amps
+c) 4.13E+00 amps

-d) 4.52E+00 amps
-e) 4.96E+00 amps
=====*_Rendition_* 3-3=====
<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by, B=μ₀H, where B is magnetic field. A current of 37A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,9){{nowrap end}} to the point {{nowrap begin}}(9,9){{nowrap end}}.
-a) 4.22E+00 amps
+b) 4.63E+00 amps
-c) 5.07E+00 amps
-d) 5.56E+00 amps
-e) 6.10E+00 amps
=====*_Rendition_* 3-4=====
<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by, B=μ₀H, where B is magnetic field. A current of 88A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,6.6){{nowrap end}} to the point {{nowrap begin}}(6.6,6.6){{nowrap end}}.
-a) 9.15E+00 amps
-b) 1.00E+01 amps
+c) 1.10E+01 amps
-d) 1.21E+01 amps
-e) 1.32E+01 amps
=====*_Rendition_* 3-5=====
<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by, B=μ₀H, where B is magnetic field. A current of 33A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,9.8){{nowrap end}} to the point {{nowrap begin}}(9.8,9.8){{nowrap end}}.
-a) 3.76E+00 amps
+b) 4.13E+00 amps
-c) 4.52E+00 amps
-d) 4.96E+00 amps
-e) 5.44E+00 amps
=====*_Rendition_* 3-6=====
<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by, B=μ₀H, where B is magnetic field. A current of 92A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,5.3){{nowrap end}} to the point {{nowrap begin}}(5.3,5.3){{nowrap end}}.
-a) 8.72E+00 amps
-b) 9.57E+00 amps
-c) 1.05E+01 amps
+d) 1.15E+01 amps
-e) 1.26E+01 amps
=====*_Rendition_* 3-7=====
<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by,

B=μ₀H, where B is magnetic field. A current of 86A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,5){{nowrap end}} to the point {{nowrap begin}}(5,5){{nowrap end}}.
-a) 7.44E+00 amps
-b) 8.15E+00 amps
-c) 8.94E+00 amps
-d) 9.80E+00 amps
+e) 1.08E+01 amps
=====*_Rendition_* 3-8=====
<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by, B=μ₀H, where B is magnetic field. A current of 46A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,7.9){{nowrap end}} to the point {{nowrap begin}}(7.9,7.9){{nowrap end}}.
-a) 5.24E+00 amps
+b) 5.75E+00 amps
-c) 6.30E+00 amps
-d) 6.91E+00 amps
-e) 7.58E+00 amps
=====*_Rendition_* 3-9=====
<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by, B=μ₀H, where B is magnetic field. A current of 50A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,7){{nowrap end}} to the point {{nowrap begin}}(7,7){{nowrap end}}.
+a) 6.25E+00 amps
-b) 6.85E+00 amps
-c) 7.51E+00 amps
-d) 8.24E+00 amps
-e) 9.03E+00 amps
=====*_Rendition_* 3-10=====
<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by, B=μ₀H, where B is magnetic field. A current of 39A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,8.5){{nowrap end}} to the point {{nowrap begin}}(8.5,8.5){{nowrap end}}.
+a) 4.88E+00 amps
-b) 5.35E+00 amps
-c) 5.86E+00 amps
-d) 6.43E+00 amps
-e) 7.05E+00 amps
=====*_Rendition_* 3-11=====
<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by, B=μ₀H, where B is magnetic field. A current of 59A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,7.2){{nowrap end}} to the point {{nowrap

begin}}(7.2,7.2){{nowrap end}}.
+a) 7.38E+00 amps
-b) 8.09E+00 amps
-c) 8.87E+00 amps
-d) 9.72E+00 amps
-e) 1.07E+01 amps
=====*_Rendition_* 3-12=====
<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by, B=μ₀H, where B is magnetic field. A current of 42A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,4.2){{nowrap end}} to the point {{nowrap begin}}(4.2,4.2){{nowrap end}}.
-a) 3.98E+00 amps
-b) 4.37E+00 amps
-c) 4.79E+00 amps
+d) 5.25E+00 amps
-e) 5.76E+00 amps
=====*_Rendition_* 3-13=====
<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by, B=μ₀H, where B is magnetic field. A current of 36A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,8.6){{nowrap end}} to the point {{nowrap begin}}(8.6,8.6){{nowrap end}}.
+a) 4.50E+00 amps
-b) 4.93E+00 amps
-c) 5.41E+00 amps
-d) 5.93E+00 amps
-e) 6.50E+00 amps
=====*_Rendition_* 3-14=====
<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by, B=μ₀H, where B is magnetic field. A current of 38A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,6.7){{nowrap end}} to the point {{nowrap begin}}(6.7,6.7){{nowrap end}}.
-a) 4.33E+00 amps
+b) 4.75E+00 amps
-c) 5.21E+00 amps
-d) 5.71E+00 amps
-e) 6.26E+00 amps
=====*_Rendition_* 3-15=====
<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by, B=μ₀H, where B is magnetic field. A current of 89A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,4.8){{nowrap end}} to the point {{nowrap begin}}(4.8,4.8){{nowrap end}}.
-a) 9.25E+00 amps
-b) 1.01E+01 amps
+c) 1.11E+01 amps

-d) 1.22E+01 amps
-e) 1.34E+01 amps
=====*_Rendition_* 3-16=====
<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by, B=μ₀H, where B is magnetic field. A current of 48A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,8.4){{nowrap end}} to the point {{nowrap begin}}(8.4,8.4){{nowrap end}}.
-a) 5.47E+00 amps
+b) 6.00E+00 amps
-c) 6.58E+00 amps
-d) 7.21E+00 amps
-e) 7.91E+00 amps
=====*_Rendition_* 3-17=====
<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by, B=μ₀H, where B is magnetic field. A current of 49A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,9.8){{nowrap end}} to the point {{nowrap begin}}(9.8,9.8){{nowrap end}}.
+a) 6.13E+00 amps
-b) 6.72E+00 amps
-c) 7.36E+00 amps
-d) 8.07E+00 amps
-e) 8.85E+00 amps
=====*_Rendition_* 3-18=====
<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by, B=μ₀H, where B is magnetic field. A current of 94A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,5.3){{nowrap end}} to the point {{nowrap begin}}(5.3,5.3){{nowrap end}}.
-a) 9.77E+00 amps
-b) 1.07E+01 amps
+c) 1.18E+01 amps
-d) 1.29E+01 amps
-e) 1.41E+01 amps
=====*_Rendition_* 3-19=====
<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by, B=μ₀H, where B is magnetic field. A current of 31A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,7.3){{nowrap end}} to the point {{nowrap begin}}(7.3,7.3){{nowrap end}}.
+a) 3.88E+00 amps
-b) 4.25E+00 amps
-c) 4.66E+00 amps
-d) 5.11E+00 amps
-e) 5.60E+00 amps
=====*_Rendition_* 3-20=====
<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by,

B=μ₀H, where B is magnetic field. A current of 81A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,7.9){{nowrap end}} to the point {{nowrap begin}}(7.9,7.9){{nowrap end}}.
-a) 7.68E+00 amps
-b) 8.42E+00 amps
-c) 9.23E+00 amps
+d) 1.01E+01 amps
-e) 1.11E+01 amps
=====*_Rendition_* 3-21=====
<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by, B=μ₀H, where B is magnetic field. A current of 58A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,8.5){{nowrap end}} to the point {{nowrap begin}}(8.5,8.5){{nowrap end}}.
-a) 6.03E+00 amps
-b) 6.61E+00 amps
+c) 7.25E+00 amps
-d) 7.95E+00 amps
-e) 8.72E+00 amps
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by, B=μ₀H, where B is magnetic field. A current of 94A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from {{nowrap begin}}(<big>-∞</big>,6.2){{nowrap end}} to {{nowrap begin}}(+<big>∞</big>,6.2){{nowrap end}}.
-a) 3.91E+01 amps
-b) 4.29E+01 amps
+c) 4.70E+01 amps
-d) 5.15E+01 amps
-e) 5.65E+01 amps
=====*_Rendition_* 4-3=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by, B=μ₀H, where B is magnetic field. A current of 93A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from {{nowrap begin}}(<big>-∞</big>,4.1){{nowrap end}} to {{nowrap begin}}(+<big>∞</big>,4.1){{nowrap end}}.
-a) 3.53E+01 amps
-b) 3.87E+01 amps
-c) 4.24E+01 amps
+d) 4.65E+01 amps
-e) 5.10E+01 amps
=====*_Rendition_* 4-4=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by, B=μ₀H, where B is magnetic field. A current of 74A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from {{nowrap

begin}}(<big>-∞</big>,9){{nowrap end}} to {{nowrap begin}}(+<big>∞</big>,9){{nowrap end}}.
-a) 3.08E+01 amps
-b) 3.37E+01 amps
+c) 3.70E+01 amps
-d) 4.06E+01 amps
-e) 4.45E+01 amps
=====*_Rendition_* 4-5=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by, B=μ₀H, where B is magnetic field. A current of 67A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from {{nowrap begin}}(<big>-∞</big>,9.4){{nowrap end}} to {{nowrap begin}}(+<big>∞</big>,9.4){{nowrap end}}.
-a) 2.32E+01 amps
-b) 2.54E+01 amps
-c) 2.79E+01 amps
-d) 3.06E+01 amps
+e) 3.35E+01 amps
=====*_Rendition_* 4-6=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by, B=μ₀H, where B is magnetic field. A current of 31A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from {{nowrap begin}}(<big>-∞</big>,9.2){{nowrap end}} to {{nowrap begin}}(+<big>∞</big>,9.2){{nowrap end}}.
-a) 1.41E+01 amps
+b) 1.55E+01 amps
-c) 1.70E+01 amps
-d) 1.86E+01 amps
-e) 2.04E+01 amps
=====*_Rendition_* 4-7=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by, B=μ₀H, where B is magnetic field. A current of 74A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from {{nowrap begin}}(<big>-∞</big>,8.2){{nowrap end}} to {{nowrap begin}}(+<big>∞</big>,8.2){{nowrap end}}.
-a) 3.37E+01 amps
+b) 3.70E+01 amps
-c) 4.06E+01 amps
-d) 4.45E+01 amps
-e) 4.88E+01 amps
=====*_Rendition_* 4-8=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by, B=μ₀H, where B is magnetic field. A current of 69A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from {{nowrap begin}}(<big>-∞</big>,5.8){{nowrap end}} to {{nowrap begin}}(+<big>∞</big>,5.8){{nowrap end}}.
-a) 2.87E+01 amps
-b) 3.15E+01 amps

+c) 3.45E+01 amps
-d) 3.78E+01 amps
-e) 4.15E+01 amps
=====*_Rendition_* 4-9=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by, B=μ₀H, where B is magnetic field. A current of 85A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from {{nowrap begin}}(<big>-∞</big>,8){{nowrap end}} to {{nowrap begin}}(+<big>∞</big>,8){{nowrap end}}.
-a) 2.94E+01 amps
-b) 3.22E+01 amps
-c) 3.53E+01 amps
-d) 3.88E+01 amps
+e) 4.25E+01 amps
=====*_Rendition_* 4-10=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by, B=μ₀H, where B is magnetic field. A current of 88A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from {{nowrap begin}}(<big>-∞</big>,8.7){{nowrap end}} to {{nowrap begin}}(+<big>∞</big>,8.7){{nowrap end}}.
-a) 4.01E+01 amps
+b) 4.40E+01 amps
-c) 4.82E+01 amps
-d) 5.29E+01 amps
-e) 5.80E+01 amps
=====*_Rendition_* 4-11=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by, B=μ₀H, where B is magnetic field. A current of 94A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from {{nowrap begin}}(<big>-∞</big>,9.4){{nowrap end}} to {{nowrap begin}}(+<big>∞</big>,9.4){{nowrap end}}.
-a) 3.25E+01 amps
-b) 3.57E+01 amps
-c) 3.91E+01 amps
-d) 4.29E+01 amps
+e) 4.70E+01 amps
=====*_Rendition_* 4-12=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by, B=μ₀H, where B is magnetic field. A current of 96A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from {{nowrap begin}}(<big>-∞</big>,8.1){{nowrap end}} to {{nowrap begin}}(+<big>∞</big>,8.1){{nowrap end}}.
-a) 3.32E+01 amps
-b) 3.64E+01 amps
-c) 3.99E+01 amps
-d) 4.38E+01 amps
+e) 4.80E+01 amps
=====*_Rendition_* 4-13=====

<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 36A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from {{nowrap
begin}}(<big>-∞</big>,8.3){{nowrap end}} to {{nowrap
begin}}(+<big>∞</big>,8.3){{nowrap end}}.
-a) 1.50E+01 amps
-b) 1.64E+01 amps
+c) 1.80E+01 amps
-d) 1.97E+01 amps
-e) 2.16E+01 amps
=====*_Rendition_* 4-14=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 76A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from {{nowrap
begin}}(<big>-∞</big>,5.8){{nowrap end}} to {{nowrap
begin}}(+<big>∞</big>,5.8){{nowrap end}}.
-a) 3.16E+01 amps
-b) 3.47E+01 amps
+c) 3.80E+01 amps
-d) 4.17E+01 amps
-e) 4.57E+01 amps
=====*_Rendition_* 4-15=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 44A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from {{nowrap
begin}}(<big>-∞</big>,5){{nowrap end}} to {{nowrap
begin}}(+<big>∞</big>,5){{nowrap end}}.
-a) 1.67E+01 amps
-b) 1.83E+01 amps
-c) 2.01E+01 amps
+d) 2.20E+01 amps
-e) 2.41E+01 amps
=====*_Rendition_* 4-16=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 39A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from {{nowrap
begin}}(<big>-∞</big>,8.5){{nowrap end}} to {{nowrap
begin}}(+<big>∞</big>,8.5){{nowrap end}}.
-a) 1.62E+01 amps
-b) 1.78E+01 amps
+c) 1.95E+01 amps
-d) 2.14E+01 amps
-e) 2.34E+01 amps
=====*_Rendition_* 4-17=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 43A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from {{nowrap

begin}}(<big>-∞</big>,5.8){{nowrap end}} to {{nowrap begin}}(+<big>∞</big>,5.8){{nowrap end}}.
-a) 1.63E+01 amps
-b) 1.79E+01 amps
-c) 1.96E+01 amps
+d) 2.15E+01 amps
-e) 2.36E+01 amps
=====*_Rendition_* 4-18=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by, B=μ₀H, where B is magnetic field. A current of 31A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from {{nowrap begin}}(<big>-∞</big>,9.4){{nowrap end}} to {{nowrap begin}}(+<big>∞</big>,9.4){{nowrap end}}.
+a) 1.55E+01 amps
-b) 1.70E+01 amps
-c) 1.86E+01 amps
-d) 2.04E+01 amps
-e) 2.24E+01 amps
=====*_Rendition_* 4-19=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by, B=μ₀H, where B is magnetic field. A current of 66A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from {{nowrap begin}}(<big>-∞</big>,5.5){{nowrap end}} to {{nowrap begin}}(+<big>∞</big>,5.5){{nowrap end}}.
-a) 3.01E+01 amps
+b) 3.30E+01 amps
-c) 3.62E+01 amps
-d) 3.97E+01 amps
-e) 4.35E+01 amps
=====*_Rendition_* 4-20=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by, B=μ₀H, where B is magnetic field. A current of 76A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from {{nowrap begin}}(<big>-∞</big>,9.6){{nowrap end}} to {{nowrap begin}}(+<big>∞</big>,9.6){{nowrap end}}.
-a) 3.16E+01 amps
-b) 3.47E+01 amps
+c) 3.80E+01 amps
-d) 4.17E+01 amps
-e) 4.57E+01 amps
=====*_Rendition_* 4-21=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by, B=μ₀H, where B is magnetic field. A current of 67A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from {{nowrap begin}}(<big>-∞</big>,6.9){{nowrap end}} to {{nowrap begin}}(+<big>∞</big>,6.9){{nowrap end}}.
-a) 2.54E+01 amps
-b) 2.79E+01 amps

-c) 3.06E+01 amps
+d) 3.35E+01 amps
-e) 3.67E+01 amps
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====*_Instructions_*====
Instructions are forthcoming

Transclusion from [[Quizbank/Instructions_0]]:
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==*_Quizbank_*==
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Information (click to expand)
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*_numerical_*
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*_See_* [[User:Guy vandegrift]]
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===*_Quiz_*===
<quiz display=simple>
{<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 4.2 m has a gap of 8 mm, and a charge of 45 μC. What is the electric field between the plates?}
-a) 5.16E+04 N/C (or V/m)
-b) 6.25E+04 N/C (or V/m)
-c) 7.57E+04 N/C (or V/m)
+d) 9.17E+04 N/C (or V/m)
-e) 1.11E+05 N/C (or V/m)

{<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 3.2 m has a gap of 13 mm, and a charge of 49 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.}
-a) 3.46E-11 Vs²m⁻¹
-b) 4.20E-11 Vs²m⁻¹
-c) 5.08E-11 Vs²m⁻¹
+d) 6.16E-11 Vs²m⁻¹
-e) 7.46E-11 Vs²m⁻¹

{<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 4.9 m has a gap of 17 mm, and a charge of 54 μC. The capacitor is discharged through a 9 kΩ resistor. What is the decay time? }
-a) 2.92E-04 s
+b) 3.54E-04 s
-c) 4.28E-04 s
-d) 5.19E-04 s
-e) 6.29E-04 s

{<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 3.3 m has a gap of 12 mm, and a charge of 93 μC. The capacitor is discharged through a 9 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)}
-a) 9.88E-09 Tesla
-b) 1.24E-08 Tesla
-c) 1.57E-08 Tesla
-d) 1.97E-08 Tesla
+e) 2.48E-08 Tesla

</quiz>

<div class="toccolours mw-collapsible mw-collapsed" style="width:100%">

Other renditions
<div class="mw-collapsible-content">
====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 3.3 m has a gap of 16 mm, and a charge of 68 μC. What is the electric field between the plates?
-a) 1.26E+05 N/C (or V/m)
-b) 1.53E+05 N/C (or V/m)
-c) 1.85E+05 N/C (or V/m)
+d) 2.24E+05 N/C (or V/m)
-e) 2.72E+05 N/C (or V/m)
=====*_Rendition_* 1-3=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 4.9 m has a gap of 11 mm, and a charge of 85 μC. What is the electric field between the plates?
+a) 1.27E+05 N/C (or V/m)
-b) 1.54E+05 N/C (or V/m)
-c) 1.87E+05 N/C (or V/m)
-d) 2.26E+05 N/C (or V/m)
-e) 2.74E+05 N/C (or V/m)
=====*_Rendition_* 1-4=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 4.4 m has a gap of 18 mm, and a charge of 36 μC. What is the electric field between the plates?

-a) 4.55E+04 N/C (or V/m)
-b) 5.52E+04 N/C (or V/m)
+c) 6.68E+04 N/C (or V/m)
-d) 8.10E+04 N/C (or V/m)
-e) 9.81E+04 N/C (or V/m)
=====*_Rendition_* 1-5=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 3.4 m has a gap of 15 mm, and a charge of 63 μC. What is the electric field between the plates?
-a) 1.62E+05 N/C (or V/m)
+b) 1.96E+05 N/C (or V/m)
-c) 2.37E+05 N/C (or V/m)
-d) 2.88E+05 N/C (or V/m)
-e) 3.48E+05 N/C (or V/m)
=====*_Rendition_* 1-6=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 3.7 m has a gap of 8 mm, and a charge of 89 μC. What is the electric field between the plates?
-a) 1.93E+05 N/C (or V/m)
+b) 2.34E+05 N/C (or V/m)
-c) 2.83E+05 N/C (or V/m)
-d) 3.43E+05 N/C (or V/m)
-e) 4.16E+05 N/C (or V/m)
=====*_Rendition_* 1-7=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 4.4 m has a gap of 18 mm, and a charge of 62 μC. What is the electric field between the plates?
-a) 9.50E+04 N/C (or V/m)
+b) 1.15E+05 N/C (or V/m)
-c) 1.39E+05 N/C (or V/m)
-d) 1.69E+05 N/C (or V/m)
-e) 2.05E+05 N/C (or V/m)
=====*_Rendition_* 1-8=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 3.6 m has a gap of 8 mm, and a charge of 53 μC. What is the electric field between the plates?
-a) 6.82E+04 N/C (or V/m)
-b) 8.27E+04 N/C (or V/m)
-c) 1.00E+05 N/C (or V/m)
-d) 1.21E+05 N/C (or V/m)
+e) 1.47E+05 N/C (or V/m)
=====*_Rendition_* 1-9=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 4.8 m has a gap of 14 mm, and a charge of 75 μC. What is the electric field between the plates?
-a) 5.43E+04 N/C (or V/m)
-b) 6.58E+04 N/C (or V/m)
-c) 7.97E+04 N/C (or V/m)
-d) 9.66E+04 N/C (or V/m)
+e) 1.17E+05 N/C (or V/m)
=====*_Rendition_* 1-10=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular

capactitor of radius 4.3 m has a gap of 7 mm, and a charge of 47 μC. What is the electric field between the plates?
-a) 7.54E+04 N/C (or V/m)
+b) 9.14E+04 N/C (or V/m)
-c) 1.11E+05 N/C (or V/m)
-d) 1.34E+05 N/C (or V/m)
-e) 1.63E+05 N/C (or V/m)
=====*_Rendition_* 1-11=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 4.1 m has a gap of 14 mm, and a charge of 24 μC. What is the electric field between the plates?
-a) 4.24E+04 N/C (or V/m)
+b) 5.13E+04 N/C (or V/m)
-c) 6.22E+04 N/C (or V/m)
-d) 7.53E+04 N/C (or V/m)
-e) 9.13E+04 N/C (or V/m)
=====*_Rendition_* 1-12=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 4.6 m has a gap of 12 mm, and a charge of 55 μC. What is the electric field between the plates?
-a) 6.37E+04 N/C (or V/m)
-b) 7.71E+04 N/C (or V/m)
+c) 9.34E+04 N/C (or V/m)
-d) 1.13E+05 N/C (or V/m)
-e) 1.37E+05 N/C (or V/m)
=====*_Rendition_* 1-13=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 3.7 m has a gap of 10 mm, and a charge of 41 μC. What is the electric field between the plates?
+a) 1.08E+05 N/C (or V/m)
-b) 1.30E+05 N/C (or V/m)
-c) 1.58E+05 N/C (or V/m)
-d) 1.91E+05 N/C (or V/m)
-e) 2.32E+05 N/C (or V/m)
=====*_Rendition_* 1-14=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 3.7 m has a gap of 10 mm, and a charge of 12 μC. What is the electric field between the plates?
-a) 2.15E+04 N/C (or V/m)
-b) 2.60E+04 N/C (or V/m)
+c) 3.15E+04 N/C (or V/m)
-d) 3.82E+04 N/C (or V/m)
-e) 4.63E+04 N/C (or V/m)
=====*_Rendition_* 1-15=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 3.2 m has a gap of 12 mm, and a charge of 84 μC. What is the electric field between the plates?
-a) 1.37E+05 N/C (or V/m)
-b) 1.66E+05 N/C (or V/m)
-c) 2.01E+05 N/C (or V/m)
-d) 2.43E+05 N/C (or V/m)
+e) 2.95E+05 N/C (or V/m)

=====*_Rendition_* 1-16=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 3.9 m has a gap of 19 mm, and a charge of 66 μC. What is the electric field between the plates?
-a) 1.29E+05 N/C (or V/m)
+b) 1.56E+05 N/C (or V/m)
-c) 1.89E+05 N/C (or V/m)
-d) 2.29E+05 N/C (or V/m)
-e) 2.77E+05 N/C (or V/m)
=====*_Rendition_* 1-17=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 4.4 m has a gap of 12 mm, and a charge of 72 μC. What is the electric field between the plates?
-a) 6.21E+04 N/C (or V/m)
-b) 7.52E+04 N/C (or V/m)
-c) 9.11E+04 N/C (or V/m)
-d) 1.10E+05 N/C (or V/m)
+e) 1.34E+05 N/C (or V/m)
=====*_Rendition_* 1-18=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 3.5 m has a gap of 14 mm, and a charge of 21 μC. What is the electric field between the plates?
+a) 6.16E+04 N/C (or V/m)
-b) 7.47E+04 N/C (or V/m)
-c) 9.05E+04 N/C (or V/m)
-d) 1.10E+05 N/C (or V/m)
-e) 1.33E+05 N/C (or V/m)
=====*_Rendition_* 1-19=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 3.3 m has a gap of 14 mm, and a charge of 11 μC. What is the electric field between the plates?
-a) 2.04E+04 N/C (or V/m)
-b) 2.47E+04 N/C (or V/m)
-c) 3.00E+04 N/C (or V/m)
+d) 3.63E+04 N/C (or V/m)
-e) 4.40E+04 N/C (or V/m)
=====*_Rendition_* 1-20=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 4.2 m has a gap of 12 mm, and a charge of 94 μC. What is the electric field between the plates?
+a) 1.92E+05 N/C (or V/m)
-b) 2.32E+05 N/C (or V/m)
-c) 2.81E+05 N/C (or V/m)
-d) 3.41E+05 N/C (or V/m)
-e) 4.13E+05 N/C (or V/m)
=====*_Rendition_* 1-21=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 4.6 m has a gap of 12 mm, and a charge of 45 μC. What is the electric field between the plates?
-a) 6.31E+04 N/C (or V/m)
+b) 7.65E+04 N/C (or V/m)
-c) 9.26E+04 N/C (or V/m)

-d) 1.12E+05 N/C (or V/m)
-e) 1.36E+05 N/C (or V/m)
=====*_Rendition_* 1-22=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 3.1 m has a gap of 9 mm, and a charge of 11 μC. What is the electric field between the plates?
-a) 2.80E+04 N/C (or V/m)
-b) 3.40E+04 N/C (or V/m)
+c) 4.12E+04 N/C (or V/m)
-d) 4.99E+04 N/C (or V/m)
-e) 6.04E+04 N/C (or V/m)
=====*_Rendition_* 1-23=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 3.4 m has a gap of 7 mm, and a charge of 95 μC. What is the electric field between the plates?
-a) 2.44E+05 N/C (or V/m)
+b) 2.95E+05 N/C (or V/m)
-c) 3.58E+05 N/C (or V/m)
-d) 4.34E+05 N/C (or V/m)
-e) 5.25E+05 N/C (or V/m)
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 4.6 m has a gap of 12 mm, and a charge of 77 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
-a) 6.59E-11 Vs²m⁻¹
-b) 7.99E-11 Vs²m⁻¹
+c) 9.68E-11 Vs²m⁻¹
-d) 1.17E-10 Vs²m⁻¹
-e) 1.42E-10 Vs²m⁻¹
=====*_Rendition_* 2-3=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 4.5 m has a gap of 19 mm, and a charge of 13 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
-a) 1.35E-11 Vs²m⁻¹
+b) 1.63E-11 Vs²m⁻¹
-c) 1.98E-11 Vs²m⁻¹
-d) 2.40E-11 Vs²m⁻¹
-e) 2.91E-11 Vs²m⁻¹
=====*_Rendition_* 2-4=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 4.4 m has a gap of 8 mm, and a charge of 85 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
-a) 4.96E-11 Vs²m⁻¹
-b) 6.01E-11 Vs²m⁻¹
-c) 7.28E-11 Vs²m⁻¹
-d) 8.82E-11 Vs²m⁻¹
+e) 1.07E-10 Vs²m⁻¹
=====*_Rendition_* 2-5=====

<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 4.3 m has a gap of 11 mm, and a charge of 66 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
-a) 6.85E-11 Vs²m⁻¹
+b) 8.29E-11 Vs²m⁻¹
-c) 1.00E-10 Vs²m⁻¹
-d) 1.22E-10 Vs²m⁻¹
-e) 1.47E-10 Vs²m⁻¹
=====*_Rendition_* 2-6=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 3.2 m has a gap of 19 mm, and a charge of 46 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
+a) 5.78E-11 Vs²m⁻¹
-b) 7.00E-11 Vs²m⁻¹
-c) 8.48E-11 Vs²m⁻¹
-d) 1.03E-10 Vs²m⁻¹
-e) 1.25E-10 Vs²m⁻¹
=====*_Rendition_* 2-7=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 3.2 m has a gap of 18 mm, and a charge of 82 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
-a) 5.79E-11 Vs²m⁻¹
-b) 7.02E-11 Vs²m⁻¹
-c) 8.51E-11 Vs²m⁻¹
+d) 1.03E-10 Vs²m⁻¹
-e) 1.25E-10 Vs²m⁻¹
=====*_Rendition_* 2-8=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 3.7 m has a gap of 17 mm, and a charge of 80 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
-a) 4.67E-11 Vs²m⁻¹
-b) 5.65E-11 Vs²m⁻¹
-c) 6.85E-11 Vs²m⁻¹
-d) 8.30E-11 Vs²m⁻¹
+e) 1.01E-10 Vs²m⁻¹
=====*_Rendition_* 2-9=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 4.1 m has a gap of 7 mm, and a charge of 50 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
-a) 2.92E-11 Vs²m⁻¹
-b) 3.53E-11 Vs²m⁻¹
-c) 4.28E-11 Vs²m⁻¹
-d) 5.19E-11 Vs²m⁻¹
+e) 6.28E-11 Vs²m⁻¹
=====*_Rendition_* 2-10=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 4.3 m has a gap of 19 mm, and a charge of 83

μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
-a) 5.87E-11 Vs²m⁻¹
-b) 7.11E-11 Vs²m⁻¹
-c) 8.61E-11 Vs²m⁻¹
+d) 1.04E-10 Vs²m⁻¹
-e) 1.26E-10 Vs²m⁻¹
=====*_Rendition_* 2-11=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 4.8 m has a gap of 12 mm, and a charge of 29 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
-a) 2.05E-11 Vs²m⁻¹
-b) 2.48E-11 Vs²m⁻¹
-c) 3.01E-11 Vs²m⁻¹
+d) 3.64E-11 Vs²m⁻¹
-e) 4.42E-11 Vs²m⁻¹
=====*_Rendition_* 2-12=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 4.4 m has a gap of 17 mm, and a charge of 65 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
-a) 5.56E-11 Vs²m⁻¹
-b) 6.74E-11 Vs²m⁻¹
+c) 8.17E-11 Vs²m⁻¹
-d) 9.90E-11 Vs²m⁻¹
-e) 1.20E-10 Vs²m⁻¹
=====*_Rendition_* 2-13=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 3.8 m has a gap of 14 mm, and a charge of 61 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
+a) 7.67E-11 Vs²m⁻¹
-b) 9.29E-11 Vs²m⁻¹
-c) 1.13E-10 Vs²m⁻¹
-d) 1.36E-10 Vs²m⁻¹
-e) 1.65E-10 Vs²m⁻¹
=====*_Rendition_* 2-14=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 4.1 m has a gap of 8 mm, and a charge of 24 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
-a) 2.05E-11 Vs²m⁻¹
-b) 2.49E-11 Vs²m⁻¹
+c) 3.02E-11 Vs²m⁻¹
-d) 3.65E-11 Vs²m⁻¹
-e) 4.43E-11 Vs²m⁻¹
=====*_Rendition_* 2-15=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 3.8 m has a gap of 14 mm, and a charge of 83 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.

-a) 7.11E-11 Vs²m⁻¹
-b) 8.61E-11 Vs²m⁻¹
+c) 1.04E-10 Vs²m⁻¹
-d) 1.26E-10 Vs²m⁻¹
-e) 1.53E-10 Vs²m⁻¹
=====*_Rendition_* 2-16=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 4.4 m has a gap of 16 mm, and a charge of 41 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
-a) 3.51E-11 Vs²m⁻¹
-b) 4.25E-11 Vs²m⁻¹
+c) 5.15E-11 Vs²m⁻¹
-d) 6.24E-11 Vs²m⁻¹
-e) 7.56E-11 Vs²m⁻¹
=====*_Rendition_* 2-17=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 4.8 m has a gap of 17 mm, and a charge of 73 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
+a) 9.17E-11 Vs²m⁻¹
-b) 1.11E-10 Vs²m⁻¹
-c) 1.35E-10 Vs²m⁻¹
-d) 1.63E-10 Vs²m⁻¹
-e) 1.98E-10 Vs²m⁻¹
=====*_Rendition_* 2-18=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 4.3 m has a gap of 14 mm, and a charge of 15 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
-a) 8.75E-12 Vs²m⁻¹
-b) 1.06E-11 Vs²m⁻¹
-c) 1.28E-11 Vs²m⁻¹
-d) 1.56E-11 Vs²m⁻¹
+e) 1.88E-11 Vs²m⁻¹
=====*_Rendition_* 2-19=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 4.5 m has a gap of 18 mm, and a charge of 92 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
-a) 7.88E-11 Vs²m⁻¹
-b) 9.54E-11 Vs²m⁻¹
+c) 1.16E-10 Vs²m⁻¹
-d) 1.40E-10 Vs²m⁻¹
-e) 1.70E-10 Vs²m⁻¹
=====*_Rendition_* 2-20=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 4.3 m has a gap of 12 mm, and a charge of 85 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
-a) 7.28E-11 Vs²m⁻¹
-b) 8.82E-11 Vs²m⁻¹

+c) 1.07E-10 Vs²m⁻¹
-d) 1.29E-10 Vs²m⁻¹
-e) 1.57E-10 Vs²m⁻¹
=====*_Rendition_* 2-21=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 3.7 m has a gap of 8 mm, and a charge of 34 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
-a) 2.40E-11 Vs²m⁻¹
-b) 2.91E-11 Vs²m⁻¹
-c) 3.53E-11 Vs²m⁻¹
+d) 4.27E-11 Vs²m⁻¹
-e) 5.18E-11 Vs²m⁻¹
=====*_Rendition_* 2-22=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 3.4 m has a gap of 8 mm, and a charge of 34 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
-a) 3.53E-11 Vs²m⁻¹
+b) 4.27E-11 Vs²m⁻¹
-c) 5.18E-11 Vs²m⁻¹
-d) 6.27E-11 Vs²m⁻¹
-e) 7.60E-11 Vs²m⁻¹
=====*_Rendition_* 2-23=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 3.9 m has a gap of 19 mm, and a charge of 78 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
-a) 4.55E-11 Vs²m⁻¹
-b) 5.51E-11 Vs²m⁻¹
-c) 6.68E-11 Vs²m⁻¹
-d) 8.09E-11 Vs²m⁻¹
+e) 9.80E-11 Vs²m⁻¹
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 4.6 m has a gap of 11 mm, and a charge of 60 μC. The capacitor is discharged through a 9 kΩ resistor. What is the decay time?
-a) 3.28E-04 s
-b) 3.97E-04 s
+c) 4.82E-04 s
-d) 5.83E-04 s
-e) 7.07E-04 s
=====*_Rendition_* 3-3=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 3.7 m has a gap of 15 mm, and a charge of 36 μC. The capacitor is discharged through a 6 kΩ resistor. What is the decay time?
-a) 1.04E-04 s
-b) 1.26E-04 s
+c) 1.52E-04 s

-d) 1.85E-04 s
-e) 2.24E-04 s
=====*_Rendition_* 3-4=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 3.3 m has a gap of 14 mm, and a charge of 43 μC. The capacitor is discharged through a 9 kΩ resistor. What is the decay time?
+a) 1.95E-04 s
-b) 2.36E-04 s
-c) 2.86E-04 s
-d) 3.46E-04 s
-e) 4.20E-04 s
=====*_Rendition_* 3-5=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 4.6 m has a gap of 7 mm, and a charge of 18 μC. The capacitor is discharged through a 9 kΩ resistor. What is the decay time?
-a) 6.25E-04 s
+b) 7.57E-04 s
-c) 9.17E-04 s
-d) 1.11E-03 s
-e) 1.35E-03 s
=====*_Rendition_* 3-6=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 3.1 m has a gap of 11 mm, and a charge of 76 μC. The capacitor is discharged through a 8 kΩ resistor. What is the decay time?
+a) 1.94E-04 s
-b) 2.36E-04 s
-c) 2.85E-04 s
-d) 3.46E-04 s
-e) 4.19E-04 s
=====*_Rendition_* 3-7=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 3.6 m has a gap of 14 mm, and a charge of 98 μC. The capacitor is discharged through a 8 kΩ resistor. What is the decay time?
-a) 1.40E-04 s
-b) 1.70E-04 s
+c) 2.06E-04 s
-d) 2.50E-04 s
-e) 3.02E-04 s
=====*_Rendition_* 3-8=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 4.3 m has a gap of 8 mm, and a charge of 12 μC. The capacitor is discharged through a 7 kΩ resistor. What is the decay time?
-a) 3.07E-04 s
-b) 3.71E-04 s
+c) 4.50E-04 s
-d) 5.45E-04 s
-e) 6.61E-04 s

=====*_Rendition_* 3-9=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 4.3 m has a gap of 13 mm, and a charge of 44 μC. The capacitor is discharged through a 9 kΩ resistor. What is the decay time?
-a) 2.00E-04 s
-b) 2.43E-04 s
-c) 2.94E-04 s
+d) 3.56E-04 s
-e) 4.31E-04 s
=====*_Rendition_* 3-10=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 4 m has a gap of 16 mm, and a charge of 48 μC. The capacitor is discharged through a 9 kΩ resistor. What is the decay time?
-a) 1.16E-04 s
-b) 1.41E-04 s
-c) 1.71E-04 s
-d) 2.07E-04 s
+e) 2.50E-04 s
=====*_Rendition_* 3-11=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 4.8 m has a gap of 16 mm, and a charge of 89 μC. The capacitor is discharged through a 6 kΩ resistor. What is the decay time?
-a) 1.98E-04 s
+b) 2.40E-04 s
-c) 2.91E-04 s
-d) 3.53E-04 s
-e) 4.27E-04 s
=====*_Rendition_* 3-12=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 4.1 m has a gap of 11 mm, and a charge of 51 μC. The capacitor is discharged through a 8 kΩ resistor. What is the decay time?
+a) 3.40E-04 s
-b) 4.12E-04 s
-c) 4.99E-04 s
-d) 6.05E-04 s
-e) 7.33E-04 s
=====*_Rendition_* 3-13=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 3.8 m has a gap of 12 mm, and a charge of 56 μC. The capacitor is discharged through a 8 kΩ resistor. What is the decay time?
+a) 2.68E-04 s
-b) 3.24E-04 s
-c) 3.93E-04 s
-d) 4.76E-04 s
-e) 5.77E-04 s
=====*_Rendition_* 3-14=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular

capactitor of radius 4.2 m has a gap of 18 mm, and a charge of 97 μC. The capacitor is discharged through a 7 kΩ resistor. What is the decay time?
+a) 1.91E-04 s
-b) 2.31E-04 s
-c) 2.80E-04 s
-d) 3.39E-04 s
-e) 4.11E-04 s
=====*_Rendition_* 3-15=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 4.7 m has a gap of 19 mm, and a charge of 27 μC. The capacitor is discharged through a 6 kΩ resistor. What is the decay time?
-a) 1.60E-04 s
+b) 1.94E-04 s
-c) 2.35E-04 s
-d) 2.85E-04 s
-e) 3.45E-04 s
=====*_Rendition_* 3-16=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 4 m has a gap of 14 mm, and a charge of 24 μC. The capacitor is discharged through a 7 kΩ resistor. What is the decay time?
-a) 1.84E-04 s
+b) 2.23E-04 s
-c) 2.70E-04 s
-d) 3.27E-04 s
-e) 3.96E-04 s
=====*_Rendition_* 3-17=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 3.3 m has a gap of 12 mm, and a charge of 63 μC. The capacitor is discharged through a 7 kΩ resistor. What is the decay time?
-a) 9.94E-05 s
-b) 1.20E-04 s
-c) 1.46E-04 s
+d) 1.77E-04 s
-e) 2.14E-04 s
=====*_Rendition_* 3-18=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 3.2 m has a gap of 8 mm, and a charge of 12 μC. The capacitor is discharged through a 7 kΩ resistor. What is the decay time?
+a) 2.49E-04 s
-b) 3.02E-04 s
-c) 3.66E-04 s
-d) 4.43E-04 s
-e) 5.37E-04 s
=====*_Rendition_* 3-19=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 4.9 m has a gap of 13 mm, and a charge of 35 μC. The capacitor is discharged through a 5 kΩ resistor.

What is the decay time?
+a) 2.57E-04 s
-b) 3.11E-04 s
-c) 3.77E-04 s
-d) 4.57E-04 s
-e) 5.53E-04 s
=====*_Rendition_* 3-20=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 4.1 m has a gap of 14 mm, and a charge of 71 μC. The capacitor is discharged through a 6 kΩ resistor. What is the decay time?
-a) 1.65E-04 s
+b) 2.00E-04 s
-c) 2.43E-04 s
-d) 2.94E-04 s
-e) 3.56E-04 s
=====*_Rendition_* 3-21=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 3.2 m has a gap of 12 mm, and a charge of 33 μC. The capacitor is discharged through a 6 kΩ resistor. What is the decay time?
+a) 1.42E-04 s
-b) 1.73E-04 s
-c) 2.09E-04 s
-d) 2.53E-04 s
-e) 3.07E-04 s
=====*_Rendition_* 3-22=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 3.4 m has a gap of 8 mm, and a charge of 64 μC. The capacitor is discharged through a 9 kΩ resistor. What is the decay time?
+a) 3.62E-04 s
-b) 4.38E-04 s
-c) 5.31E-04 s
-d) 6.43E-04 s
-e) 7.79E-04 s
=====*_Rendition_* 3-23=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 3.1 m has a gap of 15 mm, and a charge of 73 μC. The capacitor is discharged through a 8 kΩ resistor. What is the decay time?
-a) 6.62E-05 s
-b) 8.02E-05 s
-c) 9.71E-05 s
-d) 1.18E-04 s
+e) 1.43E-04 s
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 4.1 m has a gap of 11 mm, and a charge of 66 μC. The capacitor is discharged through a 6 kΩ resistor. What is what is the maximum magnetic field at the edge of the

capacitor? (There are two ways to do this; you should know both.)
-a) 6.33E-09 Tesla
-b) 7.96E-09 Tesla
-c) 1.00E-08 Tesla
+d) 1.26E-08 Tesla
-e) 1.59E-08 Tesla
=====*_Rendition_* 4-3=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 4.4 m has a gap of 15 mm, and a charge of 63 μC. The capacitor is discharged through a 8 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
-a) 7.92E-09 Tesla
+b) 9.97E-09 Tesla
-c) 1.26E-08 Tesla
-d) 1.58E-08 Tesla
-e) 1.99E-08 Tesla
=====*_Rendition_* 4-4=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 4 m has a gap of 13 mm, and a charge of 89 μC. The capacitor is discharged through a 6 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
-a) 8.62E-09 Tesla
-b) 1.09E-08 Tesla
-c) 1.37E-08 Tesla
-d) 1.72E-08 Tesla
+e) 2.17E-08 Tesla
=====*_Rendition_* 4-5=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 4.3 m has a gap of 10 mm, and a charge of 46 μC. The capacitor is discharged through a 5 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
+a) 8.32E-09 Tesla
-b) 1.05E-08 Tesla
-c) 1.32E-08 Tesla
-d) 1.66E-08 Tesla
-e) 2.09E-08 Tesla
=====*_Rendition_* 4-6=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 4.1 m has a gap of 15 mm, and a charge of 90 μC. The capacitor is discharged through a 5 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
-a) 1.41E-08 Tesla
-b) 1.78E-08 Tesla
-c) 2.24E-08 Tesla
+d) 2.82E-08 Tesla
-e) 3.55E-08 Tesla
=====*_Rendition_* 4-7=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular

capactitor of radius 4.6 m has a gap of 12 mm, and a charge of 52 μC. The capacitor is discharged through a 7 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
-a) 3.30E-09 Tesla
-b) 4.15E-09 Tesla
-c) 5.23E-09 Tesla
+d) 6.58E-09 Tesla
-e) 8.29E-09 Tesla
=====*_Rendition_* 4-8=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 3.6 m has a gap of 19 mm, and a charge of 98 μC. The capacitor is discharged through a 6 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
-a) 1.90E-08 Tesla
-b) 2.40E-08 Tesla
-c) 3.02E-08 Tesla
-d) 3.80E-08 Tesla
+e) 4.78E-08 Tesla
=====*_Rendition_* 4-9=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 4.6 m has a gap of 18 mm, and a charge of 44 μC. The capacitor is discharged through a 7 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
-a) 6.64E-09 Tesla
+b) 8.36E-09 Tesla
-c) 1.05E-08 Tesla
-d) 1.32E-08 Tesla
-e) 1.67E-08 Tesla
=====*_Rendition_* 4-10=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 4.9 m has a gap of 18 mm, and a charge of 45 μC. The capacitor is discharged through a 7 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
-a) 2.82E-09 Tesla
-b) 3.54E-09 Tesla
-c) 4.46E-09 Tesla
-d) 5.62E-09 Tesla
+e) 7.07E-09 Tesla
=====*_Rendition_* 4-11=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 4.3 m has a gap of 15 mm, and a charge of 21 μC. The capacitor is discharged through a 7 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
-a) 1.62E-09 Tesla
-b) 2.04E-09 Tesla
-c) 2.57E-09 Tesla
-d) 3.23E-09 Tesla

+e) 4.07E-09 Tesla
=====*_Rendition_* 4-12=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 4.7 m has a gap of 16 mm, and a charge of 12 μC. The capacitor is discharged through a 8 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
-a) 6.62E-10 Tesla
-b) 8.33E-10 Tesla
-c) 1.05E-09 Tesla
-d) 1.32E-09 Tesla
+e) 1.66E-09 Tesla
=====*_Rendition_* 4-13=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 4.9 m has a gap of 16 mm, and a charge of 46 μC. The capacitor is discharged through a 9 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
+a) 5.00E-09 Tesla
-b) 6.29E-09 Tesla
-c) 7.92E-09 Tesla
-d) 9.97E-09 Tesla
-e) 1.26E-08 Tesla
=====*_Rendition_* 4-14=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 4.9 m has a gap of 14 mm, and a charge of 56 μC. The capacitor is discharged through a 6 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
-a) 3.18E-09 Tesla
-b) 4.00E-09 Tesla
-c) 5.04E-09 Tesla
-d) 6.34E-09 Tesla
+e) 7.99E-09 Tesla
=====*_Rendition_* 4-15=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 4.8 m has a gap of 14 mm, and a charge of 55 μC. The capacitor is discharged through a 8 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
-a) 3.95E-09 Tesla
-b) 4.97E-09 Tesla
+c) 6.26E-09 Tesla
-d) 7.88E-09 Tesla
-e) 9.92E-09 Tesla
=====*_Rendition_* 4-16=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 4.4 m has a gap of 12 mm, and a charge of 85 μC. The capacitor is discharged through a 8 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
-a) 5.39E-09 Tesla

-b) 6.79E-09 Tesla
-c) 8.55E-09 Tesla
+d) 1.08E-08 Tesla
-e) 1.35E-08 Tesla
=====*_Rendition_* 4-17=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 3.1 m has a gap of 9 mm, and a charge of 85 μC. The capacitor is discharged through a 5 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
-a) 2.33E-08 Tesla
-b) 2.93E-08 Tesla
+c) 3.69E-08 Tesla
-d) 4.65E-08 Tesla
-e) 5.85E-08 Tesla
=====*_Rendition_* 4-18=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 4.6 m has a gap of 15 mm, and a charge of 57 μC. The capacitor is discharged through a 9 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
-a) 4.43E-09 Tesla
-b) 5.57E-09 Tesla
+c) 7.02E-09 Tesla
-d) 8.83E-09 Tesla
-e) 1.11E-08 Tesla
=====*_Rendition_* 4-19=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 4 m has a gap of 14 mm, and a charge of 78 μC. The capacitor is discharged through a 5 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
-a) 9.77E-09 Tesla
-b) 1.23E-08 Tesla
-c) 1.55E-08 Tesla
-d) 1.95E-08 Tesla
+e) 2.45E-08 Tesla
=====*_Rendition_* 4-20=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 3.5 m has a gap of 14 mm, and a charge of 88 μC. The capacitor is discharged through a 7 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
-a) 1.86E-08 Tesla
-b) 2.34E-08 Tesla
+c) 2.95E-08 Tesla
-d) 3.72E-08 Tesla
-e) 4.68E-08 Tesla
=====*_Rendition_* 4-21=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 3.9 m has a gap of 8 mm, and a charge of 55 μC. The capacitor is discharged through a 8 kΩ resistor.

What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
-a) 5.30E-09 Tesla
+b) 6.67E-09 Tesla
-c) 8.39E-09 Tesla
-d) 1.06E-08 Tesla
-e) 1.33E-08 Tesla
=====*_Rendition_* 4-22=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 4.8 m has a gap of 9 mm, and a charge of 53 μC. The capacitor is discharged through a 6 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
-a) 3.26E-09 Tesla
-b) 4.11E-09 Tesla
+c) 5.17E-09 Tesla
-d) 6.51E-09 Tesla
-e) 8.19E-09 Tesla
=====*_Rendition_* 4-23=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 4.1 m has a gap of 9 mm, and a charge of 79 μC. The capacitor is discharged through a 6 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
-a) 7.80E-09 Tesla
-b) 9.82E-09 Tesla
+c) 1.24E-08 Tesla
-d) 1.56E-08 Tesla
-e) 1.96E-08 Tesla
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====*_Instructions_*====
Instructions are forthcoming

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{<!--a02_1Dkinem_definitions_1-->A car traveling at 35.3 miles/hour stops in 4.3 seconds. What is the average acceleration?}
-a) 2.06 x 10⁰ m/s²
+b) 3.67 x 10⁰ m/s²
-c) 6.53 x 10⁰ m/s²
-d) 1.16 x 10¹ m/s²
-e) 2.06 x 10¹ m/s²

{<!--a02_1Dkinem_definitions_2-->A car completes a complete circle of radius 3.1 miles at a speed of 51 miles per hour. How many minutes does it take?}
-a) 7.25 x 10⁰ minutes
-b) 9.66 x 10⁰ minutes
-c) 1.29 x 10¹ minutes
-d) 1.72 x 10¹ minutes
+e) 2.29 x 10¹ minutes

{<!--a02_1Dkinem_definitions_3-->A car traveling at 21.3 mph increases its speed to 24.2 mph in 1.4seconds. What is the average acceleration?}
+a) 9.26 x 10⁻¹ m/s²
-b) 1.65 x 10⁰ m/s²
-c) 2.93 x 10⁰ m/s²
-d) 5.21 x 10⁰ m/s²
-e) 9.26 x 10⁰ m/s²

{<!--a02_1Dkinem_definitions_4-->Mr. Smith is backing his car at a speed of 3.28 mph when he hits a cornfield (seed corn). In the course of 1.92 seconds he stops, puts his car in forward drive, and exits the field at a speed of 5.66 mph. What was the ''magnitude'' (absolute value) of his acceleration?}
-a) 2.94 x 10⁰ miles per hour per second
-b) 3.7 x 10⁰ miles per hour per second
+c) 4.66 x 10⁰ miles per hour per second
-d) 5.86 x 10⁰ miles per hour per second
-e) 7.38 x 10⁰ miles per hour per second

</quiz>

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Other renditions
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====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a02_1Dkinem_definitions_1-->A car traveling at 33.5 miles/hour stops in 7.9 seconds. What is the average acceleration?
-a) 3.37 x 10⁻¹ m/s²
-b) 5.99 x 10⁻¹ m/s²
-c) 1.07 x 10⁰ m/s²
+d) 1.9 x 10⁰ m/s²
-e) 3.37 x 10⁰ m/s²
=====*_Rendition_* 1-3=====
<!--a02_1Dkinem_definitions_1-->A car traveling at 75.4 miles/hour stops in 1.9 seconds. What is the average acceleration?
+a) 1.77 x 10¹ m/s²
-b) 3.15 x 10¹ m/s²
-c) 5.61 x 10¹ m/s²
-d) 9.98 x 10¹ m/s²
-e) 1.77 x 10² m/s²
=====*_Rendition_* 1-4=====
<!--a02_1Dkinem_definitions_1-->A car traveling at 77.8 miles/hour stops in 6.4 seconds. What is the average acceleration?
-a) 3.06 x 10⁰ m/s²
+b) 5.43 x 10⁰ m/s²
-c) 9.66 x 10⁰ m/s²
-d) 1.72 x 10¹ m/s²
-e) 3.06 x 10¹ m/s²
=====*_Rendition_* 1-5=====
<!--a02_1Dkinem_definitions_1-->A car traveling at 38.1 miles/hour stops in 2.1 seconds. What is the average acceleration?
-a) 4.56 x 10⁰ m/s²
+b) 8.11 x 10⁰ m/s²
-c) 1.44 x 10¹ m/s²
-d) 2.56 x 10¹ m/s²
-e) 4.56 x 10¹ m/s²
=====*_Rendition_* 1-6=====
<!--a02_1Dkinem_definitions_1-->A car traveling at 34.5 miles/hour stops in 1.7 seconds. What is the average acceleration?
-a) 9.07 x 10⁻¹ m/s²
-b) 1.61 x 10⁰ m/s²
-c) 2.87 x 10⁰ m/s²
-d) 5.1 x 10⁰ m/s²
+e) 9.07 x 10⁰ m/s²
=====*_Rendition_* 1-7=====
<!--a02_1Dkinem_definitions_1-->A car traveling at 54 miles/hour stops in 5.2 seconds. What is the average acceleration?
+a) 4.64 x 10⁰ m/s²
-b) 8.26 x 10⁰ m/s²
-c) 1.47 x 10¹ m/s²
-d) 2.61 x 10¹ m/s²
-e) 4.64 x 10¹ m/s²
=====*_Rendition_* 1-8=====
<!--a02_1Dkinem_definitions_1-->A car traveling at 42.8 miles/hour stops in 7.5 seconds. What is the average acceleration?

-a) 8.07 x 10⁻¹ m/s²
-b) 1.43 x 10⁰ m/s²
+c) 2.55 x 10⁰ m/s²
-d) 4.54 x 10⁰ m/s²
-e) 8.07 x 10⁰ m/s²
=====*_Rendition_* 1-9=====
<!--a02_1Dkinem_definitions_1-->A car traveling at 44.6 miles/hour stops in 1.8 seconds. What is the average acceleration?
-a) 1.11 x 10⁰ m/s²
-b) 1.97 x 10⁰ m/s²
-c) 3.5 x 10⁰ m/s²
-d) 6.23 x 10⁰ m/s²
+e) 1.11 x 10¹ m/s²
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a02_1Dkinem_definitions_2-->A car completes a complete circle of radius 2.9 miles at a speed of 42.2 miles per hour. How many minutes does it take?
+a) 2.59 x 10¹ minutes
-b) 3.45 x 10¹ minutes
-c) 4.61 x 10¹ minutes
-d) 6.14 x 10¹ minutes
-e) 8.19 x 10¹ minutes
=====*_Rendition_* 2-3=====
<!--a02_1Dkinem_definitions_2-->A car completes a complete circle of radius 3 miles at a speed of 62.1 miles per hour. How many minutes does it take?
-a) 1.37 x 10¹ minutes
+b) 1.82 x 10¹ minutes
-c) 2.43 x 10¹ minutes
-d) 3.24 x 10¹ minutes
-e) 4.32 x 10¹ minutes
=====*_Rendition_* 2-4=====
<!--a02_1Dkinem_definitions_2-->A car completes a complete circle of radius 1.2 miles at a speed of 66.2 miles per hour. How many minutes does it take?
-a) 3.84 x 10⁰ minutes
-b) 5.12 x 10⁰ minutes
+c) 6.83 x 10⁰ minutes
-d) 9.11 x 10⁰ minutes
-e) 1.22 x 10¹ minutes
=====*_Rendition_* 2-5=====
<!--a02_1Dkinem_definitions_2-->A car completes a complete circle of radius 2.2 miles at a speed of 63.6 miles per hour. How many minutes does it take?
-a) 9.78 x 10⁰ minutes
+b) 1.3 x 10¹ minutes
-c) 1.74 x 10¹ minutes
-d) 2.32 x 10¹ minutes
-e) 3.09 x 10¹ minutes
=====*_Rendition_* 2-6=====
<!--a02_1Dkinem_definitions_2-->A car completes a complete circle of

radius 1.7 miles at a speed of 55.1 miles per hour. How many minutes does it take?
+a) 1.16 x 10¹ minutes
-b) 1.55 x 10¹ minutes
-c) 2.07 x 10¹ minutes
-d) 2.76 x 10¹ minutes
-e) 3.68 x 10¹ minutes
=====*_Rendition_* 2-7=====
<!--a02_1Dkinem_definitions_2-->A car completes a complete circle of radius 2.6 miles at a speed of 63.7 miles per hour. How many minutes does it take?
-a) 8.65 x 10⁰ minutes
-b) 1.15 x 10¹ minutes
+c) 1.54 x 10¹ minutes
-d) 2.05 x 10¹ minutes
-e) 2.74 x 10¹ minutes
=====*_Rendition_* 2-8=====
<!--a02_1Dkinem_definitions_2-->A car completes a complete circle of radius 1.2 miles at a speed of 42 miles per hour. How many minutes does it take?
-a) 3.41 x 10⁰ minutes
-b) 4.54 x 10⁰ minutes
-c) 6.06 x 10⁰ minutes
-d) 8.08 x 10⁰ minutes
+e) 1.08 x 10¹ minutes
=====*_Rendition_* 2-9=====
<!--a02_1Dkinem_definitions_2-->A car completes a complete circle of radius 3 miles at a speed of 67.5 miles per hour. How many minutes does it take?
-a) 5.3 x 10⁰ minutes
-b) 7.07 x 10⁰ minutes
-c) 9.42 x 10⁰ minutes
-d) 1.26 x 10¹ minutes
+e) 1.68 x 10¹ minutes
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a02_1Dkinem_definitions_3-->A car traveling at 33.8 mph increases its speed to 38.3 mph in 6.7seconds. What is the average acceleration?
-a) 9.49 x 10⁻² m/s²
-b) 1.69 x 10⁻¹ m/s²
+c) 3 x 10⁻¹ m/s²
-d) 5.34 x 10⁻¹ m/s²
-e) 9.49 x 10⁻¹ m/s²
=====*_Rendition_* 3-3=====
<!--a02_1Dkinem_definitions_3-->A car traveling at 34.7 mph increases its speed to 37.7 mph in 1.2seconds. What is the average acceleration?
-a) 1.99 x 10⁻¹ m/s²
-b) 3.53 x 10⁻¹ m/s²
-c) 6.28 x 10⁻¹ m/s²
+d) 1.12 x 10⁰ m/s²

-e) 1.99 x 10⁰ m/s²
=====*_Rendition_* 3-4=====
<!--a02_1Dkinem_definitions_3-->A car traveling at 29.4 mph increases its speed to 32.7 mph in 5.3 seconds. What is the average acceleration?
-a) 8.8 x 10⁻² m/s²
-b) 1.57 x 10⁻¹ m/s²
+c) 2.78 x 10⁻¹ m/s²
-d) 4.95 x 10⁻¹ m/s²
-e) 8.8 x 10⁻¹ m/s²
=====*_Rendition_* 3-5=====
<!--a02_1Dkinem_definitions_3-->A car traveling at 33.2 mph increases its speed to 35.8 mph in 4.9 seconds. What is the average acceleration?
-a) 1.33 x 10⁻¹ m/s²
+b) 2.37 x 10⁻¹ m/s²
-c) 4.22 x 10⁻¹ m/s²
-d) 7.5 x 10⁻¹ m/s²
-e) 1.33 x 10⁰ m/s²
=====*_Rendition_* 3-6=====
<!--a02_1Dkinem_definitions_3-->A car traveling at 30.4 mph increases its speed to 32.9 mph in 6.9 seconds. What is the average acceleration?
-a) 5.12 x 10⁻² m/s²
-b) 9.11 x 10⁻² m/s²
+c) 1.62 x 10⁻¹ m/s²
-d) 2.88 x 10⁻¹ m/s²
-e) 5.12 x 10⁻¹ m/s²
=====*_Rendition_* 3-7=====
<!--a02_1Dkinem_definitions_3-->A car traveling at 32.9 mph increases its speed to 35.1 mph in 4.6 seconds. What is the average acceleration?
+a) 2.14 x 10⁻¹ m/s²
-b) 3.8 x 10⁻¹ m/s²
-c) 6.76 x 10⁻¹ m/s²
-d) 1.2 x 10⁰ m/s²
-e) 2.14 x 10⁰ m/s²
=====*_Rendition_* 3-8=====
<!--a02_1Dkinem_definitions_3-->A car traveling at 38.9 mph increases its speed to 43.7 mph in 3 seconds. What is the average acceleration?
-a) 2.26 x 10⁻¹ m/s²
-b) 4.02 x 10⁻¹ m/s²
+c) 7.15 x 10⁻¹ m/s²
-d) 1.27 x 10⁰ m/s²
-e) 2.26 x 10⁰ m/s²
=====*_Rendition_* 3-9=====
<!--a02_1Dkinem_definitions_3-->A car traveling at 27 mph increases its speed to 29.5 mph in 5.4 seconds. What is the average acceleration?
+a) 2.07 x 10⁻¹ m/s²
-b) 3.68 x 10⁻¹ m/s²
-c) 6.54 x 10⁻¹ m/s²

-d) 1.16 x 10⁰ m/s²
-e) 2.07 x 10⁰ m/s²
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a02_1Dkinem_definitions_4-->Mr. Smith is backing his car at a speed of 2.42 mph when he hits a cornfield (seed corn). In the course of 2.35 seconds he stops, puts his car in forward drive, and exits the field at a speed of 6.1 mph. What was the ''magnitude'' (absolute value) of his acceleration?
-a) 2.29 x 10⁰ miles per hour per second
-b) 2.88 x 10⁰ miles per hour per second
+c) 3.63 x 10⁰ miles per hour per second
-d) 4.56 x 10⁰ miles per hour per second
-e) 5.75 x 10⁰ miles per hour per second
=====*_Rendition_* 4-3=====
<!--a02_1Dkinem_definitions_4-->Mr. Smith is backing his car at a speed of 3.06 mph when he hits a cornfield (seed corn). In the course of 1.29 seconds he stops, puts his car in forward drive, and exits the field at a speed of 5.6 mph. What was the ''magnitude'' (absolute value) of his acceleration?
-a) 3.36 x 10⁰ miles per hour per second
-b) 4.24 x 10⁰ miles per hour per second
-c) 5.33 x 10⁰ miles per hour per second
+d) 6.71 x 10⁰ miles per hour per second
-e) 8.45 x 10⁰ miles per hour per second
=====*_Rendition_* 4-4=====
<!--a02_1Dkinem_definitions_4-->Mr. Smith is backing his car at a speed of 2.33 mph when he hits a cornfield (seed corn). In the course of 1.22 seconds he stops, puts his car in forward drive, and exits the field at a speed of 6.68 mph. What was the ''magnitude'' (absolute value) of his acceleration?
-a) 2.94 x 10⁰ miles per hour per second
-b) 3.7 x 10⁰ miles per hour per second
-c) 4.66 x 10⁰ miles per hour per second
-d) 5.87 x 10⁰ miles per hour per second
+e) 7.39 x 10⁰ miles per hour per second
=====*_Rendition_* 4-5=====
<!--a02_1Dkinem_definitions_4-->Mr. Smith is backing his car at a speed of 3.12 mph when he hits a cornfield (seed corn). In the course of 2.39 seconds he stops, puts his car in forward drive, and exits the field at a speed of 6.32 mph. What was the ''magnitude'' (absolute value) of his acceleration?
+a) 3.95 x 10⁰ miles per hour per second
-b) 4.97 x 10⁰ miles per hour per second
-c) 6.26 x 10⁰ miles per hour per second
-d) 7.88 x 10⁰ miles per hour per second
-e) 9.92 x 10⁰ miles per hour per second
=====*_Rendition_* 4-6=====
<!--a02_1Dkinem_definitions_4-->Mr. Smith is backing his car at a speed of 3.57 mph when he hits a cornfield (seed corn). In the course of 2.8 seconds he stops, puts his car in forward drive, and exits the field at a speed of 6.75 mph. What was the ''magnitude'' (absolute

value) of his acceleration?
-a) 1.85 x 10⁰ miles per hour per second
-b) 2.33 x 10⁰ miles per hour per second
-c) 2.93 x 10⁰ miles per hour per second
+d) 3.69 x 10⁰ miles per hour per second
-e) 4.64 x 10⁰ miles per hour per second
=====*_Rendition_* 4-7=====
<!--a02_1Dkinem_definitions_4-->Mr. Smith is backing his car at a speed of 2.39 mph when he hits a cornfield (seed corn). In the course of 2.94 seconds he stops, puts his car in forward drive, and exits the field at a speed of 5.12 mph. What was the ''magnitude'' (absolute value) of his acceleration?
-a) 1.61 x 10⁰ miles per hour per second
-b) 2.03 x 10⁰ miles per hour per second
+c) 2.55 x 10⁰ miles per hour per second
-d) 3.22 x 10⁰ miles per hour per second
-e) 4.05 x 10⁰ miles per hour per second
=====*_Rendition_* 4-8=====
<!--a02_1Dkinem_definitions_4-->Mr. Smith is backing his car at a speed of 3.8 mph when he hits a cornfield (seed corn). In the course of 2.16 seconds he stops, puts his car in forward drive, and exits the field at a speed of 5.9 mph. What was the ''magnitude'' (absolute value) of his acceleration?
-a) 2.25 x 10⁰ miles per hour per second
-b) 2.83 x 10⁰ miles per hour per second
-c) 3.57 x 10⁰ miles per hour per second
+d) 4.49 x 10⁰ miles per hour per second
-e) 5.65 x 10⁰ miles per hour per second
=====*_Rendition_* 4-9=====
<!--a02_1Dkinem_definitions_4-->Mr. Smith is backing his car at a speed of 4.27 mph when he hits a cornfield (seed corn). In the course of 1.74 seconds he stops, puts his car in forward drive, and exits the field at a speed of 6.17 mph. What was the ''magnitude'' (absolute value) of his acceleration?
+a) 6 x 10⁰ miles per hour per second
-b) 7.55 x 10⁰ miles per hour per second
-c) 9.51 x 10⁰ miles per hour per second
-d) 1.2 x 10¹ miles per hour per second
-e) 1.51 x 10¹ miles per hour per second
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Instructions are forthcoming

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{<!--a02_1Dkinem_equations_1-->A car is accelerating uniformly at an
acceleration of 4.25m/s/s.  At x =  7.25m, the speed is 3.7m/s.  How
fast is it moving at x = 12.25 m?}
+a) 7.5 m/s.
-b) 9 m/s.
-c) 10.79 m/s.
-d) 12.95 m/s.
-e) 15.54 m/s.

{<!--a02_1Dkinem_equations_2-->What is the acceleration if a car
travelling at 10.8 m/s makes a skid mark that is 6.5 m long before
coming to rest? (Assume uniform acceleration.)}
-a) 5.19m/s<sup>2</sup>.
-b) 6.23m/s<sup>2</sup>.
-c) 7.48m/s<sup>2</sup>.
+d) 8.97m/s<sup>2</sup>.
-e) 10.77m/s<sup>2</sup>.

{<!--a02_1Dkinem_equations_3-->A train accelerates uniformly from 16
m/s to 33 m/s, while travelling a distance of 485 m.  What is the
'average' acceleration?}
+a) 0.86m/s/s.
-b) 1.03m/s/s.
-c) 1.24m/s/s.
-d) 1.48m/s/s.
-e) 1.78m/s/s.

{<!--a02_1Dkinem_equations_4-->A particle accelerates uniformly at
11.25 m/s/s.  How long does it take for the velocity to increase from
932 m/s to 1815 m/s?}
-a) 45.42 s
-b) 54.51 s
-c) 65.41 s
+d) 78.49 s
-e) 94.19 s
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====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a02_1Dkinem_equations_1-->A car is accelerating uniformly at an acceleration of 3.75m/s/s. At x = 5.25m, the speed is 3.55m/s. How fast is it moving at x = 11.5 m?
-a) 3.72 m/s.
-b) 4.46 m/s.
-c) 5.36 m/s.
-d) 6.43 m/s.
+e) 7.71 m/s.
=====*_Rendition_* 1-3=====
<!--a02_1Dkinem_equations_1-->A car is accelerating uniformly at an acceleration of 4.05m/s/s. At x = 4m, the speed is 4.8m/s. How fast is it moving at x = 12.5 m?
-a) 6.66 m/s.
-b) 7.99 m/s.
+c) 9.59 m/s.
-d) 11.5 m/s.
-e) 13.8 m/s.
=====*_Rendition_* 1-4=====
<!--a02_1Dkinem_equations_1-->A car is accelerating uniformly at an acceleration of 3.6m/s/s. At x = 6m, the speed is 3.7m/s. How fast is it moving at x = 11.5 m?
-a) 6.08 m/s.
+b) 7.3 m/s.
-c) 8.76 m/s.
-d) 10.51 m/s.
-e) 12.61 m/s.
=====*_Rendition_* 1-5=====
<!--a02_1Dkinem_equations_1-->A car is accelerating uniformly at an acceleration of 3.6m/s/s. At x = 7.5m, the speed is 4.7m/s. How fast is it moving at x = 11.5 m?
-a) 4.95 m/s.
-b) 5.94 m/s.
+c) 7.13 m/s.
-d) 8.56 m/s.
-e) 10.27 m/s.
=====*_Rendition_* 1-6=====
<!--a02_1Dkinem_equations_1-->A car is accelerating uniformly at an acceleration of 3.8m/s/s. At x = 4.5m, the speed is 3.6m/s. How fast is it moving at x = 11.5 m?
+a) 8.13 m/s.
-b) 9.76 m/s.

-c) 11.71 m/s.
-d) 14.06 m/s.
-e) 16.87 m/s.
=====*_Rendition_* 1-7=====
<!--a02_1Dkinem_equations_1-->A car is accelerating uniformly at an acceleration of 3.3m/s/s. At x = 5.75m, the speed is 4.95m/s. How fast is it moving at x = 13.75 m?
-a) 5.09 m/s.
-b) 6.11 m/s.
-c) 7.33 m/s.
+d) 8.79 m/s.
-e) 10.55 m/s.
=====*_Rendition_* 1-8=====
<!--a02_1Dkinem_equations_1-->A car is accelerating uniformly at an acceleration of 3.95m/s/s. At x = 5.5m, the speed is 3.85m/s. How fast is it moving at x = 11.25 m?
-a) 5.39 m/s.
-b) 6.47 m/s.
+c) 7.76 m/s.
-d) 9.31 m/s.
-e) 11.18 m/s.
=====*_Rendition_* 1-9=====
<!--a02_1Dkinem_equations_1-->A car is accelerating uniformly at an acceleration of 3.2m/s/s. At x = 7.5m, the speed is 4m/s. How fast is it moving at x = 12 m?
-a) 4.65 m/s.
-b) 5.58 m/s.
+c) 6.69 m/s.
-d) 8.03 m/s.
-e) 9.64 m/s.
=====*_Rendition_* 1-10=====
<!--a02_1Dkinem_equations_1-->A car is accelerating uniformly at an acceleration of 2.6m/s/s. At x = 5.5m, the speed is 3.2m/s. How fast is it moving at x = 13.25 m?
+a) 7.11 m/s.
-b) 8.53 m/s.
-c) 10.24 m/s.
-d) 12.28 m/s.
-e) 14.74 m/s.
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a02_1Dkinem_equations_2-->What is the acceleration if a car travelling at 9.95 m/s makes a skid mark that is 7.5 m long before coming to rest? (Assume uniform acceleration.)
-a) 5.5m/s².
+b) 6.6m/s².
-c) 7.92m/s².
-d) 9.5m/s².
-e) 11.41m/s².
=====*_Rendition_* 2-3=====
<!--a02_1Dkinem_equations_2-->What is the acceleration if a car travelling at 7.7 m/s makes a skid mark that is 7 m long before coming

to rest? (Assume uniform acceleration.)
+a) 4.24m/s².
-b) 5.08m/s².
-c) 6.1m/s².
-d) 7.32m/s².
-e) 8.78m/s².
=====*_Rendition_* 2-4=====
<!--a02_1Dkinem_equations_2-->What is the acceleration if a car travelling at 7.85 m/s makes a skid mark that is 6.25 m long before coming to rest? (Assume uniform acceleration.)
-a) 3.42m/s².
-b) 4.11m/s².
+c) 4.93m/s².
-d) 5.92m/s².
-e) 7.1m/s².
=====*_Rendition_* 2-5=====
<!--a02_1Dkinem_equations_2-->What is the acceleration if a car travelling at 9.75 m/s makes a skid mark that is 8 m long before coming to rest? (Assume uniform acceleration.)
-a) 2.87m/s².
-b) 3.44m/s².
-c) 4.13m/s².
-d) 4.95m/s².
+e) 5.94m/s².
=====*_Rendition_* 2-6=====
<!--a02_1Dkinem_equations_2-->What is the acceleration if a car travelling at 8.45 m/s makes a skid mark that is 8.5 m long before coming to rest? (Assume uniform acceleration.)
-a) 2.43m/s².
-b) 2.92m/s².
-c) 3.5m/s².
+d) 4.2m/s².
-e) 5.04m/s².
=====*_Rendition_* 2-7=====
<!--a02_1Dkinem_equations_2-->What is the acceleration if a car travelling at 10.95 m/s makes a skid mark that is 6.25 m long before coming to rest? (Assume uniform acceleration.)
-a) 6.66m/s².
-b) 7.99m/s².
+c) 9.59m/s².
-d) 11.51m/s².
-e) 13.81m/s².
=====*_Rendition_* 2-8=====
<!--a02_1Dkinem_equations_2-->What is the acceleration if a car travelling at 10.9 m/s makes a skid mark that is 6.25 m long before coming to rest? (Assume uniform acceleration.)
-a) 5.5m/s/2.
-b) 6.6m/s/2.
-c) 7.92m/s/2.
+d) 9.5m/s/2.
-e) 11.41m/s/2.
=====*_Rendition_* 2-9=====

<!--a02_1Dkinem_equations_2-->What is the acceleration if a car travelling at 9.8 m/s makes a skid mark that is 7.25 m long before coming to rest? (Assume uniform acceleration.)
-a) 3.83m/s/2.
-b) 4.6m/s/2.
-c) 5.52m/s/2.
+d) 6.62m/s/2.
-e) 7.95m/s/2.
=====*_Rendition_* 2-10=====
<!--a02_1Dkinem_equations_2-->What is the acceleration if a car travelling at 8.35 m/s makes a skid mark that is 8.5 m long before coming to rest? (Assume uniform acceleration.)
-a) 2.37m/s/2.
-b) 2.85m/s/2.
-c) 3.42m/s/2.
+d) 4.1m/s/2.
-e) 4.92m/s/2.
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a02_1Dkinem_equations_3-->A train accelerates uniformly from 14.25 m/s to 29.625 m/s, while travelling a distance of 490 m. What is the 'average' acceleration?
-a) 0.48m/s/s.
-b) 0.57m/s/s.
+c) 0.69m/s/s.
-d) 0.83m/s/s.
-e) 0.99m/s/s.
=====*_Rendition_* 3-3=====
<!--a02_1Dkinem_equations_3-->A train accelerates uniformly from 17 m/s to 35.25 m/s, while travelling a distance of 151 m. What is the 'average' acceleration?
-a) 1.83m/s/s.
-b) 2.19m/s/s.
-c) 2.63m/s/s.
+d) 3.16m/s/s.
-e) 3.79m/s/s.
=====*_Rendition_* 3-4=====
<!--a02_1Dkinem_equations_3-->A train accelerates uniformly from 17 m/s to 29.75 m/s, while travelling a distance of 285 m. What is the 'average' acceleration?
-a) 0.5m/s/s.
-b) 0.61m/s/s.
-c) 0.73m/s/s.
-d) 0.87m/s/s.
+e) 1.05m/s/s.
=====*_Rendition_* 3-5=====
<!--a02_1Dkinem_equations_3-->A train accelerates uniformly from 9.75 m/s to 26.875 m/s, while travelling a distance of 371 m. What is the 'average' acceleration?
+a) 0.85m/s/s.
-b) 1.01m/s/s.
-c) 1.22m/s/s.

-d) 1.46m/s/s.
-e) 1.75m/s/s.
=====*_Rendition_* 3-6=====
<!--a02_1Dkinem_equations_3-->A train accelerates uniformly from 15.75 m/s to 30.375 m/s, while travelling a distance of 357 m. What is the 'average' acceleration?
-a) 0.55m/s/s.
-b) 0.66m/s/s.
-c) 0.79m/s/s.
+d) 0.94m/s/s.
-e) 1.13m/s/s.
=====*_Rendition_* 3-7=====
<!--a02_1Dkinem_equations_3-->A train accelerates uniformly from 12.75 m/s to 33.125 m/s, while travelling a distance of 272 m. What is the 'average' acceleration?
-a) 0.99m/s/s.
-b) 1.19m/s/s.
-c) 1.43m/s/s.
+d) 1.72m/s/s.
-e) 2.06m/s/s.
=====*_Rendition_* 3-8=====
<!--a02_1Dkinem_equations_3-->A train accelerates uniformly from 9.5 m/s to 24.5 m/s, while travelling a distance of 256 m. What is the 'average' acceleration?
+a) 1m/s/s.
-b) 1.2m/s/s.
-c) 1.43m/s/s.
-d) 1.72m/s/s.
-e) 2.07m/s/s.
=====*_Rendition_* 3-9=====
<!--a02_1Dkinem_equations_3-->A train accelerates uniformly from 10 m/s to 18.75 m/s, while travelling a distance of 263 m. What is the 'average' acceleration?
-a) 0.28m/s/s.
-b) 0.33m/s/s.
-c) 0.4m/s/s.
+d) 0.48m/s/s.
-e) 0.57m/s/s.
=====*_Rendition_* 3-10=====
<!--a02_1Dkinem_equations_3-->A train accelerates uniformly from 17.75 m/s to 31.625 m/s, while travelling a distance of 372 m. What is the 'average' acceleration?
-a) 0.77m/s/s.
+b) 0.92m/s/s.
-c) 1.1m/s/s.
-d) 1.33m/s/s.
-e) 1.59m/s/s.
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a02_1Dkinem_equations_4-->A particle accelerates uniformly at 16.75 m/s/s. How long does it take for the velocity to increase from 957 m/s to 1935 m/s?

-a) 33.79 s
-b) 40.55 s
-c) 48.66 s
+d) 58.39 s
-e) 70.07 s
=====*_Rendition_* 4-3=====
<!--a02_1Dkinem_equations_4-->A particle accelerates uniformly at 10.75 m/s/s. How long does it take for the velocity to increase from 1184 m/s to 2001 m/s?
-a) 43.98 s
-b) 52.78 s
-c) 63.33 s
+d) 76 s
-e) 91.2 s
=====*_Rendition_* 4-4=====
<!--a02_1Dkinem_equations_4-->A particle accelerates uniformly at 17.25 m/s/s. How long does it take for the velocity to increase from 761 m/s to 1698 m/s?
-a) 45.27 s
+b) 54.32 s
-c) 65.18 s
-d) 78.22 s
-e) 93.86 s
=====*_Rendition_* 4-5=====
<!--a02_1Dkinem_equations_4-->A particle accelerates uniformly at 12.5 m/s/s. How long does it take for the velocity to increase from 968 m/s to 1883 m/s?
-a) 42.36 s
-b) 50.83 s
-c) 61 s
+d) 73.2 s
-e) 87.84 s
=====*_Rendition_* 4-6=====
<!--a02_1Dkinem_equations_4-->A particle accelerates uniformly at 12.5 m/s/s. How long does it take for the velocity to increase from 1173 m/s to 1878 m/s?
-a) 39.17 s
-b) 47 s
+c) 56.4 s
-d) 67.68 s
-e) 81.22 s
=====*_Rendition_* 4-7=====
<!--a02_1Dkinem_equations_4-->A particle accelerates uniformly at 11.5 m/s/s. How long does it take for the velocity to increase from 1164 m/s to 2020 m/s?
-a) 35.9 s
-b) 43.08 s
-c) 51.69 s
-d) 62.03 s
+e) 74.43 s
=====*_Rendition_* 4-8=====
<!--a02_1Dkinem_equations_4-->A particle accelerates uniformly at 16

m/s/s. How long does it take for the velocity to increase from 981 m/s to 1816 m/s?
-a) 30.2 s
-b) 36.24 s
-c) 43.49 s
+d) 52.19 s
-e) 62.63 s
=====*_Rendition_* 4-9=====
<!--a02_1Dkinem_equations_4-->A particle accelerates uniformly at 13 m/s/s. How long does it take for the velocity to increase from 1024 m/s to 1888 m/s?
-a) 46.15 s
-b) 55.38 s
+c) 66.46 s
-d) 79.75 s
-e) 95.7 s
=====*_Rendition_* 4-10=====
<!--a02_1Dkinem_equations_4-->A particle accelerates uniformly at 16.75 m/s/s. How long does it take for the velocity to increase from 1210 m/s to 2087 m/s?
+a) 52.36 s
-b) 62.83 s
-c) 75.4 s
-d) 90.47 s
-e) 108.57 s
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====*_Instructions_*====
Instructions are forthcoming

Transclusion from [[Quizbank/Instructions_0]]:
{{:Quizbank/Instructions_0}}
[[Category:QB/Numerical]]
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</div></div>
===*_Quiz_*===
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{<!--a03_2Dkinem_2dmotion_1-->A ball is kicked horizontally from a height of 2.3 m, at a speed of   7.8m/s. How far does it travel before landing?}
-a) 3.09 m.
-b) 3.71 m.
-c) 4.45 m.
+d) 5.34 m.
-e) 6.41 m.

{<!--a03_2Dkinem_2dmotion_2-->A particle is initially at the origin and moving in the x direction at a speed of 3.7 m/s. It has an constant acceleration of 2.3 m/s² in the y direction, as well as an acceleration of 0.5 in the x direction. What angle does the velocity make with the x axis at time t = 2.8 s?}
+a) 51.62 degrees.
-b) 59.37 degrees.
-c) 68.27 degrees.
-d) 78.51 degrees.
-e) 90.29 degrees.

{<!--a03_2Dkinem_2dmotion_3-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 7.29 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.75 m, and moves at a constant speed of 2.98 m/s in the +y direction.   At what time do they meet?}
-a) 0.24 s.
-b) 0.29 s.
-c) 0.34 s.
+d) 0.41 s.
-e) 0.5 s.

{<!--a03_2Dkinem_2dmotion_4-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 7.17 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.04 m, and moves at a constant speed of 2.52 m/s in the +y direction.   What is the value of θ (in radians)?}
-a) 0.27 radians.
-b) 0.31 radians.
+c) 0.36 radians.
-d) 0.41 radians.
-e) 0.47 radians.

</quiz>

<div class="toccolours mw-collapsible mw-collapsed" style="width:100%">

Other renditions
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====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a03_2Dkinem_2dmotion_1-->A ball is kicked horizontally from a height of 2.7 m, at a speed of   7.5m/s. How far does it travel before landing?
-a) 3.22 m.
-b) 3.87 m.
-c) 4.64 m.
+d) 5.57 m.
-e) 6.68 m.
=====*_Rendition_* 1-3=====
<!--a03_2Dkinem_2dmotion_1-->A ball is kicked horizontally from a height of 2.2 m, at a speed of   9.8m/s. How far does it travel before landing?
+a) 6.57 m.
-b) 7.88 m.
-c) 9.46 m.
-d) 11.35 m.
-e) 13.62 m.
=====*_Rendition_* 1-4=====
<!--a03_2Dkinem_2dmotion_1-->A ball is kicked horizontally from a height of 2.9 m, at a speed of   7.4m/s. How far does it travel before landing?
-a) 4.74 m.
+b) 5.69 m.
-c) 6.83 m.
-d) 8.2 m.
-e) 9.84 m.
=====*_Rendition_* 1-5=====
<!--a03_2Dkinem_2dmotion_1-->A ball is kicked horizontally from a height of 2.6 m, at a speed of   7.7m/s. How far does it travel before landing?
-a) 4.67 m.
+b) 5.61 m.
-c) 6.73 m.
-d) 8.08 m.
-e) 9.69 m.
=====*_Rendition_* 1-6=====
<!--a03_2Dkinem_2dmotion_1-->A ball is kicked horizontally from a height of 2.8 m, at a speed of   7.9m/s. How far does it travel before landing?
-a) 3.46 m.
-b) 4.15 m.
-c) 4.98 m.
+d) 5.97 m.
-e) 7.17 m.
=====*_Rendition_* 1-7=====
<!--a03_2Dkinem_2dmotion_1-->A ball is kicked horizontally from a height of 3 m, at a speed of   7.6m/s. How far does it travel before landing?

-a) 2.87 m.
-b) 3.44 m.
-c) 4.13 m.
-d) 4.96 m.
+e) 5.95 m.
=====*_Rendition_* 1-8=====
<!--a03_2Dkinem_2dmotion_1-->A ball is kicked horizontally from a height of 2.5 m, at a speed of   8.7m/s. How far does it travel before landing?
-a) 3.6 m.
-b) 4.32 m.
-c) 5.18 m.
+d) 6.21 m.
-e) 7.46 m.
=====*_Rendition_* 1-9=====
<!--a03_2Dkinem_2dmotion_1-->A ball is kicked horizontally from a height of 2 m, at a speed of   6.2m/s. How far does it travel before landing?
-a) 2.75 m.
-b) 3.3 m.
+c) 3.96 m.
-d) 4.75 m.
-e) 5.7 m.
=====*_Rendition_* 1-10=====
<!--a03_2Dkinem_2dmotion_1-->A ball is kicked horizontally from a height of 2 m, at a speed of   7.7m/s. How far does it travel before landing?
-a) 2.85 m.
-b) 3.42 m.
-c) 4.1 m.
+d) 4.92 m.
-e) 5.9 m.
=====*_Rendition_* 1-11=====
<!--a03_2Dkinem_2dmotion_1-->A ball is kicked horizontally from a height of 3 m, at a speed of   10m/s. How far does it travel before landing?
-a) 6.52 m.
+b) 7.82 m.
-c) 9.39 m.
-d) 11.27 m.
-e) 13.52 m.
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a03_2Dkinem_2dmotion_2-->A particle is initially at the origin and moving in the x direction at a speed of 4.3 m/s. It has an constant acceleration of 2.2 m/s² in the y direction, as well as an acceleration of 0.3 in the x direction. What angle does the velocity make with the x axis at time t = 2.8 s?
-a) 37.93 degrees.
-b) 43.62 degrees.
+c) 50.16 degrees.
-d) 57.68 degrees.

-e) 66.33 degrees.
=====*_Rendition_* 2-3=====
<!--a03_2Dkinem_2dmotion_2-->A particle is initially at the origin and moving in the x direction at a speed of 4.3 m/s. It has an constant acceleration of 1.8 m/s² in the y direction, as well as an acceleration of 0.3 in the x direction. What angle does the velocity make with the x axis at time t = 2.5 s?
-a) 36.26 degrees.
+b) 41.7 degrees.
-c) 47.96 degrees.
-d) 55.15 degrees.
-e) 63.43 degrees.
=====*_Rendition_* 2-4=====
<!--a03_2Dkinem_2dmotion_2-->A particle is initially at the origin and moving in the x direction at a speed of 4.1 m/s. It has an constant acceleration of 2.3 m/s² in the y direction, as well as an acceleration of 0.5 in the x direction. What angle does the velocity make with the x axis at time t = 2.7 s?
-a) 32.04 degrees.
-b) 36.85 degrees.
-c) 42.37 degrees.
+d) 48.73 degrees.
-e) 56.04 degrees.
=====*_Rendition_* 2-5=====
<!--a03_2Dkinem_2dmotion_2-->A particle is initially at the origin and moving in the x direction at a speed of 3.7 m/s. It has an constant acceleration of 1.5 m/s² in the y direction, as well as an acceleration of 0.6 in the x direction. What angle does the velocity make with the x axis at time t = 2.1 s?
-a) 21.32 degrees.
-b) 24.51 degrees.
-c) 28.19 degrees.
+d) 32.42 degrees.
-e) 37.28 degrees.
=====*_Rendition_* 2-6=====
<!--a03_2Dkinem_2dmotion_2-->A particle is initially at the origin and moving in the x direction at a speed of 4.1 m/s. It has an constant acceleration of 1.9 m/s² in the y direction, as well as an acceleration of 0.9 in the x direction. What angle does the velocity make with the x axis at time t = 2.4 s?
-a) 27.27 degrees.
-b) 31.37 degrees.
+c) 36.07 degrees.
-d) 41.48 degrees.
-e) 47.7 degrees.
=====*_Rendition_* 2-7=====
<!--a03_2Dkinem_2dmotion_2-->A particle is initially at the origin and moving in the x direction at a speed of 3.9 m/s. It has an constant acceleration of 1.9 m/s² in the y direction, as well as an acceleration of 0.5 in the x direction. What angle does the velocity make with the x axis at time t = 2.5 s?
-a) 37.12 degrees.

+b) 42.69 degrees.
-c) 49.09 degrees.
-d) 56.45 degrees.
-e) 64.92 degrees.
=====*_Rendition_* 2-8=====
<!--a03_2Dkinem_2dmotion_2-->A particle is initially at the origin and moving in the x direction at a speed of 4 m/s. It has an constant acceleration of 1.8 m/s² in the y direction, as well as an acceleration of 0.6 in the x direction. What angle does the velocity make with the x axis at time t = 2.7 s?
+a) 40.85 degrees.
-b) 46.98 degrees.
-c) 54.03 degrees.
-d) 62.13 degrees.
-e) 71.45 degrees.
=====*_Rendition_* 2-9=====
<!--a03_2Dkinem_2dmotion_2-->A particle is initially at the origin and moving in the x direction at a speed of 3.8 m/s. It has an constant acceleration of 2.1 m/s² in the y direction, as well as an acceleration of 0.6 in the x direction. What angle does the velocity make with the x axis at time t = 2.9 s?
-a) 31.37 degrees.
-b) 36.07 degrees.
-c) 41.48 degrees.
+d) 47.71 degrees.
-e) 54.86 degrees.
=====*_Rendition_* 2-10=====
<!--a03_2Dkinem_2dmotion_2-->A particle is initially at the origin and moving in the x direction at a speed of 4.1 m/s. It has an constant acceleration of 1.5 m/s² in the y direction, as well as an acceleration of 0.7 in the x direction. What angle does the velocity make with the x axis at time t = 2.2 s?
-a) 17.34 degrees.
-b) 19.94 degrees.
-c) 22.94 degrees.
-d) 26.38 degrees.
+e) 30.33 degrees.
=====*_Rendition_* 2-11=====
<!--a03_2Dkinem_2dmotion_2-->A particle is initially at the origin and moving in the x direction at a speed of 3.9 m/s. It has an constant acceleration of 2.2 m/s² in the y direction, as well as an acceleration of 0.8 in the x direction. What angle does the velocity make with the x axis at time t = 2.9 s?
-a) 26.14 degrees.
-b) 30.07 degrees.
-c) 34.58 degrees.
-d) 39.76 degrees.
+e) 45.73 degrees.
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a03_2Dkinem_2dmotion_3-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a

constant speed of 5.42 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.89 m, and moves at a constant speed of 2.26 m/s in the +y direction.   At what time do they meet?
-a) 0.49 s.
+b) 0.59 s.
-c) 0.7 s.
-d) 0.84 s.
-e) 1.01 s.
=====*_Rendition_* 3-3=====
<!--a03_2Dkinem_2dmotion_3-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 7.03 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.12 m, and moves at a constant speed of 2 m/s in the +y direction.   At what time do they meet?
-a) 0.15 s.
-b) 0.18 s.
-c) 0.22 s.
-d) 0.26 s.
+e) 0.31 s.
=====*_Rendition_* 3-4=====
<!--a03_2Dkinem_2dmotion_3-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 6.54 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.91 m, and moves at a constant speed of 2.42 m/s in the +y direction.   At what time do they meet?
+a) 0.48 s.
-b) 0.57 s.
-c) 0.69 s.
-d) 0.83 s.
-e) 0.99 s.
=====*_Rendition_* 3-5=====
<!--a03_2Dkinem_2dmotion_3-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 5.43 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.49 m, and moves at a constant speed of 2.75 m/s in the +y direction.   At what time do they meet?
-a) 0.26 s.
-b) 0.31 s.
-c) 0.37 s.
-d) 0.44 s.
+e) 0.53 s.
=====*_Rendition_* 3-6=====
<!--a03_2Dkinem_2dmotion_3-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 5.86 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.46 m, and moves at a constant speed of 2.23 m/s in the +y direction.   At what time do they meet?
+a) 0.45 s.
-b) 0.54 s.
-c) 0.65 s.
-d) 0.78 s.
-e) 0.94 s.

=====*_Rendition_* 3-7=====
<!--a03_2Dkinem_2dmotion_3-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 6.76 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.65 m, and moves at a constant speed of 2.8 m/s in the +y direction. At what time do they meet?
-a) 0.21 s.
-b) 0.25 s.
-c) 0.3 s.
-d) 0.36 s.
+e) 0.43 s.
=====*_Rendition_* 3-8=====
<!--a03_2Dkinem_2dmotion_3-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 7.34 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.22 m, and moves at a constant speed of 2.91 m/s in the +y direction. At what time do they meet?
-a) 0.23 s.
-b) 0.27 s.
+c) 0.33 s.
-d) 0.4 s.
-e) 0.47 s.
=====*_Rendition_* 3-9=====
<!--a03_2Dkinem_2dmotion_3-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 5.49 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.35 m, and moves at a constant speed of 2.6 m/s in the +y direction. At what time do they meet?

-a) 0.41 s.
+b) 0.49 s.
-c) 0.58 s.
-d) 0.7 s.
-e) 0.84 s.
=====*_Rendition_* 3-10=====
<!--a03_2Dkinem_2dmotion_3-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 5.94 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.92 m, and moves at a constant speed of 2.89 m/s in the +y direction. At what time do they meet?
-a) 0.33 s.
-b) 0.39 s.
-c) 0.47 s.
+d) 0.56 s.
-e) 0.68 s.
=====*_Rendition_* 3-11=====
<!--a03_2Dkinem_2dmotion_3-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 6.1 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.79 m, and moves at a constant speed of 2.87 m/s in the +y direction. At what time do they meet?
-a) 0.43 s.

+b) 0.52 s.
-c) 0.62 s.
-d) 0.75 s.
-e) 0.9 s.
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a03_2Dkinem_2dmotion_4-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 5.15 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.05 m, and moves at a constant speed of 2.94 m/s in the +y direction. What is the value of θ (in radians)?
-a) 0.46 radians.
-b) 0.53 radians.
+c) 0.61 radians.
-d) 0.7 radians.
-e) 0.8 radians.
=====*_Rendition_* 4-3=====
<!--a03_2Dkinem_2dmotion_4-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 8.02 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.27 m, and moves at a constant speed of 2.5 m/s in the +y direction. What is the value of θ (in radians)?
-a) 0.18 radians.
-b) 0.21 radians.
-c) 0.24 radians.
-d) 0.28 radians.
+e) 0.32 radians.
=====*_Rendition_* 4-4=====
<!--a03_2Dkinem_2dmotion_4-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 5.19 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.76 m, and moves at a constant speed of 2.86 m/s in the +y direction. What is the value of θ (in radians)?
-a) 0.44 radians.
-b) 0.51 radians.
+c) 0.58 radians.
-d) 0.67 radians.
-e) 0.77 radians.
=====*_Rendition_* 4-5=====
<!--a03_2Dkinem_2dmotion_4-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 5.11 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.69 m, and moves at a constant speed of 2.23 m/s in the +y direction. What is the value of θ (in radians)?
-a) 0.26 radians.
-b) 0.3 radians.
-c) 0.34 radians.
-d) 0.39 radians.

+e) 0.45 radians.
=====*_Rendition_* 4-6=====
<!--a03_2Dkinem_2dmotion_4-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 7.18 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.15 m, and moves at a constant speed of 2.88 m/s in the +y direction. What is the value of θ (in radians)?
-a) 0.24 radians.
-b) 0.27 radians.
-c) 0.31 radians.
-d) 0.36 radians.
+e) 0.41 radians.
=====*_Rendition_* 4-7=====
<!--a03_2Dkinem_2dmotion_4-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 6.27 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.38 m, and moves at a constant speed of 2.94 m/s in the +y direction. What is the value of θ (in radians)?
-a) 0.42 radians.
+b) 0.49 radians.
-c) 0.56 radians.
-d) 0.65 radians.
-e) 0.74 radians.
=====*_Rendition_* 4-8=====
<!--a03_2Dkinem_2dmotion_4-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 5.72 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2 m, and moves at a constant speed of 2.02 m/s in the +y direction. What is the value of θ (in radians)?
-a) 0.21 radians.
-b) 0.24 radians.
-c) 0.27 radians.
-d) 0.31 radians.
+e) 0.36 radians.
=====*_Rendition_* 4-9=====
<!--a03_2Dkinem_2dmotion_4-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 5.42 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.27 m, and moves at a constant speed of 2.17 m/s in the +y direction. What is the value of θ (in radians)?
-a) 0.27 radians.
-b) 0.31 radians.
-c) 0.36 radians.
+d) 0.41 radians.
-e) 0.47 radians.
=====*_Rendition_* 4-10=====
<!--a03_2Dkinem_2dmotion_4-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of

constant speed of 8.61 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.5 m, and moves at a constant speed of 2.43 m/s in the +y direction.   What is the value of θ (in radians)?
-a) 0.16 radians.
-b) 0.19 radians.
-c) 0.22 radians.
-d) 0.25 radians.
+e) 0.29 radians.
=====*_Rendition_* 4-11=====
<!--a03_2Dkinem_2dmotion_4-->At time, t=0, two particles are on the x axis. Particle A is (initially) at the origin and moves at a constant speed of 8.49 m/s at an angle of θ above the x-axis. Particle B is initially situated at x= 2.73 m, and moves at a constant speed of 2.09 m/s in the +y direction.   What is the value of θ (in radians)?
-a) 0.14 radians.
-b) 0.16 radians.
-c) 0.19 radians.
-d) 0.22 radians.
+e) 0.25 radians.
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====*_Instructions_*====
Instructions are forthcoming

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===*_Quiz_*===
<quiz display=simple>
{<!--a03_2Dkinem_smithtrain_1-->The Smith family is having fun on a

high speed train travelling at 49.8 m/s. Mr. Smith is at the back of the train and fires a pellet gun with a muzzle speed of 22.4 m/s at Mrs. Smith who is at the front of the train. What is the speed of the bullet with respect to Earth?}
-a) 14.3 m/s.
-b) 21.4 m/s.
-c) 32.1 m/s.
-d) 48.1 m/s.
+e) 72.2 m/s.

{<!--a03_2Dkinem_smithtrain_2-->The Smith family is having fun on a high speed train travelling at 49.8 m/s. Mrs. Smith, who is at the front of the train, fires straight towards the back with a bullet that is going forward with respect to Earth at a speed of 26.4 m/s. What was the muzzle speed of her bullet?}
-a) 15.6 m/s.
+b) 23.4 m/s.
-c) 35.1 m/s.
-d) 52.7 m/s.
-e) 79 m/s.

{<!--a03_2Dkinem_smithtrain_3-->The Smith family is having fun on a high speed train travelling at 49.8 m/s. The daugher fires at Mr. Smith with a pellet gun whose muzzle speed is 29.2 m/s. She was situated across the isle, perpendicular to the length of the train. What is the speed of her bullet with respect to Earth?}
-a) 17.1 m/s.
-b) 25.7 m/s.
-c) 38.5 m/s.
+d) 57.7 m/s.
-e) 86.6 m/s.

{<!--a03_2Dkinem_smithtrain_4-->The Smith family got in trouble for having fun on a high speed train travelling at 49.8 m/s. Mr. Smith is charged with having fired a pellet gun at his daughter (directly across the isle) with a bullet that had a speed of 91.8 m/s with respect to Earth. How fast was the bullet going relative to the daughter (i.e. train)?}
-a) 64.3 m/s.
+b) 77.1 m/s.
-c) 92.5 m/s.
-d) 111.1 m/s.
-e) 133.3 m/s.

</quiz>

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Other renditions
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====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a03_2Dkinem_smithtrain_1-->The Smith family is having fun on a high speed train travelling at 48.8 m/s. Mr. Smith is at the back of the train and fires a pellet gun with a muzzle speed of 25.7 m/s at Mrs. Smith who is at the front of the train. What is the speed of the bullet with respect to Earth?
-a) 22.1 m/s.
-b) 33.1 m/s.
-c) 49.7 m/s.
+d) 74.5 m/s.
-e) 111.8 m/s.
=====*_Rendition_* 1-3=====
<!--a03_2Dkinem_smithtrain_1-->The Smith family is having fun on a high speed train travelling at 48.1 m/s. Mr. Smith is at the back of the train and fires a pellet gun with a muzzle speed of 21.1 m/s at Mrs. Smith who is at the front of the train. What is the speed of the bullet with respect to Earth?
-a) 13.7 m/s.
-b) 20.5 m/s.
-c) 30.8 m/s.
-d) 46.1 m/s.
+e) 69.2 m/s.
=====*_Rendition_* 1-4=====
<!--a03_2Dkinem_smithtrain_1-->The Smith family is having fun on a high speed train travelling at 48.4 m/s. Mr. Smith is at the back of the train and fires a pellet gun with a muzzle speed of 20.7 m/s at Mrs. Smith who is at the front of the train. What is the speed of the bullet with respect to Earth?
-a) 20.5 m/s.
-b) 30.7 m/s.
-c) 46.1 m/s.
+d) 69.1 m/s.
-e) 103.7 m/s.
=====*_Rendition_* 1-5=====
<!--a03_2Dkinem_smithtrain_1-->The Smith family is having fun on a high speed train travelling at 47.5 m/s. Mr. Smith is at the back of the train and fires a pellet gun with a muzzle speed of 22.5 m/s at Mrs. Smith who is at the front of the train. What is the speed of the bullet with respect to Earth?
-a) 46.7 m/s.
+b) 70 m/s.
-c) 105 m/s.
-d) 157.5 m/s.
-e) 236.3 m/s.
=====*_Rendition_* 1-6=====
<!--a03_2Dkinem_smithtrain_1-->The Smith family is having fun on a high speed train travelling at 42.3 m/s. Mr. Smith is at the back of the train and fires a pellet gun with a muzzle speed of 25.2 m/s at Mrs. Smith who is at the front of the train. What is the speed of the bullet with respect to Earth?
-a) 30 m/s.

-b) 45 m/s.
+c) 67.5 m/s.
-d) 101.3 m/s.
-e) 151.9 m/s.
=====*_Rendition_* 1-7=====
<!--a03_2Dkinem_smithtrain_1-->The Smith family is having fun on a high speed train travelling at 47.1 m/s. Mr. Smith is at the back of the train and fires a pellet gun with a muzzle speed of 22.9 m/s at Mrs. Smith who is at the front of the train. What is the speed of the bullet with respect to Earth?
-a) 31.1 m/s.
-b) 46.7 m/s.
+c) 70 m/s.
-d) 105 m/s.
-e) 157.5 m/s.
=====*_Rendition_* 1-8=====
<!--a03_2Dkinem_smithtrain_1-->The Smith family is having fun on a high speed train travelling at 47.6 m/s. Mr. Smith is at the back of the train and fires a pellet gun with a muzzle speed of 29.7 m/s at Mrs. Smith who is at the front of the train. What is the speed of the bullet with respect to Earth?
-a) 22.9 m/s.
-b) 34.4 m/s.
-c) 51.5 m/s.
+d) 77.3 m/s.
-e) 116 m/s.
=====*_Rendition_* 1-9=====
<!--a03_2Dkinem_smithtrain_1-->The Smith family is having fun on a high speed train travelling at 47.6 m/s. Mr. Smith is at the back of the train and fires a pellet gun with a muzzle speed of 28.1 m/s at Mrs. Smith who is at the front of the train. What is the speed of the bullet with respect to Earth?
-a) 15 m/s.
-b) 22.4 m/s.
-c) 33.6 m/s.
-d) 50.5 m/s.
+e) 75.7 m/s.
=====*_Rendition_* 1-10=====
<!--a03_2Dkinem_smithtrain_1-->The Smith family is having fun on a high speed train travelling at 47.6 m/s. Mr. Smith is at the back of the train and fires a pellet gun with a muzzle speed of 23.3 m/s at Mrs. Smith who is at the front of the train. What is the speed of the bullet with respect to Earth?
+a) 70.9 m/s.
-b) 106.4 m/s.
-c) 159.5 m/s.
-d) 239.3 m/s.
-e) 358.9 m/s.
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a03_2Dkinem_smithtrain_2-->The Smith family is having fun on a high speed train travelling at 48.8 m/s. Mrs. Smith, who is at the

front of the train, fires straight towards the back with a bullet that is going forward with respect to Earth at a speed of 20.2 m/s. What was the muzzle speed of her bullet?
-a) 8.5 m/s.
-b) 12.7 m/s.
-c) 19.1 m/s.
+d) 28.6 m/s.
-e) 42.9 m/s.
=====*_Rendition_* 2-3=====
<!--a03_2Dkinem_smithtrain_2-->The Smith family is having fun on a high speed train travelling at 48.1 m/s. Mrs. Smith, who is at the front of the train, fires straight towards the back with a bullet that is going forward with respect to Earth at a speed of 23.9 m/s. What was the muzzle speed of her bullet?
-a) 16.1 m/s.
+b) 24.2 m/s.
-c) 36.3 m/s.
-d) 54.5 m/s.
-e) 81.7 m/s.
=====*_Rendition_* 2-4=====
<!--a03_2Dkinem_smithtrain_2-->The Smith family is having fun on a high speed train travelling at 48.4 m/s. Mrs. Smith, who is at the front of the train, fires straight towards the back with a bullet that is going forward with respect to Earth at a speed of 29 m/s. What was the muzzle speed of her bullet?
-a) 8.6 m/s.
-b) 12.9 m/s.
+c) 19.4 m/s.
-d) 29.1 m/s.
-e) 43.7 m/s.
=====*_Rendition_* 2-5=====
<!--a03_2Dkinem_smithtrain_2-->The Smith family is having fun on a high speed train travelling at 47.5 m/s. Mrs. Smith, who is at the front of the train, fires straight towards the back with a bullet that is going forward with respect to Earth at a speed of 25.5 m/s. What was the muzzle speed of her bullet?
-a) 9.8 m/s.
-b) 14.7 m/s.
+c) 22 m/s.
-d) 33 m/s.
-e) 49.5 m/s.
=====*_Rendition_* 2-6=====
<!--a03_2Dkinem_smithtrain_2-->The Smith family is having fun on a high speed train travelling at 42.3 m/s. Mrs. Smith, who is at the front of the train, fires straight towards the back with a bullet that is going forward with respect to Earth at a speed of 26.3 m/s. What was the muzzle speed of her bullet?
-a) 7.1 m/s.
-b) 10.7 m/s.
+c) 16 m/s.
-d) 24 m/s.
-e) 36 m/s.

=====*_Rendition_* 2-7=====
<!--a03_2Dkinem_smithtrain_2-->The Smith family is having fun on a high speed train travelling at 47.1 m/s. Mrs. Smith, who is at the front of the train, fires straight towards the back with a bullet that is going forward with respect to Earth at a speed of 24.4 m/s. What was the muzzle speed of her bullet?
-a) 6.7 m/s.
-b) 10.1 m/s.
-c) 15.1 m/s.
+d) 22.7 m/s.
-e) 34.1 m/s.
=====*_Rendition_* 2-8=====
<!--a03_2Dkinem_smithtrain_2-->The Smith family is having fun on a high speed train travelling at 47.6 m/s. Mrs. Smith, who is at the front of the train, fires straight towards the back with a bullet that is going forward with respect to Earth at a speed of 27.9 m/s. What was the muzzle speed of her bullet?
-a) 8.8 m/s.
-b) 13.1 m/s.
+c) 19.7 m/s.
-d) 29.6 m/s.
-e) 44.3 m/s.
=====*_Rendition_* 2-9=====
<!--a03_2Dkinem_smithtrain_2-->The Smith family is having fun on a high speed train travelling at 47.6 m/s. Mrs. Smith, who is at the front of the train, fires straight towards the back with a bullet that is going forward with respect to Earth at a speed of 24.1 m/s. What was the muzzle speed of her bullet?
-a) 7 m/s.
-b) 10.4 m/s.
-c) 15.7 m/s.
+d) 23.5 m/s.
-e) 35.3 m/s.
=====*_Rendition_* 2-10=====
<!--a03_2Dkinem_smithtrain_2-->The Smith family is having fun on a high speed train travelling at 47.6 m/s. Mrs. Smith, who is at the front of the train, fires straight towards the back with a bullet that is going forward with respect to Earth at a speed of 23.7 m/s. What was the muzzle speed of her bullet?
-a) 15.9 m/s.
+b) 23.9 m/s.
-c) 35.9 m/s.
-d) 53.8 m/s.
-e) 80.7 m/s.
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a03_2Dkinem_smithtrain_3-->The Smith family is having fun on a high speed train travelling at 48.8 m/s. The daugher fires at Mr. Smith with a pellet gun whose muzzle speed is 21.6 m/s. She was situated across the isle, perpendicular to the length of the train. What is the speed of her bullet with respect to Earth?
-a) 15.8 m/s.

-b) 23.7 m/s.
-c) 35.6 m/s.
+d) 53.4 m/s.
-e) 80 m/s.
=====*_Rendition_* 3-3=====
<!--a03_2Dkinem_smithtrain_3-->The Smith family is having fun on a high speed train travelling at 48.1 m/s. The daugher fires at Mr. Smith with a pellet gun whose muzzle speed is 27.7 m/s. She was situated across the isle, perpendicular to the length of the train. What is the speed of her bullet with respect to Earth?
-a) 16.4 m/s.
-b) 24.7 m/s.
-c) 37 m/s.
+d) 55.5 m/s.
-e) 83.3 m/s.
=====*_Rendition_* 3-4=====
<!--a03_2Dkinem_smithtrain_3-->The Smith family is having fun on a high speed train travelling at 48.4 m/s. The daugher fires at Mr. Smith with a pellet gun whose muzzle speed is 26.1 m/s. She was situated across the isle, perpendicular to the length of the train. What is the speed of her bullet with respect to Earth?
-a) 24.4 m/s.
-b) 36.7 m/s.
+c) 55 m/s.
-d) 82.5 m/s.
-e) 123.7 m/s.
=====*_Rendition_* 3-5=====
<!--a03_2Dkinem_smithtrain_3-->The Smith family is having fun on a high speed train travelling at 47.5 m/s. The daugher fires at Mr. Smith with a pellet gun whose muzzle speed is 28.2 m/s. She was situated across the isle, perpendicular to the length of the train. What is the speed of her bullet with respect to Earth?
-a) 24.6 m/s.
-b) 36.8 m/s.
+c) 55.2 m/s.
-d) 82.9 m/s.
-e) 124.3 m/s.
=====*_Rendition_* 3-6=====
<!--a03_2Dkinem_smithtrain_3-->The Smith family is having fun on a high speed train travelling at 42.3 m/s. The daugher fires at Mr. Smith with a pellet gun whose muzzle speed is 29.1 m/s. She was situated across the isle, perpendicular to the length of the train. What is the speed of her bullet with respect to Earth?
-a) 34.2 m/s.
+b) 51.3 m/s.
-c) 77 m/s.
-d) 115.5 m/s.
-e) 173.3 m/s.
=====*_Rendition_* 3-7=====
<!--a03_2Dkinem_smithtrain_3-->The Smith family is having fun on a high speed train travelling at 47.1 m/s. The daugher fires at Mr. Smith with a pellet gun whose muzzle speed is 29.9 m/s. She was

situated across the isle, perpendicular to the length of the train.
What is the speed of her bullet with respect to Earth?
-a) 24.8 m/s.
-b) 37.2 m/s.
+c) 55.8 m/s.
-d) 83.7 m/s.
-e) 125.5 m/s.
=====*_Rendition_* 3-8=====
<!--a03_2Dkinem_smithtrain_3-->The Smith family is having fun on a high speed train travelling at 47.6 m/s. The daugher fires at Mr. Smith with a pellet gun whose muzzle speed is 25.5 m/s. She was situated across the isle, perpendicular to the length of the train.
What is the speed of her bullet with respect to Earth?
-a) 10.7 m/s.
-b) 16 m/s.
-c) 24 m/s.
-d) 36 m/s.
+e) 54 m/s.
=====*_Rendition_* 3-9=====
<!--a03_2Dkinem_smithtrain_3-->The Smith family is having fun on a high speed train travelling at 47.6 m/s. The daugher fires at Mr. Smith with a pellet gun whose muzzle speed is 23.8 m/s. She was situated across the isle, perpendicular to the length of the train.
What is the speed of her bullet with respect to Earth?
-a) 10.5 m/s.
-b) 15.8 m/s.
-c) 23.7 m/s.
-d) 35.5 m/s.
+e) 53.2 m/s.
=====*_Rendition_* 3-10=====
<!--a03_2Dkinem_smithtrain_3-->The Smith family is having fun on a high speed train travelling at 47.6 m/s. The daugher fires at Mr. Smith with a pellet gun whose muzzle speed is 21.1 m/s. She was situated across the isle, perpendicular to the length of the train.
What is the speed of her bullet with respect to Earth?
+a) 52.1 m/s.
-b) 78.1 m/s.
-c) 117.2 m/s.
-d) 175.7 m/s.
-e) 263.6 m/s.
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a03_2Dkinem_smithtrain_4-->The Smith family got in trouble for having fun on a high speed train travelling at 48.8 m/s. Mr. Smith is charged with having fired a pellet gun at his daughter (directly across the isle) with a bullet that had a speed of 92.5 m/s with respect to Earth. How fast was the bullet going relative to the daughter (i.e. train)?
-a) 45.5 m/s.
-b) 54.6 m/s.
-c) 65.5 m/s.
+d) 78.6 m/s.

-e) 94.3 m/s.
=====*_Rendition_* 4-3=====
<!--a03_2Dkinem_smithtrain_4-->The Smith family got in trouble for having fun on a high speed train travelling at 48.1 m/s. Mr. Smith is charged with having fired a pellet gun at his daughter (directly across the isle) with a bullet that had a speed of 92.7 m/s with respect to Earth. How fast was the bullet going relative to the daughter (i.e. train)?
-a) 38.2 m/s.
-b) 45.9 m/s.
-c) 55 m/s.
-d) 66 m/s.
+e) 79.2 m/s.
=====*_Rendition_* 4-4=====
<!--a03_2Dkinem_smithtrain_4-->The Smith family got in trouble for having fun on a high speed train travelling at 48.4 m/s. Mr. Smith is charged with having fired a pellet gun at his daughter (directly across the isle) with a bullet that had a speed of 89.1 m/s with respect to Earth. How fast was the bullet going relative to the daughter (i.e. train)?
+a) 74.8 m/s.
-b) 89.8 m/s.
-c) 107.7 m/s.
-d) 129.3 m/s.
-e) 155.1 m/s.
=====*_Rendition_* 4-5=====
<!--a03_2Dkinem_smithtrain_4-->The Smith family got in trouble for having fun on a high speed train travelling at 47.5 m/s. Mr. Smith is charged with having fired a pellet gun at his daughter (directly across the isle) with a bullet that had a speed of 94.6 m/s with respect to Earth. How fast was the bullet going relative to the daughter (i.e. train)?
+a) 81.8 m/s.
-b) 98.2 m/s.
-c) 117.8 m/s.
-d) 141.4 m/s.
-e) 169.6 m/s.
=====*_Rendition_* 4-6=====
<!--a03_2Dkinem_smithtrain_4-->The Smith family got in trouble for having fun on a high speed train travelling at 42.3 m/s. Mr. Smith is charged with having fired a pellet gun at his daughter (directly across the isle) with a bullet that had a speed of 84.5 m/s with respect to Earth. How fast was the bullet going relative to the daughter (i.e. train)?
+a) 73.2 m/s.
-b) 87.8 m/s.
-c) 105.3 m/s.
-d) 126.4 m/s.
-e) 151.7 m/s.
=====*_Rendition_* 4-7=====
<!--a03_2Dkinem_smithtrain_4-->The Smith family got in trouble for having fun on a high speed train travelling at 47.1 m/s. Mr. Smith is

charged with having fired a pellet gun at his daughter (directly across the isle) with a bullet that had a speed of 95.6 m/s with respect to Earth. How fast was the bullet going relative to the daughter (i.e. train)?
-a) 69.3 m/s.
+b) 83.2 m/s.
-c) 99.8 m/s.
-d) 119.8 m/s.
-e) 143.8 m/s.
=====*_Rendition_* 4-8=====
<!--a03_2Dkinem_smithtrain_4-->The Smith family got in trouble for having fun on a high speed train travelling at 47.6 m/s. Mr. Smith is charged with having fired a pellet gun at his daughter (directly across the isle) with a bullet that had a speed of 88.1 m/s with respect to Earth. How fast was the bullet going relative to the daughter (i.e. train)?
-a) 35.8 m/s.
-b) 42.9 m/s.
-c) 51.5 m/s.
-d) 61.8 m/s.
+e) 74.1 m/s.
=====*_Rendition_* 4-9=====
<!--a03_2Dkinem_smithtrain_4-->The Smith family got in trouble for having fun on a high speed train travelling at 47.6 m/s. Mr. Smith is charged with having fired a pellet gun at his daughter (directly across the isle) with a bullet that had a speed of 90.4 m/s with respect to Earth. How fast was the bullet going relative to the daughter (i.e. train)?
-a) 53.4 m/s.
-b) 64 m/s.
+c) 76.9 m/s.
-d) 92.2 m/s.
-e) 110.7 m/s.
=====*_Rendition_* 4-10=====
<!--a03_2Dkinem_smithtrain_4-->The Smith family got in trouble for having fun on a high speed train travelling at 47.6 m/s. Mr. Smith is charged with having fired a pellet gun at his daughter (directly across the isle) with a bullet that had a speed of 97 m/s with respect to Earth. How fast was the bullet going relative to the daughter (i.e. train)?
-a) 40.8 m/s.
-b) 48.9 m/s.
-c) 58.7 m/s.
-d) 70.4 m/s.
+e) 84.5 m/s.
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Instructions are forthcoming

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{<!--a04DynForce Newton_forces_1-->A mass with weight (mg) of 44 newtons is suspended symmetrically from two strings. The angle between the two strings (i.e. where they are attached to the mass) is 60 degrees. What is the tension in the string?}
-a) 16.7 N.
-b) 19.2 N.
-c) 22.1 N.
+d) 25.4 N.
-e) 29.2 N.

{<!--a04DynForce Newton_forces_2-->A mass with weight (mg) equal to 25 newtons is suspended symmetrically from two strings. Each string makes the (same) angle of 69 degrees with respect to the horizontal. What is the tension in each string?}
-a) 10.1 N.
-b) 11.6 N.
+c) 13.4 N.
-d) 15.4 N.
-e) 17.7 N.

{<!--a04DynForce Newton_forces_3-->A 4.5 kg mass is sliding along a surface that has a kinetic coefficient of friction equal to 0.37 . In addition to the surface friction, there is also an air drag equal to 29 N. What is the magnitude (absolute value) of the acceleration?}
-a) 5.8 m/s².
-b) 6.6 m/s².
-c) 7.6 m/s².
-d) 8.8 m/s².
+e) 10.1 m/s².

{<!--a04DynForce Newton_forces_4-->A mass with weight (mg) 7.3 newtons is on a horzontal surface. It is being pulled on by a string at an angle of 30 degrees above the horizontal, with a force equal to 3.94 newtons. If this is the maximum force before the block starts to move, what is the static coefficient of friction? }
-a) 0.37
-b) 0.44
-c) 0.53
+d) 0.64
-e) 0.77

</quiz>

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Other renditions
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====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a04DynForce Newton_forces_1-->A mass with weight (mg) of 48 newtons is suspended symmetrically from two strings. The angle between the two strings (i.e. where they are attached to the mass) is 30 degrees. What is the tension in the string?
+a) 24.8 N.
-b) 28.6 N.
-c) 32.9 N.
-d) 37.8 N.
-e) 43.5 N.
=====*_Rendition_* 1-3=====
<!--a04DynForce Newton_forces_1-->A mass with weight (mg) of 37 newtons is suspended symmetrically from two strings. The angle between the two strings (i.e. where they are attached to the mass) is 44 degrees. What is the tension in the string?
-a) 11.4 N.
-b) 13.1 N.
-c) 15.1 N.
-d) 17.4 N.
+e) 20 N.
=====*_Rendition_* 1-4=====
<!--a04DynForce Newton_forces_1-->A mass with weight (mg) of 42 newtons is suspended symmetrically from two strings. The angle between the two strings (i.e. where they are attached to the mass) is 46 degrees. What is the tension in the string?
-a) 15 N.
-b) 17.3 N.
-c) 19.8 N.
+d) 22.8 N.
-e) 26.2 N.
=====*_Rendition_* 1-5=====

<!--a04DynForce Newton_forces_1-->A mass with weight (mg) of 27 newtons is suspended symmetrically from two strings. The angle between the two strings (i.e. where they are attached to the mass) is 70 degrees. What is the tension in the string?
-a) 12.5 N.
-b) 14.3 N.
+c) 16.5 N.
-d) 19 N.
-e) 21.8 N.
=====*_Rendition_* 1-6=====
<!--a04DynForce Newton_forces_1-->A mass with weight (mg) of 32 newtons is suspended symmetrically from two strings. The angle between the two strings (i.e. where they are attached to the mass) is 70 degrees. What is the tension in the string?
-a) 12.8 N.
-b) 14.8 N.
-c) 17 N.
+d) 19.5 N.
-e) 22.5 N.
=====*_Rendition_* 1-7=====
<!--a04DynForce Newton_forces_1-->A mass with weight (mg) of 39 newtons is suspended symmetrically from two strings. The angle between the two strings (i.e. where they are attached to the mass) is 56 degrees. What is the tension in the string?
+a) 22.1 N.
-b) 25.4 N.
-c) 29.2 N.
-d) 33.6 N.
-e) 38.6 N.
=====*_Rendition_* 1-8=====
<!--a04DynForce Newton_forces_1-->A mass with weight (mg) of 49 newtons is suspended symmetrically from two strings. The angle between the two strings (i.e. where they are attached to the mass) is 54 degrees. What is the tension in the string?
+a) 27.5 N.
-b) 31.6 N.
-c) 36.4 N.
-d) 41.8 N.
-e) 48.1 N.
=====*_Rendition_* 1-9=====
<!--a04DynForce Newton_forces_1-->A mass with weight (mg) of 48 newtons is suspended symmetrically from two strings. The angle between the two strings (i.e. where they are attached to the mass) is 46 degrees. What is the tension in the string?
-a) 22.7 N.
+b) 26.1 N.
-c) 30 N.
-d) 34.5 N.
-e) 39.7 N.
=====*_Rendition_* 1-10=====
<!--a04DynForce Newton_forces_1-->A mass with weight (mg) of 32 newtons is suspended symmetrically from two strings. The angle

between the two strings (i.e. where they are attached to the mass) is 40 degrees. What is the tension in the string?
-a) 11.2 N.
-b) 12.9 N.
-c) 14.8 N.
+d) 17 N.
-e) 19.6 N.
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a04DynForce Newton_forces_2-->A mass with weight (mg) equal to 29 newtons is suspended symmetrically from two strings. Each string makes the (same) angle of 60 degrees with respect to the horizontal. What is the tension in each string?
-a) 12.7 N.
-b) 14.6 N.
+c) 16.7 N.
-d) 19.3 N.
-e) 22.1 N.
=====*_Rendition_* 2-3=====
<!--a04DynForce Newton_forces_2-->A mass with weight (mg) equal to 34 newtons is suspended symmetrically from two strings. Each string makes the (same) angle of 14 degrees with respect to the horizontal. What is the tension in each string?
-a) 61.1 N.
+b) 70.3 N.
-c) 80.8 N.
-d) 92.9 N.
-e) 106.9 N.
=====*_Rendition_* 2-4=====
<!--a04DynForce Newton_forces_2-->A mass with weight (mg) equal to 42 newtons is suspended symmetrically from two strings. Each string makes the (same) angle of 26 degrees with respect to the horizontal. What is the tension in each string?
-a) 27.4 N.
-b) 31.5 N.
-c) 36.2 N.
-d) 41.7 N.
+e) 47.9 N.
=====*_Rendition_* 2-5=====
<!--a04DynForce Newton_forces_2-->A mass with weight (mg) equal to 41 newtons is suspended symmetrically from two strings. Each string makes the (same) angle of 30 degrees with respect to the horizontal. What is the tension in each string?
-a) 23.4 N.
-b) 27 N.
-c) 31 N.
-d) 35.7 N.
+e) 41 N.
=====*_Rendition_* 2-6=====
<!--a04DynForce Newton_forces_2-->A mass with weight (mg) equal to 33 newtons is suspended symmetrically from two strings. Each string makes the (same) angle of 72 degrees with respect to the horizontal.

What is the tension in each string?
-a) 9.9 N.
-b) 11.4 N.
-c) 13.1 N.
-d) 15.1 N.
+e) 17.3 N.
=====*_Rendition_* 2-7=====
<!--a04DynForce Newton_forces_2-->A mass with weight (mg) equal to 44 newtons is suspended symmetrically from two strings. Each string makes the (same) angle of 60 degrees with respect to the horizontal. What is the tension in each string?
-a) 14.5 N.
-b) 16.7 N.
-c) 19.2 N.
-d) 22.1 N.
+e) 25.4 N.
=====*_Rendition_* 2-8=====
<!--a04DynForce Newton_forces_2-->A mass with weight (mg) equal to 21 newtons is suspended symmetrically from two strings. Each string makes the (same) angle of 66 degrees with respect to the horizontal. What is the tension in each string?
-a) 6.6 N.
-b) 7.6 N.
-c) 8.7 N.
-d) 10 N.
+e) 11.5 N.
=====*_Rendition_* 2-9=====
<!--a04DynForce Newton_forces_2-->A mass with weight (mg) equal to 42 newtons is suspended symmetrically from two strings. Each string makes the (same) angle of 59 degrees with respect to the horizontal. What is the tension in each string?
-a) 21.3 N.
+b) 24.5 N.
-c) 28.2 N.
-d) 32.4 N.
-e) 37.3 N.
=====*_Rendition_* 2-10=====
<!--a04DynForce Newton_forces_2-->A mass with weight (mg) equal to 37 newtons is suspended symmetrically from two strings. Each string makes the (same) angle of 65 degrees with respect to the horizontal. What is the tension in each string?
-a) 15.4 N.
-b) 17.7 N.
+c) 20.4 N.
-d) 23.5 N.
-e) 27 N.
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a04DynForce Newton_forces_3-->A 2.1 kg mass is sliding along a surface that has a kinetic coefficient of friction equal to 0.46 . In addition to the surface friction, there is also an air drag equal to 14 N. What is the magnitude (absolute value) of the acceleration?

-a) 6.4 m/s².
-b) 7.3 m/s².
-c) 8.4 m/s².
-d) 9.7 m/s².
+e) 11.2 m/s².
=====*_Rendition_* 3-3=====
<!--a04DynForce Newton_forces_3-->A 3 kg mass is sliding along a surface that has a kinetic coefficient of friction equal to 0.27 . In addition to the surface friction, there is also an air drag equal to 7 N. What is the magnitude (absolute value) of the acceleration?
-a) 3.8 m/s².
-b) 4.3 m/s².
+c) 5 m/s².
-d) 5.7 m/s².
-e) 6.6 m/s².
=====*_Rendition_* 3-4=====
<!--a04DynForce Newton_forces_3-->A 2.4 kg mass is sliding along a surface that has a kinetic coefficient of friction equal to 0.68 . In addition to the surface friction, there is also an air drag equal to 6 N. What is the magnitude (absolute value) of the acceleration?
+a) 9.2 m/s².
-b) 10.5 m/s².
-c) 12.1 m/s².
-d) 13.9 m/s².
-e) 16 m/s².
=====*_Rendition_* 3-5=====
<!--a04DynForce Newton_forces_3-->A 2.2 kg mass is sliding along a surface that has a kinetic coefficient of friction equal to 0.59 . In addition to the surface friction, there is also an air drag equal to 14 N. What is the magnitude (absolute value) of the acceleration?
-a) 6.9 m/s².
-b) 8 m/s².
-c) 9.2 m/s².
-d) 10.6 m/s².
+e) 12.1 m/s².
=====*_Rendition_* 3-6=====
<!--a04DynForce Newton_forces_3-->A 2.5 kg mass is sliding along a surface that has a kinetic coefficient of friction equal to 0.41 . In addition to the surface friction, there is also an air drag equal to 11 N. What is the magnitude (absolute value) of the acceleration?
-a) 7.3 m/s².
+b) 8.4 m/s².
-c) 9.7 m/s².
-d) 11.1 m/s².
-e) 12.8 m/s².
=====*_Rendition_* 3-7=====
<!--a04DynForce Newton_forces_3-->A 3.8 kg mass is sliding along a surface that has a kinetic coefficient of friction equal to 0.6 . In addition to the surface friction, there is also an air drag equal to 20 N. What is the magnitude (absolute value) of the acceleration?
-a) 6.4 m/s².
-b) 7.3 m/s².

-c) 8.4 m/s².
-d) 9.7 m/s².
+e) 11.1 m/s².
=====*_Rendition_* 3-8=====
<!--a04DynForce Newton_forces_3-->A 3.2 kg mass is sliding along a surface that has a kinetic coefficient of friction equal to 0.29 . In addition to the surface friction, there is also an air drag equal to 21 N. What is the magnitude (absolute value) of the acceleration?
-a) 8.2 m/s².
+b) 9.4 m/s².
-c) 10.8 m/s².
-d) 12.4 m/s².
-e) 14.3 m/s².
=====*_Rendition_* 3-9=====
<!--a04DynForce Newton_forces_3-->A 2.3 kg mass is sliding along a surface that has a kinetic coefficient of friction equal to 0.41 . In addition to the surface friction, there is also an air drag equal to 16 N. What is the magnitude (absolute value) of the acceleration?
-a) 7.2 m/s².
-b) 8.3 m/s².
-c) 9.5 m/s².
+d) 11 m/s².
-e) 12.6 m/s².
=====*_Rendition_* 3-10=====
<!--a04DynForce Newton_forces_3-->A 3.1 kg mass is sliding along a surface that has a kinetic coefficient of friction equal to 0.43 . In addition to the surface friction, there is also an air drag equal to 12 N. What is the magnitude (absolute value) of the acceleration?
-a) 4.6 m/s².
-b) 5.3 m/s².
-c) 6.1 m/s².
-d) 7 m/s².
+e) 8.1 m/s².
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a04DynForce Newton_forces_4-->A mass with weight (mg) 5.3 newtons is on a horzontal surface. It is being pulled on by a string at an angle of 30 degrees above the horizontal, with a force equal to 3.05 newtons. If this is the maximum force before the block starts to move, what is the static coefficient of friction?
-a) 0.34
-b) 0.4
-c) 0.49
-d) 0.58
+e) 0.7
=====*_Rendition_* 4-3=====
<!--a04DynForce Newton_forces_4-->A mass with weight (mg) 8.7 newtons is on a horzontal surface. It is being pulled on by a string at an angle of 30 degrees above the horizontal, with a force equal to 4.08 newtons. If this is the maximum force before the block starts to move, what is the static coefficient of friction?
-a) 0.31

-b) 0.37
-c) 0.44
+d) 0.53
-e) 0.64
=====*_Rendition_* 4-4=====
<!--a04DynForce Newton_forces_4-->A mass with weight (mg) 7.9 newtons is on a horzontal surface. It is being pulled on by a string at an angle of 30 degrees above the horizontal, with a force equal to 1.64 newtons. If this is the maximum force before the block starts to move, what is the static coefficient of friction?
-a) 0.1
-b) 0.12
-c) 0.14
-d) 0.17
+e) 0.2
=====*_Rendition_* 4-5=====
<!--a04DynForce Newton_forces_4-->A mass with weight (mg) 10.8 newtons is on a horzontal surface. It is being pulled on by a string at an angle of 30 degrees above the horizontal, with a force equal to 4.53 newtons. If this is the maximum force before the block starts to move, what is the static coefficient of friction?
-a) 0.38
+b) 0.46
-c) 0.55
-d) 0.66
-e) 0.79
=====*_Rendition_* 4-6=====
<!--a04DynForce Newton_forces_4-->A mass with weight (mg) 11 newtons is on a horzontal surface. It is being pulled on by a string at an angle of 30 degrees above the horizontal, with a force equal to 2.77 newtons. If this is the maximum force before the block starts to move, what is the static coefficient of friction?
-a) 0.12
-b) 0.14
-c) 0.17
-d) 0.21
+e) 0.25
=====*_Rendition_* 4-7=====
<!--a04DynForce Newton_forces_4-->A mass with weight (mg) 6.8 newtons is on a horzontal surface. It is being pulled on by a string at an angle of 30 degrees above the horizontal, with a force equal to 2.5 newtons. If this is the maximum force before the block starts to move, what is the static coefficient of friction?
-a) 0.19
-b) 0.23
-c) 0.27
-d) 0.33
+e) 0.39
=====*_Rendition_* 4-8=====
<!--a04DynForce Newton_forces_4-->A mass with weight (mg) 6 newtons is on a horzontal surface. It is being pulled on by a string at an angle of 30 degrees above the horizontal, with a force equal to 3.2 newtons.

If this is the maximum force before the block starts to move, what is the static coefficient of friction?
-a) 0.52
+b) 0.63
-c) 0.76
-d) 0.91
-e) 1.09
=====*_Rendition_* 4-9=====
<!--a04DynForce Newton_forces_4-->A mass with weight (mg) 8.9 newtons is on a horzontal surface. It is being pulled on by a string at an angle of 30 degrees above the horizontal, with a force equal to 5.12 newtons. If this is the maximum force before the block starts to move, what is the static coefficient of friction?
+a) 0.7
-b) 0.84
-c) 1.01
-d) 1.21
-e) 1.45
=====*_Rendition_* 4-10=====
<!--a04DynForce Newton_forces_4-->A mass with weight (mg) 8.7 newtons is on a horzontal surface. It is being pulled on by a string at an angle of 30 degrees above the horizontal, with a force equal to 4.08 newtons. If this is the maximum force before the block starts to move, what is the static coefficient of friction?
-a) 0.44
+b) 0.53
-c) 0.64
-d) 0.76
-e) 0.92
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====*_Instructions_*====
Instructions are forthcoming

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{<!--a04DynForce Newton_sled_1-->A sled of mass 5.4 kg is at rest on a rough surface. A string pulls with a tension of 43.4N at an angle of 31 degrees above the horizontal. What is the magnitude of the friction?}
-a) 24.46 N.
-b) 28.13 N.
-c) 32.35 N.
+d) 37.2 N.
-e) 42.78 N.

{<!--a04DynForce Newton_sled_2-->A sled of mass 5.3 kg is at rest on a rough surface. A string pulls with a tension of 44.9N at an angle of 57 degrees above the horizontal. What is the normal force?}
-a) 8.17 N.
-b) 9.39 N.
-c) 10.8 N.
-d) 12.42 N.
+e) 14.28 N.

{<!--a04DynForce Newton_sled_3-->A sled of mass 5.9 kg is at rest on a perfectly smooth surface. A string pulls with a tension of 47.3N at an angle of 48 degrees above the horizontal. How long will it take to reach a speed of 10.8 m/s?}
-a) 1.15 s
-b) 1.32 s
-c) 1.52 s
-d) 1.75 s
+e) 2.01 s

{<!--a04DynForce Newton_sled_4-->A sled of mass 2.1 kg is on perfectly smooth surface. A string pulls with a tension of 17.5N. At what angle above the horizontal must the string pull in order to achieve an accelerations of 2.8 m/s²?}
+a) 70.4 degrees
-b) 80.9 degrees
-c) 93.1 degrees
-d) 107 degrees
-e) 123.1 degrees

</quiz>

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Other renditions
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====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a04DynForce Newton_sled_1-->A sled of mass 5.7 kg is at rest on a rough surface. A string pulls with a tension of 41.6N at an angle of 34 degress above the horizontal. What is the magnitude of the friction?
-a) 19.72 N.
-b) 22.68 N.
-c) 26.08 N.
-d) 29.99 N.
+e) 34.49 N.
=====*_Rendition_* 1-3=====
<!--a04DynForce Newton_sled_1-->A sled of mass 5.3 kg is at rest on a rough surface. A string pulls with a tension of 46.8N at an angle of 56 degress above the horizontal. What is the magnitude of the friction?
-a) 17.21 N.
-b) 19.79 N.
-c) 22.76 N.
+d) 26.17 N.
-e) 30.1 N.
=====*_Rendition_* 1-4=====
<!--a04DynForce Newton_sled_1-->A sled of mass 5.9 kg is at rest on a rough surface. A string pulls with a tension of 43.6N at an angle of 38 degress above the horizontal. What is the magnitude of the friction?
-a) 19.64 N.
-b) 22.59 N.
-c) 25.98 N.
-d) 29.88 N.
+e) 34.36 N.
=====*_Rendition_* 1-5=====
<!--a04DynForce Newton_sled_1-->A sled of mass 5.1 kg is at rest on a rough surface. A string pulls with a tension of 48N at an angle of 48 degress above the horizontal. What is the magnitude of the friction?
-a) 24.29 N.
-b) 27.93 N.
+c) 32.12 N.
-d) 36.94 N.
-e) 42.48 N.
=====*_Rendition_* 1-6=====
<!--a04DynForce Newton_sled_1-->A sled of mass 5.9 kg is at rest on a rough surface. A string pulls with a tension of 43.7N at an angle of 41 degress above the horizontal. What is the magnitude of the friction?
-a) 24.94 N.
-b) 28.68 N.
+c) 32.98 N.
-d) 37.93 N.
-e) 43.62 N.

=====*_Rendition_* 1-7=====
<!--a04DynForce Newton_sled_1-->A sled of mass 5.8 kg is at rest on a rough surface. A string pulls with a tension of 42.3N at an angle of 40 degress above the horizontal. What is the magnitude of the friction?
-a) 21.31 N.
-b) 24.5 N.
-c) 28.18 N.
+d) 32.4 N.
-e) 37.26 N.
=====*_Rendition_* 1-8=====
<!--a04DynForce Newton_sled_1-->A sled of mass 5.1 kg is at rest on a rough surface. A string pulls with a tension of 41.2N at an angle of 42 degress above the horizontal. What is the magnitude of the friction?
-a) 23.15 N.
-b) 26.62 N.
+c) 30.62 N.
-d) 35.21 N.
-e) 40.49 N.
=====*_Rendition_* 1-9=====
<!--a04DynForce Newton_sled_1-->A sled of mass 5.4 kg is at rest on a rough surface. A string pulls with a tension of 46.6N at an angle of 38 degress above the horizontal. What is the magnitude of the friction?
+a) 36.72 N.
-b) 42.23 N.
-c) 48.56 N.
-d) 55.85 N.
-e) 64.23 N.
=====*_Rendition_* 1-10=====
<!--a04DynForce Newton_sled_1-->A sled of mass 5.5 kg is at rest on a rough surface. A string pulls with a tension of 46.8N at an angle of 40 degress above the horizontal. What is the magnitude of the friction?
-a) 27.11 N.
-b) 31.17 N.
+c) 35.85 N.
-d) 41.23 N.
-e) 47.41 N.
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a04DynForce Newton_sled_2-->A sled of mass 5.4 kg is at rest on a rough surface. A string pulls with a tension of 40.4N at an angle of 39 degress above the horizontal. What is the normal force?
+a) 27.5 N.
-b) 31.62 N.
-c) 36.36 N.
-d) 41.82 N.
-e) 48.09 N.
=====*_Rendition_* 2-3=====
<!--a04DynForce Newton_sled_2-->A sled of mass 5.3 kg is at rest on a

rough surface. A string pulls with a tension of 43N at an angle of 55 degress above the horizontal. What is the normal force?
-a) 10.99 N.
-b) 12.64 N.
-c) 14.54 N.
+d) 16.72 N.
-e) 19.22 N.
=====*_Rendition_* 2-4=====
<!--a04DynForce Newton_sled_2-->A sled of mass 5.7 kg is at rest on a rough surface. A string pulls with a tension of 40.1N at an angle of 42 degress above the horizontal. What is the normal force?
+a) 29.03 N.
-b) 33.38 N.
-c) 38.39 N.
-d) 44.15 N.
-e) 50.77 N.
=====*_Rendition_* 2-5=====
<!--a04DynForce Newton_sled_2-->A sled of mass 5.5 kg is at rest on a rough surface. A string pulls with a tension of 41.3N at an angle of 34 degress above the horizontal. What is the normal force?
-a) 26.79 N.
+b) 30.81 N.
-c) 35.43 N.
-d) 40.74 N.
-e) 46.85 N.
=====*_Rendition_* 2-6=====
<!--a04DynForce Newton_sled_2-->A sled of mass 5.9 kg is at rest on a rough surface. A string pulls with a tension of 45.6N at an angle of 36 degress above the horizontal. What is the normal force?
-a) 23.45 N.
-b) 26.97 N.
+c) 31.02 N.
-d) 35.67 N.
-e) 41.02 N.
=====*_Rendition_* 2-7=====
<!--a04DynForce Newton_sled_2-->A sled of mass 5.8 kg is at rest on a rough surface. A string pulls with a tension of 41.9N at an angle of 42 degress above the horizontal. What is the normal force?
-a) 18.94 N.
-b) 21.78 N.
-c) 25.05 N.
+d) 28.8 N.
-e) 33.12 N.
=====*_Rendition_* 2-8=====
<!--a04DynForce Newton_sled_2-->A sled of mass 5.7 kg is at rest on a rough surface. A string pulls with a tension of 43.9N at an angle of 50 degress above the horizontal. What is the normal force?
-a) 16.81 N.
-b) 19.33 N.
+c) 22.23 N.
-d) 25.57 N.
-e) 29.4 N.

=====*_Rendition_* 2-9=====
<!--a04DynForce Newton_sled_2-->A sled of mass 5.2 kg is at rest on a rough surface. A string pulls with a tension of 45.3N at an angle of 59 degress above the horizontal. What is the normal force?
-a) 10.55 N.
+b) 12.13 N.
-c) 13.95 N.
-d) 16.04 N.
-e) 18.45 N.
=====*_Rendition_* 2-10=====
<!--a04DynForce Newton_sled_2-->A sled of mass 5.8 kg is at rest on a rough surface. A string pulls with a tension of 42.5N at an angle of 51 degress above the horizontal. What is the normal force?
-a) 13.61 N.
-b) 15.66 N.
-c) 18 N.
-d) 20.71 N.
+e) 23.81 N.
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a04DynForce Newton_sled_3-->A sled of mass 5.7 kg is at rest on a perfectly smooth surface. A string pulls with a tension of 44.3N at an angle of 31 degress above the horizontal. How long will it take to reach a speed of 9.2 m/s?
-a) 0.91 s
-b) 1.04 s
-c) 1.2 s
+d) 1.38 s
-e) 1.59 s
=====*_Rendition_* 3-3=====
<!--a04DynForce Newton_sled_3-->A sled of mass 5.5 kg is at rest on a perfectly smooth surface. A string pulls with a tension of 42.8N at an angle of 36 degress above the horizontal. How long will it take to reach a speed of 10.4 m/s?
-a) 1.25 s
-b) 1.44 s
+c) 1.65 s
-d) 1.9 s
-e) 2.18 s
=====*_Rendition_* 3-4=====
<!--a04DynForce Newton_sled_3-->A sled of mass 5.7 kg is at rest on a perfectly smooth surface. A string pulls with a tension of 41.3N at an angle of 40 degress above the horizontal. How long will it take to reach a speed of 10.3 m/s?
-a) 1.4 s
-b) 1.61 s
+c) 1.86 s
-d) 2.13 s
-e) 2.45 s
=====*_Rendition_* 3-5=====
<!--a04DynForce Newton_sled_3-->A sled of mass 5.2 kg is at rest on a perfectly smooth surface. A string pulls with a tension of 46N at an

angle of 32 degress above the horizontal. How long will it take to reach a speed of 9.1 m/s?
-a) 1.05 s
+b) 1.21 s
-c) 1.39 s
-d) 1.6 s
-e) 1.84 s
=====*_Rendition_* 3-6=====
<!--a04DynForce Newton_sled_3-->A sled of mass 5.5 kg is at rest on a perfectly smooth surface. A string pulls with a tension of 40.3N at an angle of 43 degress above the horizontal. How long will it take to reach a speed of 9 m/s?
-a) 1.27 s
-b) 1.46 s
+c) 1.68 s
-d) 1.93 s
-e) 2.22 s
=====*_Rendition_* 3-7=====
<!--a04DynForce Newton_sled_3-->A sled of mass 5.7 kg is at rest on a perfectly smooth surface. A string pulls with a tension of 41.7N at an angle of 55 degress above the horizontal. How long will it take to reach a speed of 10.5 m/s?
-a) 1.89 s
-b) 2.18 s
+c) 2.5 s
-d) 2.88 s
-e) 3.31 s
=====*_Rendition_* 3-8=====
<!--a04DynForce Newton_sled_3-->A sled of mass 5.4 kg is at rest on a perfectly smooth surface. A string pulls with a tension of 41.2N at an angle of 58 degress above the horizontal. How long will it take to reach a speed of 10.5 m/s?
+a) 2.6 s
-b) 2.99 s
-c) 3.43 s
-d) 3.95 s
-e) 4.54 s
=====*_Rendition_* 3-9=====
<!--a04DynForce Newton_sled_3-->A sled of mass 5.2 kg is at rest on a perfectly smooth surface. A string pulls with a tension of 41.3N at an angle of 55 degress above the horizontal. How long will it take to reach a speed of 9.8 m/s?
-a) 1.87 s
+b) 2.15 s
-c) 2.47 s
-d) 2.85 s
-e) 3.27 s
=====*_Rendition_* 3-10=====
<!--a04DynForce Newton_sled_3-->A sled of mass 5.1 kg is at rest on a perfectly smooth surface. A string pulls with a tension of 47.8N at an angle of 36 degress above the horizontal. How long will it take to reach a speed of 9 m/s?

-a) 0.68 s
-b) 0.78 s
-c) 0.9 s
-d) 1.03 s
+e) 1.19 s
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a04DynForce Newton_sled_4-->A sled of mass 2.3 kg is on perfectly smooth surface. A string pulls with a tension of 18.3N. At what angle above the horizontal must the string pull in order to achieve an accelerations of 2.8 m/s²?
+a) 69.4 degrees
-b) 79.8 degrees
-c) 91.8 degrees
-d) 105.5 degrees
-e) 121.4 degrees
=====*_Rendition_* 4-3=====
<!--a04DynForce Newton_sled_4-->A sled of mass 2.6 kg is on perfectly smooth surface. A string pulls with a tension of 16.4N. At what angle above the horizontal must the string pull in order to achieve an accelerations of 3.1 m/s²?
-a) 34.6 degrees
-b) 39.8 degrees
-c) 45.8 degrees
-d) 52.7 degrees
+e) 60.6 degrees
=====*_Rendition_* 4-4=====
<!--a04DynForce Newton_sled_4-->A sled of mass 2.6 kg is on perfectly smooth surface. A string pulls with a tension of 19.3N. At what angle above the horizontal must the string pull in order to achieve an accelerations of 2.5 m/s²?
+a) 70.3 degrees
-b) 80.9 degrees
-c) 93 degrees
-d) 106.9 degrees
-e) 123 degrees
=====*_Rendition_* 4-5=====
<!--a04DynForce Newton_sled_4-->A sled of mass 2.5 kg is on perfectly smooth surface. A string pulls with a tension of 18.1N. At what angle above the horizontal must the string pull in order to achieve an accelerations of 2 m/s²?
+a) 74 degrees
-b) 85.1 degrees
-c) 97.8 degrees
-d) 112.5 degrees
-e) 129.4 degrees
=====*_Rendition_* 4-6=====
<!--a04DynForce Newton_sled_4-->A sled of mass 2.2 kg is on perfectly smooth surface. A string pulls with a tension of 17.2N. At what angle above the horizontal must the string pull in order to achieve an accelerations of 3.5 m/s²?
-a) 36.3 degrees

-b) 41.7 degrees
-c) 47.9 degrees
-d) 55.1 degrees
+e) 63.4 degrees
=====*_Rendition_* 4-7=====
<!--a04DynForce Newton_sled_4-->A sled of mass 2.5 kg is on perfectly smooth surface. A string pulls with a tension of 17.7N. At what angle above the horizontal must the string pull in order to achieve an accelerations of 3.1 m/s²?
-a) 48.4 degrees
-b) 55.7 degrees
+c) 64 degrees
-d) 73.6 degrees
-e) 84.7 degrees
=====*_Rendition_* 4-8=====
<!--a04DynForce Newton_sled_4-->A sled of mass 2.6 kg is on perfectly smooth surface. A string pulls with a tension of 19.2N. At what angle above the horizontal must the string pull in order to achieve an accelerations of 2.4 m/s²?
-a) 53.7 degrees
-b) 61.8 degrees
+c) 71 degrees
-d) 81.7 degrees
-e) 93.9 degrees
=====*_Rendition_* 4-9=====
<!--a04DynForce Newton_sled_4-->A sled of mass 2 kg is on perfectly smooth surface. A string pulls with a tension of 17.4N. At what angle above the horizontal must the string pull in order to achieve an accelerations of 2.9 m/s²?
-a) 53.3 degrees
-b) 61.3 degrees
+c) 70.5 degrees
-d) 81.1 degrees
-e) 93.3 degrees
=====*_Rendition_* 4-10=====
<!--a04DynForce Newton_sled_4-->A sled of mass 2.1 kg is on perfectly smooth surface. A string pulls with a tension of 17.7N. At what angle above the horizontal must the string pull in order to achieve an accelerations of 3.6 m/s²?
-a) 56.3 degrees
+b) 64.7 degrees
-c) 74.4 degrees
-d) 85.6 degrees
-e) 98.4 degrees
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====*_Instructions_*====
Instructions are forthcoming

Transclusion from [[Quizbank/Instructions_0]]:
{{:Quizbank/Instructions_0}}
[[Category:QB/Numerical]]
==*_End_*==

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{<!--a04DynForce
Newton_tensions_1-->[[File:Threetensions.jpg|220px|right]]In the
figure shown, &theta;<sub>1</sub> is 18 degrees, and
&theta;<sub>3</sub> is 34 degrees.  The  tension T<sub>3</sub> is 24
N. What is the tension, T<sub>1</sub>? <br/>}
-a) 15.82 N.
-b) 18.19 N.
+c) 20.92 N.
-d) 24.06 N.
-e) 27.67 N.

{<!--a04DynForce
Newton_tensions_2-->[[File:Threetensions.jpg|220px|right]]In the
figure shown, &theta;<sub>1</sub> is   18 degrees, and
&theta;<sub>3</sub> is  34 degrees.  The  tension T<sub>3</sub> is  24
N.  What is the weight?}
-a) 13.1 N.
-b) 15 N.
-c) 17.3 N.
+d) 19.9 N.
-e) 22.9 N.

{<!--a04DynForce Newton_tensions_3-->[[File:3 tensions horizontal
string.gif|rilght|180px|right]]In the figure shown, &theta; is 35
degrees, and the ''mass'' is 3.8 kg. What is T<sub>2</sub>? }
-a) 56.46 N.
+b) 64.93 N.
-c) 74.66 N.
-d) 85.86 N.
-e) 98.74 N.
```

{<!--a04DynForce Newton_tensions_4-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is 35 degrees, and the ''mass'' is 3.8 kg. What is T₁?}
-a) 30.8 N.
-b) 36.9 N.
-c) 44.3 N.
+d) 53.2 N.
-e) 63.8 N.

{<!--a04DynForce Newton_tensions_5-->[[File:Threetensions.jpg|220px|right]]In the figure shown, θ₁ is 15 degrees , and θ₃ is 40 degrees . The mass has a 'weight' of 26 N. What is the tension, T₁?
}
-a) 15.99 N.
-b) 18.39 N.
-c) 21.14 N.
+d) 24.31 N.
-e) 27.96 N.

</quiz>

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Other renditions
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====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a04DynForce Newton_tensions_1-->[[File:Threetensions.jpg|220px|right]]In the figure shown, θ₁ is 18 degrees, and θ₃ is 38 degrees. The tension T₃ is 19 N. What is the tension, T₁?
-a) 10.35 N.
-b) 11.9 N.
-c) 13.69 N.
+d) 15.74 N.
-e) 18.1 N.
=====*_Rendition_* 1-3=====
<!--a04DynForce Newton_tensions_1-->[[File:Threetensions.jpg|220px|right]]In the figure shown, θ₁ is 17 degrees, and θ₃ is 30 degrees. The tension T₃ is 46 N. What is the tension, T₁?
-a) 36.22 N.
+b) 41.66 N.
-c) 47.91 N.
-d) 55.09 N.
-e) 63.36 N.

=====*_Rendition_* 1-4=====
<!--a04DynForce
Newton_tensions_1-->[[File:Threetensions.jpg|220px|right]]In the figure shown, θ₁ is 15 degrees, and θ₃ is 37 degrees. The tension T₃ is 22 N. What is the tension, T₁?
-a) 11.96 N.
-b) 13.75 N.
-c) 15.82 N.
+d) 18.19 N.
-e) 20.92 N.
=====*_Rendition_* 1-5=====
<!--a04DynForce
Newton_tensions_1-->[[File:Threetensions.jpg|220px|right]]In the figure shown, θ₁ is 19 degrees, and θ₃ is 38 degrees. The tension T₃ is 21 N. What is the tension, T₁?
-a) 10.01 N.
-b) 11.51 N.
-c) 13.23 N.
-d) 15.22 N.
+e) 17.5 N.
=====*_Rendition_* 1-6=====
<!--a04DynForce
Newton_tensions_1-->[[File:Threetensions.jpg|220px|right]]In the figure shown, θ₁ is 20 degrees, and θ₃ is 29 degrees. The tension T₃ is 25 N. What is the tension, T₁?
-a) 13.3 N.
-b) 15.3 N.
-c) 17.59 N.
-d) 20.23 N.
+e) 23.27 N.
=====*_Rendition_* 1-7=====
<!--a04DynForce
Newton_tensions_1-->[[File:Threetensions.jpg|220px|right]]In the figure shown, θ₁ is 18 degrees, and θ₃ is 35 degrees. The tension T₃ is 48 N. What is the tension, T₁?
-a) 31.26 N.
-b) 35.95 N.
+c) 41.34 N.
-d) 47.54 N.
-e) 54.68 N.
=====*_Rendition_* 1-8=====
<!--a04DynForce
Newton_tensions_1-->[[File:Threetensions.jpg|220px|right]]In the figure shown, θ₁ is 17 degrees, and θ₃ is 29 degrees. The tension T₃ is 12 N. What is the tension, T₁?
-a) 6.27 N.
-b) 7.22 N.

-c) 8.3 N.
-d) 9.54 N.
+e) 10.97 N.
=====*_Rendition_* 1-9=====
<!--a04DynForce
Newton_tensions_1-->[[File:Threetensions.jpg|220px|right]]In the
figure shown, θ₁ is 16 degrees, and
θ₃ is 30 degrees. The tension T₃ is 45
N. What is the tension, T₁?
-a) 26.66 N.
-b) 30.66 N.
-c) 35.25 N.
+d) 40.54 N.
-e) 46.62 N.
=====*_Rendition_* 1-10=====
<!--a04DynForce
Newton_tensions_1-->[[File:Threetensions.jpg|220px|right]]In the
figure shown, θ₁ is 15 degrees, and
θ₃ is 36 degrees. The tension T₃ is 39
N. What is the tension, T₁?
+a) 32.66 N.
-b) 37.56 N.
-c) 43.2 N.
-d) 49.68 N.
-e) 57.13 N.
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a04DynForce
Newton_tensions_2-->[[File:Threetensions.jpg|220px|right]]In the
figure shown, θ₁ is   18 degrees, and
θ₃ is 38 degrees. The tension T₃ is 19
N. What is the weight?
-a) 14.4 N.
+b) 16.6 N.
-c) 19 N.
-d) 21.9 N.
-e) 25.2 N.
=====*_Rendition_* 2-3=====
<!--a04DynForce
Newton_tensions_2-->[[File:Threetensions.jpg|220px|right]]In the
figure shown, θ₁ is   17 degrees, and
θ₃ is 30 degrees. The tension T₃ is 46
N. What is the weight?
-a) 20.1 N.
-b) 23.1 N.
-c) 26.6 N.
-d) 30.6 N.
+e) 35.2 N.
=====*_Rendition_* 2-4=====
<!--a04DynForce
Newton_tensions_2-->[[File:Threetensions.jpg|220px|right]]In the
figure shown, θ₁ is 15 degrees, and

θ₃ is 37 degrees. The tension T₃ is 22 N. What is the weight?
-a) 13.6 N.
-b) 15.6 N.
+c) 17.9 N.
-d) 20.6 N.
-e) 23.7 N.
=====*_Rendition_* 2-5=====
<!--a04DynForce Newton_tensions_2-->In the figure "3 tensions" shown above θ₁ is 19 degrees, and θ₃ is 38 degrees. The tension T₃ is 21 N. What is the weight?
+a) 18.6 N.
-b) 21.4 N.
-c) 24.6 N.
-d) 28.3 N.
-e) 32.6 N.
=====*_Rendition_* 2-6=====
<!--a04DynForce Newton_tensions_2-->In the figure "3 tensions" shown above θ₁ is 20 degrees, and θ₃ is 29 degrees. The tension T₃ is 25 N. What is the weight?
+a) 20.1 N.
-b) 23.1 N.
-c) 26.6 N.
-d) 30.5 N.
-e) 35.1 N.
=====*_Rendition_* 2-7=====
<!--a04DynForce Newton_tensions_2-->In the figure "3 tensions" shown above θ₁ is 18 degrees, and θ₃ is 35 degrees. The tension T₃ is 48 N. What is the weight?
+a) 40.3 N.
-b) 46.4 N.
-c) 53.3 N.
-d) 61.3 N.
-e) 70.5 N.
=====*_Rendition_* 2-8=====
<!--a04DynForce Newton_tensions_2-->In the figure "3 tensions" shown above θ₁ is 17 degrees, and θ₃ is 29 degrees. The tension T₃ is 12 N. What is the weight?
-a) 5.9 N.
-b) 6.8 N.
-c) 7.8 N.
+d) 9 N.
-e) 10.4 N.
=====*_Rendition_* 2-9=====
<!--a04DynForce Newton_tensions_2-->In the figure "3 tensions" shown above θ₁ is 16 degrees, and θ₃ is 30 degrees. The tension T₃ is 45 N. What is the weight?
-a) 25.5 N.
-b) 29.3 N.
+c) 33.7 N.
-d) 38.7 N.
-e) 44.5 N.

=====*_Rendition_* 2-10=====
<!--a04DynForce Newton_tensions_2-->In the figure "3 tensions" shown above θ₁ is 15 degrees, and θ₃ is 36 degrees. The tension T₃ is 39 N. What is the weight?
-a) 23.7 N.
-b) 27.3 N.
+c) 31.4 N.
-d) 36.1 N.
-e) 41.5 N.
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a04DynForce Newton_tensions_3-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is 28 degrees, and the ''mass'' is 2.5 kg. What is T₂?
-a) 45.38 N.
+b) 52.19 N.
-c) 60.01 N.
-d) 69.02 N.
-e) 79.37 N.
=====*_Rendition_* 3-3=====
<!--a04DynForce Newton_tensions_3-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is 32 degrees, and the ''mass'' is 2.8 kg. What is T₂?
-a) 45.03 N.
+b) 51.78 N.
-c) 59.55 N.
-d) 68.48 N.
-e) 78.75 N.
=====*_Rendition_* 3-4=====
<!--a04DynForce Newton_tensions_3-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is 21 degrees, and the ''mass'' is 3.1 kg. What is T₂?
-a) 55.74 N.
-b) 64.1 N.
-c) 73.72 N.
+d) 84.77 N.
-e) 97.49 N.
=====*_Rendition_* 3-5=====
<!--a04DynForce Newton_tensions_3-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is 33 degrees, and the ''mass'' is 2.8 kg. What is T₂?
+a) 50.38 N.
-b) 57.94 N.
-c) 66.63 N.
-d) 76.62 N.
-e) 88.12 N.
=====*_Rendition_* 3-6=====
<!--a04DynForce Newton_tensions_3-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is 36 degrees, and the ''mass'' is 3.1 kg. What is T₂?
-a) 39.08 N.
-b) 44.94 N.

+c) 51.69 N.
-d) 59.44 N.
-e) 68.35 N.
=====*_Rendition_* 3-7=====
<!--a04DynForce Newton_tensions_3-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is 33 degrees, and the ''mass'' is 2.7 kg. What is T₂?
-a) 36.74 N.
-b) 42.25 N.
+c) 48.58 N.
-d) 55.87 N.
-e) 64.25 N.
=====*_Rendition_* 3-8=====
<!--a04DynForce Newton_tensions_3-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is 37 degrees, and the ''mass'' is 2.5 kg. What is T₂?
-a) 30.78 N.
-b) 35.4 N.
+c) 40.71 N.
-d) 46.82 N.
-e) 53.84 N.
=====*_Rendition_* 3-9=====
<!--a04DynForce Newton_tensions_3-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is 33 degrees, and the ''mass'' is 3.7 kg. What is T₂?
+a) 66.58 N.
-b) 76.56 N.
-c) 88.05 N.
-d) 101.25 N.
-e) 116.44 N.
=====*_Rendition_* 3-10=====
<!--a04DynForce Newton_tensions_3-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is 28 degrees, and the ''mass'' is 2.9 kg. What is T₂?
+a) 60.54 N.
-b) 69.62 N.
-c) 80.06 N.
-d) 92.07 N.
-e) 105.88 N.
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a04DynForce Newton_tensions_4-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is   28 degrees, and the ''mass'' is   2.5 kg. What is T₁?
-a) 32 N.
-b) 38.4 N.
+c) 46.1 N.
-d) 55.3 N.
-e) 66.4 N.
=====*_Rendition_* 4-3=====
<!--a04DynForce Newton_tensions_4-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is   32

degrees, and the ''mass'' is 2.8 kg. What is T₁?
-a) 21.2 N.
-b) 25.4 N.
-c) 30.5 N.
-d) 36.6 N.
+e) 43.9 N.
=====*_Rendition_* 4-4=====
<!--a04DynForce Newton_tensions_4-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is 21 degrees, and the ''mass'' is 3.1 kg. What is T₁?
+a) 79.1 N.
-b) 95 N.
-c) 114 N.
-d) 136.8 N.
-e) 164.1 N.
=====*_Rendition_* 4-5=====
<!--a04DynForce Newton_tensions_4-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is 33 degrees, and the ''mass'' is 2.8 kg. What is T₁?
-a) 35.2 N.
+b) 42.3 N.
-c) 50.7 N.
-d) 60.8 N.
-e) 73 N.
=====*_Rendition_* 4-6=====
<!--a04DynForce Newton_tensions_4-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is 36 degrees, and the ''mass'' is 3.1 kg. What is T₁?
-a) 34.8 N.
+b) 41.8 N.
-c) 50.2 N.
-d) 60.2 N.
-e) 72.3 N.
=====*_Rendition_* 4-7=====
<!--a04DynForce Newton_tensions_4-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is 33 degrees, and the ''mass'' is 2.7 kg. What is T₁?
+a) 40.7 N.
-b) 48.9 N.
-c) 58.7 N.
-d) 70.4 N.
-e) 84.5 N.
=====*_Rendition_* 4-8=====
<!--a04DynForce Newton_tensions_4-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is 37 degrees, and the ''mass'' is 2.5 kg. What is T₁?
+a) 32.5 N.
-b) 39 N.
-c) 46.8 N.
-d) 56.2 N.
-e) 67.4 N.
=====*_Rendition_* 4-9=====

<!--a04DynForce Newton_tensions_4-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is   33 degrees, and the ''mass'' is   3.7 kg. What is T₁?
-a) 46.5 N.
+b) 55.8 N.
-c) 67 N.
-d) 80.4 N.
-e) 96.5 N.
=====*_Rendition_* 4-10=====
<!--a04DynForce Newton_tensions_4-->[[File:3 tensions horizontal string.gif|rilght|180px|right]]In the figure shown, θ is   28 degrees, and the ''mass'' is   2.9 kg. What is T₁?
-a) 30.9 N.
-b) 37.1 N.
-c) 44.5 N.
+d) 53.5 N.
-e) 64.1 N.
====*_Question_* 5====
=====*_Rendition_* 5-2=====
<!--a04DynForce Newton_tensions_5-->[[File:Threetensions.jpg|220px|right]]In the figure shown, θ₁ is   16 degrees , and θ₃ is   30 degrees . The mass has a 'weight' of 44 N. What is the tension, T₁?
-a) 34.83 N.
-b) 40.05 N.
-c) 46.06 N.
+d) 52.97 N.
-e) 60.92 N.
=====*_Rendition_* 5-3=====
<!--a04DynForce Newton_tensions_5-->[[File:Threetensions.jpg|220px|right]]In the figure shown, θ₁ is   17 degrees , and θ₃ is   33 degrees . The mass has a 'weight' of 33 N. What is the tension, T₁?
-a) 27.32 N.
-b) 31.42 N.
+c) 36.13 N.
-d) 41.55 N.
-e) 47.78 N.
=====*_Rendition_* 5-4=====
<!--a04DynForce Newton_tensions_5-->[[File:Threetensions.jpg|220px|right]]In the figure shown, θ₁ is   16 degrees , and θ₃ is   35 degrees . The mass has a 'weight' of 28 N. What is the tension, T₁?
-a) 19.41 N.
-b) 22.32 N.
-c) 25.66 N.
+d) 29.51 N.
-e) 33.94 N.
=====*_Rendition_* 5-5=====

<!--a04DynForce
Newton_tensions_5-->[[File:Threetensions.jpg|220px|right]]In the figure shown, θ₁ is 17 degrees , and θ₃ is 29 degrees . The mass has a ''weight'' of 29 N. What is the tension, T₁?
-a) 20.16 N.
-b) 23.18 N.
-c) 26.66 N.
-d) 30.66 N.
+e) 35.26 N.
=====*_Rendition_* 5-6=====
<!--a04DynForce
Newton_tensions_5-->[[File:Threetensions.jpg|220px|right]]In the figure shown, θ₁ is 20 degrees , and θ₃ is 31 degrees . The mass has a ''weight'' of 36 N. What is the tension, T₁?
-a) 22.7 N.
-b) 26.11 N.
-c) 30.02 N.
-d) 34.53 N.
+e) 39.71 N.
=====*_Rendition_* 5-7=====
<!--a04DynForce
Newton_tensions_5-->[[File:Threetensions.jpg|220px|right]]In the figure shown, θ₁ is 18 degrees , and θ₃ is 29 degrees . The mass has a ''weight'' of 50 N. What is the tension, T₁?
-a) 34.19 N.
-b) 39.32 N.
-c) 45.21 N.
-d) 52 N.
+e) 59.79 N.
=====*_Rendition_* 5-8=====
<!--a04DynForce
Newton_tensions_5-->[[File:Threetensions.jpg|220px|right]]In the figure shown, θ₁ is 20 degrees , and θ₃ is 37 degrees . The mass has a ''weight'' of 41 N. What is the tension, T₁?
-a) 29.52 N.
-b) 33.95 N.
+c) 39.04 N.
-d) 44.9 N.
-e) 51.63 N.
=====*_Rendition_* 5-9=====
<!--a04DynForce
Newton_tensions_5-->[[File:Threetensions.jpg|220px|right]]In the figure shown, θ₁ is 20 degrees , and θ₃ is 33 degrees . The mass has a ''weight'' of 31 N. What is the tension, T₁?
+a) 32.55 N.
-b) 37.44 N.
-c) 43.05 N.

-d) 49.51 N.
-e) 56.94 N.
=====*_Rendition_* 5-10=====
<!--a04DynForce
Newton_tensions_5-->[[File:Threetensions.jpg|220px|right]]In the
figure shown, θ₁ is   17 degrees , and
θ₃ is   39 degrees . The mass has a ''weight'' of
42 N. What is the tension, T₁?
-a) 34.24 N.
+b) 39.37 N.
-c) 45.28 N.
-d) 52.07 N.
-e) 59.88 N.
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====*_Instructions_*====
Instructions are forthcoming

Transclusion from [[Quizbank/Instructions_0]]:
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===*_Quiz_*===
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{<!--a05frictDragElast_3rdLaw_1-->[[File:Forces 2 carts connected by
string.jpg|right|340px]] In the figure shown, the mass of
m₁ is 5.4 kg, and the mass of m₂ is 3.2 kg.
If the external force, F_{ext} on m₂ is 104 N, what
is the tension in the connecting string? Assume no friction is
present.}
-a) 56.8 N
+b) 65.3 N
-c) 75.1 N

-d) 86.4 N
-e) 99.3 N

{<!--a05frictDragElast_3rdLaw_2-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown (with m₁ = 5.4 kg, m₂ = 3.2 kg, and F_{ext} = 104 N), what is the acceleration? Assume no friction is present. }
-a) 9.1 m/s²
-b) 10.5 m/s²
+c) 12.1 m/s²
-d) 13.9 m/s²
-e) 16 m/s²

{<!--a05frictDragElast_3rdLaw_3-->Nine barefoot baseball players, with a total mass of 647 kg plays tug of war against five basketball players wearing shoes that provide a static coefficient of friction of 0.58 . The net mass of the (shoed) basketball team is 392 kg. What is the maximum coefficient of the barefoot boys if they lose?}
+a) 0.351
-b) 0.387
-c) 0.425
-d) 0.468
-e) 0.514

{<!--a05frictDragElast_3rdLaw_4-->Without their shoes, members of a 9 person baseball team have a coefficient of static friction of only 0.23 . But the team wins a game of tug of war due to their superior mass of 638 kg. They are playing against a 5 person basketball team with a net mass of 415 kg. What is the maximum coefficient of static friction of the basketball team? }
-a) 0.321
+b) 0.354
-c) 0.389
-d) 0.428
-e) 0.471

{<!--a05frictDragElast_3rdLaw_5-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown, the mass of m₁ is 6.6 kg, and the mass of m₂ is 2.6 kg. If the external force, F_{ext} on m₂ is 126 N, what is the tension in the connecting string? Assume that m₁ has a kinetic coefficient of friction equal to 0.37, and that for m₂ the coefficient is 0.44 .}
-a) 67.4 N
-b) 77.5 N
+c) 89.1 N
-d) 102.5 N
-e) 117.9 N

</quiz>

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Other renditions
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====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a05frictDragElast_3rdLaw_1-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown, the mass of m₁ is 6.4 kg, and the mass of m₂ is 2.3 kg. If the external force, F_{ext} on m₂ is 174 N, what is the tension in the connecting string? Assume no friction is present.
-a) 84.2 N
-b) 96.8 N
-c) 111.3 N
+d) 128 N
-e) 147.2 N
=====*_Rendition_* 1-3=====
<!--a05frictDragElast_3rdLaw_1-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown, the mass of m₁ is 7 kg, and the mass of m₂ is 3.6 kg. If the external force, F_{ext} on m₂ is 153 N, what is the tension in the connecting string? Assume no friction is present.
-a) 66.4 N
-b) 76.4 N
-c) 87.9 N
+d) 101 N
-e) 116.2 N
=====*_Rendition_* 1-4=====
<!--a05frictDragElast_3rdLaw_1-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown, the mass of m₁ is 6.7 kg, and the mass of m₂ is 2.5 kg. If the external force, F_{ext} on m₂ is 101 N, what is the tension in the connecting string? Assume no friction is present.
-a) 55.6 N
-b) 64 N
+c) 73.6 N
-d) 84.6 N
-e) 97.3 N
=====*_Rendition_* 1-5=====
<!--a05frictDragElast_3rdLaw_1-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown, the mass of m₁ is 5.4 kg, and the mass of m₂ is 3.9 kg. If the external force, F_{ext} on m₂ is 136 N, what is the tension in the connecting string? Assume no friction is present.
+a) 79 N
-b) 90.8 N
-c) 104.4 N
-d) 120.1 N

-e) 138.1 N
=====*_Rendition_* 1-6=====
<!--a05frictDragElast_3rdLaw_1-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown, the mass of m₁ is 5.1 kg, and the mass of m₂ is 2.8 kg. If the external force, F_{ext} on m₂ is 148 N, what is the tension in the connecting string? Assume no friction is present.
+a) 95.5 N
-b) 109.9 N
-c) 126.4 N
-d) 145.3 N
-e) 167.1 N
=====*_Rendition_* 1-7=====
<!--a05frictDragElast_3rdLaw_1-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown, the mass of m₁ is 5.4 kg, and the mass of m₂ is 2.3 kg. If the external force, F_{ext} on m₂ is 138 N, what is the tension in the connecting string? Assume no friction is present.
-a) 84.2 N
+b) 96.8 N
-c) 111.3 N
-d) 128 N
-e) 147.2 N
=====*_Rendition_* 1-8=====
<!--a05frictDragElast_3rdLaw_1-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown, the mass of m₁ is 6.5 kg, and the mass of m₂ is 2.5 kg. If the external force, F_{ext} on m₂ is 141 N, what is the tension in the connecting string? Assume no friction is present.
-a) 58.2 N
-b) 67 N
-c) 77 N
-d) 88.6 N
+e) 101.8 N
=====*_Rendition_* 1-9=====
<!--a05frictDragElast_3rdLaw_1-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown, the mass of m₁ is 5.1 kg, and the mass of m₂ is 3.5 kg. If the external force, F_{ext} on m₂ is 135 N, what is the tension in the connecting string? Assume no friction is present.
-a) 45.8 N
-b) 52.6 N
-c) 60.5 N
-d) 69.6 N
+e) 80.1 N
=====*_Rendition_* 1-10=====
<!--a05frictDragElast_3rdLaw_1-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown, the mass of

m₁ is 6.4 kg, and the mass of m₂ is 3.7 kg. If the external force, F_{ext} on m₂ is 135 N, what is the tension in the connecting string? Assume no friction is present.
-a) 74.4 N
+b) 85.5 N
-c) 98.4 N
-d) 113.1 N
-e) 130.1 N
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a05frictDragElast_3rdLaw_2-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown (with m₁ = 6.4 kg, m₂ = 2.3 kg, and F_{ext} = 174 N), what is the acceleration? Assume no friction is present.
+a) 20 m/s²
-b) 23 m/s²
-c) 26.5 m/s²
-d) 30.4 m/s²
-e) 35 m/s²
=====*_Rendition_* 2-3=====
<!--a05frictDragElast_3rdLaw_2-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown (with m₁ = 7 kg, m₂ = 3.6 kg, and F_{ext} = 153 N), what is the acceleration? Assume no friction is present.
-a) 12.6 m/s²
+b) 14.4 m/s²
-c) 16.6 m/s²
-d) 19.1 m/s²
-e) 22 m/s²
=====*_Rendition_* 2-4=====
<!--a05frictDragElast_3rdLaw_2-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown (with m₁ = 6.7 kg, m₂ = 2.5 kg, and F_{ext} = 101 N), what is the acceleration? Assume no friction is present.
-a) 6.3 m/s²
-b) 7.2 m/s²
-c) 8.3 m/s²
-d) 9.5 m/s²
+e) 11 m/s²
=====*_Rendition_* 2-5=====
<!--a05frictDragElast_3rdLaw_2-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown (with m₁ = 5.4 kg, m₂ = 3.9 kg, and F_{ext} = 136 N), what is the acceleration? Assume no friction is present.
-a) 12.7 m/s²
+b) 14.6 m/s²
-c) 16.8 m/s²
-d) 19.3 m/s²
-e) 22.2 m/s²
=====*_Rendition_* 2-6=====
<!--a05frictDragElast_3rdLaw_2-->[[File:Forces 2 carts connected by

string.jpg|right|340px]] In the figure shown (with m₁ = 5.1 kg, m₂ = 2.8 kg, and F_{ext} = 148 N), what is the acceleration? Assume no friction is present.
-a) 14.2 m/s²
-b) 16.3 m/s²
+c) 18.7 m/s²
-d) 21.5 m/s²
-e) 24.8 m/s²
=====*_Rendition_* 2-7=====
<!--a05frictDragElast_3rdLaw_2-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown (with m₁ = 5.4 kg, m₂ = 2.3 kg, and F_{ext} = 138 N), what is the acceleration? Assume no friction is present.
-a) 10.2 m/s²
-b) 11.8 m/s²
-c) 13.6 m/s²
-d) 15.6 m/s²
+e) 17.9 m/s²
=====*_Rendition_* 2-8=====
<!--a05frictDragElast_3rdLaw_2-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown (with m₁ = 6.5 kg, m₂ = 2.5 kg, and F_{ext} = 141 N), what is the acceleration? Assume no friction is present.
-a) 9 m/s²
-b) 10.3 m/s²
-c) 11.8 m/s²
-d) 13.6 m/s²
+e) 15.7 m/s²
=====*_Rendition_* 2-9=====
<!--a05frictDragElast_3rdLaw_2-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown (with m₁ = 5.1 kg, m₂ = 3.5 kg, and F_{ext} = 135 N), what is the acceleration? Assume no friction is present.
-a) 13.7 m/s²
+b) 15.7 m/s²
-c) 18.1 m/s²
-d) 20.8 m/s²
-e) 23.9 m/s²
=====*_Rendition_* 2-10=====
<!--a05frictDragElast_3rdLaw_2-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown (with m₁ = 6.4 kg, m₂ = 3.7 kg, and F_{ext} = 135 N), what is the acceleration? Assume no friction is present.
+a) 13.4 m/s²
-b) 15.4 m/s²
-c) 17.7 m/s²
-d) 20.3 m/s²
-e) 23.4 m/s²
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a05frictDragElast_3rdLaw_3-->Nine barefoot baseball players, with a total mass of 640 kg plays tug of war against five basketball

players wearing shoes that provide a static coefficient of friction of 0.68 . The net mass of the (shoed) basketball team is 431 kg. What is the maximum coefficient of the barefoot boys if they lose?
-a) 0.313
-b) 0.344
-c) 0.378
-d) 0.416
+e) 0.458
=====*_Rendition_* 3-3=====
<!--a05frictDragElast_3rdLaw_3-->Nine barefoot baseball players, with a total mass of 625 kg plays tug of war against five basketball players wearing shoes that provide a static coefficient of friction of 0.54 . The net mass of the (shoed) basketball team is 445 kg. What is the maximum coefficient of the barefoot boys if they lose?
-a) 0.263
-b) 0.289
-c) 0.318
-d) 0.35
+e) 0.384
=====*_Rendition_* 3-4=====
<!--a05frictDragElast_3rdLaw_3-->Nine barefoot baseball players, with a total mass of 672 kg plays tug of war against five basketball players wearing shoes that provide a static coefficient of friction of 0.59 . The net mass of the (shoed) basketball team is 407 kg. What is the maximum coefficient of the barefoot boys if they lose?
-a) 0.295
-b) 0.325
+c) 0.357
-d) 0.393
-e) 0.432
=====*_Rendition_* 3-5=====
<!--a05frictDragElast_3rdLaw_3-->Nine barefoot baseball players, with a total mass of 664 kg plays tug of war against five basketball players wearing shoes that provide a static coefficient of friction of 0.53 . The net mass of the (shoed) basketball team is 418 kg. What is the maximum coefficient of the barefoot boys if they lose?
+a) 0.334
-b) 0.367
-c) 0.404
-d) 0.444
-e) 0.488
=====*_Rendition_* 3-6=====
<!--a05frictDragElast_3rdLaw_3-->Nine barefoot baseball players, with a total mass of 679 kg plays tug of war against five basketball players wearing shoes that provide a static coefficient of friction of 0.61 . The net mass of the (shoed) basketball team is 380 kg. What is the maximum coefficient of the barefoot boys if they lose?
-a) 0.31
+b) 0.341
-c) 0.376
-d) 0.413
-e) 0.454

=====*_Rendition_* 3-7=====
<!--a05frictDragElast_3rdLaw_3-->Nine barefoot baseball players, with a total mass of 616 kg plays tug of war against five basketball players wearing shoes that provide a static coefficient of friction of 0.71 . The net mass of the (shoed) basketball team is 388 kg. What is the maximum coefficient of the barefoot boys if they lose?
+a) 0.447
-b) 0.492
-c) 0.541
-d) 0.595
-e) 0.655
=====*_Rendition_* 3-8=====
<!--a05frictDragElast_3rdLaw_3-->Nine barefoot baseball players, with a total mass of 640 kg plays tug of war against five basketball players wearing shoes that provide a static coefficient of friction of 0.61 . The net mass of the (shoed) basketball team is 385 kg. What is the maximum coefficient of the barefoot boys if they lose?
-a) 0.303
-b) 0.334
+c) 0.367
-d) 0.404
-e) 0.444
=====*_Rendition_* 3-9=====
<!--a05frictDragElast_3rdLaw_3-->Nine barefoot baseball players, with a total mass of 692 kg plays tug of war against five basketball players wearing shoes that provide a static coefficient of friction of 0.61 . The net mass of the (shoed) basketball team is 406 kg. What is the maximum coefficient of the barefoot boys if they lose?
+a) 0.358
-b) 0.394
-c) 0.433
-d) 0.476
-e) 0.524
=====*_Rendition_* 3-10=====
<!--a05frictDragElast_3rdLaw_3-->Nine barefoot baseball players, with a total mass of 616 kg plays tug of war against five basketball players wearing shoes that provide a static coefficient of friction of 0.68 . The net mass of the (shoed) basketball team is 421 kg. What is the maximum coefficient of the barefoot boys if they lose?
-a) 0.422
+b) 0.465
-c) 0.511
-d) 0.562
-e) 0.619
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a05frictDragElast_3rdLaw_4-->Without their shoes, members of a 9 person baseball team have a coefficient of static friction of only 0.24 . But the team wins a game of tug of war due to their superior mass of 643 kg. They are playing against a 5 person basketball team with a net mass of 405 kg. What is the maximum coefficient of static friction of the basketball team?

-a) 0.26
-b) 0.286
-c) 0.315
-d) 0.346
+e) 0.381
=====*_Rendition_* 4-3=====
<!--a05frictDragElast_3rdLaw_4-->Without their shoes, members of a 9 person baseball team have a coefficient of static friction of only 0.36 . But the team wins a game of tug of war due to their superior mass of 683 kg. They are playing against a 5 person basketball team with a net mass of 406 kg. What is the maximum coefficient of static friction of the basketball team?
-a) 0.455
-b) 0.501
-c) 0.551
+d) 0.606
-e) 0.666
=====*_Rendition_* 4-4=====
<!--a05frictDragElast_3rdLaw_4-->Without their shoes, members of a 9 person baseball team have a coefficient of static friction of only 0.23 . But the team wins a game of tug of war due to their superior mass of 675 kg. They are playing against a 5 person basketball team with a net mass of 394 kg. What is the maximum coefficient of static friction of the basketball team?
+a) 0.394
-b) 0.433
-c) 0.477
-d) 0.524
-e) 0.577
=====*_Rendition_* 4-5=====
<!--a05frictDragElast_3rdLaw_4-->Without their shoes, members of a 9 person baseball team have a coefficient of static friction of only 0.35 . But the team wins a game of tug of war due to their superior mass of 614 kg. They are playing against a 5 person basketball team with a net mass of 405 kg. What is the maximum coefficient of static friction of the basketball team?
-a) 0.439
-b) 0.482
+c) 0.531
-d) 0.584
-e) 0.642
=====*_Rendition_* 4-6=====
<!--a05frictDragElast_3rdLaw_4-->Without their shoes, members of a 9 person baseball team have a coefficient of static friction of only 0.33 . But the team wins a game of tug of war due to their superior mass of 663 kg. They are playing against a 5 person basketball team with a net mass of 422 kg. What is the maximum coefficient of static friction of the basketball team?
-a) 0.39
-b) 0.428
-c) 0.471
+d) 0.518

-e) 0.57
=====*_Rendition_* 4-7=====
<!--a05frictDragElast_3rdLaw_4-->Without their shoes, members of a 9 person baseball team have a coefficient of static friction of only 0.38 . But the team wins a game of tug of war due to their superior mass of 671 kg. They are playing against a 5 person basketball team with a net mass of 438 kg. What is the maximum coefficient of static friction of the basketball team?
-a) 0.481
-b) 0.529
+c) 0.582
-d) 0.64
-e) 0.704
=====*_Rendition_* 4-8=====
<!--a05frictDragElast_3rdLaw_4-->Without their shoes, members of a 9 person baseball team have a coefficient of static friction of only 0.23 . But the team wins a game of tug of war due to their superior mass of 607 kg. They are playing against a 5 person basketball team with a net mass of 429 kg. What is the maximum coefficient of static friction of the basketball team?
-a) 0.269
-b) 0.296
+c) 0.325
-d) 0.358
-e) 0.394
=====*_Rendition_* 4-9=====
<!--a05frictDragElast_3rdLaw_4-->Without their shoes, members of a 9 person baseball team have a coefficient of static friction of only 0.21 . But the team wins a game of tug of war due to their superior mass of 683 kg. They are playing against a 5 person basketball team with a net mass of 389 kg. What is the maximum coefficient of static friction of the basketball team?
-a) 0.277
-b) 0.305
-c) 0.335
+d) 0.369
-e) 0.406
=====*_Rendition_* 4-10=====
<!--a05frictDragElast_3rdLaw_4-->Without their shoes, members of a 9 person baseball team have a coefficient of static friction of only 0.3 . But the team wins a game of tug of war due to their superior mass of 662 kg. They are playing against a 5 person basketball team with a net mass of 430 kg. What is the maximum coefficient of static friction of the basketball team?
-a) 0.42
+b) 0.462
-c) 0.508
-d) 0.559
-e) 0.615
====*_Question_* 5====
=====*_Rendition_* 5-2=====
<!--a05frictDragElast_3rdLaw_5-->[[File:Forces 2 carts connected by

string.jpg|right|340px]] In the figure shown, the mass of m₁ is 6.9 kg, and the mass of m₂ is 3 kg. If the external force, F_{ext} on m₂ is 131 N, what is the tension in the connecting string? Assume that m₁ has a kinetic coefficient of friction equal to 0.31, and that for m₂ the coefficient is 0.49 .
-a) 76.2 N
+b) 87.6 N
-c) 100.8 N
-d) 115.9 N
-e) 133.3 N
=====*_Rendition_* 5-3=====
<!--a05frictDragElast_3rdLaw_5-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown, the mass of m₁ is 5.7 kg, and the mass of m₂ is 3.1 kg. If the external force, F_{ext} on m₂ is 137 N, what is the tension in the connecting string? Assume that m₁ has a kinetic coefficient of friction equal to 0.34, and that for m₂ the coefficient is 0.47 .
-a) 56.7 N
-b) 65.2 N
-c) 74.9 N
+d) 86.2 N
-e) 99.1 N
=====*_Rendition_* 5-4=====
<!--a05frictDragElast_3rdLaw_5-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown, the mass of m₁ is 5.7 kg, and the mass of m₂ is 2.5 kg. If the external force, F_{ext} on m₂ is 159 N, what is the tension in the connecting string? Assume that m₁ has a kinetic coefficient of friction equal to 0.34, and that for m₂ the coefficient is 0.46 .
-a) 82 N
-b) 94.3 N
+c) 108.5 N
-d) 124.8 N
-e) 143.5 N
=====*_Rendition_* 5-5=====
<!--a05frictDragElast_3rdLaw_5-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown, the mass of m₁ is 6.9 kg, and the mass of m₂ is 2.5 kg. If the external force, F_{ext} on m₂ is 165 N, what is the tension in the connecting string? Assume that m₁ has a kinetic coefficient of friction equal to 0.35, and that for m₂ the coefficient is 0.44 .
-a) 68.3 N
-b) 78.6 N
-c) 90.4 N
-d) 103.9 N
+e) 119.5 N
=====*_Rendition_* 5-6=====
<!--a05frictDragElast_3rdLaw_5-->[[File:Forces 2 carts connected by

string.jpg|right|340px]] In the figure shown, the mass of m₁ is 6.5 kg, and the mass of m₂ is 2.9 kg. If the external force, F_{ext} on m₂ is 132 N, what is the tension in the connecting string? Assume that m₁ has a kinetic coefficient of friction equal to 0.37, and that for m₂ the coefficient is 0.48 .
+a) 89.1 N
-b) 102.5 N
-c) 117.9 N
-d) 135.5 N
-e) 155.9 N
=====*_Rendition_* 5-7=====
<!--a05frictDragElast_3rdLaw_5-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown, the mass of m₁ is 6.8 kg, and the mass of m₂ is 3.3 kg. If the external force, F_{ext} on m₂ is 112 N, what is the tension in the connecting string? Assume that m₁ has a kinetic coefficient of friction equal to 0.39, and that for m₂ the coefficient is 0.46 .
-a) 48.6 N
-b) 55.9 N
-c) 64.2 N
+d) 73.9 N
-e) 85 N
=====*_Rendition_* 5-8=====
<!--a05frictDragElast_3rdLaw_5-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown, the mass of m₁ is 6.5 kg, and the mass of m₂ is 3 kg. If the external force, F_{ext} on m₂ is 175 N, what is the tension in the connecting string? Assume that m₁ has a kinetic coefficient of friction equal to 0.33, and that for m₂ the coefficient is 0.48 .
-a) 66.7 N
-b) 76.7 N
-c) 88.3 N
-d) 101.5 N
+e) 116.7 N
=====*_Rendition_* 5-9=====
<!--a05frictDragElast_3rdLaw_5-->[[File:Forces 2 carts connected by string.jpg|right|340px]] In the figure shown, the mass of m₁ is 6 kg, and the mass of m₂ is 3.2 kg. If the external force, F_{ext} on m₂ is 173 N, what is the tension in the connecting string? Assume that m₁ has a kinetic coefficient of friction equal to 0.31, and that for m₂ the coefficient is 0.44 .
+a) 110.2 N
-b) 126.7 N
-c) 145.7 N
-d) 167.6 N
-e) 192.7 N
=====*_Rendition_* 5-10=====
<!--a05frictDragElast_3rdLaw_5-->[[File:Forces 2 carts connected by

string.jpg|right|340px]] In the figure shown, the mass of
m₁ is 5.2 kg, and the mass of m₂ is 2.9 kg.
If the external force, F_{ext} on m₂ is 179 N, what
is the tension in the connecting string? Assume that m₁
has a kinetic coefficient of friction equal to 0.36, and that for
m₂ the coefficient is 0.46 .
-a) 74.4 N
-b) 85.5 N
-c) 98.3 N
+d) 113.1 N
-e) 130.1 N
</div></div>
====*_Instructions_*====
Instructions are forthcoming

Transclusion from [[Quizbank/Instructions_0]]:
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*_Permalink_* [[Special:Permalink/1418007]]
*_wiki_* https://en.wikiversity.org/wiki/
*_numerical_*
*_Attribution_*
https://en.wikiversity.org/w/index.php?title=Physics_equations/06-Unif
orm_Circular_Motion_and_Gravitation/Q:friction&oldid=1418007
*_See_* [[User:Guy vandegrift]]
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===*_Quiz_*===
<quiz display=simple>
{<!--a06uniformCircMotGravitation_friction_1-->A merry-go-round has an
angular frequency, ω, equal to 0.15 rad/sec. How
many minutes does it take to complete 8.5 revolutions? }
-a) 4.49 minutes.
-b) 5.16 minutes.
+c) 5.93 minutes.
-d) 6.82 minutes.
-e) 7.85 minutes.

{<!--a06uniformCircMotGravitation_friction_2-->A merry-go round has a
period of 0.22 minutes. What is the centripetal force on a 81.2 kg

person who is standing 1.64 meters from the center?}
-a) 26.2 newtons.
+b) 30.2 newtons.
-c) 34.7 newtons.
-d) 39.9 newtons.
-e) 45.9 newtons.

{<!--a06uniformCircMotGravitation_friction_3-->A merry-go round has a period of 0.22 minutes. What is the minimum coefficient of static friction that would allow a 81.2 kg person to stand1.64 meters from the center, without grabbing something?}
-a) 0.033
+b) 0.038
-c) 0.044
-d) 0.05
-e) 0.058

{<!--a06uniformCircMotGravitation_friction_4-->What is the gravitational acceleration on a plant that is 2.37 times more massive than Earth, and a radius that is 1.52 times greater than Earths?}
+a) 10.1 m/s²
-b) 11.6 m/s²
-c) 13.3 m/s²
-d) 15.3 m/s²
-e) 17.6 m/s²

{<!--a06uniformCircMotGravitation_friction_5-->What is the gravitational acceleration on a plant that is 2.89 times more dense than Earth, and a radius that is 2.38 times greater than Earth's?}
-a) 58.6 m/s²
+b) 67.4 m/s²
-c) 77.5 m/s²
-d) 89.1 m/s²
-e) 102.5 m/s²

</quiz>

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Other renditions
<div class="mw-collapsible-content">
====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a06uniformCircMotGravitation_friction_1-->A merry-go-round has an angular frequency, ω, equal to 0.174 rad/sec. How many minutes does it take to complete 8.5 revolutions?
-a) 3.87 minutes.
-b) 4.45 minutes.
+c) 5.12 minutes.
-d) 5.88 minutes.

-e) 6.77 minutes.
=====*_Rendition_* 1-3=====
<!--a06uniformCircMotGravitation_friction_1-->A merry-go-round has an angular frequency, ω, equal to 0.192 rad/sec. How many minutes does it take to complete 12.5 revolutions?
-a) 5.93 minutes.
+b) 6.82 minutes.
-c) 7.84 minutes.
-d) 9.02 minutes.
-e) 10.37 minutes.
=====*_Rendition_* 1-4=====
<!--a06uniformCircMotGravitation_friction_1-->A merry-go-round has an angular frequency, ω, equal to 0.188 rad/sec. How many minutes does it take to complete 6.5 revolutions?
-a) 2.74 minutes.
-b) 3.15 minutes.
+c) 3.62 minutes.
-d) 4.16 minutes.
-e) 4.79 minutes.
=====*_Rendition_* 1-5=====
<!--a06uniformCircMotGravitation_friction_1-->A merry-go-round has an angular frequency, ω, equal to 0.168 rad/sec. How many minutes does it take to complete 6.5 revolutions?
-a) 2.66 minutes.
-b) 3.06 minutes.
-c) 3.52 minutes.
+d) 4.05 minutes.
-e) 4.66 minutes.
=====*_Rendition_* 1-6=====
<!--a06uniformCircMotGravitation_friction_1-->A merry-go-round has an angular frequency, ω, equal to 0.174 rad/sec. How many minutes does it take to complete 12.5 revolutions?
-a) 5.69 minutes.
-b) 6.54 minutes.
+c) 7.52 minutes.
-d) 8.65 minutes.
-e) 9.95 minutes.
=====*_Rendition_* 1-7=====
<!--a06uniformCircMotGravitation_friction_1-->A merry-go-round has an angular frequency, ω, equal to 0.192 rad/sec. How many minutes does it take to complete 8.5 revolutions?
-a) 3.05 minutes.
-b) 3.51 minutes.
-c) 4.03 minutes.
+d) 4.64 minutes.
-e) 5.33 minutes.
=====*_Rendition_* 1-8=====
<!--a06uniformCircMotGravitation_friction_1-->A merry-go-round has an angular frequency, ω, equal to 0.182 rad/sec. How many minutes does it take to complete 12.5 revolutions?
-a) 5.44 minutes.
-b) 6.25 minutes.

+c) 7.19 minutes.
-d) 8.27 minutes.
-e) 9.51 minutes.
=====*_Rendition_* 1-9=====
<!--a06uniformCircMotGravitation_friction_1-->A merry-go-round has an angular frequency, ω, equal to 0.15 rad/sec. How many minutes does it take to complete 9.5 revolutions?
-a) 5.77 minutes.
+b) 6.63 minutes.
-c) 7.63 minutes.
-d) 8.77 minutes.
-e) 10.09 minutes.
=====*_Rendition_* 1-10=====
<!--a06uniformCircMotGravitation_friction_1-->A merry-go-round has an angular frequency, ω, equal to 0.16 rad/sec. How many minutes does it take to complete 9.5 revolutions?
-a) 5.41 minutes.
+b) 6.22 minutes.
-c) 7.15 minutes.
-d) 8.22 minutes.
-e) 9.46 minutes.
=====*_Rendition_* 1-11=====
<!--a06uniformCircMotGravitation_friction_1-->A merry-go-round has an angular frequency, ω, equal to 0.198 rad/sec. How many minutes does it take to complete 10.5 revolutions?
-a) 4.83 minutes.
+b) 5.55 minutes.
-c) 6.39 minutes.
-d) 7.34 minutes.
-e) 8.45 minutes.
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a06uniformCircMotGravitation_friction_2-->A merry-go round has a period of 0.34 minutes. What is the centripetal force on a 89.6 kg person who is standing 2.25 meters from the center?
-a) 16.6 newtons.
+b) 19.1 newtons.
-c) 22 newtons.
-d) 25.3 newtons.
-e) 29.1 newtons.
=====*_Rendition_* 2-3=====
<!--a06uniformCircMotGravitation_friction_2-->A merry-go round has a period of 0.38 minutes. What is the centripetal force on a 77.6 kg person who is standing 1.59 meters from the center?
+a) 9.4 newtons.
-b) 10.8 newtons.
-c) 12.4 newtons.
-d) 14.3 newtons.
-e) 16.4 newtons.
=====*_Rendition_* 2-4=====
<!--a06uniformCircMotGravitation_friction_2-->A merry-go round has a period of 0.26 minutes. What is the centripetal force on a 51.9 kg

person who is standing 1.26 meters from the center?
-a) 6.1 newtons.
-b) 7 newtons.
-c) 8 newtons.
-d) 9.2 newtons.
+e) 10.6 newtons.
=====*_Rendition_* 2-5=====
<!--a06uniformCircMotGravitation_friction_2-->A merry-go round has a period of 0.32 minutes. What is the centripetal force on a 88.1 kg person who is standing 1.73 meters from the center?
+a) 16.3 newtons.
-b) 18.8 newtons.
-c) 21.6 newtons.
-d) 24.8 newtons.
-e) 28.5 newtons.
=====*_Rendition_* 2-6=====
<!--a06uniformCircMotGravitation_friction_2-->A merry-go round has a period of 0.34 minutes. What is the centripetal force on a 51.4 kg person who is standing 3.09 meters from the center?
-a) 8.6 newtons.
-b) 9.9 newtons.
-c) 11.4 newtons.
-d) 13.1 newtons.
+e) 15.1 newtons.
=====*_Rendition_* 2-7=====
<!--a06uniformCircMotGravitation_friction_2-->A merry-go round has a period of 0.38 minutes. What is the centripetal force on a 64.8 kg person who is standing 1.76 meters from the center?
-a) 5 newtons.
-b) 5.7 newtons.
-c) 6.5 newtons.
-d) 7.5 newtons.
+e) 8.7 newtons.
=====*_Rendition_* 2-8=====
<!--a06uniformCircMotGravitation_friction_2-->A merry-go round has a period of 0.26 minutes. What is the centripetal force on a 53.3 kg person who is standing 1.35 meters from the center?
-a) 7.7 newtons.
-b) 8.8 newtons.
-c) 10.2 newtons.
+d) 11.7 newtons.
-e) 13.4 newtons.
=====*_Rendition_* 2-9=====
<!--a06uniformCircMotGravitation_friction_2-->A merry-go round has a period of 0.22 minutes. What is the centripetal force on a 96.9 kg person who is standing 1.95 meters from the center?
-a) 32.4 newtons.
-b) 37.2 newtons.
+c) 42.8 newtons.
-d) 49.2 newtons.
-e) 56.6 newtons.
=====*_Rendition_* 2-10=====

<!--a06uniformCircMotGravitation_friction_2-->A merry-go round has a period of 0.36 minutes. What is the centripetal force on a 73.9 kg person who is standing 2.94 meters from the center?
-a) 12.1 newtons.
-b) 13.9 newtons.
-c) 16 newtons.
+d) 18.4 newtons.
-e) 21.1 newtons.
=====*_Rendition_* 2-11=====
<!--a06uniformCircMotGravitation_friction_2-->A merry-go round has a period of 0.36 minutes. What is the centripetal force on a 67.1 kg person who is standing 1.19 meters from the center?
-a) 4.4 newtons.
-b) 5.1 newtons.
-c) 5.9 newtons.
+d) 6.8 newtons.
-e) 7.8 newtons.
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a06uniformCircMotGravitation_friction_3-->A merry-go round has a period of 0.34 minutes. What is the minimum coefficient of static friction that would allow a 89.6 kg person to stand2.25 meters from the center, without grabbing something?
-a) 0.019
+b) 0.022
-c) 0.025
-d) 0.029
-e) 0.033
=====*_Rendition_* 3-3=====
<!--a06uniformCircMotGravitation_friction_3-->A merry-go round has a period of 0.38 minutes. What is the minimum coefficient of static friction that would allow a 77.6 kg person to stand1.59 meters from the center, without grabbing something?
-a) 0.008
-b) 0.009
-c) 0.011
+d) 0.012
-e) 0.014
=====*_Rendition_* 3-4=====
<!--a06uniformCircMotGravitation_friction_3-->A merry-go round has a period of 0.26 minutes. What is the minimum coefficient of static friction that would allow a 51.9 kg person to stand1.26 meters from the center, without grabbing something?
+a) 0.021
-b) 0.024
-c) 0.028
-d) 0.032
-e) 0.036
=====*_Rendition_* 3-5=====
<!--a06uniformCircMotGravitation_friction_3-->A merry-go round has a period of 0.32 minutes. What is the minimum coefficient of static friction that would allow a 88.1 kg person to stand1.73 meters from

the center, without grabbing something?
+a) 0.019
-b) 0.022
-c) 0.025
-d) 0.029
-e) 0.033
=====*_Rendition_* 3-6=====
<!--a06uniformCircMotGravitation_friction_3-->A merry-go round has a period of 0.34 minutes. What is the minimum coefficient of static friction that would allow a 51.4 kg person to stand3.09 meters from the center, without grabbing something?
-a) 0.017
-b) 0.02
-c) 0.023
-d) 0.026
+e) 0.03
=====*_Rendition_* 3-7=====
<!--a06uniformCircMotGravitation_friction_3-->A merry-go round has a period of 0.38 minutes. What is the minimum coefficient of static friction that would allow a 64.8 kg person to stand1.76 meters from the center, without grabbing something?
-a) 0.008
-b) 0.009
-c) 0.01
-d) 0.012
+e) 0.014
=====*_Rendition_* 3-8=====
<!--a06uniformCircMotGravitation_friction_3-->A merry-go round has a period of 0.26 minutes. What is the minimum coefficient of static friction that would allow a 53.3 kg person to stand1.35 meters from the center, without grabbing something?
-a) 0.019
+b) 0.022
-c) 0.026
-d) 0.03
-e) 0.034
=====*_Rendition_* 3-9=====
<!--a06uniformCircMotGravitation_friction_3-->A merry-go round has a period of 0.22 minutes. What is the minimum coefficient of static friction that would allow a 96.9 kg person to stand1.95 meters from the center, without grabbing something?
-a) 0.03
-b) 0.034
-c) 0.039
+d) 0.045
-e) 0.052
=====*_Rendition_* 3-10=====
<!--a06uniformCircMotGravitation_friction_3-->A merry-go round has a period of 0.36 minutes. What is the minimum coefficient of static friction that would allow a 73.9 kg person to stand2.94 meters from the center, without grabbing something?
-a) 0.017

-b) 0.019
-c) 0.022
+d) 0.025
-e) 0.029
=====*_Rendition_* 3-11=====
<!--a06uniformCircMotGravitation_friction_3-->A merry-go round has a period of 0.36 minutes. What is the minimum coefficient of static friction that would allow a 67.1 kg person to stand1.19 meters from the center, without grabbing something?
-a) 0.006
-b) 0.007
-c) 0.008
-d) 0.009
+e) 0.01
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a06uniformCircMotGravitation_friction_4-->What is the gravitational acceleration on a plant that is 2.67 times more massive than Earth, and a radius that is 1.74 times greater than Earths?
-a) 5.7 m/s²
-b) 6.5 m/s²
-c) 7.5 m/s²
+d) 8.6 m/s²
-e) 9.9 m/s²
=====*_Rendition_* 4-3=====
<!--a06uniformCircMotGravitation_friction_4-->What is the gravitational acceleration on a plant that is 2.33 times more massive than Earth, and a radius that is 1.49 times greater than Earths?
+a) 10.3 m/s²
-b) 11.8 m/s²
-c) 13.6 m/s²
-d) 15.6 m/s²
-e) 18 m/s²
=====*_Rendition_* 4-4=====
<!--a06uniformCircMotGravitation_friction_4-->What is the gravitational acceleration on a plant that is 2.05 times more massive than Earth, and a radius that is 1.56 times greater than Earths?
-a) 4.7 m/s²
-b) 5.4 m/s²
-c) 6.2 m/s²
-d) 7.2 m/s²
+e) 8.3 m/s²
=====*_Rendition_* 4-5=====
<!--a06uniformCircMotGravitation_friction_4-->What is the gravitational acceleration on a plant that is 1.83 times more massive than Earth, and a radius that is 1.38 times greater than Earths?
-a) 8.2 m/s²
+b) 9.4 m/s²
-c) 10.8 m/s²
-d) 12.5 m/s²
-e) 14.3 m/s²
=====*_Rendition_* 4-6=====

<!--a06uniformCircMotGravitation_friction_4-->What is the gravitational acceleration on a plant that is 2.59 times more massive than Earth, and a radius that is 1.75 times greater than Earths?
+a) 8.3 m/s²
-b) 9.5 m/s²
-c) 11 m/s²
-d) 12.6 m/s²
-e) 14.5 m/s²
=====*_Rendition_* 4-7=====
<!--a06uniformCircMotGravitation_friction_4-->What is the gravitational acceleration on a plant that is 1.34 times more massive than Earth, and a radius that is 1.45 times greater than Earths?
-a) 4.7 m/s²
-b) 5.4 m/s²
+c) 6.2 m/s²
-d) 7.2 m/s²
-e) 8.3 m/s²
=====*_Rendition_* 4-8=====
<!--a06uniformCircMotGravitation_friction_4-->What is the gravitational acceleration on a plant that is 1.96 times more massive than Earth, and a radius that is 1.62 times greater than Earths?
-a) 4.8 m/s²
-b) 5.5 m/s²
-c) 6.4 m/s²
+d) 7.3 m/s²
-e) 8.4 m/s²
=====*_Rendition_* 4-9=====
<!--a06uniformCircMotGravitation_friction_4-->What is the gravitational acceleration on a plant that is 2.13 times more massive than Earth, and a radius that is 1.31 times greater than Earths?
-a) 8 m/s²
-b) 9.2 m/s²
-c) 10.6 m/s²
+d) 12.2 m/s²
-e) 14 m/s²
=====*_Rendition_* 4-10=====
<!--a06uniformCircMotGravitation_friction_4-->What is the gravitational acceleration on a plant that is 1.34 times more massive than Earth, and a radius that is 1.88 times greater than Earths?
-a) 2.4 m/s²
-b) 2.8 m/s²
-c) 3.2 m/s²
+d) 3.7 m/s²
-e) 4.3 m/s²
=====*_Rendition_* 4-11=====
<!--a06uniformCircMotGravitation_friction_4-->What is the gravitational acceleration on a plant that is 2.21 times more massive than Earth, and a radius that is 1.74 times greater than Earths?
-a) 4.1 m/s²
-b) 4.7 m/s²
-c) 5.4 m/s²
-d) 6.2 m/s²

+e) 7.2 m/s²
====*_Question_* 5====
=====*_Rendition_* 5-2=====
<!--a06uniformCircMotGravitation_friction_5-->What is the gravitational acceleration on a plant that is 1.95 times more dense than Earth, and a radius that is 2.12 times greater than Earth's?
+a) 40.5 m/s²
-b) 46.6 m/s²
-c) 53.6 m/s²
-d) 61.6 m/s²
-e) 70.9 m/s²
=====*_Rendition_* 5-3=====
<!--a06uniformCircMotGravitation_friction_5-->What is the gravitational acceleration on a plant that is 1.92 times more dense than Earth, and a radius that is 1.69 times greater than Earth's?
-a) 24 m/s²
-b) 27.7 m/s²
+c) 31.8 m/s²
-d) 36.6 m/s²
-e) 42.1 m/s²
=====*_Rendition_* 5-4=====
<!--a06uniformCircMotGravitation_friction_5-->What is the gravitational acceleration on a plant that is 1.94 times more dense than Earth, and a radius that is 2.35 times greater than Earth's?
-a) 38.9 m/s²
+b) 44.7 m/s²
-c) 51.4 m/s²
-d) 59.1 m/s²
-e) 67.9 m/s²
=====*_Rendition_* 5-5=====
<!--a06uniformCircMotGravitation_friction_5-->What is the gravitational acceleration on a plant that is 1.29 times more dense than Earth, and a radius that is 1.53 times greater than Earth's?
-a) 12.7 m/s²
-b) 14.6 m/s²
-c) 16.8 m/s²
+d) 19.3 m/s²
-e) 22.2 m/s²
=====*_Rendition_* 5-6=====
<!--a06uniformCircMotGravitation_friction_5-->What is the gravitational acceleration on a plant that is 2.98 times more dense than Earth, and a radius that is 1.81 times greater than Earth's?
-a) 30.2 m/s²
-b) 34.8 m/s²
-c) 40 m/s²
-d) 46 m/s²
+e) 52.9 m/s²
=====*_Rendition_* 5-7=====
<!--a06uniformCircMotGravitation_friction_5-->What is the gravitational acceleration on a plant that is 1.23 times more dense than Earth, and a radius that is 2.98 times greater than Earth's?
+a) 35.9 m/s²

-b) 41.3 m/s²
-c) 47.5 m/s²
-d) 54.6 m/s²
-e) 62.8 m/s²
=====*_Rendition_* 5-8=====
<!--a06uniformCircMotGravitation_friction_5-->What is the gravitational acceleration on a plant that is 1.73 times more dense than Earth, and a radius that is 2.44 times greater than Earth's?
+a) 41.4 m/s²
-b) 47.6 m/s²
-c) 54.7 m/s²
-d) 62.9 m/s²
-e) 72.4 m/s²
=====*_Rendition_* 5-9=====
<!--a06uniformCircMotGravitation_friction_5-->What is the gravitational acceleration on a plant that is 1.23 times more dense than Earth, and a radius that is 1.83 times greater than Earth's?
-a) 19.2 m/s²
+b) 22.1 m/s²
-c) 25.4 m/s²
-d) 29.2 m/s²
-e) 33.5 m/s²
=====*_Rendition_* 5-10=====
<!--a06uniformCircMotGravitation_friction_5-->What is the gravitational acceleration on a plant that is 1.47 times more dense than Earth, and a radius that is 1.42 times greater than Earth's?
+a) 20.5 m/s²
-b) 23.5 m/s²
-c) 27.1 m/s²
-d) 31.1 m/s²
-e) 35.8 m/s²
=====*_Rendition_* 5-11=====
<!--a06uniformCircMotGravitation_friction_5-->What is the gravitational acceleration on a plant that is 2.01 times more dense than Earth, and a radius that is 1.54 times greater than Earth's?
-a) 26.4 m/s²
+b) 30.3 m/s²
-c) 34.9 m/s²
-d) 40.1 m/s²
-e) 46.1 m/s²
</div></div>
====*_Instructions_*====
Instructions are forthcoming

Transclusion from [[Quizbank/Instructions_0]]:
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*_conceptual_*
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rm_Circular_Motion_and_Gravitation/Q:derive&oldid=1411691
*_See_* [[User:Guy vandegrift]]
</div></div>
===*_Quiz_*===
<quiz display=simple>
{<!--a06uniformCircMotGravitation_proof_1-->[[File:UniCircMot_gv52.png
|right|180px]]  Is <math>dv/d\ell=v/r</math> valid for uniform
circular motion? <br/><br/><br/>}
+ Yes
- No

{<!--a06uniformCircMotGravitation_proof_10-->[[File:UniCircMot_gv52.pn
g|right|180px]]  Is <math>dv/r=d\ell/v</math> valid for uniform
circular motion? <br/><br/><br/>}
- Yes
+ No

{<!--a06uniformCircMotGravitation_proof_11-->[[File:UniCircMot_gv52.pn
g|right|180px]]  Is <math>rd\ell=vdv</math> valid for uniform circular
motion? <br/><br/><br/>}
- Yes
+ No

{<!--a06uniformCircMotGravitation_proof_12-->[[File:UniCircMot_gv52.pn
g|right|180px]]  Is <math>dv=|\vec v_2|-|\vec v_1|</math> valid for
uniform circular motion? <br/><br/><br/>}
- Yes
+ No

{<!--a06uniformCircMotGravitation_proof_13-->[[File:UniCircMot_gv52.pn
g|right|180px]]  Is <math>d\ell/dv=v/r</math> valid for uniform
circular motion? <br/><br/><br/>}
- Yes
+ No

{<!--a06uniformCircMotGravitation_proof_14-->[[File:UniCircMot_gv52.pn
g|right|180px]]  Is <math>dv/d\ell=r/v</math> valid for uniform
circular motion? <br/><br/><br/>}
- Yes
```

+ No

{<!--a06uniformCircMotGravitation_proof_2-->[[File:UniCircMot_gv52.png|right|180px]] Is $dv=|\vec v_2-\vec v_1|$ valid for uniform circular motion?

}
+ Yes
- No

{<!--a06uniformCircMotGravitation_proof_3-->[[File:UniCircMot_gv52.png|right|180px]] Is $d\ell=vdt$ valid for uniform circular motion?

}
+ Yes
- No

{<!--a06uniformCircMotGravitation_proof_4-->[[File:UniCircMot_gv52.png|right|180px]] Is $adt/v =vdt/ r$ valid for uniform circular motion?

}
+ Yes
- No

{<!--a06uniformCircMotGravitation_proof_5-->[[File:UniCircMot_gv52.png|right|180px]] Is $dv=adt$ valid for uniform circular motion?

}
+ Yes
- No

{<!--a06uniformCircMotGravitation_proof_6-->[[File:UniCircMot_gv52.png|right|180px]] Is $|d\vec v|=adt$ valid for uniform circular motion?

}
+ Yes
- No

{<!--a06uniformCircMotGravitation_proof_7-->[[File:UniCircMot_gv52.png|right|180px]] Is $d\ell=|\vec r_2-\vec r_1|$ valid for uniform circular motion?

}
+ Yes
- No

{<!--a06uniformCircMotGravitation_proof_8-->[[File:UniCircMot_gv52.png|right|180px]] Is $d\ell=|\vec r_2|-|\vec r_1|$ valid for uniform circular motion?

}
- Yes
+ No

{<!--a06uniformCircMotGravitation_proof_9-->[[File:UniCircMot_gv52.png|right|180px]] Is $v/d\ell=r/dv$ valid for uniform circular motion?

}
- Yes
+ No

</quiz>

```
====*_Instructions_*====
Instructions are forthcoming

Transclusion from [[Quizbank/Instructions_0]]:<br/>
{{:Quizbank/Instructions_0}}
[[Category:QB/Conceptual]]
==*_End_*==
__NOTOC__
<div style="text-align: right; direction: ltr; margin-left:
1em;">{{REVISIONID}}</div>
==*_Quizbank_*==
<div class="toccolours mw-collapsible mw-collapsed"
style="width:100%">
<span style="font-family:Cursive; font-size: 10pt;
background-color:#FFF">
Information (click to expand)
</span><div class="mw-collapsible-content">
[[#*_Instructions_*]]
*_Name_* QB/a07energy_cart1
*_Permalink_* [[Special:Permalink/1380215]]
*_wiki_* https://en.wikiversity.org/wiki/
*_numerical_*
*_Attribution_*
https://en.wikiversity.org/w/index.php?title=Physics_equations/07-Work
_and_Energy/Q:cart1&oldid=1380215
*_See_* [[User:Guy vandegrift]]
</div></div>
===*_Quiz_*===
<quiz display=simple>
{<!--aa07energy_cart1_1-->If the initial velocity after leaving the
spring is 5.00 m/s,  how high does it reach before coming to
rest?[[File:Roller coaster energy conservation.jpg|right|280px]]}
- a) 1.10 m
- b) 1.16 m
- c) 1.21 m
+ d) 1.28 m
- e) 1.34 m

{<!--aa07energy_cart1_2-->The mass of the cart is 2.0kg,   and the
spring constant is 5447N/m. If the initial compression of the spring
is 0.10m, how high does it reach before coming to rest?[[File:Roller
coaster energy conservation.jpg|right|280px]]}
- a) 1.32E+00  m
+ b) 1.39E+00  m
- c) 1.46E+00  m
- d) 1.53E+00  m
- e) 1.61E+00  m

{<!--aa07energy_cart1_3-->What is the highest point the cart reaches
if the speed was 1.4m/s,  when the cart was situated at a height of
2.2m?,  [[File:Roller coaster energy conservation.jpg|right|280px]]}
- a) 2.00 m
```

- b) 2.10 m
+ c) 2.20 m
- d) 2.31 m
- e) 2.43 m

</quiz>

<div class="toccolours mw-collapsible mw-collapsed" style="width:100%">

Other renditions
<div class="mw-collapsible-content">
====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 9.60 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 3.87 m
- b) 4.06 m
- c) 4.26 m
- d) 4.48 m
+ e) 4.70 m
=====*_Rendition_* 1-3=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 9.60 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 4.26 m
- b) 4.48 m
+ c) 4.70 m
- d) 4.94 m
- e) 5.18 m
=====*_Rendition_* 1-4=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 9.10 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 3.48 m
- b) 3.65 m
- c) 3.83 m
- d) 4.02 m
+ e) 4.22 m
=====*_Rendition_* 1-5=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 6.70 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
+ a) 2.29 m
- b) 2.40 m
- c) 2.53 m
- d) 2.65 m
- e) 2.78 m
=====*_Rendition_* 1-6=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the

spring is 9.00 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 3.75 m
- b) 3.94 m
+ c) 4.13 m
- d) 4.34 m
- e) 4.56 m
=====*_Rendition_* 1-7=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 9.80 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 4.44 m
- b) 4.67 m
+ c) 4.90 m
- d) 5.15 m
- e) 5.40 m
=====*_Rendition_* 1-8=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 6.10 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 1.64 m
- b) 1.72 m
- c) 1.81 m
+ d) 1.90 m
- e) 1.99 m
=====*_Rendition_* 1-9=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 9.50 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 3.98 m
- b) 4.18 m
- c) 4.39 m
+ d) 4.60 m
- e) 4.83 m
=====*_Rendition_* 1-10=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 6.50 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 1.96 m
- b) 2.05 m
+ c) 2.16 m
- d) 2.26 m
- e) 2.38 m
=====*_Rendition_* 1-11=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 6.90 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
+ a) 2.43 m
- b) 2.55 m
- c) 2.68 m
- d) 2.81 m
- e) 2.95 m

=====*_Rendition_* 1-12=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 7.90 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 2.62 m
- b) 2.75 m
- c) 2.89 m
- d) 3.03 m
+ e) 3.18 m
=====*_Rendition_* 1-13=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 7.70 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 2.88 m
+ b) 3.02 m
- c) 3.18 m
- d) 3.34 m
- e) 3.50 m
=====*_Rendition_* 1-14=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 9.40 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 3.89 m
- b) 4.09 m
- c) 4.29 m
+ d) 4.51 m
- e) 4.73 m
=====*_Rendition_* 1-15=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 8.80 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 3.58 m
- b) 3.76 m
+ c) 3.95 m
- d) 4.15 m
- e) 4.36 m
=====*_Rendition_* 1-16=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 7.70 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 2.88 m
+ b) 3.02 m
- c) 3.18 m
- d) 3.34 m
- e) 3.50 m
=====*_Rendition_* 1-17=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 7.60 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 2.42 m
- b) 2.55 m
- c) 2.67 m

- d) 2.81 m
+ e) 2.95 m
=====*_Rendition_* 1-18=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 7.30 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 2.35 m
- b) 2.47 m
- c) 2.59 m
+ d) 2.72 m
- e) 2.85 m
=====*_Rendition_* 1-19=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 7.30 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 2.35 m
- b) 2.47 m
- c) 2.59 m
+ d) 2.72 m
- e) 2.85 m
=====*_Rendition_* 1-20=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 5.90 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 1.69 m
+ b) 1.78 m
- c) 1.86 m
- d) 1.96 m
- e) 2.06 m
=====*_Rendition_* 1-21=====
<!--aa07energy_cart1_1-->If the initial velocity after leaving the spring is 5.30 m/s, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 1.24 m
- b) 1.30 m
- c) 1.36 m
+ d) 1.43 m
- e) 1.50 m
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--aa07energy_cart1_2-->The mass of the cart is 2.0kg,   and the spring constant is 6541N/m. If the initial compression of the spring is 2.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
+ a) 6.67E+02 m
- b) 7.01E+02 m
- c) 7.36E+02 m
- d) 7.73E+02 m
- e) 8.11E+02 m
=====*_Rendition_* 2-3=====
<!--aa07energy_cart1_2-->The mass of the cart is 2.0kg,   and the spring constant is 7779N/m. If the initial compression of the spring

is 1.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 1.80E+02 m
- b) 1.89E+02 m
+ c) 1.98E+02 m
- d) 2.08E+02 m
- e) 2.19E+02 m
=====*_Rendition_* 2-4=====
<!--aa07energy_cart1_2-->The mass of the cart is 4.0kg,   and the spring constant is 9396N/m. If the initial compression of the spring is 4.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 1.74E+03 m
- b) 1.83E+03 m
+ c) 1.92E+03 m
- d) 2.01E+03 m
- e) 2.11E+03 m
=====*_Rendition_* 2-5=====
<!--aa07energy_cart1_2-->The mass of the cart is 4.0kg,   and the spring constant is 6611N/m. If the initial compression of the spring is 2.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
+ a) 3.37E+02 m
- b) 3.54E+02 m
- c) 3.72E+02 m
- d) 3.90E+02 m
- e) 4.10E+02 m
=====*_Rendition_* 2-6=====
<!--aa07energy_cart1_2-->The mass of the cart is 3.0kg,   and the spring constant is 5128N/m. If the initial compression of the spring is 2.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 2.87E+02 m
- b) 3.01E+02 m
- c) 3.16E+02 m
- d) 3.32E+02 m
+ e) 3.49E+02 m
=====*_Rendition_* 2-7=====
<!--aa07energy_cart1_2-->The mass of the cart is 4.0kg,   and the spring constant is 9905N/m. If the initial compression of the spring is 1.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
+ a) 1.26E+02 m
- b) 1.33E+02 m
- c) 1.39E+02 m
- d) 1.46E+02 m
- e) 1.54E+02 m
=====*_Rendition_* 2-8=====
<!--aa07energy_cart1_2-->The mass of the cart is 3.0kg,   and the spring constant is 7685N/m. If the initial compression of the spring is 3.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]

- a) 1.02E+03 m
- b) 1.07E+03 m
- c) 1.12E+03 m
+ d) 1.18E+03 m
- e) 1.24E+03 m
=====*_Rendition_* 2-9=====
<!--aa07energy_cart1_2-->The mass of the cart is 3.0kg,   and the spring constant is 8959N/m. If the initial compression of the spring is 4.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 2.21E+03 m
- b) 2.32E+03 m
+ c) 2.44E+03 m
- d) 2.56E+03 m
- e) 2.69E+03 m
=====*_Rendition_* 2-10=====
<!--aa07energy_cart1_2-->The mass of the cart is 2.0kg,   and the spring constant is 8128N/m. If the initial compression of the spring is 5.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 4.26E+03 m
- b) 4.48E+03 m
- c) 4.70E+03 m
- d) 4.94E+03 m
+ e) 5.18E+03 m
=====*_Rendition_* 2-11=====
<!--aa07energy_cart1_2-->The mass of the cart is 4.0kg,   and the spring constant is 5938N/m. If the initial compression of the spring is 5.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
+ a) 1.89E+03 m
- b) 1.99E+03 m
- c) 2.09E+03 m
- d) 2.19E+03 m
- e) 2.30E+03 m
=====*_Rendition_* 2-12=====
<!--aa07energy_cart1_2-->The mass of the cart is 4.0kg,   and the spring constant is 5240N/m. If the initial compression of the spring is 4.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
+ a) 1.07E+03 m
- b) 1.12E+03 m
- c) 1.18E+03 m
- d) 1.24E+03 m
- e) 1.30E+03 m
=====*_Rendition_* 2-13=====
<!--aa07energy_cart1_2-->The mass of the cart is 4.0kg,   and the spring constant is 5859N/m. If the initial compression of the spring is 1.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 7.12E+01 m
+ b) 7.47E+01 m

- c) 7.85E+01 m
- d) 8.24E+01 m
- e) 8.65E+01 m
=====*_Rendition_* 2-14=====
<!--aa07energy_cart1_2-->The mass of the cart is 4.0kg,   and the spring constant is 6023N/m. If the initial compression of the spring is 5.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
+ a) 1.92E+03 m
- b) 2.02E+03 m
- c) 2.12E+03 m
- d) 2.22E+03 m
- e) 2.33E+03 m
=====*_Rendition_* 2-15=====
<!--aa07energy_cart1_2-->The mass of the cart is 3.0kg,   and the spring constant is 8205N/m. If the initial compression of the spring is 3.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
+ a) 1.26E+03 m
- b) 1.32E+03 m
- c) 1.38E+03 m
- d) 1.45E+03 m
- e) 1.53E+03 m
=====*_Rendition_* 2-16=====
<!--aa07energy_cart1_2-->The mass of the cart is 3.0kg,   and the spring constant is 6073N/m. If the initial compression of the spring is 4.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 1.57E+03 m
+ b) 1.65E+03 m
- c) 1.74E+03 m
- d) 1.82E+03 m
- e) 1.91E+03 m
=====*_Rendition_* 2-17=====
<!--aa07energy_cart1_2-->The mass of the cart is 4.0kg,   and the spring constant is 9395N/m. If the initial compression of the spring is 4.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 1.66E+03 m
- b) 1.74E+03 m
- c) 1.83E+03 m
+ d) 1.92E+03 m
- e) 2.01E+03 m
=====*_Rendition_* 2-18=====
<!--aa07energy_cart1_2-->The mass of the cart is 3.0kg,   and the spring constant is 8219N/m. If the initial compression of the spring is 1.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 1.33E+02 m
+ b) 1.40E+02 m
- c) 1.47E+02 m
- d) 1.54E+02 m

- e) 1.62E+02 m
=====*_Rendition_* 2-19=====
<!--aa07energy_cart1_2-->The mass of the cart is 3.0kg,   and the spring constant is 7035N/m. If the initial compression of the spring is 2.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 4.56E+02 m
+ b) 4.79E+02 m
- c) 5.03E+02 m
- d) 5.28E+02 m
- e) 5.54E+02 m
=====*_Rendition_* 2-20=====
<!--aa07energy_cart1_2-->The mass of the cart is 4.0kg,   and the spring constant is 9397N/m. If the initial compression of the spring is 4.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
+ a) 1.92E+03 m
- b) 2.01E+03 m
- c) 2.11E+03 m
- d) 2.22E+03 m
- e) 2.33E+03 m
=====*_Rendition_* 2-21=====
<!--aa07energy_cart1_2-->The mass of the cart is 3.0kg,   and the spring constant is 7941N/m. If the initial compression of the spring is 2.00m, how high does it reach before coming to rest?[[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 5.14E+02 m
+ b) 5.40E+02 m
- c) 5.67E+02 m
- d) 5.96E+02 m
- e) 6.25E+02 m
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 2.8m/s, when the cart was situated at a height of 2.3m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 2.19 m
+ b) 2.30 m
- c) 2.42 m
- d) 2.54 m
- e) 2.66 m
=====*_Rendition_* 3-3=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 2.2m/s, when the cart was situated at a height of 2.4m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 1.97 m
- b) 2.07 m
- c) 2.18 m
- d) 2.29 m
+ e) 2.40 m
=====*_Rendition_* 3-4=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if

the speed was 2.4m/s, when the cart was situated at a height of 3.8m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 3.28 m
- b) 3.45 m
- c) 3.62 m
+ d) 3.80 m
- e) 3.99 m
=====*_Rendition_* 3-5=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 1.4m/s, when the cart was situated at a height of 2.7m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
+ a) 2.70 m
- b) 2.84 m
- c) 2.98 m
- d) 3.13 m
- e) 3.28 m
=====*_Rendition_* 3-6=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 2.4m/s, when the cart was situated at a height of 2.3m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 1.99 m
- b) 2.09 m
- c) 2.19 m
+ d) 2.30 m
- e) 2.42 m
=====*_Rendition_* 3-7=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 2.1m/s, when the cart was situated at a height of 2.7m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 2.45 m
- b) 2.57 m
+ c) 2.70 m
- d) 2.84 m
- e) 2.98 m
=====*_Rendition_* 3-8=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 2.5m/s, when the cart was situated at a height of 3.6m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 3.43 m
+ b) 3.60 m
- c) 3.78 m
- d) 3.97 m
- e) 4.17 m
=====*_Rendition_* 3-9=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 1.8m/s, when the cart was situated at a height of 2.8m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 2.42 m
- b) 2.54 m
- c) 2.67 m
+ d) 2.80 m
- e) 2.94 m

=====*_Rendition_* 3-10=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 2.7m/s, when the cart was situated at a height of 3.5m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 2.88 m
- b) 3.02 m
- c) 3.17 m
- d) 3.33 m
+ e) 3.50 m
=====*_Rendition_* 3-11=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 2.7m/s, when the cart was situated at a height of 2.5m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 2.06 m
- b) 2.16 m
- c) 2.27 m
- d) 2.38 m
+ e) 2.50 m
=====*_Rendition_* 3-12=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 2.9m/s, when the cart was situated at a height of 3.5m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 2.88 m
- b) 3.02 m
- c) 3.17 m
- d) 3.33 m
+ e) 3.50 m
=====*_Rendition_* 3-13=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 1.5m/s, when the cart was situated at a height of 3.3m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 3.14 m
+ b) 3.30 m
- c) 3.46 m
- d) 3.64 m
- e) 3.82 m
=====*_Rendition_* 3-14=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 2.4m/s, when the cart was situated at a height of 3.7m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 3.52 m
+ b) 3.70 m
- c) 3.89 m
- d) 4.08 m
- e) 4.28 m
=====*_Rendition_* 3-15=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 2.6m/s, when the cart was situated at a height of 2.5m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 2.27 m
- b) 2.38 m
+ c) 2.50 m

- d) 2.63 m
- e) 2.76 m
=====*_Rendition_* 3-16=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 2.4m/s, when the cart was situated at a height of 3.4m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 3.24 m
+ b) 3.40 m
- c) 3.57 m
- d) 3.75 m
- e) 3.94 m
=====*_Rendition_* 3-17=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 1.8m/s, when the cart was situated at a height of 3.8m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 3.28 m
- b) 3.45 m
- c) 3.62 m
+ d) 3.80 m
- e) 3.99 m
=====*_Rendition_* 3-18=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 1.5m/s, when the cart was situated at a height of 3.3m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
+ a) 3.30 m
- b) 3.46 m
- c) 3.64 m
- d) 3.82 m
- e) 4.01 m
=====*_Rendition_* 3-19=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 2.6m/s, when the cart was situated at a height of 3.7m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 3.52 m
+ b) 3.70 m
- c) 3.89 m
- d) 4.08 m
- e) 4.28 m
=====*_Rendition_* 3-20=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 1.6m/s, when the cart was situated at a height of 3.5m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
- a) 3.33 m
+ b) 3.50 m
- c) 3.68 m
- d) 3.86 m
- e) 4.05 m
=====*_Rendition_* 3-21=====
<!--aa07energy_cart1_3-->What is the highest point the cart reaches if the speed was 1.8m/s, when the cart was situated at a height of 2.5m?, [[File:Roller coaster energy conservation.jpg|right|280px]]
+ a) 2.50 m

- b) 2.63 m
- c) 2.76 m
- d) 2.89 m
- e) 3.04 m
</div></div>
====*_Instructions_*====
Instructions are forthcoming

Transclusion from [[Quizbank/Instructions_0]]:
{{:Quizbank/Instructions_0}}
[[Category:QB/Numerical]]
==*_End_*==
__NOTOC__
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==*_Quizbank_*==
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Information (click to expand)
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*_Permalink_* [[Special:Permalink/1380821]]
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http://en.wikiversity.org/w/index.php?title=Physics_equations/07-Work_and_Energy/Q:cart2&oldid=1380821
*_See_* [[User:Guy vandegrift]]
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===*_Quiz_*===
<quiz display=simple>
{<!--a07energy_cart2_1-->The spring constant is 561N/m, and the initial compression is 0.12m. What is the mass if the cart reaches a height of 1.38m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]}
- a) 0.271 kg
- b) 0.284 kg
+ c) 0.299 kg
- d) 0.314 kg
- e) 0.329 kg

{<!--a07energy_cart2_2-->The cart has a mass of 3.03kg.   It is moving at a speed of 2.10m/s, when it is at a height of 2.45m.   If the spring constant was 572N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]}
- a) 0.43 m
- b) 0.46 m
- c) 0.49 m
+ d) 0.53 m

- e) 0.56 m

{<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s, when you encounter a hill of height 1.14m. What is your speed at the top of the hill?}
- a) 1.149 m/s
- b) 1.218 m/s
+ c) 1.291 m/s
- d) 1.368 m/s
- e) 1.450 m/s

</quiz>

<div class="toccolours mw-collapsible mw-collapsed" style="width:100%">

Other renditions
<div class="mw-collapsible-content">
====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a07energy_cart2_1-->The spring constant is 663N/m, and the initial compression is 0.22m. What is the mass if the cart reaches a height of 2.80m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 0.481 kg
- b) 0.505 kg
- c) 0.530 kg
- d) 0.557 kg
+ e) 0.585 kg
=====*_Rendition_* 1-3=====
<!--a07energy_cart2_1-->The spring constant is 615N/m, and the initial compression is 0.12m. What is the mass if the cart reaches a height of 2.74m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 0.157 kg
+ b) 0.165 kg
- c) 0.173 kg
- d) 0.182 kg
- e) 0.191 kg
=====*_Rendition_* 1-4=====
<!--a07energy_cart2_1-->The spring constant is 752N/m, and the initial compression is 0.18m. What is the mass if the cart reaches a height of 2.95m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
+ a) 0.421 kg
- b) 0.442 kg
- c) 0.465 kg
- d) 0.488 kg
- e) 0.512 kg
=====*_Rendition_* 1-5=====

<!--a07energy_cart2_1-->The spring constant is 539N/m, and the initial compression is 0.27m. What is the mass if the cart reaches a height of 1.20m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 1.443 kg
- b) 1.515 kg
- c) 1.591 kg
+ d) 1.671 kg
- e) 1.754 kg
=====*_Rendition_* 1-6=====
<!--a07energy_cart2_1-->The spring constant is 720N/m, and the initial compression is 0.19m. What is the mass if the cart reaches a height of 1.95m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 0.559 kg
- b) 0.587 kg
- c) 0.617 kg
- d) 0.648 kg
+ e) 0.680 kg
=====*_Rendition_* 1-7=====
<!--a07energy_cart2_1-->The spring constant is 620N/m, and the initial compression is 0.19m. What is the mass if the cart reaches a height of 1.45m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 0.750 kg
+ b) 0.788 kg
- c) 0.827 kg
- d) 0.868 kg
- e) 0.912 kg
=====*_Rendition_* 1-8=====
<!--a07energy_cart2_1-->The spring constant is 594N/m, and the initial compression is 0.27m. What is the mass if the cart reaches a height of 1.66m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 1.268 kg
+ b) 1.331 kg
- c) 1.397 kg
- d) 1.467 kg
- e) 1.541 kg
=====*_Rendition_* 1-9=====
<!--a07energy_cart2_1-->The spring constant is 623N/m, and the initial compression is 0.24m. What is the mass if the cart reaches a height of 1.43m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 1.053 kg
- b) 1.106 kg
- c) 1.161 kg
- d) 1.219 kg
+ e) 1.280 kg
=====*_Rendition_* 1-10=====
<!--a07energy_cart2_1-->The spring constant is 525N/m, and the initial compression is 0.19m. What is the mass if the cart reaches a

height of 1.17m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 0.714 kg
- b) 0.750 kg
- c) 0.787 kg
+ d) 0.826 kg
- e) 0.868 kg
=====*_Rendition_* 1-11=====
<!--a07energy_cart2_1-->The spring constant is 710N/m, and the initial compression is 0.15m. What is the mass if the cart reaches a height of 2.62m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 0.282 kg
- b) 0.296 kg
+ c) 0.311 kg
- d) 0.327 kg
- e) 0.343 kg
=====*_Rendition_* 1-12=====
<!--a07energy_cart2_1-->The spring constant is 755N/m, and the initial compression is 0.21m. What is the mass if the cart reaches a height of 3.12m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 0.494 kg
- b) 0.519 kg
+ c) 0.544 kg
- d) 0.572 kg
- e) 0.600 kg
=====*_Rendition_* 1-13=====
<!--a07energy_cart2_1-->The spring constant is 608N/m, and the initial compression is 0.20m. What is the mass if the cart reaches a height of 1.68m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 0.608 kg
- b) 0.638 kg
- c) 0.670 kg
- d) 0.703 kg
+ e) 0.739 kg
=====*_Rendition_* 1-14=====
<!--a07energy_cart2_1-->The spring constant is 640N/m, and the initial compression is 0.15m. What is the mass if the cart reaches a height of 2.07m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 0.307 kg
- b) 0.322 kg
- c) 0.338 kg
+ d) 0.355 kg
- e) 0.373 kg
=====*_Rendition_* 1-15=====
<!--a07energy_cart2_1-->The spring constant is 621N/m, and the initial compression is 0.14m. What is the mass if the cart reaches a height of 3.01m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]

- a) 0.187 kg
- b) 0.196 kg
+ c) 0.206 kg
- d) 0.217 kg
- e) 0.227 kg
=====*_Rendition_* 1-16=====
<!--a07energy_cart2_1-->The spring constant is 612N/m, and the initial compression is 0.15m. What is the mass if the cart reaches a height of 1.59m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 0.401 kg
- b) 0.421 kg
+ c) 0.442 kg
- d) 0.464 kg
- e) 0.487 kg
=====*_Rendition_* 1-17=====
<!--a07energy_cart2_1-->The spring constant is 630N/m, and the initial compression is 0.25m. What is the mass if the cart reaches a height of 1.26m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 1.312 kg
- b) 1.377 kg
- c) 1.446 kg
- d) 1.518 kg
+ e) 1.594 kg
=====*_Rendition_* 1-18=====
<!--a07energy_cart2_1-->The spring constant is 704N/m, and the initial compression is 0.13m. What is the mass if the cart reaches a height of 3.02m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
+ a) 0.201 kg
- b) 0.211 kg
- c) 0.222 kg
- d) 0.233 kg
- e) 0.244 kg
=====*_Rendition_* 1-19=====
<!--a07energy_cart2_1-->The spring constant is 682N/m, and the initial compression is 0.21m. What is the mass if the cart reaches a height of 1.47m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
+ a) 1.044 kg
- b) 1.096 kg
- c) 1.151 kg
- d) 1.208 kg
- e) 1.269 kg
=====*_Rendition_* 1-20=====
<!--a07energy_cart2_1-->The spring constant is 731N/m, and the initial compression is 0.25m. What is the mass if the cart reaches a height of 2.04m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
+ a) 1.143 kg
- b) 1.200 kg

- c) 1.260 kg
- d) 1.323 kg
- e) 1.389 kg
=====*_Rendition_* 1-21=====
<!--a07energy_cart2_1-->The spring constant is 676N/m, and the initial compression is 0.14m. What is the mass if the cart reaches a height of 2.73m, before coming to rest?[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 0.225 kg
- b) 0.236 kg
+ c) 0.248 kg
- d) 0.260 kg
- e) 0.273 kg
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a07energy_cart2_2-->The cart has a mass of 36.20kg.   It is moving at a speed of 3.50m/s, when it is at a height of 3.70m.   If the spring constant was 518N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 2.13 m
- b) 2.27 m
+ c) 2.43 m
- d) 2.60 m
- e) 2.79 m
=====*_Rendition_* 2-3=====
<!--a07energy_cart2_2-->The cart has a mass of 44.40kg.   It is moving at a speed of 3.10m/s, when it is at a height of 2.47m.   If the spring constant was 682N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 1.48 m
- b) 1.59 m
- c) 1.70 m
- d) 1.82 m
+ e) 1.94 m
=====*_Rendition_* 2-4=====
<!--a07energy_cart2_2-->The cart has a mass of 40.30kg.   It is moving at a speed of 3.40m/s, when it is at a height of 3.59m.   If the spring constant was 539N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]
+ a) 2.47 m
- b) 2.65 m
- c) 2.83 m
- d) 3.03 m
- e) 3.24 m
=====*_Rendition_* 2-5=====
<!--a07energy_cart2_2-->The cart has a mass of 42.40kg.   It is moving at a speed of 2.10m/s, when it is at a height of 2.08m.   If the spring constant was 522N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 1.46 m
- b) 1.56 m
- c) 1.67 m

- d) 1.79 m
+ e) 1.92 m
=====*_Rendition_* 2-6=====
<!--a07energy_cart2_2-->The cart has a mass of 37.60kg.   It is moving at a speed of 2.50m/s, when it is at a height of 2.74m.   If the spring constant was 534N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 1.68 m
- b) 1.79 m
- c) 1.92 m
+ d) 2.05 m
- e) 2.20 m
=====*_Rendition_* 2-7=====
<!--a07energy_cart2_2-->The cart has a mass of 36.60kg.   It is moving at a speed of 2.60m/s, when it is at a height of 3.45m.   If the spring constant was 616N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 1.72 m
- b) 1.84 m
- c) 1.96 m
+ d) 2.10 m
- e) 2.25 m
=====*_Rendition_* 2-8=====
<!--a07energy_cart2_2-->The cart has a mass of 37.20kg.   It is moving at a speed of 2.40m/s, when it is at a height of 3.15m.   If the spring constant was 596N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 1.79 m
- b) 1.92 m
+ c) 2.05 m
- d) 2.20 m
- e) 2.35 m
=====*_Rendition_* 2-9=====
<!--a07energy_cart2_2-->The cart has a mass of 36.40kg.   It is moving at a speed of 3.90m/s, when it is at a height of 2.52m.   If the spring constant was 612N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 1.83 m
+ b) 1.96 m
- c) 2.10 m
- d) 2.24 m
- e) 2.40 m
=====*_Rendition_* 2-10=====
<!--a07energy_cart2_2-->The cart has a mass of 36.30kg.   It is moving at a speed of 2.10m/s, when it is at a height of 3.33m.   If the spring constant was 677N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 1.69 m
- b) 1.81 m
+ c) 1.93 m
- d) 2.07 m
- e) 2.21 m

=====*_Rendition_* 2-11=====
<!--a07energy_cart2_2-->The cart has a mass of 47.10kg.   It is moving at a speed of 3.90m/s, when it is at a height of 2.75m.   If the spring constant was 539N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]
+ a) 2.46 m
- b) 2.63 m
- c) 2.81 m
- d) 3.01 m
- e) 3.22 m
=====*_Rendition_* 2-12=====
<!--a07energy_cart2_2-->The cart has a mass of 36.10kg.   It is moving at a speed of 3.70m/s, when it is at a height of 3.05m.   If the spring constant was 665N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]
+ a) 2.00 m
- b) 2.14 m
- c) 2.29 m
- d) 2.45 m
- e) 2.62 m
=====*_Rendition_* 2-13=====
<!--a07energy_cart2_2-->The cart has a mass of 42.30kg.   It is moving at a speed of 3.10m/s, when it is at a height of 2.52m.   If the spring constant was 499N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 2.09 m
+ b) 2.24 m
- c) 2.39 m
- d) 2.56 m
- e) 2.74 m
=====*_Rendition_* 2-14=====
<!--a07energy_cart2_2-->The cart has a mass of 46.40kg.   It is moving at a speed of 3.80m/s, when it is at a height of 3.99m.   If the spring constant was 500N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 2.39 m
- b) 2.56 m
- c) 2.74 m
+ d) 2.93 m
- e) 3.14 m
=====*_Rendition_* 2-15=====
<!--a07energy_cart2_2-->The cart has a mass of 31.70kg.   It is moving at a speed of 3.30m/s, when it is at a height of 3.61m.   If the spring constant was 665N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 1.72 m
- b) 1.84 m
+ c) 1.97 m
- d) 2.11 m
- e) 2.26 m
=====*_Rendition_* 2-16=====
<!--a07energy_cart2_2-->The cart has a mass of 35.20kg.   It is moving

at a speed of 3.50m/s, when it is at a height of 2.34m.   If the spring constant was 554N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]
+ a) 1.92 m
- b) 2.06 m
- c) 2.20 m
- d) 2.35 m
- e) 2.52 m
=====*_Rendition_* 2-17=====
<!--a07energy_cart2_2-->The cart has a mass of 38.00kg.   It is moving at a speed of 2.10m/s, when it is at a height of 3.71m.   If the spring constant was 540N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 1.78 m
- b) 1.90 m
- c) 2.03 m
- d) 2.18 m
+ e) 2.33 m
=====*_Rendition_* 2-18=====
<!--a07energy_cart2_2-->The cart has a mass of 31.20kg.   It is moving at a speed of 2.50m/s, when it is at a height of 2.10m.   If the spring constant was 649N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 1.23 m
- b) 1.32 m
- c) 1.41 m
+ d) 1.51 m
- e) 1.62 m
=====*_Rendition_* 2-19=====
<!--a07energy_cart2_2-->The cart has a mass of 48.30kg.   It is moving at a speed of 3.80m/s, when it is at a height of 3.61m.   If the spring constant was 699N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 1.85 m
- b) 1.98 m
- c) 2.12 m
- d) 2.27 m
+ e) 2.43 m
=====*_Rendition_* 2-20=====
<!--a07energy_cart2_2-->The cart has a mass of 36.50kg.   It is moving at a speed of 2.10m/s, when it is at a height of 3.46m.   If the spring constant was 594N/m, what was the initial compression?
[[File:Roller coaster energy conservation.jpg|260px|right]]
- a) 1.97 m
+ b) 2.11 m
- c) 2.25 m
- d) 2.41 m
- e) 2.58 m
=====*_Rendition_* 2-21=====
<!--a07energy_cart2_2-->The cart has a mass of 47.20kg.   It is moving at a speed of 2.20m/s, when it is at a height of 2.77m.   If the spring constant was 527N/m, what was the initial compression?

[[File:Roller coaster energy conservation.jpg|260px|right]]
+ a) 2.30 m
- b) 2.46 m
- c) 2.63 m
- d) 2.82 m
- e) 3.02 m
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s,   when you encounter a hill of height 1.14m. What is your speed at the top of the hill?
+ a) 1.291 m/s
- b) 1.368 m/s
- c) 1.450 m/s
- d) 1.537 m/s
- e) 1.630 m/s
=====*_Rendition_* 3-3=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s,   when you encounter a hill of height 1.14m. What is your speed at the top of the hill?
- a) 1.022 m/s
- b) 1.084 m/s
- c) 1.149 m/s
- d) 1.218 m/s
+ e) 1.291 m/s
=====*_Rendition_* 3-4=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s,   when you encounter a hill of height 1.14m. What is your speed at the top of the hill?
- a) 1.084 m/s
- b) 1.149 m/s
- c) 1.218 m/s
+ d) 1.291 m/s
- e) 1.368 m/s
=====*_Rendition_* 3-5=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s,   when you encounter a hill of height 1.14m. What is your speed at the top of the hill?
- a) 1.218 m/s
+ b) 1.291 m/s
- c) 1.368 m/s
- d) 1.450 m/s
- e) 1.537 m/s
=====*_Rendition_* 3-6=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s,   when you encounter a hill of height 1.14m. What is your speed at the top of the hill?

+ a) 1.291 m/s
- b) 1.368 m/s
- c) 1.450 m/s
- d) 1.537 m/s
- e) 1.630 m/s
=====*_Rendition_* 3-7=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s,   when you encounter a hill of height 1.14m. What is your speed at the top of the hill?
- a) 1.218 m/s
+ b) 1.291 m/s
- c) 1.368 m/s
- d) 1.450 m/s
- e) 1.537 m/s
=====*_Rendition_* 3-8=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s,   when you encounter a hill of height 1.14m. What is your speed at the top of the hill?
- a) 1.022 m/s
- b) 1.084 m/s
- c) 1.149 m/s
- d) 1.218 m/s
+ e) 1.291 m/s
=====*_Rendition_* 3-9=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s,   when you encounter a hill of height 1.14m. What is your speed at the top of the hill?
- a) 1.218 m/s
+ b) 1.291 m/s
- c) 1.368 m/s
- d) 1.450 m/s
- e) 1.537 m/s
=====*_Rendition_* 3-10=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s,   when you encounter a hill of height 1.14m. What is your speed at the top of the hill?
- a) 1.084 m/s
- b) 1.149 m/s
- c) 1.218 m/s
+ d) 1.291 m/s
- e) 1.368 m/s
=====*_Rendition_* 3-11=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s,   when you encounter a hill of height 1.14m. What is your speed at the top of the hill?
- a) 1.022 m/s
- b) 1.084 m/s

- c) 1.149 m/s
- d) 1.218 m/s
+ e) 1.291 m/s
=====*_Rendition_* 3-12=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s,   when you encounter a hill of height 1.14m. What is your speed at the top of the hill?
- a) 1.022 m/s
- b) 1.084 m/s
- c) 1.149 m/s
- d) 1.218 m/s
+ e) 1.291 m/s
=====*_Rendition_* 3-13=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s,   when you encounter a hill of height 1.14m. What is your speed at the top of the hill?
- a) 1.218 m/s
+ b) 1.291 m/s
- c) 1.368 m/s
- d) 1.450 m/s
- e) 1.537 m/s
=====*_Rendition_* 3-14=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s,   when you encounter a hill of height 1.14m. What is your speed at the top of the hill?
+ a) 1.291 m/s
- b) 1.368 m/s
- c) 1.450 m/s
- d) 1.537 m/s
- e) 1.630 m/s
=====*_Rendition_* 3-15=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s,   when you encounter a hill of height 1.14m. What is your speed at the top of the hill?
- a) 1.149 m/s
- b) 1.218 m/s
+ c) 1.291 m/s
- d) 1.368 m/s
- e) 1.450 m/s
=====*_Rendition_* 3-16=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s,   when you encounter a hill of height 1.14m. What is your speed at the top of the hill?
+ a) 1.291 m/s
- b) 1.368 m/s
- c) 1.450 m/s
- d) 1.537 m/s

- e) 1.630 m/s
=====*_Rendition_* 3-17=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s, when you encounter a hill of height 1.14m. What is your speed at the top of the hill?
- a) 1.084 m/s
- b) 1.149 m/s
- c) 1.218 m/s
+ d) 1.291 m/s
- e) 1.368 m/s
=====*_Rendition_* 3-18=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s, when you encounter a hill of height 1.14m. What is your speed at the top of the hill?
- a) 1.022 m/s
- b) 1.084 m/s
- c) 1.149 m/s
- d) 1.218 m/s
+ e) 1.291 m/s
=====*_Rendition_* 3-19=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s, when you encounter a hill of height 1.14m. What is your speed at the top of the hill?
- a) 1.149 m/s
- b) 1.218 m/s
+ c) 1.291 m/s
- d) 1.368 m/s
- e) 1.450 m/s
=====*_Rendition_* 3-20=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s, when you encounter a hill of height 1.14m. What is your speed at the top of the hill?
- a) 1.149 m/s
- b) 1.218 m/s
+ c) 1.291 m/s
- d) 1.368 m/s
- e) 1.450 m/s
=====*_Rendition_* 3-21=====
<!--a07energy_cart2_3-->You are riding a bicycle on a flat road. Assume no friction or air drag, and that you are coasting. Your speed is 4.9m/s, when you encounter a hill of height 1.14m. What is your speed at the top of the hill?
+ a) 1.291 m/s
- b) 1.368 m/s
- c) 1.450 m/s
- d) 1.537 m/s
- e) 1.630 m/s
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{<!--a08linearMomentumCollisions_1-->On object of mass 2.8 kg that is moving at a velocity of 23m/s collides with a stationary object of mass 20.47 kg. What is the final velocity if they stick? (Assume no external friction.)}
-a) 2.31m/s.
+b) 2.77m/s.
-c) 3.32m/s.
-d) 3.99m/s.
-e) 4.78m/s.

{<!--a08linearMomentumCollisions_2-->A car of mass 637 kg is driving on an icy road at a speed of 22 m/s, when it collides with a stationary truck. After the collision they stick and move at a speed of 7.7 m/s. What was the mass of the truck?}
-a) 822
-b) 986
+c) 1183
-d) 1420
-e) 1704

{<!--a08linearMomentumCollisions_3-->[[File:Ballistic pendulum.svg|right|160px]]A 167 gm bullet strikes a ballistic pendulum of mass 2.1 kg (before the bullet struck). After impact, the pendulum

rises by 65 cm. What was the speed of the bullet?}
-a) 37 m/s.
-b) 40 m/s.
-c) 42 m/s.
-d) 45 m/s.
+e) 48 m/s.

</quiz>

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Other renditions
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====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a08linearMomentumCollisions_1-->On object of mass 3 kg that is moving at a velocity of 17m/s collides with a stationary object of mass 10.2 kg. What is the final velocity if they stick? (Assume no external friction.)
-a) 2.68m/s.
-b) 3.22m/s.
+c) 3.86m/s.
-d) 4.64m/s.
-e) 5.56m/s.
=====*_Rendition_* 1-3=====
<!--a08linearMomentumCollisions_1-->On object of mass 2.3 kg that is moving at a velocity of 22m/s collides with a stationary object of mass 19.36 kg. What is the final velocity if they stick? (Assume no external friction.)
-a) 1.62m/s.
-b) 1.95m/s.
+c) 2.34m/s.
-d) 2.8m/s.
-e) 3.36m/s.
=====*_Rendition_* 1-4=====
<!--a08linearMomentumCollisions_1-->On object of mass 2.3 kg that is moving at a velocity of 22m/s collides with a stationary object of mass 19.8 kg. What is the final velocity if they stick? (Assume no external friction.)
-a) 1.32m/s.
-b) 1.59m/s.
-c) 1.91m/s.
+d) 2.29m/s.
-e) 2.75m/s.
=====*_Rendition_* 1-5=====
<!--a08linearMomentumCollisions_1-->On object of mass 2.3 kg that is moving at a velocity of 24m/s collides with a stationary object of mass 17.52 kg. What is the final velocity if they stick? (Assume no external friction.)
-a) 1.93m/s.

-b) 2.32m/s.
+c) 2.79m/s.
-d) 3.34m/s.
-e) 4.01m/s.
=====*_Rendition_* 1-6=====
<!--a08linearMomentumCollisions_1-->On object of mass 2.3 kg that is moving at a velocity of 16m/s collides with a stationary object of mass 9.6 kg. What is the final velocity if they stick? (Assume no external friction.)
-a) 1.49m/s.
-b) 1.79m/s.
-c) 2.15m/s.
-d) 2.58m/s.
+e) 3.09m/s.
=====*_Rendition_* 1-7=====
<!--a08linearMomentumCollisions_1-->On object of mass 2.9 kg that is moving at a velocity of 21m/s collides with a stationary object of mass 12.6 kg. What is the final velocity if they stick? (Assume no external friction.)
+a) 3.93m/s.
-b) 4.71m/s.
-c) 5.66m/s.
-d) 6.79m/s.
-e) 8.15m/s.
=====*_Rendition_* 1-8=====
<!--a08linearMomentumCollisions_1-->On object of mass 2.5 kg that is moving at a velocity of 23m/s collides with a stationary object of mass 17.94 kg. What is the final velocity if they stick? (Assume no external friction.)
-a) 1.95m/s.
-b) 2.34m/s.
+c) 2.81m/s.
-d) 3.38m/s.
-e) 4.05m/s.
=====*_Rendition_* 1-9=====
<!--a08linearMomentumCollisions_1-->On object of mass 2 kg that is moving at a velocity of 25m/s collides with a stationary object of mass 25 kg. What is the final velocity if they stick? (Assume no external friction.)
-a) 1.29m/s.
-b) 1.54m/s.
+c) 1.85m/s.
-d) 2.22m/s.
-e) 2.67m/s.
=====*_Rendition_* 1-10=====
<!--a08linearMomentumCollisions_1-->On object of mass 2.7 kg that is moving at a velocity of 25m/s collides with a stationary object of mass 20.75 kg. What is the final velocity if they stick? (Assume no external friction.)
-a) 2m/s.
-b) 2.4m/s.
+c) 2.88m/s.

-d) 3.45m/s.
-e) 4.14m/s.
=====*_Rendition_* 1-11=====
<!--a08linearMomentumCollisions_1-->On object of mass 2.2 kg that is moving at a velocity of 28m/s collides with a stationary object of mass 18.48 kg. What is the final velocity if they stick? (Assume no external friction.)
-a) 1.72m/s.
-b) 2.07m/s.
-c) 2.48m/s.
+d) 2.98m/s.
-e) 3.57m/s.
=====*_Rendition_* 1-12=====
<!--a08linearMomentumCollisions_1-->On object of mass 2.3 kg that is moving at a velocity of 24m/s collides with a stationary object of mass 22.8 kg. What is the final velocity if they stick? (Assume no external friction.)
-a) 1.06m/s.
-b) 1.27m/s.
-c) 1.53m/s.
-d) 1.83m/s.
+e) 2.2m/s.
=====*_Rendition_* 1-13=====
<!--a08linearMomentumCollisions_1-->On object of mass 2.6 kg that is moving at a velocity of 23m/s collides with a stationary object of mass 18.17 kg. What is the final velocity if they stick? (Assume no external friction.)
+a) 2.88m/s.
-b) 3.45m/s.
-c) 4.15m/s.
-d) 4.98m/s.
-e) 5.97m/s.
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a08linearMomentumCollisions_2-->A car of mass 634 kg is driving on an icy road at a speed of 17 m/s, when it collides with a stationary truck. After the collision they stick and move at a speed of 5.5 m/s. What was the mass of the truck?
-a) 767 kg
-b) 921 kg
-c) 1105 kg
+d) 1326 kg
-e) 1591 kg
=====*_Rendition_* 2-3=====
<!--a08linearMomentumCollisions_2-->A car of mass 796 kg is driving on an icy road at a speed of 18 m/s, when it collides with a stationary truck. After the collision they stick and move at a speed of 5.9 m/s. What was the mass of the truck?
-a) 1134 kg
-b) 1360 kg
+c) 1632 kg
-d) 1959 kg

-e) 2351 kg
=====*_Rendition_* 2-4=====
<!--a08linearMomentumCollisions_2-->A car of mass 884 kg is driving on an icy road at a speed of 20 m/s, when it collides with a stationary truck. After the collision they stick and move at a speed of 4.2 m/s. What was the mass of the truck?
+a) 3326 kg
-b) 3991 kg
-c) 4789 kg
-d) 5747 kg
-e) 6896 kg
=====*_Rendition_* 2-5=====
<!--a08linearMomentumCollisions_2-->A car of mass 860 kg is driving on an icy road at a speed of 17 m/s, when it collides with a stationary truck. After the collision they stick and move at a speed of 5.9 m/s. What was the mass of the truck?
-a) 1124 kg
-b) 1348 kg
+c) 1618 kg
-d) 1942 kg
-e) 2330 kg
=====*_Rendition_* 2-6=====
<!--a08linearMomentumCollisions_2-->A car of mass 674 kg is driving on an icy road at a speed of 16 m/s, when it collides with a stationary truck. After the collision they stick and move at a speed of 5.9 m/s. What was the mass of the truck?
-a) 801 kg
-b) 961 kg
+c) 1154 kg
-d) 1385 kg
-e) 1661 kg
=====*_Rendition_* 2-7=====
<!--a08linearMomentumCollisions_2-->A car of mass 571 kg is driving on an icy road at a speed of 24 m/s, when it collides with a stationary truck. After the collision they stick and move at a speed of 5.5 m/s. What was the mass of the truck?
-a) 1334 kg
-b) 1601 kg
+c) 1921 kg
-d) 2305 kg
-e) 2766 kg
=====*_Rendition_* 2-8=====
<!--a08linearMomentumCollisions_2-->A car of mass 806 kg is driving on an icy road at a speed of 24 m/s, when it collides with a stationary truck. After the collision they stick and move at a speed of 5.5 m/s. What was the mass of the truck?
-a) 1883 kg
-b) 2259 kg
+c) 2711 kg
-d) 3253 kg
-e) 3904 kg
=====*_Rendition_* 2-9=====

<!--a08linearMomentumCollisions_2-->A car of mass 636 kg is driving on an icy road at a speed of 22 m/s, when it collides with a stationary truck. After the collision they stick and move at a speed of 5.2 m/s. What was the mass of the truck?
-a) 1427 kg
-b) 1712 kg
+c) 2055 kg
-d) 2466 kg
-e) 2959 kg
=====*_Rendition_* 2-10=====
<!--a08linearMomentumCollisions_2-->A car of mass 863 kg is driving on an icy road at a speed of 25 m/s, when it collides with a stationary truck. After the collision they stick and move at a speed of 5.7 m/s. What was the mass of the truck?
-a) 2435 kg
+b) 2922 kg
-c) 3507 kg
-d) 4208 kg
-e) 5049 kg
=====*_Rendition_* 2-11=====
<!--a08linearMomentumCollisions_2-->A car of mass 856 kg is driving on an icy road at a speed of 19 m/s, when it collides with a stationary truck. After the collision they stick and move at a speed of 4.7 m/s. What was the mass of the truck?
-a) 1507 kg
-b) 1809 kg
-c) 2170 kg
+d) 2604 kg
-e) 3125 kg
=====*_Rendition_* 2-12=====
<!--a08linearMomentumCollisions_2-->A car of mass 841 kg is driving on an icy road at a speed of 21 m/s, when it collides with a stationary truck. After the collision they stick and move at a speed of 4.2 m/s. What was the mass of the truck?
-a) 1622 kg
-b) 1947 kg
-c) 2336 kg
-d) 2803 kg
+e) 3364 kg
=====*_Rendition_* 2-13=====
<!--a08linearMomentumCollisions_2-->A car of mass 654 kg is driving on an icy road at a speed of 15 m/s, when it collides with a stationary truck. After the collision they stick and move at a speed of 5.7 m/s. What was the mass of the truck?
-a) 741 kg
-b) 889 kg
+c) 1067 kg
-d) 1280 kg
-e) 1537 kg
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a08linearMomentumCollisions_3-->[[File:Ballistic

pendulum.svg|right|160px]]A 159 gm bullet strikes a ballistic pendulum of mass 2.08 kg (before the bullet struck). After impact, the pendulum rises by 65 cm. What was the speed of the bullet?
-a) 44 m/s.
-b) 47 m/s.
+c) 50 m/s.
-d) 54 m/s.
-e) 58 m/s.
=====*_Rendition_* 3-3=====
<!--a08linearMomentumCollisions_3-->[[File:Ballistic pendulum.svg|right|160px]]A 171 gm bullet strikes a ballistic pendulum of mass 2.41 kg (before the bullet struck). After impact, the pendulum rises by 65 cm. What was the speed of the bullet?
-a) 41 m/s.
-b) 44 m/s.
-c) 47 m/s.
-d) 50 m/s.
+e) 54 m/s.
=====*_Rendition_* 3-4=====
<!--a08linearMomentumCollisions_3-->[[File:Ballistic pendulum.svg|right|160px]]A 157 gm bullet strikes a ballistic pendulum of mass 2.22 kg (before the bullet struck). After impact, the pendulum rises by 65 cm. What was the speed of the bullet?
-a) 47 m/s.
-b) 51 m/s.
+c) 54 m/s.
-d) 58 m/s.
-e) 62 m/s.
=====*_Rendition_* 3-5=====
<!--a08linearMomentumCollisions_3-->[[File:Ballistic pendulum.svg|right|160px]]A 195 gm bullet strikes a ballistic pendulum of mass 2.13 kg (before the bullet struck). After impact, the pendulum rises by 65 cm. What was the speed of the bullet?
-a) 32 m/s.
-b) 35 m/s.
-c) 37 m/s.
-d) 40 m/s.
+e) 43 m/s.
=====*_Rendition_* 3-6=====
<!--a08linearMomentumCollisions_3-->[[File:Ballistic pendulum.svg|right|160px]]A 191 gm bullet strikes a ballistic pendulum of mass 2.19 kg (before the bullet struck). After impact, the pendulum rises by 65 cm. What was the speed of the bullet?
-a) 34 m/s.
-b) 36 m/s.
-c) 39 m/s.
-d) 42 m/s.
+e) 44 m/s.
=====*_Rendition_* 3-7=====
<!--a08linearMomentumCollisions_3-->[[File:Ballistic pendulum.svg|right|160px]]A 191 gm bullet strikes a ballistic pendulum of mass 2.02 kg (before the bullet struck). After impact, the

pendulum rises by 65 cm. What was the speed of the bullet?
-a) 34 m/s.
-b) 36 m/s.
-c) 39 m/s.
+d) 41 m/s.
-e) 44 m/s.
=====*_Rendition_* 3-8=====
<!--a08linearMomentumCollisions_3-->[[File:Ballistic pendulum.svg|right|160px]]A 159 gm bullet strikes a ballistic pendulum of mass 2.11 kg (before the bullet struck). After impact, the pendulum rises by 65 cm. What was the speed of the bullet?
-a) 39 m/s.
-b) 42 m/s.
-c) 44 m/s.
-d) 48 m/s.
+e) 51 m/s.
=====*_Rendition_* 3-9=====
<!--a08linearMomentumCollisions_3-->[[File:Ballistic pendulum.svg|right|160px]]A 169 gm bullet strikes a ballistic pendulum of mass 2.45 kg (before the bullet struck). After impact, the pendulum rises by 65 cm. What was the speed of the bullet?
+a) 55 m/s.
-b) 59 m/s.
-c) 63 m/s.
-d) 68 m/s.
-e) 73 m/s.
=====*_Rendition_* 3-10=====
<!--a08linearMomentumCollisions_3-->[[File:Ballistic pendulum.svg|right|160px]]A 161 gm bullet strikes a ballistic pendulum of mass 2.1 kg (before the bullet struck). After impact, the pendulum rises by 65 cm. What was the speed of the bullet?
-a) 44 m/s.
-b) 47 m/s.
+c) 50 m/s.
-d) 54 m/s.
-e) 57 m/s.
=====*_Rendition_* 3-11=====
<!--a08linearMomentumCollisions_3-->[[File:Ballistic pendulum.svg|right|160px]]A 159 gm bullet strikes a ballistic pendulum of mass 2.27 kg (before the bullet struck). After impact, the pendulum rises by 65 cm. What was the speed of the bullet?
+a) 55 m/s.
-b) 58 m/s.
-c) 62 m/s.
-d) 67 m/s.
-e) 71 m/s.
=====*_Rendition_* 3-12=====
<!--a08linearMomentumCollisions_3-->[[File:Ballistic pendulum.svg|right|160px]]A 167 gm bullet strikes a ballistic pendulum of mass 2.28 kg (before the bullet struck). After impact, the pendulum rises by 65 cm. What was the speed of the bullet?
-a) 43 m/s.

-b) 46 m/s.
-c) 49 m/s.
+d) 52 m/s.
-e) 56 m/s.
=====*_Rendition_* 3-13=====
<!--a08linearMomentumCollisions_3-->[[File:Ballistic pendulum.svg|right|160px]]A 164 gm bullet strikes a ballistic pendulum of mass 2.48 kg (before the bullet struck). After impact, the pendulum rises by 65 cm. What was the speed of the bullet?
-a) 54 m/s.
+b) 58 m/s.
-c) 62 m/s.
-d) 66 m/s.
-e) 70 m/s.
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{<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 7.6m is attached to a wall by a frictionless hinge (shown as a circle). The bar is held horizontal by a string that makes and angle θ = 37.4 degrees above the horizontal. An object of mass, M =   6kg is suspended at a length, L =   5.4m from the wall. What is the tension, T, in the string?}
-a) 3.45E+01 N

-b) 4.34E+01 N
-c) 5.46E+01 N
+d) 6.88E+01 N
-e) 8.66E+01 N

{<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 5.3m, L₂ = 4.3m and L₃ = 7.3m. What is F₁ if F₂ =3.6N and F₃ =5.1N?}
-a) 8.21E+00 N
+b) 9.95E+00 N
-c) 1.20E+01 N
-d) 1.46E+01 N
-e) 1.77E+01 N

{<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.1m is attached to a wall by a frictionless hinge (shown as a circle). The bar is held horizontal by a string that makes and angle θ = 28.2 degrees above the horizontal. An object of mass, M =   9.2kg is suspended at a length, L =   5.7m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?}
-a) 8.06E+01 N
-b) 9.77E+01 N
+c) 1.18E+02 N
-d) 1.43E+02 N
-e) 1.74E+02 N

{<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.5m, L₂ = 4.5m and L₃ = 7.8m. What is F₂ if F₁ =0.56N and F₃ =0.4N?}
-a) 6.50E-02 N
-b) 7.87E-02 N
-c) 9.54E-02 N
+d) 1.16E-01 N
-e) 1.40E-01 N

{<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.5m is attached to a wall by a frictionless hinge (shown as a circle). The bar is held horizontal by a string that makes and angle θ = 26.5 degrees above the horizontal. An object of mass, M =   6.8kg is suspended at a length, L =6.6m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?}
-a) 1.39E+01 N
-b) 1.68E+01 N
+c) 2.03E+01 N
-d) 2.46E+01 N
-e) 2.99E+01 N

</quiz>

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Other renditions
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=====*_Rendition_* 1-2=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.3m is attached to a wall by a frictionless hinge (shown as a circle). The bar is held horizontal by a string that makes and angle θ = 28.1 degrees above the horizontal. An object of mass, M =   8.1kg is suspended at a length, L =   5.7m from the wall. What is the tension, T, in the string?
-a) 8.20E+01 N
+b) 1.03E+02 N
-c) 1.30E+02 N
-d) 1.64E+02 N
-e) 2.06E+02 N
=====*_Rendition_* 1-3=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 7.8m is attached to a wall by a frictionless hinge (shown as a circle). The bar is held horizontal by a string that makes and angle θ = 27.7 degrees above the horizontal. An object of mass, M =   7.7kg is suspended at a length, L =   5.2m from the wall. What is the tension, T, in the string?
+a) 1.08E+02 N
-b) 1.36E+02 N
-c) 1.72E+02 N
-d) 2.16E+02 N
-e) 2.72E+02 N
=====*_Rendition_* 1-4=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.7m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 26.5 degrees above the horizontal. An object of mass, M =   7.6kg is suspended at a length, L =   4.7m from the wall. What is the tension, T, in the string?
-a) 3.59E+01 N
-b) 4.52E+01 N
-c) 5.69E+01 N
-d) 7.16E+01 N
+e) 9.02E+01 N
=====*_Rendition_* 1-5=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.4m is

attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 37.7 degrees above the horizontal. An object of mass, M =   5.1kg is suspended at a length, L =   4.7m from the wall. What is the tension, T, in the string?
-a) 1.82E+01 N
-b) 2.29E+01 N
-c) 2.89E+01 N
-d) 3.63E+01 N
+e) 4.57E+01 N
=====*_Rendition_* 1-6=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.7m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 29.5 degrees above the horizontal. An object of mass, M =   4.7kg is suspended at a length, L =   6m from the wall. What is the tension, T, in the string?
-a) 3.65E+01 N
-b) 4.60E+01 N
+c) 5.79E+01 N
-d) 7.28E+01 N
-e) 9.17E+01 N
=====*_Rendition_* 1-7=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.1m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 26.7 degrees above the horizontal. An object of mass, M =   6.2kg is suspended at a length, L =   5.6m from the wall. What is the tension, T, in the string?
-a) 3.31E+01 N
-b) 4.17E+01 N
-c) 5.25E+01 N
-d) 6.61E+01 N
+e) 8.32E+01 N
=====*_Rendition_* 1-8=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.1m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 31.1 degrees above the horizontal. An object of mass, M =   5.4kg is suspended at a length, L =   6.2m from the wall. What is the tension, T, in the string?
-a) 3.93E+01 N
-b) 4.95E+01 N
-c) 6.23E+01 N
+d) 7.84E+01 N
-e) 9.87E+01 N
=====*_Rendition_* 1-9=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.4m is

attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 31.6 degrees above the horizontal. An object of mass, M = 4.6kg is suspended at a length, L = 4.7m from the wall. What is the tension, T, in the string?
+a) 4.81E+01 N
-b) 6.06E+01 N
-c) 7.63E+01 N
-d) 9.60E+01 N
-e) 1.21E+02 N
=====*_Rendition_* 1-10=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 29 degrees above the horizontal. An object of mass, M = 8.1kg is suspended at a length, L = 4.4m from the wall. What is the tension, T, in the string?
-a) 3.59E+01 N
-b) 4.51E+01 N
-c) 5.68E+01 N
-d) 7.15E+01 N
+e) 9.01E+01 N
=====*_Rendition_* 1-11=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.6m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 24.4 degrees above the horizontal. An object of mass, M = 6.9kg is suspended at a length, L = 4.5m from the wall. What is the tension, T, in the string?
-a) 3.05E+01 N
-b) 3.85E+01 N
-c) 4.84E+01 N
-d) 6.09E+01 N
+e) 7.67E+01 N
=====*_Rendition_* 1-12=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 7.6m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 26.6 degrees above the horizontal. An object of mass, M = 6.4kg is suspended at a length, L = 6.1m from the wall. What is the tension, T, in the string?
-a) 4.48E+01 N
-b) 5.63E+01 N
-c) 7.09E+01 N
-d) 8.93E+01 N
+e) 1.12E+02 N
=====*_Rendition_* 1-13=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.7m is

attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 38.2 degrees above the horizontal. An object of mass, M =   6.5kg is suspended at a length, L =   6.5m from the wall. What is the tension, T, in the string?
+a) 7.70E+01 N
-b) 9.69E+01 N
-c) 1.22E+02 N
-d) 1.54E+02 N
-e) 1.93E+02 N
=====*_Rendition_* 1-14=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.4m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 31.2 degrees above the horizontal. An object of mass, M =   4.8kg is suspended at a length, L =   5.5m from the wall. What is the tension, T, in the string?
+a) 5.95E+01 N
-b) 7.49E+01 N
-c) 9.42E+01 N
-d) 1.19E+02 N
-e) 1.49E+02 N
=====*_Rendition_* 1-15=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.4m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 25.4 degrees above the horizontal. An object of mass, M =   7.6kg is suspended at a length, L =   5.2m from the wall. What is the tension, T, in the string?
+a) 1.07E+02 N
-b) 1.35E+02 N
-c) 1.70E+02 N
-d) 2.14E+02 N
-e) 2.70E+02 N
=====*_Rendition_* 1-16=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.7m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 30.9 degrees above the horizontal. An object of mass, M =   9.2kg is suspended at a length, L =   5.3m from the wall. What is the tension, T, in the string?
-a) 8.50E+01 N
+b) 1.07E+02 N
-c) 1.35E+02 N
-d) 1.70E+02 N
-e) 2.13E+02 N
=====*_Rendition_* 1-17=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.5m is

attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 35.6 degrees above the horizontal. An object of mass, M =   6kg is suspended at a length, L =   6m from the wall. What is the tension, T, in the string?
-a) 3.57E+01 N
-b) 4.50E+01 N
-c) 5.66E+01 N
+d) 7.13E+01 N
-e) 8.98E+01 N
=====*_Rendition_* 1-18=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.1m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 33.6 degrees above the horizontal. An object of mass, M =   9.6kg is suspended at a length, L =   4.6m from the wall. What is the tension, T, in the string?
-a) 6.83E+01 N
+b) 8.59E+01 N
-c) 1.08E+02 N
-d) 1.36E+02 N
-e) 1.71E+02 N
=====*_Rendition_* 1-19=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.5m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 33.6 degrees above the horizontal. An object of mass, M =   7.3kg is suspended at a length, L =   5.7m from the wall. What is the tension, T, in the string?
-a) 4.34E+01 N
-b) 5.47E+01 N
-c) 6.89E+01 N
+d) 8.67E+01 N
-e) 1.09E+02 N
=====*_Rendition_* 1-20=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.6m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 29.9 degrees above the horizontal. An object of mass, M =   8kg is suspended at a length, L =   5.9m from the wall. What is the tension, T, in the string?
-a) 6.81E+01 N
-b) 8.57E+01 N
+c) 1.08E+02 N
-d) 1.36E+02 N
-e) 1.71E+02 N
=====*_Rendition_* 1-21=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.6m is

attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 29.9 degrees above the horizontal. An object of mass, M =   8.6kg is suspended at a length, L =   5m from the wall. What is the tension, T, in the string?
+a) 8.81E+01 N
-b) 1.11E+02 N
-c) 1.40E+02 N
-d) 1.76E+02 N
-e) 2.21E+02 N
=====*_Rendition_* 1-22=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.1m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 32 degrees above the horizontal. An object of mass, M =   4.6kg is suspended at a length, L =   4.3m from the wall. What is the tension, T, in the string?
-a) 1.80E+01 N
-b) 2.26E+01 N
-c) 2.85E+01 N
-d) 3.59E+01 N
+e) 4.52E+01 N
=====*_Rendition_* 1-23=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.6m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 37.6 degrees above the horizontal. An object of mass, M =   7.4kg is suspended at a length, L =   6.2m from the wall. What is the tension, T, in the string?
-a) 3.41E+01 N
-b) 4.29E+01 N
-c) 5.41E+01 N
-d) 6.81E+01 N
+e) 8.57E+01 N
=====*_Rendition_* 1-24=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.9m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 29.4 degrees above the horizontal. An object of mass, M =   4.3kg is suspended at a length, L =   5.3m from the wall. What is the tension, T, in the string?
-a) 4.06E+01 N
+b) 5.11E+01 N
-c) 6.44E+01 N
-d) 8.10E+01 N
-e) 1.02E+02 N
=====*_Rendition_* 1-25=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.8m is

attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 25.2 degrees above the horizontal. An object of mass, M =   4.7kg is suspended at a length, L =   4.4m from the wall. What is the tension, T, in the string?
-a) 1.93E+01 N
-b) 2.43E+01 N
-c) 3.06E+01 N
-d) 3.86E+01 N
+e) 4.86E+01 N
=====*_Rendition_* 1-26=====
<!--a09staticsTorques_torque_1-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 24.3 degrees above the horizontal. An object of mass, M =   9kg is suspended at a length, L =   5.4m from the wall. What is the tension, T, in the string?
+a) 1.29E+02 N
-b) 1.62E+02 N
-c) 2.04E+02 N
-d) 2.57E+02 N
-e) 3.23E+02 N
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 5.4m, L₂ = 3.3m and L₃ = 8m. What is F₁ if F₂ =9.8N and F₃ =5.7N?
-a) 6.70E+00 N
-b) 8.12E+00 N
-c) 9.83E+00 N
-d) 1.19E+01 N
+e) 1.44E+01 N
=====*_Rendition_* 2-3=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 5.7m, L₂ = 4.5m and L₃ = 8.2m. What is F₁ if F₂ =8.6N and F₃ =6.7N?
-a) 1.36E+01 N
+b) 1.64E+01 N
-c) 1.99E+01 N
-d) 2.41E+01 N
-e) 2.92E+01 N
=====*_Rendition_* 2-4=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.3m, L₂ = 4.3m and L₃ = 8.5m. What is F₁ if F₂ =8.4N and F₃ =5.2N?
+a) 1.27E+01 N
-b) 1.54E+01 N
-c) 1.87E+01 N

-d) 2.27E+01 N
-e) 2.75E+01 N
=====*_Rendition_* 2-5=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 5.3m, L₂ = 3.3m and L₃ = 8.7m. What is F₁ if F₂ =8.7N and F₃ =6N?
-a) 7.09E+00 N
-b) 8.58E+00 N
-c) 1.04E+01 N
-d) 1.26E+01 N
+e) 1.53E+01 N
=====*_Rendition_* 2-6=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 5.8m, L₂ = 3.5m and L₃ = 7.8m. What is F₁ if F₂ =7.3N and F₃ =5.3N?
-a) 7.86E+00 N
-b) 9.52E+00 N
+c) 1.15E+01 N
-d) 1.40E+01 N
-e) 1.69E+01 N
=====*_Rendition_* 2-7=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.5m, L₂ = 3.2m and L₃ = 8.8m. What is F₁ if F₂ =9.3N and F₃ =5.9N?
-a) 8.56E+00 N
-b) 1.04E+01 N
+c) 1.26E+01 N
-d) 1.52E+01 N
-e) 1.84E+01 N
=====*_Rendition_* 2-8=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 5.4m, L₂ = 3.5m and L₃ = 7.4m. What is F₁ if F₂ =7.7N and F₃ =5.8N?
-a) 1.07E+01 N
+b) 1.29E+01 N
-c) 1.57E+01 N
-d) 1.90E+01 N
-e) 2.30E+01 N
=====*_Rendition_* 2-9=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.6m, L₂ = 3.1m and L₃ = 8.8m. What is F₁ if F₂ =9.2N and F₃ =5.9N?
-a) 5.66E+00 N
-b) 6.85E+00 N
-c) 8.30E+00 N
-d) 1.01E+01 N
+e) 1.22E+01 N

=====*_Rendition_* 2-10=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.4m, L₂ = 3.2m and L₃ = 8.3m. What is F₁ if F₂ =8.5N and F₃ =6.5N?
-a) 5.89E+00 N
-b) 7.13E+00 N
-c) 8.64E+00 N
-d) 1.05E+01 N
+e) 1.27E+01 N
=====*_Rendition_* 2-11=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.9m, L₂ = 4.3m and L₃ = 8m. What is F₁ if F₂ =8.4N and F₃ =5.2N?
-a) 7.67E+00 N
-b) 9.30E+00 N
+c) 1.13E+01 N
-d) 1.36E+01 N
-e) 1.65E+01 N
=====*_Rendition_* 2-12=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.6m, L₂ = 3.2m and L₃ = 7.8m. What is F₁ if F₂ =8.6N and F₃ =5.8N?
+a) 1.10E+01 N
-b) 1.34E+01 N
-c) 1.62E+01 N
-d) 1.96E+01 N
-e) 2.38E+01 N
=====*_Rendition_* 2-13=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 5.6m, L₂ = 4.3m and L₃ = 8.3m. What is F₁ if F₂ =8.6N and F₃ =6.3N?
-a) 7.40E+00 N
-b) 8.96E+00 N
-c) 1.09E+01 N
-d) 1.32E+01 N
+e) 1.59E+01 N
=====*_Rendition_* 2-14=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 5.5m, L₂ = 3.7m and L₃ = 8.2m. What is F₁ if F₂ =7.8N and F₃ =5.6N?
-a) 9.26E+00 N
-b) 1.12E+01 N
+c) 1.36E+01 N
-d) 1.65E+01 N
-e) 2.00E+01 N
=====*_Rendition_* 2-15=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on

fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.4m, L₂ = 4.3m and L₃ = 8.3m. What is F₁ if F₂ =7.1N and F₃ =5.2N?
-a) 9.50E+00 N
+b) 1.15E+01 N
-c) 1.39E+01 N
-d) 1.69E+01 N
-e) 2.05E+01 N
=====*_Rendition_* 2-16=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.8m, L₂ = 4.2m and L₃ = 8.9m. What is F₁ if F₂ =7.7N and F₃ =6.3N?
-a) 6.03E+00 N
-b) 7.31E+00 N
-c) 8.86E+00 N
-d) 1.07E+01 N
+e) 1.30E+01 N
=====*_Rendition_* 2-17=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 5.9m, L₂ = 3.1m and L₃ = 7.4m. What is F₁ if F₂ =9.1N and F₃ =5.9N?
-a) 8.30E+00 N
-b) 1.01E+01 N
+c) 1.22E+01 N
-d) 1.48E+01 N
-e) 1.79E+01 N
=====*_Rendition_* 2-18=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.4m, L₂ = 3.5m and L₃ = 7.3m. What is F₁ if F₂ =8.8N and F₃ =5.9N?
-a) 9.53E+00 N
+b) 1.15E+01 N
-c) 1.40E+01 N
-d) 1.69E+01 N
-e) 2.05E+01 N
=====*_Rendition_* 2-19=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.1m, L₂ = 4.3m and L₃ = 8m. What is F₁ if F₂ =9.9N and F₃ =5.4N?
+a) 1.41E+01 N
-b) 1.70E+01 N
-c) 2.06E+01 N
-d) 2.50E+01 N
-e) 3.03E+01 N
=====*_Rendition_* 2-20=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6m, L₂ = 3.7m and L₃ = 7.3m. What is F₁

if F₂ =8.7N and F₃ =5.5N?
-a) 9.95E+00 N
+b) 1.21E+01 N
-c) 1.46E+01 N
-d) 1.77E+01 N
-e) 2.14E+01 N
=====*_Rendition_* 2-21=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.6m, L₂ = 4.4m and L₃ = 7.8m. What is F₁ if F₂ =7.7N and F₃ =6.5N?
-a) 8.73E+00 N
-b) 1.06E+01 N
+c) 1.28E+01 N
-d) 1.55E+01 N
-e) 1.88E+01 N
=====*_Rendition_* 2-22=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 5.3m, L₂ = 4.3m and L₃ = 8m. What is F₁ if F₂ =7.6N and F₃ =5.9N?
-a) 1.03E+01 N
-b) 1.24E+01 N
+c) 1.51E+01 N
-d) 1.83E+01 N
-e) 2.21E+01 N
=====*_Rendition_* 2-23=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.5m, L₂ = 4.1m and L₃ = 7.5m. What is F₁ if F₂ =9N and F₃ =5.2N?
-a) 9.64E+00 N
+b) 1.17E+01 N
-c) 1.41E+01 N
-d) 1.71E+01 N
-e) 2.08E+01 N
=====*_Rendition_* 2-24=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 5.4m, L₂ = 3.3m and L₃ = 7.4m. What is F₁ if F₂ =7.5N and F₃ =5.4N?
-a) 8.16E+00 N
-b) 9.89E+00 N
+c) 1.20E+01 N
-d) 1.45E+01 N
-e) 1.76E+01 N
=====*_Rendition_* 2-25=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 5.4m, L₂ = 4.2m and L₃ = 8.1m. What is F₁ if F₂ =7.2N and F₃ =6.7N?
-a) 1.29E+01 N

+b) 1.56E+01 N
-c) 1.90E+01 N
-d) 2.30E+01 N
-e) 2.78E+01 N
=====*_Rendition_* 2-26=====
<!--a09staticsTorques_torque_2-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.7m, L₂ = 3.7m and L₃ = 7.9m. What is F₁ if F₂ =7.2N and F₃ =5.4N?
+a) 1.03E+01 N
-b) 1.25E+01 N
-c) 1.52E+01 N
-d) 1.84E+01 N
-e) 2.23E+01 N
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.8m is attached to a wall by a frictionless hinge (shown as a circle). The bar is held horizontal by a string that makes and angle θ = 27.3 degrees above the horizontal. An object of mass, M =   8.2kg is suspended at a length, L =   4.7m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
-a) 6.86E+01 N
+b) 8.32E+01 N
-c) 1.01E+02 N
-d) 1.22E+02 N
-e) 1.48E+02 N
=====*_Rendition_* 3-3=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8m is attached to a wall by a frictionless hinge (shown as a circle). The bar is held horizontal by a string that makes and angle θ = 35.4 degrees above the horizontal. An object of mass, M =   8.3kg is suspended at a length, L =   5m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
+a) 7.15E+01 N
-b) 8.67E+01 N
-c) 1.05E+02 N
-d) 1.27E+02 N
-e) 1.54E+02 N
=====*_Rendition_* 3-4=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 7.9m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 37.7 degrees above the horizontal. An object of mass, M =   4.1kg is suspended at a length, L =   6.1m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
-a) 3.31E+01 N

+b) 4.01E+01 N
-c) 4.86E+01 N
-d) 5.89E+01 N
-e) 7.14E+01 N
=====*_Rendition_* 3-5=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 7.6m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 36.8 degrees above the horizontal. An object of mass, M =   7.3kg is suspended at a length, L =   4.9m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
-a) 4.20E+01 N
-b) 5.09E+01 N
+c) 6.17E+01 N
-d) 7.47E+01 N
-e) 9.05E+01 N
=====*_Rendition_* 3-6=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.8m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 38.4 degrees above the horizontal. An object of mass, M =   7kg is suspended at a length, L =   4.2m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
-a) 3.06E+01 N
+b) 3.71E+01 N
-c) 4.49E+01 N
-d) 5.44E+01 N
-e) 6.60E+01 N
=====*_Rendition_* 3-7=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.4m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 30.7 degrees above the horizontal. An object of mass, M =   5.2kg is suspended at a length, L =   5.3m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
-a) 3.05E+01 N
-b) 3.69E+01 N
-c) 4.47E+01 N
+d) 5.42E+01 N
-e) 6.56E+01 N
=====*_Rendition_* 3-8=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.1m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 37.9 degrees above the horizontal. An object of mass, M =   6kg is

suspended at a length, L =   4.5m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
+a) 4.20E+01 N
-b) 5.08E+01 N
-c) 6.16E+01 N
-d) 7.46E+01 N
-e) 9.04E+01 N
=====*_Rendition_* 3-9=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.8m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 27.5 degrees above the horizontal. An object of mass, M =   6.2kg is suspended at a length, L =   6.5m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
-a) 4.00E+01 N
-b) 4.85E+01 N
-c) 5.87E+01 N
-d) 7.12E+01 N
+e) 8.62E+01 N
=====*_Rendition_* 3-10=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.2m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 37.6 degrees above the horizontal. An object of mass, M =   9.2kg is suspended at a length, L =   4.9m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
-a) 4.25E+01 N
-b) 5.15E+01 N
+c) 6.24E+01 N
-d) 7.55E+01 N
-e) 9.15E+01 N
=====*_Rendition_* 3-11=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.1m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 24.6 degrees above the horizontal. An object of mass, M =   3.5kg is suspended at a length, L =   5.4m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
-a) 3.03E+01 N
-b) 3.67E+01 N
+c) 4.45E+01 N
-d) 5.39E+01 N
-e) 6.53E+01 N
=====*_Rendition_* 3-12=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall

statics.jpg|right|110px]]A massless bar of length, S = 9m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 33.4 degrees above the horizontal. An object of mass, M =   5.1kg is suspended at a length, L =   5.1m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
-a) 2.42E+01 N
-b) 2.93E+01 N
-c) 3.55E+01 N
+d) 4.30E+01 N
-e) 5.20E+01 N
=====*_Rendition_* 3-13=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 26.6 degrees above the horizontal. An object of mass, M =   3.9kg is suspended at a length, L =   6.5m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
-a) 3.10E+01 N
-b) 3.76E+01 N
-c) 4.55E+01 N
+d) 5.51E+01 N
-e) 6.68E+01 N
=====*_Rendition_* 3-14=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.9m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 28 degrees above the horizontal. An object of mass, M =   8.7kg is suspended at a length, L =   6.5m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
-a) 9.67E+01 N
+b) 1.17E+02 N
-c) 1.42E+02 N
-d) 1.72E+02 N
-e) 2.08E+02 N
=====*_Rendition_* 3-15=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.1m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 32 degrees above the horizontal. An object of mass, M =   7.6kg is suspended at a length, L =   5.1m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
+a) 7.50E+01 N
-b) 9.09E+01 N
-c) 1.10E+02 N

-d) 1.33E+02 N
-e) 1.62E+02 N
=====*_Rendition_* 3-16=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 34.1 degrees above the horizontal. An object of mass, M = 7.8kg is suspended at a length, L = 4.2m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
+a) 5.93E+01 N
-b) 7.18E+01 N
-c) 8.70E+01 N
-d) 1.05E+02 N
-e) 1.28E+02 N
=====*_Rendition_* 3-17=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 7.7m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 29.1 degrees above the horizontal. An object of mass, M = 7.2kg is suspended at a length, L = 4.5m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
-a) 5.05E+01 N
-b) 6.12E+01 N
+c) 7.41E+01 N
-d) 8.98E+01 N
-e) 1.09E+02 N
=====*_Rendition_* 3-18=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.5m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 33.9 degrees above the horizontal. An object of mass, M = 8.4kg is suspended at a length, L = 4.9m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
+a) 7.06E+01 N
-b) 8.56E+01 N
-c) 1.04E+02 N
-d) 1.26E+02 N
-e) 1.52E+02 N
=====*_Rendition_* 3-19=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 7.5m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 25.6 degrees above the horizontal. An object of mass, M = 3.5kg is suspended at a length, L = 5.1m from the wall. What is the x (horizontal) component of the force exerted by the wall on the

horizontal bar?
-a) 3.32E+01 N
-b) 4.02E+01 N
+c) 4.87E+01 N
-d) 5.90E+01 N
-e) 7.15E+01 N
=====*_Rendition_* 3-20=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 7.4m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 35.3 degrees above the horizontal. An object of mass, M =   4.7kg is suspended at a length, L =   5.2m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
+a) 4.57E+01 N
-b) 5.54E+01 N
-c) 6.71E+01 N
-d) 8.13E+01 N
-e) 9.85E+01 N
=====*_Rendition_* 3-21=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.8m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 28.9 degrees above the horizontal. An object of mass, M =   7.7kg is suspended at a length, L =   5.1m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
-a) 4.00E+01 N
-b) 4.85E+01 N
-c) 5.87E+01 N
+d) 7.11E+01 N
-e) 8.62E+01 N
=====*_Rendition_* 3-22=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 7.6m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 24.8 degrees above the horizontal. An object of mass, M =   8.9kg is suspended at a length, L =   5.5m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
-a) 9.31E+01 N
-b) 1.13E+02 N
+c) 1.37E+02 N
-d) 1.65E+02 N
-e) 2.01E+02 N
=====*_Rendition_* 3-23=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.9m is attached to a wall by a frictionless hinge (shown as a circle). The

bar his held horizontal by a string that makes and angle θ = 33.9 degrees above the horizontal. An object of mass, M =   8.1kg is suspended at a length, L =   6.3m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
-a) 5.70E+01 N
-b) 6.90E+01 N
+c) 8.36E+01 N
-d) 1.01E+02 N
-e) 1.23E+02 N
=====*_Rendition_* 3-24=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 7.4m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 33.5 degrees above the horizontal. An object of mass, M =   5kg is suspended at a length, L =   5.4m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
-a) 3.04E+01 N
-b) 3.68E+01 N
-c) 4.46E+01 N
+d) 5.40E+01 N
-e) 6.54E+01 N
=====*_Rendition_* 3-25=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.2m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 35.1 degrees above the horizontal. An object of mass, M =   3.5kg is suspended at a length, L =   6.2m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
-a) 2.71E+01 N
+b) 3.29E+01 N
-c) 3.98E+01 N
-d) 4.83E+01 N
-e) 5.85E+01 N
=====*_Rendition_* 3-26=====
<!--a09staticsTorques_torque_3-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 28.9 degrees above the horizontal. An object of mass, M =   9.2kg is suspended at a length, L =   4.3m from the wall. What is the x (horizontal) component of the force exerted by the wall on the horizontal bar?
-a) 6.44E+01 N
+b) 7.80E+01 N
-c) 9.45E+01 N
-d) 1.15E+02 N
-e) 1.39E+02 N

====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6m, L₂ = 4.3m and L₃ = 8.7m. What is F₂ if F₁ =0.98N and F₃ =0.1N?
-a) 5.41E-01 N
-b) 6.55E-01 N
-c) 7.94E-01 N
-d) 9.62E-01 N
+e) 1.17E+00 N
=====*_Rendition_* 4-3=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.1m, L₂ = 3.2m and L₃ = 7.2m. What is F₂ if F₁ =0.77N and F₃ =0N?
-a) 8.25E-01 N
-b) 1.00E+00 N
-c) 1.21E+00 N
+d) 1.47E+00 N
-e) 1.78E+00 N
=====*_Rendition_* 4-4=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.1m, L₂ = 4.8m and L₃ = 7.2m. What is F₂ if F₁ =0.72N and F₃ =0.1N?
-a) 6.31E-01 N
+b) 7.65E-01 N
-c) 9.27E-01 N
-d) 1.12E+00 N
-e) 1.36E+00 N
=====*_Rendition_* 4-5=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6m, L₂ = 3.8m and L₃ = 7.2m. What is F₂ if F₁ =0.62N and F₃ =0N?
-a) 6.67E-01 N
-b) 8.08E-01 N
+c) 9.79E-01 N
-d) 1.19E+00 N
-e) 1.44E+00 N
=====*_Rendition_* 4-6=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 5.5m, L₂ = 3.7m and L₃ = 8.6m. What is F₂ if F₁ =0.51N and F₃ =0N?
-a) 4.26E-01 N
-b) 5.16E-01 N
-c) 6.26E-01 N
+d) 7.58E-01 N
-e) 9.18E-01 N
=====*_Rendition_* 4-7=====

<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6m, L₂ = 4.5m and L₃ = 8.6m. What is F₂ if F₁ =0.82N and F₃ =0.1N?
-a) 6.15E-01 N
-b) 7.45E-01 N
+c) 9.02E-01 N
-d) 1.09E+00 N
-e) 1.32E+00 N
=====*_Rendition_* 4-8=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.8m, L₂ = 4.8m and L₃ = 7.9m. What is F₂ if F₁ =0.56N and F₃ =0N?
-a) 6.55E-01 N
+b) 7.93E-01 N
-c) 9.61E-01 N
-d) 1.16E+00 N
-e) 1.41E+00 N
=====*_Rendition_* 4-9=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.1m, L₂ = 4m and L₃ = 7.5m. What is F₂ if F₁ =0.74N and F₃ =0N?
-a) 6.35E-01 N
-b) 7.69E-01 N
-c) 9.31E-01 N
+d) 1.13E+00 N
-e) 1.37E+00 N
=====*_Rendition_* 4-10=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.4m, L₂ = 3.4m and L₃ = 7.1m. What is F₂ if F₁ =0.87N and F₃ =0.1N?
+a) 1.43E+00 N
-b) 1.73E+00 N
-c) 2.10E+00 N
-d) 2.54E+00 N
-e) 3.08E+00 N
=====*_Rendition_* 4-11=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 5.2m, L₂ = 4.5m and L₃ = 8.6m. What is F₂ if F₁ =0.86N and F₃ =0.1N?
-a) 3.73E-01 N
-b) 4.51E-01 N
-c) 5.47E-01 N
-d) 6.63E-01 N
+e) 8.03E-01 N
=====*_Rendition_* 4-12=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 5.1m,

L₂ = 4.8m and L₃ = 7.4m. What is F₂ if F₁ =0.56N and F₃ =0N?
-a) 4.91E-01 N
+b) 5.95E-01 N
-c) 7.21E-01 N
-d) 8.73E-01 N
-e) 1.06E+00 N
=====*_Rendition_* 4-13=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 5.4m, L₂ = 3.1m and L₃ = 8.1m. What is F₂ if F₁ =0.94N and F₃ =0.1N?
-a) 1.14E+00 N
+b) 1.38E+00 N
-c) 1.67E+00 N
-d) 2.02E+00 N
-e) 2.45E+00 N
=====*_Rendition_* 4-14=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.4m, L₂ = 3.7m and L₃ = 8.2m. What is F₂ if F₁ =0.56N and F₃ =0N?
+a) 9.69E-01 N
-b) 1.17E+00 N
-c) 1.42E+00 N
-d) 1.72E+00 N
-e) 2.09E+00 N
=====*_Rendition_* 4-15=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.6m, L₂ = 4.3m and L₃ = 8.9m. What is F₂ if F₁ =0.77N and F₃ =0.1N?
-a) 8.05E-01 N
+b) 9.75E-01 N
-c) 1.18E+00 N
-d) 1.43E+00 N
-e) 1.73E+00 N
=====*_Rendition_* 4-16=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 5.5m, L₂ = 3.5m and L₃ = 8.3m. What is F₂ if F₁ =0.92N and F₃ =0.1N?
-a) 8.23E-01 N
-b) 9.98E-01 N
+c) 1.21E+00 N
-d) 1.46E+00 N
-e) 1.77E+00 N
=====*_Rendition_* 4-17=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.5m, L₂ = 3.5m and L₃ = 8.8m. What is F₂ if F₁ =0.64N and F₃ =0N?

-a) 6.68E-01 N
-b) 8.10E-01 N
-c) 9.81E-01 N
+d) 1.19E+00 N
-e) 1.44E+00 N
=====*_Rendition_* 4-18=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.3m, L₂ = 3.8m and L₃ = 8.6m. What is F₂ if F₁ =0.91N and F₃ =0.1N?
-a) 5.95E-01 N
-b) 7.21E-01 N
-c) 8.74E-01 N
-d) 1.06E+00 N
+e) 1.28E+00 N
=====*_Rendition_* 4-19=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 5.9m, L₂ = 3.7m and L₃ = 8.5m. What is F₂ if F₁ =0.81N and F₃ =0.1N?
-a) 7.23E-01 N
-b) 8.76E-01 N
+c) 1.06E+00 N
-d) 1.29E+00 N
-e) 1.56E+00 N
=====*_Rendition_* 4-20=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.4m, L₂ = 3.7m and L₃ = 8.4m. What is F₂ if F₁ =0.7N and F₃ =0N?
-a) 5.62E-01 N
-b) 6.81E-01 N
-c) 8.25E-01 N
-d) 9.99E-01 N
+e) 1.21E+00 N
=====*_Rendition_* 4-21=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.6m, L₂ = 4.4m and L₃ = 7.4m. What is F₂ if F₁ =0.93N and F₃ =0N?
-a) 6.48E-01 N
-b) 7.84E-01 N
-c) 9.50E-01 N
-d) 1.15E+00 N
+e) 1.39E+00 N
=====*_Rendition_* 4-22=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.8m, L₂ = 4.3m and L₃ = 8.2m. What is F₂ if F₁ =0.9N and F₃ =0.1N?
-a) 5.72E-01 N
-b) 6.93E-01 N

-c) 8.40E-01 N
-d) 1.02E+00 N
+e) 1.23E+00 N
=====*_Rendition_* 4-23=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.9m, L₂ = 4.4m and L₃ = 8.2m. What is F₂ if F₁ =0.96N and F₃ =0.1N?
-a) 7.42E-01 N
-b) 8.99E-01 N
-c) 1.09E+00 N
+d) 1.32E+00 N
-e) 1.60E+00 N
=====*_Rendition_* 4-24=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.4m, L₂ = 3.9m and L₃ = 8.1m. What is F₂ if F₁ =0.72N and F₃ =0.1N?
-a) 6.63E-01 N
-b) 8.04E-01 N
+c) 9.74E-01 N
-d) 1.18E+00 N
-e) 1.43E+00 N
=====*_Rendition_* 4-25=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.8m, L₂ = 4.8m and L₃ = 8.7m. What is F₂ if F₁ =0.89N and F₃ =0.1N?
-a) 8.91E-01 N
+b) 1.08E+00 N
-c) 1.31E+00 N
-d) 1.58E+00 N
-e) 1.92E+00 N
=====*_Rendition_* 4-26=====
<!--a09staticsTorques_torque_4-->[[File:Three forces on fulcrum.jpg|right|240px]]In the figure shown, L₁ = 6.9m, L₂ = 4m and L₃ = 8.4m. What is F₂ if F₁ =0.99N and F₃ =0.1N?
+a) 1.50E+00 N
-b) 1.81E+00 N
-c) 2.20E+00 N
-d) 2.66E+00 N
-e) 3.23E+00 N
====*_Question_* 5====
=====*_Rendition_* 5-2=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 7.6m is attached to a wall by a frictionless hinge (shown as a circle). The bar is held horizontal by a string that makes and angle θ = 27.6 degrees above the horizontal. An object of mass, M =   5.1kg is suspended at a length, L =6.2m from the wall. What is the y (vertical) component of the force exerted by the wall on the

horizontal bar?
-a) 7.60E+00 N
+b) 9.21E+00 N
-c) 1.12E+01 N
-d) 1.35E+01 N
-e) 1.64E+01 N
=====*_Rendition_* 5-3=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.8m is attached to a wall by a frictionless hinge (shown as a circle). The bar is held horizontal by a string that makes and angle θ = 27.4 degrees above the horizontal. An object of mass, M = 7.1kg is suspended at a length, L =5.2m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
-a) 2.70E+01 N
+b) 3.27E+01 N
-c) 3.96E+01 N
-d) 4.79E+01 N
-e) 5.81E+01 N
=====*_Rendition_* 5-4=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.8m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 26 degrees above the horizontal. An object of mass, M = 8.5kg is suspended at a length, L =6.1m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
-a) 1.46E+01 N
-b) 1.77E+01 N
-c) 2.14E+01 N
-d) 2.60E+01 N
+e) 3.15E+01 N
=====*_Rendition_* 5-5=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 7.7m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 28.6 degrees above the horizontal. An object of mass, M = 6.2kg is suspended at a length, L =4.2m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
-a) 2.28E+01 N
+b) 2.76E+01 N
-c) 3.35E+01 N
-d) 4.05E+01 N
-e) 4.91E+01 N
=====*_Rendition_* 5-6=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 7.7m is attached to a wall by a frictionless hinge (shown as a circle). The

bar his held horizontal by a string that makes and angle θ = 33.2 degrees above the horizontal. An object of mass, M =   8.2kg is suspended at a length, L =5.7m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
+a) 2.09E+01 N
-b) 2.53E+01 N
-c) 3.06E+01 N
-d) 3.71E+01 N
-e) 4.50E+01 N
=====*_Rendition_* 5-7=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.4m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 31.9 degrees above the horizontal. An object of mass, M =   5.7kg is suspended at a length, L =6.4m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
-a) 1.47E+01 N
+b) 1.78E+01 N
-c) 2.16E+01 N
-d) 2.62E+01 N
-e) 3.17E+01 N
=====*_Rendition_* 5-8=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.4m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 32.6 degrees above the horizontal. An object of mass, M =   5.2kg is suspended at a length, L =5.6m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
-a) 1.40E+01 N
+b) 1.70E+01 N
-c) 2.06E+01 N
-d) 2.49E+01 N
-e) 3.02E+01 N
=====*_Rendition_* 5-9=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.1m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 30.3 degrees above the horizontal. An object of mass, M =   5.8kg is suspended at a length, L =6.5m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
+a) 1.62E+01 N
-b) 1.97E+01 N
-c) 2.38E+01 N
-d) 2.89E+01 N
-e) 3.50E+01 N

=====*_Rendition_* 5-10=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.5m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 36 degrees above the horizontal. An object of mass, M =   7.4kg is suspended at a length, L =5.6m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
-a) 2.04E+01 N
+b) 2.47E+01 N
-c) 3.00E+01 N
-d) 3.63E+01 N
-e) 4.40E+01 N
=====*_Rendition_* 5-11=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 31.7 degrees above the horizontal. An object of mass, M =   9.8kg is suspended at a length, L =5.7m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
+a) 3.52E+01 N
-b) 4.27E+01 N
-c) 5.17E+01 N
-d) 6.26E+01 N
-e) 7.59E+01 N
=====*_Rendition_* 5-12=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 7.8m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 31.4 degrees above the horizontal. An object of mass, M =   5.7kg is suspended at a length, L =6.4m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
-a) 6.83E+00 N
-b) 8.28E+00 N
+c) 1.00E+01 N
-d) 1.21E+01 N
-e) 1.47E+01 N
=====*_Rendition_* 5-13=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 7.8m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 30 degrees above the horizontal. An object of mass, M =   6.4kg is suspended at a length, L =6.5m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
+a) 1.05E+01 N

-b) 1.27E+01 N
-c) 1.53E+01 N
-d) 1.86E+01 N
-e) 2.25E+01 N
=====*_Rendition_* 5-14=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.6m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 35 degrees above the horizontal. An object of mass, M =   5.1kg is suspended at a length, L =5.5m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
+a) 2.13E+01 N
-b) 2.59E+01 N
-c) 3.13E+01 N
-d) 3.80E+01 N
-e) 4.60E+01 N
=====*_Rendition_* 5-15=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 7.5m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 32.7 degrees above the horizontal. An object of mass, M =   8.5kg is suspended at a length, L =5.1m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
-a) 1.82E+01 N
-b) 2.20E+01 N
+c) 2.67E+01 N
-d) 3.23E+01 N
-e) 3.91E+01 N
=====*_Rendition_* 5-16=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.4m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 33.4 degrees above the horizontal. An object of mass, M =   3.5kg is suspended at a length, L =5.6m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
-a) 9.45E+00 N
-b) 1.14E+01 N
+c) 1.39E+01 N
-d) 1.68E+01 N
-e) 2.04E+01 N
=====*_Rendition_* 5-17=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 7.8m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 29.1 degrees above the horizontal. An object of mass, M =   4kg is

suspended at a length, L =5.5m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
-a) 6.50E+00 N
-b) 7.88E+00 N
-c) 9.54E+00 N
+d) 1.16E+01 N
-e) 1.40E+01 N
=====*_Rendition_* 5-18=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.9m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 32.4 degrees above the horizontal. An object of mass, M =   7kg is suspended at a length, L =6.2m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
-a) 1.17E+01 N
-b) 1.42E+01 N
-c) 1.72E+01 N
+d) 2.08E+01 N
-e) 2.52E+01 N
=====*_Rendition_* 5-19=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.8m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 36.7 degrees above the horizontal. An object of mass, M =   4.7kg is suspended at a length, L =4.4m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
-a) 1.18E+01 N
-b) 1.43E+01 N
-c) 1.73E+01 N
-d) 2.09E+01 N
+e) 2.54E+01 N
=====*_Rendition_* 5-20=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.2m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 30.9 degrees above the horizontal. An object of mass, M =   3.6kg is suspended at a length, L =4.9m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
-a) 1.12E+01 N
-b) 1.36E+01 N
+c) 1.65E+01 N
-d) 2.00E+01 N
-e) 2.42E+01 N
=====*_Rendition_* 5-21=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall

statics.jpg|right|110px]]A massless bar of length, S = 8.6m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 35.8 degrees above the horizontal. An object of mass, M =   7.3kg is suspended at a length, L =4.4m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
-a) 1.96E+01 N
-b) 2.38E+01 N
-c) 2.88E+01 N
+d) 3.49E+01 N
-e) 4.23E+01 N
=====*_Rendition_* 5-22=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 9.9m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 26 degrees above the horizontal. An object of mass, M =   9.1kg is suspended at a length, L =5.6m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
-a) 3.20E+01 N
+b) 3.87E+01 N
-c) 4.69E+01 N
-d) 5.69E+01 N
-e) 6.89E+01 N
=====*_Rendition_* 5-23=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 7.3m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 27.3 degrees above the horizontal. An object of mass, M =   9.1kg is suspended at a length, L =5.3m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
+a) 2.44E+01 N
-b) 2.96E+01 N
-c) 3.59E+01 N
-d) 4.34E+01 N
-e) 5.26E+01 N
=====*_Rendition_* 5-24=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.6m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 35.4 degrees above the horizontal. An object of mass, M =   9.1kg is suspended at a length, L =4.7m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
-a) 3.34E+01 N
+b) 4.04E+01 N
-c) 4.90E+01 N

-d) 5.94E+01 N
-e) 7.19E+01 N
=====*_Rendition_* 5-25=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 7.7m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 30.4 degrees above the horizontal. An object of mass, M =   4.3kg is suspended at a length, L =4.1m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
-a) 1.34E+01 N
-b) 1.63E+01 N
+c) 1.97E+01 N
-d) 2.39E+01 N
-e) 2.89E+01 N
=====*_Rendition_* 5-26=====
<!--a09staticsTorques_torque_5-->[[File:Hinge on wall statics.jpg|right|110px]]A massless bar of length, S = 8.4m is attached to a wall by a frictionless hinge (shown as a circle). The bar his held horizontal by a string that makes and angle θ = 31.1 degrees above the horizontal. An object of mass, M =   8.4kg is suspended at a length, L =6.1m from the wall. What is the y (vertical) component of the force exerted by the wall on the horizontal bar?
-a) 1.54E+01 N
-b) 1.86E+01 N
+c) 2.25E+01 N
-d) 2.73E+01 N
-e) 3.31E+01 N
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====*_Instructions_*====
Instructions are forthcoming

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{<!--a10rotationalMotionAngMom_dynamics_1-->A car with a tire radius of 0.26 m accelerates from 0 to 36 m/s in 6.8 seconds. What is the angular acceleration of the wheel?}
-a) 1.15 x 10¹ m
-b) 1.39 x 10¹ m
-c) 1.68 x 10¹ m
+d) 2.04 x 10¹ m
-e) 2.47 x 10¹ m

{<!--a10rotationalMotionAngMom_dynamics_2-->A lead filled bicycle wheel of radius 0.57 m and mass 2.2 kg is rotating at a frequency of 1.7 revolutions per second. What is the moment of inertia?}
-a) 4.02 x 10⁻¹ kg m²/s²
-b) 4.87 x 10⁻¹ kg m²/s²
-c) 5.9 x 10⁻¹ kg m²/s²
+d) 7.15 x 10⁻¹ kg m²/s²
-e) 8.66 x 10⁻¹ kg m²/s²

{<!--a10rotationalMotionAngMom_dynamics_3-->A lead filled bicycle wheel of radius 0.57 m and mass 2.2 kg is rotating at a frequency of 1.7 revolutions per second. What is the total kinetic energy if the wheel is rotating about a stationary axis?}
-a) 1.99 x 10¹ J
-b) 2.29 x 10¹ J
-c) 2.76 x 10¹ J
-d) 3.43 x 10¹ J
+e) 4.08 x 10¹ J

{<!--a10rotationalMotionAngMom_dynamics_4-->[[File:Yo yo moment of inertia.jpg|right|280px]]The moment of inertia of a solid disk of mass, M, and radius, R, is ½ MR². Two identical disks, each with mass 3.8 kg are attached. The larger disk has a diameter of 0.9 m, and the smaller disk has a diameter of 0.46 m. If a force of 76 N is applied at the rim of the smaller disk, what is the angular acceleration?}
-a) 2.03 x 10¹ s⁻²
-b) 2.45 x 10¹ s⁻²
-c) 2.97 x 10¹ s⁻²
+d) 3.6 x 10¹ s⁻²
-e) 4.36 x 10¹ s⁻²

</quiz>

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Other renditions
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====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a10rotationalMotionAngMom_dynamics_1-->A car with a tire radius of 0.26 m accelerates from 0 to 27 m/s in 9.5 seconds. What is the angular acceleration of the wheel?
+a) 1.09 x 10¹ m
-b) 1.32 x 10¹ m
-c) 1.6 x 10¹ m
-d) 1.94 x 10¹ m
-e) 2.36 x 10¹ m
=====*_Rendition_* 1-3=====
<!--a10rotationalMotionAngMom_dynamics_1-->A car with a tire radius of 0.35 m accelerates from 0 to 32 m/s in 8.8 seconds. What is the angular acceleration of the wheel?
-a) 5.84 x 10⁰ m
-b) 7.08 x 10⁰ m
-c) 8.58 x 10⁰ m
+d) 1.04 x 10¹ m
-e) 1.26 x 10¹ m
=====*_Rendition_* 1-4=====
<!--a10rotationalMotionAngMom_dynamics_1-->A car with a tire radius of 0.34 m accelerates from 0 to 25 m/s in 9.2 seconds. What is the angular acceleration of the wheel?
-a) 5.45 x 10⁰ m
-b) 6.6 x 10⁰ m
+c) 7.99 x 10⁰ m
-d) 9.68 x 10⁰ m
-e) 1.17 x 10¹ m
=====*_Rendition_* 1-5=====
<!--a10rotationalMotionAngMom_dynamics_1-->A car with a tire radius of 0.31 m accelerates from 0 to 39 m/s in 9.3 seconds. What is the angular acceleration of the wheel?
-a) 1.12 x 10¹ m
+b) 1.35 x 10¹ m
-c) 1.64 x 10¹ m
-d) 1.99 x 10¹ m
-e) 2.41 x 10¹ m
=====*_Rendition_* 1-6=====
<!--a10rotationalMotionAngMom_dynamics_1-->A car with a tire radius of 0.21 m accelerates from 0 to 26 m/s in 11.1 seconds. What is the angular acceleration of the wheel?
-a) 9.21 x 10⁰ m
+b) 1.12 x 10¹ m
-c) 1.35 x 10¹ m
-d) 1.64 x 10¹ m
-e) 1.98 x 10¹ m
=====*_Rendition_* 1-7=====

<!--a10rotationalMotionAngMom_dynamics_1-->A car with a tire radius of 0.24 m accelerates from 0 to 33 m/s in 8.5 seconds. What is the angular acceleration of the wheel?
-a) 1.34 x 10¹ m
+b) 1.62 x 10¹ m
-c) 1.96 x 10¹ m
-d) 2.37 x 10¹ m
-e) 2.88 x 10¹ m
=====*_Rendition_* 1-8=====
<!--a10rotationalMotionAngMom_dynamics_1-->A car with a tire radius of 0.21 m accelerates from 0 to 26 m/s in 9.1 seconds. What is the angular acceleration of the wheel?
-a) 7.65 x 10⁰ m
-b) 9.27 x 10⁰ m
-c) 1.12 x 10¹ m
+d) 1.36 x 10¹ m
-e) 1.65 x 10¹ m
=====*_Rendition_* 1-9=====
<!--a10rotationalMotionAngMom_dynamics_1-->A car with a tire radius of 0.28 m accelerates from 0 to 22 m/s in 10 seconds. What is the angular acceleration of the wheel?
-a) 5.35 x 10⁰ m
-b) 6.49 x 10⁰ m
+c) 7.86 x 10⁰ m
-d) 9.52 x 10⁰ m
-e) 1.15 x 10¹ m
=====*_Rendition_* 1-10=====
<!--a10rotationalMotionAngMom_dynamics_1-->A car with a tire radius of 0.23 m accelerates from 0 to 31 m/s in 11.3 seconds. What is the angular acceleration of the wheel?
-a) 9.85 x 10⁰ m
+b) 1.19 x 10¹ m
-c) 1.45 x 10¹ m
-d) 1.75 x 10¹ m
-e) 2.12 x 10¹ m
=====*_Rendition_* 1-11=====
<!--a10rotationalMotionAngMom_dynamics_1-->A car with a tire radius of 0.21 m accelerates from 0 to 29 m/s in 11 seconds. What is the angular acceleration of the wheel?
+a) 1.26 x 10¹ m
-b) 1.52 x 10¹ m
-c) 1.84 x 10¹ m
-d) 2.23 x 10¹ m
-e) 2.7 x 10¹ m
=====*_Rendition_* 1-12=====
<!--a10rotationalMotionAngMom_dynamics_1-->A car with a tire radius of 0.23 m accelerates from 0 to 23 m/s in 10.5 seconds. What is the angular acceleration of the wheel?
+a) 9.52 x 10⁰ m
-b) 1.15 x 10¹ m
-c) 1.4 x 10¹ m
-d) 1.69 x 10¹ m

-e) 2.05 x 10¹ m
=====*_Rendition_* 1-13=====
<!--a10rotationalMotionAngMom_dynamics_1-->A car with a tire radius of 0.37 m accelerates from 0 to 28 m/s in 11.9 seconds. What is the angular acceleration of the wheel?
+a) 6.36 x 10⁰ m
-b) 7.7 x 10⁰ m
-c) 9.33 x 10⁰ m
-d) 1.13 x 10¹ m
-e) 1.37 x 10¹ m
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a10rotationalMotionAngMom_dynamics_2-->A lead filled bicycle wheel of radius 0.47 m and mass 2.2 kg is rotating at a frequency of 1.9 revolutions per second. What is the moment of inertia?
-a) 3.31 x 10⁻¹ kg m²/s²
-b) 4.01 x 10⁻¹ kg m²/s²
+c) 4.86 x 10⁻¹ kg m²/s²
-d) 5.89 x 10⁻¹ kg m²/s²
-e) 7.13 x 10⁻¹ kg m²/s²
=====*_Rendition_* 2-3=====
<!--a10rotationalMotionAngMom_dynamics_2-->A lead filled bicycle wheel of radius 0.33 m and mass 2.2 kg is rotating at a frequency of 1.3 revolutions per second. What is the moment of inertia?
+a) 2.4 x 10⁻¹ kg m²/s²
-b) 2.9 x 10⁻¹ kg m²/s²
-c) 3.52 x 10⁻¹ kg m²/s²
-d) 4.26 x 10⁻¹ kg m²/s²
-e) 5.16 x 10⁻¹ kg m²/s²
=====*_Rendition_* 2-4=====
<!--a10rotationalMotionAngMom_dynamics_2-->A lead filled bicycle wheel of radius 0.37 m and mass 2.3 kg is rotating at a frequency of 1.6 revolutions per second. What is the moment of inertia?
+a) 3.15 x 10⁻¹ kg m²/s²
-b) 3.81 x 10⁻¹ kg m²/s²
-c) 4.62 x 10⁻¹ kg m²/s²
-d) 5.6 x 10⁻¹ kg m²/s²
-e) 6.78 x 10⁻¹ kg m²/s²
=====*_Rendition_* 2-5=====
<!--a10rotationalMotionAngMom_dynamics_2-->A lead filled bicycle wheel of radius 0.35 m and mass 2.7 kg is rotating at a frequency of 1.5 revolutions per second. What is the moment of inertia?
-a) 2.25 x 10⁻¹ kg m²/s²
-b) 2.73 x 10⁻¹ kg m²/s²
+c) 3.31 x 10⁻¹ kg m²/s²
-d) 4.01 x 10⁻¹ kg m²/s²
-e) 4.85 x 10⁻¹ kg m²/s²
=====*_Rendition_* 2-6=====
<!--a10rotationalMotionAngMom_dynamics_2-->A lead filled bicycle wheel of radius 0.56 m and mass 2.9 kg is rotating at a frequency of 1.6 revolutions per second. What is the moment of inertia?
-a) 7.51 x 10⁻¹ kg m²/s²

+b) 9.09 x 10⁻¹ kg m²/s²
-c) 1.1 x 10⁰ kg m²/s²
-d) 1.33 x 10⁰ kg m²/s²
-e) 1.62 x 10⁰ kg m²/s²
=====*_Rendition_* 2-7=====
<!--a10rotationalMotionAngMom_dynamics_2-->A lead filled bicycle wheel of radius 0.43 m and mass 2.2 kg is rotating at a frequency of 1.1 revolutions per second. What is the moment of inertia?
-a) 1.89 x 10⁻¹ kg m²/s²
-b) 2.29 x 10⁻¹ kg m²/s²
-c) 2.77 x 10⁻¹ kg m²/s²
-d) 3.36 x 10⁻¹ kg m²/s²
+e) 4.07 x 10⁻¹ kg m²/s²
=====*_Rendition_* 2-8=====
<!--a10rotationalMotionAngMom_dynamics_2-->A lead filled bicycle wheel of radius 0.35 m and mass 2.3 kg is rotating at a frequency of 1.1 revolutions per second. What is the moment of inertia?
+a) 2.82 x 10⁻¹ kg m²/s²
-b) 3.41 x 10⁻¹ kg m²/s²
-c) 4.14 x 10⁻¹ kg m²/s²
-d) 5.01 x 10⁻¹ kg m²/s²
-e) 6.07 x 10⁻¹ kg m²/s²
=====*_Rendition_* 2-9=====
<!--a10rotationalMotionAngMom_dynamics_2-->A lead filled bicycle wheel of radius 0.38 m and mass 2.8 kg is rotating at a frequency of 1.7 revolutions per second. What is the moment of inertia?
-a) 3.34 x 10⁻¹ kg m²/s²
+b) 4.04 x 10⁻¹ kg m²/s²
-c) 4.9 x 10⁻¹ kg m²/s²
-d) 5.93 x 10⁻¹ kg m²/s²
-e) 7.19 x 10⁻¹ kg m²/s²
=====*_Rendition_* 2-10=====
<!--a10rotationalMotionAngMom_dynamics_2-->A lead filled bicycle wheel of radius 0.37 m and mass 2.1 kg is rotating at a frequency of 1.4 revolutions per second. What is the moment of inertia?
+a) 2.87 x 10⁻¹ kg m²/s²
-b) 3.48 x 10⁻¹ kg m²/s²
-c) 4.22 x 10⁻¹ kg m²/s²
-d) 5.11 x 10⁻¹ kg m²/s²
-e) 6.19 x 10⁻¹ kg m²/s²
=====*_Rendition_* 2-11=====
<!--a10rotationalMotionAngMom_dynamics_2-->A lead filled bicycle wheel of radius 0.58 m and mass 2.8 kg is rotating at a frequency of 1.8 revolutions per second. What is the moment of inertia?
+a) 9.42 x 10⁻¹ kg m²/s²
-b) 1.14 x 10⁰ kg m²/s²
-c) 1.38 x 10⁰ kg m²/s²
-d) 1.67 x 10⁰ kg m²/s²
-e) 2.03 x 10⁰ kg m²/s²
=====*_Rendition_* 2-12=====
<!--a10rotationalMotionAngMom_dynamics_2-->A lead filled bicycle wheel of radius 0.41 m and mass 2.9 kg is rotating at a frequency of 1.7

revolutions per second. What is the moment of inertia?
-a) 4.02 x 10⁻¹ kg m²/s²
+b) 4.87 x 10⁻¹ kg m²/s²
-c) 5.91 x 10⁻¹ kg m²/s²
-d) 7.16 x 10⁻¹ kg m²/s²
-e) 8.67 x 10⁻¹ kg m²/s²
=====*_Rendition_* 2-13=====
<!--a10rotationalMotionAngMom_dynamics_2-->A lead filled bicycle wheel of radius 0.4 m and mass 2.7 kg is rotating at a frequency of 1.6 revolutions per second. What is the moment of inertia?
+a) 4.32 x 10⁻¹ kg m²/s²
-b) 5.23 x 10⁻¹ kg m²/s²
-c) 6.34 x 10⁻¹ kg m²/s²
-d) 7.68 x 10⁻¹ kg m²/s²
-e) 9.31 x 10⁻¹ kg m²/s²
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a10rotationalMotionAngMom_dynamics_3-->A lead filled bicycle wheel of radius 0.47 m and mass 2.2 kg is rotating at a frequency of 1.9 revolutions per second. What is the total kinetic energy if the wheel is rotating about a stationary axis?
+a) 3.46 x 10¹ J
-b) 4.2 x 10¹ J
-c) 5.08 x 10¹ J
-d) 6.16 x 10¹ J
-e) 7.46 x 10¹ J
=====*_Rendition_* 3-3=====
<!--a10rotationalMotionAngMom_dynamics_3-->A lead filled bicycle wheel of radius 0.33 m and mass 2.2 kg is rotating at a frequency of 1.3 revolutions per second. What is the total kinetic if the wheel is rotating about a stationary axis?
-a) 6.6 x 10⁰ J
+b) 7.99 x 10⁰ J
-c) 9.68 x 10⁰ J
-d) 1.17 x 10¹ J
-e) 1.42 x 10¹ J
=====*_Rendition_* 3-4=====
<!--a10rotationalMotionAngMom_dynamics_3-->A lead filled bicycle wheel of radius 0.37 m and mass 2.3 kg is rotating at a frequency of 1.6 revolutions per second. What is the total kinetic energy if the wheel is rotating about a stationary axis?
-a) 7.39 x 10⁰ J
-b) 8.95 x 10⁰ J
-c) 1.08 x 10¹ J
-d) 1.31 x 10¹ J
+e) 1.59 x 10¹ J
=====*_Rendition_* 3-5=====
<!--a10rotationalMotionAngMom_dynamics_3-->A lead filled bicycle wheel of radius 0.35 m and mass 2.7 kg is rotating at a frequency of 1.5 revolutions per second. What is the total kinetic energy if the wheel is rotating about a stationary axis?
-a) 8.26 x 10⁰ J

-b) 1 x 10¹ J
-c) 1.21 x 10¹ J
+d) 1.47 x 10¹ J
-e) 1.78 x 10¹ J
=====*_Rendition_* 3-6=====
<!--a10rotationalMotionAngMom_dynamics_3-->A lead filled bicycle wheel of radius 0.56 m and mass 2.9 kg is rotating at a frequency of 1.6 revolutions per second. What is the total kinetic energy if the wheel is rotating about a stationary axis?
-a) 3.79 x 10¹ J
+b) 4.6 x 10¹ J
-c) 5.57 x 10¹ J
-d) 6.75 x 10¹ J
-e) 8.17 x 10¹ J
=====*_Rendition_* 3-7=====
<!--a10rotationalMotionAngMom_dynamics_3-->A lead filled bicycle wheel of radius 0.43 m and mass 2.2 kg is rotating at a frequency of 1.1 revolutions per second. What is the total kinetic energy if the wheel is rotating about a stationary axis?
-a) 4.51 x 10⁰ J
-b) 5.46 x 10⁰ J
-c) 6.62 x 10⁰ J
-d) 8.02 x 10⁰ J
+e) 9.72 x 10⁰ J
=====*_Rendition_* 3-8=====
<!--a10rotationalMotionAngMom_dynamics_3-->A lead filled bicycle wheel of radius 0.35 m and mass 2.3 kg is rotating at a frequency of 1.1 revolutions per second. What is the total kinetic energy if the wheel is rotating about a stationary axis?
-a) 3.78 x 10⁰ J
-b) 4.58 x 10⁰ J
-c) 5.55 x 10⁰ J
+d) 6.73 x 10⁰ J
-e) 8.15 x 10⁰ J
=====*_Rendition_* 3-9=====
<!--a10rotationalMotionAngMom_dynamics_3-->A lead filled bicycle wheel of radius 0.38 m and mass 2.8 kg is rotating at a frequency of 1.7 revolutions per second. What is the total kinetic energy if the wheel is rotating about a stationary axis?
-a) 1.07 x 10¹ J
-b) 1.3 x 10¹ J
-c) 1.57 x 10¹ J
-d) 1.9 x 10¹ J
+e) 2.31 x 10¹ J
=====*_Rendition_* 3-10=====
<!--a10rotationalMotionAngMom_dynamics_3-->A lead filled bicycle wheel of radius 0.37 m and mass 2.1 kg is rotating at a frequency of 1.4 revolutions per second. What is the total kinetic energy if the wheel is rotating about a stationary axis?
-a) 5.16 x 10⁰ J
-b) 6.25 x 10⁰ J
-c) 7.58 x 10⁰ J

-d) 9.18 x 10⁰ J
+e) 1.11 x 10¹ J
=====*_Rendition_* 3-11=====
<!--a10rotationalMotionAngMom_dynamics_3-->A lead filled bicycle wheel of radius 0.58 m and mass 2.8 kg is rotating at a frequency of 1.8 revolutions per second. What is the total kinetic energy if the wheel is rolling about a stationary axis?
-a) 3.39 x 10¹ J
-b) 4.1 x 10¹ J
-c) 4.97 x 10¹ J
+d) 6.02 x 10¹ J
-e) 7.3 x 10¹ J
=====*_Rendition_* 3-12=====
<!--a10rotationalMotionAngMom_dynamics_3-->A lead filled bicycle wheel of radius 0.41 m and mass 2.9 kg is rotating at a frequency of 1.7 revolutions per second. What is the total kinetic energy if the wheel is rolling about a stationary axis?
+a) 2.78 x 10¹ J
-b) 3.37 x 10¹ J
-c) 4.08 x 10¹ J
-d) 4.95 x 10¹ J
-e) 5.99 x 10¹ J
=====*_Rendition_* 3-13=====
<!--a10rotationalMotionAngMom_dynamics_3-->A lead filled bicycle wheel of radius 0.4 m and mass 2.7 kg is rotating at a frequency of 1.6 revolutions per second. What is the total kinetic energy if the wheel is rolling about a stationary axis?
-a) 1.23 x 10¹ J
-b) 1.49 x 10¹ J
-c) 1.8 x 10¹ J
+d) 2.18 x 10¹ J
-e) 2.64 x 10¹ J
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a10rotationalMotionAngMom_dynamics_4-->[[File:Yo yo moment of inertia.jpg|right|280px]]The moment of inertia of a solid disk of mass, M, and radius, R, is ½ MR². Two identical disks, each with mass 2.7 kg are attached. The larger disk has a diameter of 0.87 m, and the smaller disk has a diameter of 0.45 m. If a force of 55 N is applied at the rim of the smaller disk, what is the angular acceleration?
-a) 2.6 x 10¹ s⁻²
-b) 3.15 x 10¹ s⁻²
+c) 3.82 x 10¹ s⁻²
-d) 4.63 x 10¹ s⁻²
-e) 5.61 x 10¹ s⁻²
=====*_Rendition_* 4-3=====
<!--a10rotationalMotionAngMom_dynamics_4-->[[File:Yo yo moment of inertia.jpg|right|280px]]The moment of inertia of a solid disk of mass, M, and radius, R, is ½ MR². Two identical disks, each with mass 3.6 kg are attached. The larger disk has a diameter of 0.71 m, and the smaller disk has a diameter of 0.32 m. If a force of

13 N is applied at the rim of the smaller disk, what is the angular acceleration?
-a) 5.19 x 10⁰ s⁻²
-b) 6.29 x 10⁰ s⁻²
+c) 7.62 x 10⁰ s⁻²
-d) 9.23 x 10⁰ s⁻²
-e) 1.12 x 10¹ s⁻²
=====*_Rendition_* 4-4=====
<!--a10rotationalMotionAngMom_dynamics_4-->[[File:Yo yo moment of inertia.jpg|right|280px]]The moment of inertia of a solid disk of mass, M, and radius, R, is ½ MR². Two identical disks, each with mass 4.7 kg are attached. The larger disk has a diameter of 0.81 m, and the smaller disk has a diameter of 0.44 m. If a force of 97 N is applied at the rim of the smaller disk, what is the angular acceleration?
+a) 4.27 x 10¹ s⁻²
-b) 5.18 x 10¹ s⁻²
-c) 6.27 x 10¹ s⁻²
-d) 7.6 x 10¹ s⁻²
-e) 9.21 x 10¹ s⁻²
=====*_Rendition_* 4-5=====
<!--a10rotationalMotionAngMom_dynamics_4-->[[File:Yo yo moment of inertia.jpg|right|280px]]The moment of inertia of a solid disk of mass, M, and radius, R, is ½ MR². Two identical disks, each with mass 3.4 kg are attached. The larger disk has a diameter of 0.91 m, and the smaller disk has a diameter of 0.56 m. If a force of 35 N is applied at the rim of the smaller disk, what is the angular acceleration?
-a) 9.37 x 10⁰ s⁻²
-b) 1.14 x 10¹ s⁻²
-c) 1.38 x 10¹ s⁻²
-d) 1.67 x 10¹ s⁻²
+e) 2.02 x 10¹ s⁻²
=====*_Rendition_* 4-6=====
<!--a10rotationalMotionAngMom_dynamics_4-->[[File:Yo yo moment of inertia.jpg|right|280px]]The moment of inertia of a solid disk of mass, M, and radius, R, is ½ MR². Two identical disks, each with mass 9.3 kg are attached. The larger disk has a diameter of 0.83 m, and the smaller disk has a diameter of 0.46 m. If a force of 96 N is applied at the rim of the smaller disk, what is the angular acceleration?
-a) 9.79 x 10⁰ s⁻²
-b) 1.19 x 10¹ s⁻²
-c) 1.44 x 10¹ s⁻²
-d) 1.74 x 10¹ s⁻²
+e) 2.11 x 10¹ s⁻²
=====*_Rendition_* 4-7=====
<!--a10rotationalMotionAngMom_dynamics_4-->[[File:Yo yo moment of inertia.jpg|right|280px]]The moment of inertia of a solid disk of mass, M, and radius, R, is ½ MR². Two identical disks, each with mass 3 kg are attached. The larger disk has a diameter of 0.92 m, and the smaller disk has a diameter of 0.48 m. If a force of

70 N is applied at the rim of the smaller disk, what is the angular acceleration?
-a) 2.83 x 10¹ s⁻²
-b) 3.43 x 10¹ s⁻²
+c) 4.16 x 10¹ s⁻²
-d) 5.04 x 10¹ s⁻²
-e) 6.11 x 10¹ s⁻²
=====*_Rendition_* 4-8=====
<!--a10rotationalMotionAngMom_dynamics_4-->[[File:Yo yo moment of inertia.jpg|right|280px]]The moment of inertia of a solid disk of mass, M, and radius, R, is ½ MR². Two identical disks, each with mass 5.2 kg are attached. The larger disk has a diameter of 0.92 m, and the smaller disk has a diameter of 0.47 m. If a force of 53 N is applied at the rim of the smaller disk, what is the angular acceleration?
-a) 1.48 x 10¹ s⁻²
+b) 1.8 x 10¹ s⁻²
-c) 2.18 x 10¹ s⁻²
-d) 2.64 x 10¹ s⁻²
-e) 3.19 x 10¹ s⁻²
=====*_Rendition_* 4-9=====
<!--a10rotationalMotionAngMom_dynamics_4-->[[File:Yo yo moment of inertia.jpg|right|280px]]The moment of inertia of a solid disk of mass, M, and radius, R, is ½ MR². Two identical disks, each with mass 9.7 kg are attached. The larger disk has a diameter of 0.83 m, and the smaller disk has a diameter of 0.41 m. If a force of 31 N is applied at the rim of the smaller disk, what is the angular acceleration?
-a) 3.44 x 10⁰ s⁻²
-b) 4.17 x 10⁰ s⁻²
-c) 5.05 x 10⁰ s⁻²
+d) 6.12 x 10⁰ s⁻²
-e) 7.41 x 10⁰ s⁻²
=====*_Rendition_* 4-10=====
<!--a10rotationalMotionAngMom_dynamics_4-->[[File:Yo yo moment of inertia.jpg|right|280px]]The moment of inertia of a solid disk of mass, M, and radius, R, is ½ MR². Two identical disks, each with mass 1.8 kg are attached. The larger disk has a diameter of 0.85 m, and the smaller disk has a diameter of 0.44 m. If a force of 14 N is applied at the rim of the smaller disk, what is the angular acceleration?
-a) 8.4 x 10⁰ s⁻²
-b) 1.02 x 10¹ s⁻²
-c) 1.23 x 10¹ s⁻²
+d) 1.49 x 10¹ s⁻²
-e) 1.81 x 10¹ s⁻²
=====*_Rendition_* 4-11=====
<!--a10rotationalMotionAngMom_dynamics_4-->[[File:Yo yo moment of inertia.jpg|right|280px]]The moment of inertia of a solid disk of mass, M, and radius, R, is ½ MR². Two identical disks, each with mass 8.1 kg are attached. The larger disk has a diameter of 0.99 m, and the smaller disk has a diameter of 0.63 m. If a force of

87 N is applied at the rim of the smaller disk, what is the angular acceleration?
-a) 9.12 x 10⁰ s⁻²
-b) 1.11 x 10¹ s⁻²
-c) 1.34 x 10¹ s⁻²
-d) 1.62 x 10¹ s⁻²
+e) 1.97 x 10¹ s⁻²
=====*_Rendition_* 4-12=====
<!--a10rotationalMotionAngMom_dynamics_4-->[[File:Yo yo moment of inertia.jpg|right|280px]]The moment of inertia of a solid disk of mass, M, and radius, R, is ½ MR². Two identical disks, each with mass 3.9 kg are attached. The larger disk has a diameter of 0.9 m, and the smaller disk has a diameter of 0.46 m. If a force of 44 N is applied at the rim of the smaller disk, what is the angular acceleration?
-a) 9.43 x 10⁰ s⁻²
-b) 1.14 x 10¹ s⁻²
-c) 1.38 x 10¹ s⁻²
-d) 1.68 x 10¹ s⁻²
+e) 2.03 x 10¹ s⁻²
=====*_Rendition_* 4-13=====
<!--a10rotationalMotionAngMom_dynamics_4-->[[File:Yo yo moment of inertia.jpg|right|280px]]The moment of inertia of a solid disk of mass, M, and radius, R, is ½ MR². Two identical disks, each with mass 1.8 kg are attached. The larger disk has a diameter of 0.86 m, and the smaller disk has a diameter of 0.38 m. If a force of 31 N is applied at the rim of the smaller disk, what is the angular acceleration?
-a) 1.37 x 10¹ s⁻²
-b) 1.67 x 10¹ s⁻²
-c) 2.02 x 10¹ s⁻²
-d) 2.44 x 10¹ s⁻²
+e) 2.96 x 10¹ s⁻²
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====*_Instructions_*====
Instructions are forthcoming

Transclusion from [[Quizbank/Instructions_0]]:
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{<!--a11fluidStatics_buoyantForce_1-->A cylinder with a radius of 0.22 m and a length of 2.2 m is held so that the top circular face is 4.8 m below the water. The mass of the block is 826.0 kg. The mass density of water is 1000kg/m^3. What is the pressure at the top face of the cylinder?}
- 3.20E4 Pa
- 3.88E4 Pa
+ 4.70E4 Pa
- 5.70E4 Pa
- 6.90E4 Pa

{<!--a11fluidStatics_buoyantForce_2-->A cylinder with a radius of 0.22 m and a length of 2.2 m is held so that the top circular face is 4.8 m below the water. The mass of the block is 826.0 kg. The mass density of water is 1000kg/m^3. What is the buoyant force?}
- 2.71E3 N
+ 3.28E3 N
- 3.97E3 N
- 4.81E3 N
- 5.83E3 N

{<!--a11fluidStatics_buoyantForce_3-->A cylinder with a radius of 0.22 m and a length of 2.2 m is held so that the top circular face is 4.8 m below the water. The mass of the block is 826.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the water at the top surface?}
+ 7.15E3 N
- 9.00E3 N
- 1.13E4 N
- 1.43E4 N
- 1.80E4 N

{<!--a11fluidStatics_buoyantForce_4-->A cylinder with a radius of 0.22 m and a length of 2.2 m is held so that the top circular face is 4.8 m below the water. The mass of the block is 826.0 kg. The mass density of water is 1000kg/m^3. What,what is the force exerted by the fluid on the bottom of the cylinder?}
+ 1.04E4 Pa
- 1.31E4 Pa
- 1.65E4 Pa
- 2.08E4 Pa

- 2.62E4 Pa

</quiz>

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Other renditions
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====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a11fluidStatics_buoyantForce_1-->A cylinder with a radius of 0.25 m and a length of 2.5 m is held so that the top circular face is 4.2 m below the water. The mass of the block is 853.0 kg. The mass density of water is 1000kg/m^3. What is the pressure at the top face of the cylinder?
- 3.40E4 Pa
+ 4.12E4 Pa
- 4.99E4 Pa
- 6.04E4 Pa
- 7.32E4 Pa
=====*_Rendition_* 1-3=====
<!--a11fluidStatics_buoyantForce_1-->A cylinder with a radius of 0.38 m and a length of 2.2 m is held so that the top circular face is 3.8 m below the water. The mass of the block is 903.0 kg. The mass density of water is 1000kg/m^3. What is the pressure at the top face of the cylinder?
+ 3.72E4 Pa
- 4.51E4 Pa
- 5.47E4 Pa
- 6.62E4 Pa
- 8.02E4 Pa
=====*_Rendition_* 1-4=====
<!--a11fluidStatics_buoyantForce_1-->A cylinder with a radius of 0.38 m and a length of 3.6 m is held so that the top circular face is 4.2 m below the water. The mass of the block is 829.0 kg. The mass density of water is 1000kg/m^3. What is the pressure at the top face of the cylinder?
- 3.40E4 Pa
+ 4.12E4 Pa
- 4.99E4 Pa
- 6.04E4 Pa
- 7.32E4 Pa
=====*_Rendition_* 1-5=====
<!--a11fluidStatics_buoyantForce_1-->A cylinder with a radius of 0.28 m and a length of 2.9 m is held so that the top circular face is 4.6 m below the water. The mass of the block is 880.0 kg. The mass density of water is 1000kg/m^3. What is the pressure at the top face of the cylinder?
- 2.54E4 Pa
- 3.07E4 Pa

- 3.72E4 Pa
+ 4.51E4 Pa
- 5.46E4 Pa
=====*_Rendition_* 1-6=====
<!--a11fluidStatics_buoyantForce_1-->A cylinder with a radius of 0.24 m and a length of 3.8 m is held so that the top circular face is 3.5 m below the water. The mass of the block is 853.0 kg. The mass density of water is 1000kg/m^3. What is the pressure at the top face of the cylinder?
- 2.83E4 Pa
+ 3.43E4 Pa
- 4.16E4 Pa
- 5.03E4 Pa
- 6.10E4 Pa
=====*_Rendition_* 1-7=====
<!--a11fluidStatics_buoyantForce_1-->A cylinder with a radius of 0.29 m and a length of 2.8 m is held so that the top circular face is 4.6 m below the water. The mass of the block is 952.0 kg. The mass density of water is 1000kg/m^3. What is the pressure at the top face of the cylinder?
- 3.07E4 Pa
- 3.72E4 Pa
+ 4.51E4 Pa
- 5.46E4 Pa
- 6.62E4 Pa
=====*_Rendition_* 1-8=====
<!--a11fluidStatics_buoyantForce_1-->A cylinder with a radius of 0.33 m and a length of 2.9 m is held so that the top circular face is 4.1 m below the water. The mass of the block is 912.0 kg. The mass density of water is 1000kg/m^3. What is the pressure at the top face of the cylinder?
- 2.26E4 Pa
- 2.74E4 Pa
- 3.32E4 Pa
+ 4.02E4 Pa
- 4.87E4 Pa
=====*_Rendition_* 1-9=====
<!--a11fluidStatics_buoyantForce_1-->A cylinder with a radius of 0.31 m and a length of 3.5 m is held so that the top circular face is 4.8 m below the water. The mass of the block is 933.0 kg. The mass density of water is 1000kg/m^3. What is the pressure at the top face of the cylinder?
- 3.88E4 Pa
+ 4.70E4 Pa
- 5.70E4 Pa
- 6.90E4 Pa
- 8.37E4 Pa
=====*_Rendition_* 1-10=====
<!--a11fluidStatics_buoyantForce_1-->A cylinder with a radius of 0.29 m and a length of 2.3 m is held so that the top circular face is 4.7 m below the water. The mass of the block is 968.0 kg. The mass density of water is 1000kg/m^3. What is the pressure at the top face of the

cylinder?
- 2.59E4 Pa
- 3.14E4 Pa
- 3.80E4 Pa
+ 4.61E4 Pa
- 5.58E4 Pa
=====*_Rendition_* 1-11=====
<!--a11fluidStatics_buoyantForce_1-->A cylinder with a radius of 0.28 m and a length of 2.6 m is held so that the top circular face is 4.1 m below the water. The mass of the block is 831.0 kg. The mass density of water is 1000kg/m^3. What is the pressure at the top face of the cylinder?
- 2.74E4 Pa
- 3.32E4 Pa
+ 4.02E4 Pa
- 4.87E4 Pa
- 5.90E4 Pa
=====*_Rendition_* 1-12=====
<!--a11fluidStatics_buoyantForce_1-->A cylinder with a radius of 0.38 m and a length of 2.3 m is held so that the top circular face is 4.5 m below the water. The mass of the block is 909.0 kg. The mass density of water is 1000kg/m^3. What is the pressure at the top face of the cylinder?
- 2.48E4 Pa
- 3.00E4 Pa
- 3.64E4 Pa
+ 4.41E4 Pa
- 5.34E4 Pa
=====*_Rendition_* 1-13=====
<!--a11fluidStatics_buoyantForce_1-->A cylinder with a radius of 0.25 m and a length of 3.5 m is held so that the top circular face is 3.3 m below the water. The mass of the block is 922.0 kg. The mass density of water is 1000kg/m^3. What is the pressure at the top face of the cylinder?
+ 3.23E4 Pa
- 3.92E4 Pa
- 4.75E4 Pa
- 5.75E4 Pa
- 6.97E4 Pa
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a11fluidStatics_buoyantForce_2-->A cylinder with a radius of 0.25 m and a length of 2.5 m is held so that the top circular face is 4.2 m below the water. The mass of the block is 853.0 kg. The mass density of water is 1000kg/m^3. What is the buoyant force?
- 2.71E3 N
- 3.28E3 N
- 3.97E3 N
+ 4.81E3 N
- 5.83E3 N
=====*_Rendition_* 2-3=====
<!--a11fluidStatics_buoyantForce_2-->A cylinder with a radius of 0.38

m and a length of 2.2 m is held so that the top circular face is 3.8 m below the water. The mass of the block is 903.0 kg. The mass density of water is 1000kg/m^3. What is the buoyant force?
- 8.07E3 N
+ 9.78E3 N
- 1.18E4 N
- 1.44E4 N
- 1.74E4 N
=====*_Rendition_* 2-4=====
<!--a11fluidStatics_buoyantForce_2-->A cylinder with a radius of 0.38 m and a length of 3.6 m is held so that the top circular face is 4.2 m below the water. The mass of the block is 829.0 kg. The mass density of water is 1000kg/m^3. What is the buoyant force?
- 1.09E4 N
- 1.32E4 N
+ 1.60E4 N
- 1.94E4 N
- 2.35E4 N
=====*_Rendition_* 2-5=====
<!--a11fluidStatics_buoyantForce_2-->A cylinder with a radius of 0.28 m and a length of 2.9 m is held so that the top circular face is 4.6 m below the water. The mass of the block is 880.0 kg. The mass density of water is 1000kg/m^3. What is the buoyant force?
+ 7.00E3 N
- 8.48E3 N
- 1.03E4 N
- 1.24E4 N
- 1.51E4 N
=====*_Rendition_* 2-6=====
<!--a11fluidStatics_buoyantForce_2-->A cylinder with a radius of 0.24 m and a length of 3.8 m is held so that the top circular face is 3.5 m below the water. The mass of the block is 853.0 kg. The mass density of water is 1000kg/m^3. What is the buoyant force?
- 5.56E3 N
+ 6.74E3 N
- 8.16E3 N
- 9.89E3 N
- 1.20E4 N
=====*_Rendition_* 2-7=====
<!--a11fluidStatics_buoyantForce_2-->A cylinder with a radius of 0.29 m and a length of 2.8 m is held so that the top circular face is 4.6 m below the water. The mass of the block is 952.0 kg. The mass density of water is 1000kg/m^3. What is the buoyant force?
- 4.94E3 N
- 5.98E3 N
+ 7.25E3 N
- 8.78E3 N
- 1.06E4 N
=====*_Rendition_* 2-8=====
<!--a11fluidStatics_buoyantForce_2-->A cylinder with a radius of 0.33 m and a length of 2.9 m is held so that the top circular face is 4.1 m below the water. The mass of the block is 912.0 kg. The mass density

of water is 1000kg/m^3. What is the buoyant force?
+ 9.72E3 N
- 1.18E4 N
- 1.43E4 N
- 1.73E4 N
- 2.09E4 N
=====*_Rendition_* 2-9=====
<!--a11fluidStatics_buoyantForce_2-->A cylinder with a radius of 0.31 m and a length of 3.5 m is held so that the top circular face is 4.8 m below the water. The mass of the block is 933.0 kg. The mass density of water is 1000kg/m^3. What is the buoyant force?
- 5.82E3 N
- 7.06E3 N
- 8.55E3 N
+ 1.04E4 N
- 1.25E4 N
=====*_Rendition_* 2-10=====
<!--a11fluidStatics_buoyantForce_2-->A cylinder with a radius of 0.29 m and a length of 2.3 m is held so that the top circular face is 4.7 m below the water. The mass of the block is 968.0 kg. The mass density of water is 1000kg/m^3. What is the buoyant force?
+ 5.96E3 N
- 7.21E3 N
- 8.74E3 N
- 1.06E4 N
- 1.28E4 N
=====*_Rendition_* 2-11=====
<!--a11fluidStatics_buoyantForce_2-->A cylinder with a radius of 0.28 m and a length of 2.6 m is held so that the top circular face is 4.1 m below the water. The mass of the block is 831.0 kg. The mass density of water is 1000kg/m^3. What is the buoyant force?
- 5.18E3 N
+ 6.28E3 N
- 7.60E3 N
- 9.21E3 N
- 1.12E4 N
=====*_Rendition_* 2-12=====
<!--a11fluidStatics_buoyantForce_2-->A cylinder with a radius of 0.38 m and a length of 2.3 m is held so that the top circular face is 4.5 m below the water. The mass of the block is 909.0 kg. The mass density of water is 1000kg/m^3. What is the buoyant force?
- 6.97E3 N
- 8.44E3 N
+ 1.02E4 N
- 1.24E4 N
- 1.50E4 N
=====*_Rendition_* 2-13=====
<!--a11fluidStatics_buoyantForce_2-->A cylinder with a radius of 0.25 m and a length of 3.5 m is held so that the top circular face is 3.3 m below the water. The mass of the block is 922.0 kg. The mass density of water is 1000kg/m^3. What is the buoyant force?
- 5.56E3 N

+ 6.73E3 N
- 8.16E3 N
- 9.89E3 N
- 1.20E4 N
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a11fluidStatics_buoyantForce_3-->A cylinder with a radius of 0.25 m and a length of 2.5 m is held so that the top circular face is 4.2 m below the water. The mass of the block is 853.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the water at the top surface?
+ 8.08E3 N
- 1.02E4 N
- 1.28E4 N
- 1.61E4 N
- 2.03E4 N
=====*_Rendition_* 3-3=====
<!--a11fluidStatics_buoyantForce_3-->A cylinder with a radius of 0.38 m and a length of 2.2 m is held so that the top circular face is 3.8 m below the water. The mass of the block is 903.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the water at the top surface?
- 1.07E4 N
- 1.34E4 N
+ 1.69E4 N
- 2.13E4 N
- 2.68E4 N
=====*_Rendition_* 3-4=====
<!--a11fluidStatics_buoyantForce_3-->A cylinder with a radius of 0.38 m and a length of 3.6 m is held so that the top circular face is 4.2 m below the water. The mass of the block is 829.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the water at the top surface?
- 1.48E4 N
+ 1.87E4 N
- 2.35E4 N
- 2.96E4 N
- 3.73E4 N
=====*_Rendition_* 3-5=====
<!--a11fluidStatics_buoyantForce_3-->A cylinder with a radius of 0.28 m and a length of 2.9 m is held so that the top circular face is 4.6 m below the water. The mass of the block is 880.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the water at the top surface?
+ 1.11E4 N
- 1.40E4 N
- 1.76E4 N
- 2.22E4 N
- 2.79E4 N
=====*_Rendition_* 3-6=====
<!--a11fluidStatics_buoyantForce_3-->A cylinder with a radius of 0.24 m and a length of 3.8 m is held so that the top circular face is 3.5 m

below the water. The mass of the block is 853.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the water at the top surface?
- 3.11E3 N
- 3.92E3 N
- 4.93E3 N
+ 6.21E3 N
- 7.81E3 N
=====*_Rendition_* 3-7=====
<!--a11fluidStatics_buoyantForce_3-->A cylinder with a radius of 0.29 m and a length of 2.8 m is held so that the top circular face is 4.6 m below the water. The mass of the block is 952.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the water at the top surface?
+ 1.19E4 N
- 1.50E4 N
- 1.89E4 N
- 2.38E4 N
- 2.99E4 N
=====*_Rendition_* 3-8=====
<!--a11fluidStatics_buoyantForce_3-->A cylinder with a radius of 0.33 m and a length of 2.9 m is held so that the top circular face is 4.1 m below the water. The mass of the block is 912.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the water at the top surface?
- 6.89E3 N
- 8.67E3 N
- 1.09E4 N
+ 1.37E4 N
- 1.73E4 N
=====*_Rendition_* 3-9=====
<!--a11fluidStatics_buoyantForce_3-->A cylinder with a radius of 0.31 m and a length of 3.5 m is held so that the top circular face is 4.8 m below the water. The mass of the block is 933.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the water at the top surface?
- 7.12E3 N
- 8.96E3 N
- 1.13E4 N
+ 1.42E4 N
- 1.79E4 N
=====*_Rendition_* 3-10=====
<!--a11fluidStatics_buoyantForce_3-->A cylinder with a radius of 0.29 m and a length of 2.3 m is held so that the top circular face is 4.7 m below the water. The mass of the block is 968.0 kg. The mass density of water is 1000kg/m^3. What is what is the force exerted by the water at the top surface?
- 6.10E3 N
- 7.68E3 N
- 9.67E3 N
+ 1.22E4 N
- 1.53E4 N

=====*_Rendition_* 3-11=====
<!--a11fluidStatics_buoyantForce_3-->A cylinder with a radius of 0.28 m and a length of 2.6 m is held so that the top circular face is 4.1 m below the water. The mass of the block is 831.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the water at the top surface?
- 6.24E3 N
- 7.86E3 N
+ 9.90E3 N
- 1.25E4 N
- 1.57E4 N
=====*_Rendition_* 3-12=====
<!--a11fluidStatics_buoyantForce_3-->A cylinder with a radius of 0.38 m and a length of 2.3 m is held so that the top circular face is 4.5 m below the water. The mass of the block is 909.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the water at the top surface?
- 1.59E4 N
+ 2.00E4 N
- 2.52E4 N
- 3.17E4 N
- 3.99E4 N
=====*_Rendition_* 3-13=====
<!--a11fluidStatics_buoyantForce_3-->A cylinder with a radius of 0.25 m and a length of 3.5 m is held so that the top circular face is 3.3 m below the water. The mass of the block is 922.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the water at the top surface?
- 4.01E3 N
- 5.04E3 N
+ 6.35E3 N
- 7.99E3 N
- 1.01E4 N
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a11fluidStatics_buoyantForce_4-->A cylinder with a radius of 0.25 m and a length of 2.5 m is held so that the top circular face is 4.2 m below the water. The mass of the block is 853.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the fluid on the bottom of the cylinder?
- 1.02E4 Pa
+ 1.29E4 Pa
- 1.62E4 Pa
- 2.04E4 Pa
- 2.57E4 Pa
=====*_Rendition_* 4-3=====
<!--a11fluidStatics_buoyantForce_4-->A cylinder with a radius of 0.38 m and a length of 2.2 m is held so that the top circular face is 3.8 m below the water. The mass of the block is 903.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the fluid on the bottom of the cylinder?
- 1.68E4 Pa

- 2.12E4 Pa
+ 2.67E4 Pa
- 3.36E4 Pa
- 4.23E4 Pa
=====*_Rendition_* 4-4=====
<!--a11fluidStatics_buoyantForce_4-->A cylinder with a radius of 0.38 m and a length of 3.6 m is held so that the top circular face is 4.2 m below the water. The mass of the block is 829.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the fluid on the bottom of the cylinder?
- 1.74E4 Pa
- 2.19E4 Pa
- 2.75E4 Pa
+ 3.47E4 Pa
- 4.37E4 Pa
=====*_Rendition_* 4-5=====
<!--a11fluidStatics_buoyantForce_4-->A cylinder with a radius of 0.28 m and a length of 2.9 m is held so that the top circular face is 4.6 m below the water. The mass of the block is 880.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the fluid on the bottom of the cylinder?
- 1.14E4 Pa
- 1.44E4 Pa
+ 1.81E4 Pa
- 2.28E4 Pa
- 2.87E4 Pa
=====*_Rendition_* 4-6=====
<!--a11fluidStatics_buoyantForce_4-->A cylinder with a radius of 0.24 m and a length of 3.8 m is held so that the top circular face is 3.5 m below the water. The mass of the block is 853.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the fluid on the bottom of the cylinder?
- 8.17E3 Pa
- 1.03E4 Pa
+ 1.29E4 Pa
- 1.63E4 Pa
- 2.05E4 Pa
=====*_Rendition_* 4-7=====
<!--a11fluidStatics_buoyantForce_4-->A cylinder with a radius of 0.29 m and a length of 2.8 m is held so that the top circular face is 4.6 m below the water. The mass of the block is 952.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the fluid on the bottom of the cylinder?
- 1.52E4 Pa
+ 1.92E4 Pa
- 2.41E4 Pa
- 3.04E4 Pa
- 3.82E4 Pa
=====*_Rendition_* 4-8=====
<!--a11fluidStatics_buoyantForce_4-->A cylinder with a radius of 0.33 m and a length of 2.9 m is held so that the top circular face is 4.1 m below the water. The mass of the block is 912.0 kg. The mass density

of water is 1000kg/m^3. What is is the force exerted by the fluid on the bottom of the cylinder?
+ 2.35E4 Pa
- 2.95E4 Pa
- 3.72E4 Pa
- 4.68E4 Pa
- 5.90E4 Pa
=====*_Rendition_* 4-9=====
<!--a11fluidStatics_buoyantForce_4-->A cylinder with a radius of 0.31 m and a length of 3.5 m is held so that the top circular face is 4.8 m below the water. The mass of the block is 933.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the fluid on the bottom of the cylinder?
- 1.95E4 Pa
+ 2.46E4 Pa
- 3.09E4 Pa
- 3.89E4 Pa
- 4.90E4 Pa
=====*_Rendition_* 4-10=====
<!--a11fluidStatics_buoyantForce_4-->A cylinder with a radius of 0.29 m and a length of 2.3 m is held so that the top circular face is 4.7 m below the water. The mass of the block is 968.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the fluid on the bottom of the cylinder?
- 1.44E4 Pa
+ 1.81E4 Pa
- 2.28E4 Pa
- 2.87E4 Pa
- 3.62E4 Pa
=====*_Rendition_* 4-11=====
<!--a11fluidStatics_buoyantForce_4-->A cylinder with a radius of 0.28 m and a length of 2.6 m is held so that the top circular face is 4.1 m below the water. The mass of the block is 831.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the fluid on the bottom of the cylinder?
- 8.11E3 Pa
- 1.02E4 Pa
- 1.28E4 Pa
+ 1.62E4 Pa
- 2.04E4 Pa
=====*_Rendition_* 4-12=====
<!--a11fluidStatics_buoyantForce_4-->A cylinder with a radius of 0.38 m and a length of 2.3 m is held so that the top circular face is 4.5 m below the water. The mass of the block is 909.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the fluid on the bottom of the cylinder?
+ 3.02E4 Pa
- 3.81E4 Pa
- 4.79E4 Pa
- 6.03E4 Pa
- 7.59E4 Pa
=====*_Rendition_* 4-13=====

<!--a11fluidStatics_buoyantForce_4-->A cylinder with a radius of 0.25 m and a length of 3.5 m is held so that the top circular face is 3.3 m below the water. The mass of the block is 922.0 kg. The mass density of water is 1000kg/m^3. What is the force exerted by the fluid on the bottom of the cylinder?
- 8.26E3 Pa
- 1.04E4 Pa
+ 1.31E4 Pa
- 1.65E4 Pa
- 2.07E4 Pa
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Instructions are forthcoming

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{<!--a12fluidDynamics_pipeDiameter_1-->A 8.3 cm diameter pipe can fill a 1.7 m^3 volume in 6.0 minutes. Before exiting the pipe, the diameter is reduced to 3.0 cm (with no loss of flow rate). What is the speed in the first (wider) pipe?}
-a) 7.20E-1 m/s
+b) 8.73E-1 m/s
-c) 1.06E0 m/s
-d) 1.28E0 m/s
-e) 1.55E0 m/s

{<!--a12fluidDynamics_pipeDiameter_2-->A 8.3 cm diameter pipe can fill a 1.7 m^3 volume in 6.0 minutes. Before exiting the pipe, the diameter

is reduced to 3.0 cm (with no loss of flow rate). What is the pressure difference (in Pascals) between the two regions of the pipe?}
-a) 1.81E4
+b) 2.19E4
-c) 2.66E4
-d) 3.22E4
-e) 3.90E4

{<!--a12fluidDynamics_pipeDiameter_3-->A 8.3 cm diameter pipe can fill a 1.7 m^3 volume in 6.0 minutes. Before exiting the pipe, the diameter is reduced to 3.0 cm (with no loss of flow rate). If two fluid elements at the center of the pipe are separated by 19.0 mm when they are both in the wide pipe, and we neglect turbulence, what is the separation when both are in the narrow pipe?}
+a) 1.45E2 mm
-b) 1.76E2 mm
-c) 2.13E2 mm
-d) 2.59E2 mm
-e) 3.13E2 mm

{<!--a12fluidDynamics_pipeDiameter_4-->A large cylinder is filled with water so that the bottom is 7.8 m below the waterline. At the bottom is a small hole with a diameter of 5.4E-4 m. How fast is the water flowing at the hole? (Neglect viscous effects, turbulence, and also assume that the hole is so small that no significant motion occurs at the top of the cylinder.)}
-a) 8.42E0 m/s
-b) 1.02E1 m/s
+c) 1.24E1 m/s
-d) 1.50E1 m/s
-e) 1.81E1 m/s

</quiz>

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Other renditions
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====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a12fluidDynamics_pipeDiameter_1-->A 9.4 cm diameter pipe can fill a 2.2 m^3 volume in 5.0 minutes. Before exiting the pipe, the diameter is reduced to 3.1 cm (with no loss of flow rate). What is the speed in the first (wider) pipe?
-a) 5.94E-1 m/s
-b) 7.20E-1 m/s
-c) 8.72E-1 m/s
+d) 1.06E0 m/s
-e) 1.28E0 m/s
=====*_Rendition_* 1-3=====

<!--a12fluidDynamics_pipeDiameter_1-->A 9.7 cm diameter pipe can fill a 1.2 m^3 volume in 4.0 minutes. Before exiting the pipe, the diameter is reduced to 4.3 cm (with no loss of flow rate). What is the speed in the first (wider) pipe?
-a) 4.61E-1 m/s
-b) 5.58E-1 m/s
+c) 6.77E-1 m/s
-d) 8.20E-1 m/s
-e) 9.93E-1 m/s
=====*_Rendition_* 1-4=====
<!--a12fluidDynamics_pipeDiameter_1-->A 9.2 cm diameter pipe can fill a 1.6 m^3 volume in 8.0 minutes. Before exiting the pipe, the diameter is reduced to 4.0 cm (with no loss of flow rate). What is the speed in the first (wider) pipe?
+a) 5.01E-1 m/s
-b) 6.08E-1 m/s
-c) 7.36E-1 m/s
-d) 8.92E-1 m/s
-e) 1.08E0 m/s
=====*_Rendition_* 1-5=====
<!--a12fluidDynamics_pipeDiameter_1-->A 6.4 cm diameter pipe can fill a 1.8 m^3 volume in 8.0 minutes. Before exiting the pipe, the diameter is reduced to 3.7 cm (with no loss of flow rate). What is the speed in the first (wider) pipe?
-a) 7.94E-1 m/s
-b) 9.62E-1 m/s
+c) 1.17E0 m/s
-d) 1.41E0 m/s
-e) 1.71E0 m/s
=====*_Rendition_* 1-6=====
<!--a12fluidDynamics_pipeDiameter_1-->A 6.4 cm diameter pipe can fill a 1.6 m^3 volume in 4.0 minutes. Before exiting the pipe, the diameter is reduced to 4.8 cm (with no loss of flow rate). What is the speed in the first (wider) pipe?
+a) 2.07E0 m/s
-b) 2.51E0 m/s
-c) 3.04E0 m/s
-d) 3.69E0 m/s
-e) 4.46E0 m/s
=====*_Rendition_* 1-7=====
<!--a12fluidDynamics_pipeDiameter_1-->A 9.4 cm diameter pipe can fill a 1.5 m^3 volume in 7.0 minutes. Before exiting the pipe, the diameter is reduced to 1.7 cm (with no loss of flow rate). What is the speed in the first (wider) pipe?
-a) 2.89E-1 m/s
-b) 3.51E-1 m/s
-c) 4.25E-1 m/s
+d) 5.15E-1 m/s
-e) 6.23E-1 m/s
=====*_Rendition_* 1-8=====
<!--a12fluidDynamics_pipeDiameter_1-->A 6.5 cm diameter pipe can fill a 1.8 m^3 volume in 4.0 minutes. Before exiting the pipe, the diameter

is reduced to 2.3 cm (with no loss of flow rate). What is the speed in the first (wider) pipe?
-a) 1.27E0 m/s
-b) 1.54E0 m/s
-c) 1.87E0 m/s
+d) 2.26E0 m/s
-e) 2.74E0 m/s
=====*_Rendition_* 1-9=====
<!--a12fluidDynamics_pipeDiameter_1-->A 6.7 cm diameter pipe can fill a 2.2 m^3 volume in 8.0 minutes. Before exiting the pipe, the diameter is reduced to 2.3 cm (with no loss of flow rate). What is the speed in the first (wider) pipe?
-a) 8.86E-1 m/s
-b) 1.07E0 m/s
+c) 1.30E0 m/s
-d) 1.57E0 m/s
-e) 1.91E0 m/s
=====*_Rendition_* 1-10=====
<!--a12fluidDynamics_pipeDiameter_1-->A 6.3 cm diameter pipe can fill a 1.4 m^3 volume in 8.0 minutes. Before exiting the pipe, the diameter is reduced to 4.8 cm (with no loss of flow rate). What is the speed in the first (wider) pipe?
-a) 7.72E-1 m/s
+b) 9.36E-1 m/s
-c) 1.13E0 m/s
-d) 1.37E0 m/s
-e) 1.66E0 m/s
=====*_Rendition_* 1-11=====
<!--a12fluidDynamics_pipeDiameter_1-->A 7.0 cm diameter pipe can fill a 2.1 m^3 volume in 8.0 minutes. Before exiting the pipe, the diameter is reduced to 1.7 cm (with no loss of flow rate). What is the speed in the first (wider) pipe?
+a) 1.14E0 m/s
-b) 1.38E0 m/s
-c) 1.67E0 m/s
-d) 2.02E0 m/s
-e) 2.45E0 m/s
=====*_Rendition_* 1-12=====
<!--a12fluidDynamics_pipeDiameter_1-->A 7.9 cm diameter pipe can fill a 1.5 m^3 volume in 7.0 minutes. Before exiting the pipe, the diameter is reduced to 2.7 cm (with no loss of flow rate). What is the speed in the first (wider) pipe?
-a) 6.01E-1 m/s
+b) 7.29E-1 m/s
-c) 8.83E-1 m/s
-d) 1.07E0 m/s
-e) 1.30E0 m/s
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a12fluidDynamics_pipeDiameter_2-->A 9.4 cm diameter pipe can fill a 2.2 m^3 volume in 5.0 minutes. Before exiting the pipe, the diameter is reduced to 3.1 cm (with no loss of flow rate). What is the pressure

difference (in Pascals) between the two regions of the pipe?
-a) 3.85E4
+b) 4.66E4
-c) 5.65E4
-d) 6.85E4
-e) 8.29E4
=====*_Rendition_* 2-3=====
<!--a12fluidDynamics_pipeDiameter_2-->A 9.7 cm diameter pipe can fill a 1.2 m^3 volume in 4.0 minutes. Before exiting the pipe, the diameter is reduced to 4.3 cm (with no loss of flow rate). What is the pressure difference (in Pascals) between the two regions of the pipe?
+a) 5.70E3
-b) 6.90E3
-c) 8.36E3
-d) 1.01E4
-e) 1.23E4
=====*_Rendition_* 2-4=====
<!--a12fluidDynamics_pipeDiameter_2-->A 9.2 cm diameter pipe can fill a 1.6 m^3 volume in 8.0 minutes. Before exiting the pipe, the diameter is reduced to 4.0 cm (with no loss of flow rate). What is the pressure difference (in Pascals) between the two regions of the pipe?
-a) 1.91E3
-b) 2.31E3
-c) 2.80E3
+d) 3.39E3
-e) 4.11E3
=====*_Rendition_* 2-5=====
<!--a12fluidDynamics_pipeDiameter_2-->A 6.4 cm diameter pipe can fill a 1.8 m^3 volume in 8.0 minutes. Before exiting the pipe, the diameter is reduced to 3.7 cm (with no loss of flow rate). What is the pressure difference (in Pascals) between the two regions of the pipe?
-a) 3.04E3
-b) 3.68E3
-c) 4.46E3
+d) 5.40E3
-e) 6.55E3
=====*_Rendition_* 2-6=====
<!--a12fluidDynamics_pipeDiameter_2-->A 6.4 cm diameter pipe can fill a 1.6 m^3 volume in 4.0 minutes. Before exiting the pipe, the diameter is reduced to 4.8 cm (with no loss of flow rate). What is the pressure difference (in Pascals) between the two regions of the pipe?
+a) 4.64E3
-b) 5.62E3
-c) 6.81E3
-d) 8.25E3
-e) 9.99E3
=====*_Rendition_* 2-7=====
<!--a12fluidDynamics_pipeDiameter_2-->A 9.4 cm diameter pipe can fill a 1.5 m^3 volume in 7.0 minutes. Before exiting the pipe, the diameter is reduced to 1.7 cm (with no loss of flow rate). What is the pressure difference (in Pascals) between the two regions of the pipe?
+a) 1.24E5

-b) 1.50E5
-c) 1.82E5
-d) 2.20E5
-e) 2.66E5
=====*_Rendition_* 2-8=====
<!--a12fluidDynamics_pipeDiameter_2-->A 6.5 cm diameter pipe can fill a 1.8 m^3 volume in 4.0 minutes. Before exiting the pipe, the diameter is reduced to 2.3 cm (with no loss of flow rate). What is the pressure difference (in Pascals) between the two regions of the pipe?
+a) 1.60E5
-b) 1.94E5
-c) 2.35E5
-d) 2.85E5
-e) 3.46E5
=====*_Rendition_* 2-9=====
<!--a12fluidDynamics_pipeDiameter_2-->A 6.7 cm diameter pipe can fill a 2.2 m^3 volume in 8.0 minutes. Before exiting the pipe, the diameter is reduced to 2.3 cm (with no loss of flow rate). What is the pressure difference (in Pascals) between the two regions of the pipe?
+a) 6.00E4
-b) 7.27E4
-c) 8.81E4
-d) 1.07E5
-e) 1.29E5
=====*_Rendition_* 2-10=====
<!--a12fluidDynamics_pipeDiameter_2-->A 6.3 cm diameter pipe can fill a 1.4 m^3 volume in 8.0 minutes. Before exiting the pipe, the diameter is reduced to 4.8 cm (with no loss of flow rate). What is the pressure difference (in Pascals) between the two regions of the pipe?
-a) 4.84E2
-b) 5.87E2
-c) 7.11E2
+d) 8.61E2
-e) 1.04E3
=====*_Rendition_* 2-11=====
<!--a12fluidDynamics_pipeDiameter_2-->A 7.0 cm diameter pipe can fill a 2.1 m^3 volume in 8.0 minutes. Before exiting the pipe, the diameter is reduced to 1.7 cm (with no loss of flow rate). What is the pressure difference (in Pascals) between the two regions of the pipe?
-a) 1.26E5
-b) 1.53E5
+c) 1.85E5
-d) 2.24E5
-e) 2.72E5
=====*_Rendition_* 2-12=====
<!--a12fluidDynamics_pipeDiameter_2-->A 7.9 cm diameter pipe can fill a 1.5 m^3 volume in 7.0 minutes. Before exiting the pipe, the diameter is reduced to 2.7 cm (with no loss of flow rate). What is the pressure difference (in Pascals) between the two regions of the pipe?
-a) 1.08E4
-b) 1.31E4
-c) 1.58E4

+d) 1.92E4
-e) 2.32E4
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a12fluidDynamics_pipeDiameter_3-->A 9.4 cm diameter pipe can fill a 2.2 m^3 volume in 5.0 minutes. Before exiting the pipe, the diameter is reduced to 3.1 cm (with no loss of flow rate). If two fluid elements at the center of the pipe are separated by 21.0 mm when they are both in the wide pipe, and we neglect turbulence, what is the separation when both are in the narrow pipe?
-a) 1.59E2 mm
+b) 1.93E2 mm
-c) 2.34E2 mm
-d) 2.83E2 mm
-e) 3.43E2 mm
=====*_Rendition_* 3-3=====
<!--a12fluidDynamics_pipeDiameter_3-->A 9.7 cm diameter pipe can fill a 1.2 m^3 volume in 4.0 minutes. Before exiting the pipe, the diameter is reduced to 4.3 cm (with no loss of flow rate). If two fluid elements at the center of the pipe are separated by 22.0 mm when they are both in the wide pipe, and we neglect turbulence, what is the separation when both are in the narrow pipe?
-a) 6.30E1 mm
-b) 7.63E1 mm
-c) 9.24E1 mm
+d) 1.12E2 mm
-e) 1.36E2 mm
=====*_Rendition_* 3-4=====
<!--a12fluidDynamics_pipeDiameter_3-->A 9.2 cm diameter pipe can fill a 1.6 m^3 volume in 8.0 minutes. Before exiting the pipe, the diameter is reduced to 4.0 cm (with no loss of flow rate). If two fluid elements at the center of the pipe are separated by 34.0 mm when they are both in the wide pipe, and we neglect turbulence, what is the separation when both are in the narrow pipe?
-a) 1.23E2 mm
-b) 1.48E2 mm
+c) 1.80E2 mm
-d) 2.18E2 mm
-e) 2.64E2 mm
=====*_Rendition_* 3-5=====
<!--a12fluidDynamics_pipeDiameter_3-->A 6.4 cm diameter pipe can fill a 1.8 m^3 volume in 8.0 minutes. Before exiting the pipe, the diameter is reduced to 3.7 cm (with no loss of flow rate). If two fluid elements at the center of the pipe are separated by 18.0 mm when they are both in the wide pipe, and we neglect turbulence, what is the separation when both are in the narrow pipe?
-a) 4.45E1 mm
+b) 5.39E1 mm
-c) 6.52E1 mm
-d) 7.90E1 mm
-e) 9.58E1 mm
=====*_Rendition_* 3-6=====

<!--a12fluidDynamics_pipeDiameter_3-->A 6.4 cm diameter pipe can fill a 1.6 m^3 volume in 4.0 minutes. Before exiting the pipe, the diameter is reduced to 4.8 cm (with no loss of flow rate). If two fluid elements at the center of the pipe are separated by 28.0 mm when they are both in the wide pipe, and we neglect turbulence, what is the separation when both are in the narrow pipe?
-a) 2.80E1 mm
-b) 3.39E1 mm
-c) 4.11E1 mm
+d) 4.98E1 mm
-e) 6.03E1 mm
=====*_Rendition_* 3-7=====
<!--a12fluidDynamics_pipeDiameter_3-->A 9.4 cm diameter pipe can fill a 1.5 m^3 volume in 7.0 minutes. Before exiting the pipe, the diameter is reduced to 1.7 cm (with no loss of flow rate). If two fluid elements at the center of the pipe are separated by 37.0 mm when they are both in the wide pipe, and we neglect turbulence, what is the separation when both are in the narrow pipe?
-a) 9.34E2 mm
+b) 1.13E3 mm
-c) 1.37E3 mm
-d) 1.66E3 mm
-e) 2.01E3 mm
=====*_Rendition_* 3-8=====
<!--a12fluidDynamics_pipeDiameter_3-->A 6.5 cm diameter pipe can fill a 1.8 m^3 volume in 4.0 minutes. Before exiting the pipe, the diameter is reduced to 2.3 cm (with no loss of flow rate). If two fluid elements at the center of the pipe are separated by 30.0 mm when they are both in the wide pipe, and we neglect turbulence, what is the separation when both are in the narrow pipe?
-a) 1.63E2 mm
-b) 1.98E2 mm
+c) 2.40E2 mm
-d) 2.90E2 mm
-e) 3.52E2 mm
=====*_Rendition_* 3-9=====
<!--a12fluidDynamics_pipeDiameter_3-->A 6.7 cm diameter pipe can fill a 2.2 m^3 volume in 8.0 minutes. Before exiting the pipe, the diameter is reduced to 2.3 cm (with no loss of flow rate). If two fluid elements at the center of the pipe are separated by 16.0 mm when they are both in the wide pipe, and we neglect turbulence, what is the separation when both are in the narrow pipe?
-a) 9.25E1 mm
-b) 1.12E2 mm
+c) 1.36E2 mm
-d) 1.64E2 mm
-e) 1.99E2 mm
=====*_Rendition_* 3-10=====
<!--a12fluidDynamics_pipeDiameter_3-->A 6.3 cm diameter pipe can fill a 1.4 m^3 volume in 8.0 minutes. Before exiting the pipe, the diameter is reduced to 4.8 cm (with no loss of flow rate). If two fluid elements at the center of the pipe are separated by 32.0 mm when they

are both in the wide pipe, and we neglect turbulence, what is the separation when both are in the narrow pipe?
-a) 3.10E1 mm
-b) 3.76E1 mm
-c) 4.55E1 mm
+d) 5.51E1 mm
-e) 6.68E1 mm
=====*_Rendition_* 3-11=====
<!--a12fluidDynamics_pipeDiameter_3-->A 7.0 cm diameter pipe can fill a 2.1 m^3 volume in 8.0 minutes. Before exiting the pipe, the diameter is reduced to 1.7 cm (with no loss of flow rate). If two fluid elements at the center of the pipe are separated by 29.0 mm when they are both in the wide pipe, and we neglect turbulence, what is the separation when both are in the narrow pipe?
-a) 4.06E2 mm
+b) 4.92E2 mm
-c) 5.96E2 mm
-d) 7.22E2 mm
-e) 8.74E2 mm
=====*_Rendition_* 3-12=====
<!--a12fluidDynamics_pipeDiameter_3-->A 7.9 cm diameter pipe can fill a 1.5 m^3 volume in 7.0 minutes. Before exiting the pipe, the diameter is reduced to 2.7 cm (with no loss of flow rate). If two fluid elements at the center of the pipe are separated by 28.0 mm when they are both in the wide pipe, and we neglect turbulence, what is the separation when both are in the narrow pipe?
-a) 1.35E2 mm
-b) 1.63E2 mm
-c) 1.98E2 mm
+d) 2.40E2 mm
-e) 2.90E2 mm
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a12fluidDynamics_pipeDiameter_4-->A large cylinder is filled with water so that the bottom is 8.6 m below the waterline. At the bottom is a small hole with a diameter of 9.1E-4 m. How fast is the water flowing at the hole? (Neglect viscous effects, turbulence, and also assume that the hole is so small that no significant motion occurs at the top of the cylinder.)
+a) 1.30E1 m/s
-b) 1.57E1 m/s
-c) 1.91E1 m/s
-d) 2.31E1 m/s
-e) 2.80E1 m/s
=====*_Rendition_* 4-3=====
<!--a12fluidDynamics_pipeDiameter_4-->A large cylinder is filled with water so that the bottom is 8.8 m below the waterline. At the bottom is a small hole with a diameter of 6.3E-4 m. How fast is the water flowing at the hole? (Neglect viscous effects, turbulence, and also assume that the hole is so small that no significant motion occurs at the top of the cylinder.)
-a) 1.08E1 m/s

+b) 1.31E1 m/s
-c) 1.59E1 m/s
-d) 1.93E1 m/s
-e) 2.34E1 m/s
=====*_Rendition_* 4-4=====
<!--a12fluidDynamics_pipeDiameter_4-->A large cylinder is filled with water so that the bottom is 8.0 m below the waterline. At the bottom is a small hole with a diameter of 9.1E-4 m. How fast is the water flowing at the hole? (Neglect viscous effects, turbulence, and also assume that the hole is so small that no significant motion occurs at the top of the cylinder.)
-a) 7.04E0 m/s
-b) 8.53E0 m/s
-c) 1.03E1 m/s
+d) 1.25E1 m/s
-e) 1.52E1 m/s
=====*_Rendition_* 4-5=====
<!--a12fluidDynamics_pipeDiameter_4-->A large cylinder is filled with water so that the bottom is 7.0 m below the waterline. At the bottom is a small hole with a diameter of 7.8E-4 m. How fast is the water flowing at the hole? (Neglect viscous effects, turbulence, and also assume that the hole is so small that no significant motion occurs at the top of the cylinder.)
-a) 7.98E0 m/s
-b) 9.67E0 m/s
+c) 1.17E1 m/s
-d) 1.42E1 m/s
-e) 1.72E1 m/s
=====*_Rendition_* 4-6=====
<!--a12fluidDynamics_pipeDiameter_4-->A large cylinder is filled with water so that the bottom is 7.0 m below the waterline. At the bottom is a small hole with a diameter of 8.2E-4 m. How fast is the water flowing at the hole? (Neglect viscous effects, turbulence, and also assume that the hole is so small that no significant motion occurs at the top of the cylinder.)
-a) 7.98E0 m/s
-b) 9.67E0 m/s
+c) 1.17E1 m/s
-d) 1.42E1 m/s
-e) 1.72E1 m/s
=====*_Rendition_* 4-7=====
<!--a12fluidDynamics_pipeDiameter_4-->A large cylinder is filled with water so that the bottom is 5.7 m below the waterline. At the bottom is a small hole with a diameter of 5.7E-4 m. How fast is the water flowing at the hole? (Neglect viscous effects, turbulence, and also assume that the hole is so small that no significant motion occurs at the top of the cylinder.)
-a) 5.94E0 m/s
-b) 7.20E0 m/s
-c) 8.72E0 m/s
+d) 1.06E1 m/s
-e) 1.28E1 m/s

=====*_Rendition_* 4-8=====
<!--a12fluidDynamics_pipeDiameter_4-->A large cylinder is filled with water so that the bottom is 6.8 m below the waterline. At the bottom is a small hole with a diameter of 7.4E-4 m. How fast is the water flowing at the hole? (Neglect viscous effects, turbulence, and also assume that the hole is so small that no significant motion occurs at the top of the cylinder.)
-a) 9.53E0 m/s
+b) 1.15E1 m/s
-c) 1.40E1 m/s
-d) 1.69E1 m/s
-e) 2.05E1 m/s
=====*_Rendition_* 4-9=====
<!--a12fluidDynamics_pipeDiameter_4-->A large cylinder is filled with water so that the bottom is 6.4 m below the waterline. At the bottom is a small hole with a diameter of 9.7E-4 m. How fast is the water flowing at the hole? (Neglect viscous effects, turbulence, and also assume that the hole is so small that no significant motion occurs at the top of the cylinder.)
-a) 9.24E0 m/s
+b) 1.12E1 m/s
-c) 1.36E1 m/s
-d) 1.64E1 m/s
-e) 1.99E1 m/s
=====*_Rendition_* 4-10=====
<!--a12fluidDynamics_pipeDiameter_4-->A large cylinder is filled with water so that the bottom is 8.9 m below the waterline. At the bottom is a small hole with a diameter of 7.6E-4 m. How fast is the water flowing at the hole? (Neglect viscous effects, turbulence, and also assume that the hole is so small that no significant motion occurs at the top of the cylinder.)
-a) 1.09E1 m/s
+b) 1.32E1 m/s
-c) 1.60E1 m/s
-d) 1.94E1 m/s
-e) 2.35E1 m/s
=====*_Rendition_* 4-11=====
<!--a12fluidDynamics_pipeDiameter_4-->A large cylinder is filled with water so that the bottom is 5.4 m below the waterline. At the bottom is a small hole with a diameter of 9.6E-4 m. How fast is the water flowing at the hole? (Neglect viscous effects, turbulence, and also assume that the hole is so small that no significant motion occurs at the top of the cylinder.)
-a) 7.01E0 m/s
-b) 8.49E0 m/s
+c) 1.03E1 m/s
-d) 1.25E1 m/s
-e) 1.51E1 m/s
=====*_Rendition_* 4-12=====
<!--a12fluidDynamics_pipeDiameter_4-->A large cylinder is filled with water so that the bottom is 7.8 m below the waterline. At the bottom is a small hole with a diameter of 5.4E-4 m. How fast is the water

flowing at the hole? (Neglect viscous effects, turbulence, and also assume that the hole is so small that no significant motion occurs at the top of the cylinder.)
-a) 8.42E0 m/s
-b) 1.02E1 m/s
+c) 1.24E1 m/s
-d) 1.50E1 m/s
-e) 1.81E1 m/s
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====*_Instructions_*====
Instructions are forthcoming

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{<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_1-->What is the root-mean-square of 27, 4, and -39?}
-a) 1.734 x 10¹
-b) 1.946 x 10¹
-c) 2.183 x 10¹
-d) 2.449 x 10¹
+e) 2.748 x 10¹

{<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_2-->What is the rms speed of a molecule with an atomic mass of 9 if the temperature is 60 degrees Fahrenheit?}
-a) 5.03 x 10² m/s
-b) 6.09 x 10² m/s

-c) 7.38 x 10² m/s
+d) 8.95 x 10² m/s
-e) 1.08 x 10³ m/s

{<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_3-->If a molecule with atomic mass equal to 7 amu has a speed of 289 m/s, what is the speed at an atom in the same atmosphere of a molecule with an atomic mass of 22 ?}
-a) 1.11 x 10² m/s
-b) 1.35 x 10² m/s
+c) 1.63 x 10² m/s
-d) 1.98 x 10² m/s
-e) 2.39 x 10² m/s

</quiz>

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Other renditions
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====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_1-->What is the root-mean-square of 33, 27, and -39?
-a) 2.105 x 10¹
-b) 2.362 x 10¹
-c) 2.65 x 10¹
-d) 2.973 x 10¹
+e) 3.336 x 10¹
=====*_Rendition_* 1-3=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_1-->What is the root-mean-square of 6, -2, and -44?
-a) 1.619 x 10¹
-b) 1.817 x 10¹
-c) 2.039 x 10¹
-d) 2.287 x 10¹
+e) 2.566 x 10¹
=====*_Rendition_* 1-4=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_1-->What is the root-mean-square of 44, 4, and 36?
-a) 2.614 x 10¹
-b) 2.933 x 10¹
+c) 3.29 x 10¹
-d) 3.692 x 10¹
-e) 4.142 x 10¹
=====*_Rendition_* 1-5=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_1-->What is the root-mean-square of -20, 40, and -32?
-a) 2.522 x 10¹
-b) 2.83 x 10¹

+c) 3.175 x 10¹
-d) 3.562 x 10¹
-e) 3.997 x 10¹
=====*_Rendition_* 1-6=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_1-->What is the root-mean-square of 36, 6, and -23?
-a) 1.763 x 10¹
-b) 1.978 x 10¹
-c) 2.22 x 10¹
+d) 2.491 x 10¹
-e) 2.795 x 10¹
=====*_Rendition_* 1-7=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_1-->What is the root-mean-square of -28, -38, and -13?
-a) 2.519 x 10¹
+b) 2.827 x 10¹
-c) 3.172 x 10¹
-d) 3.559 x 10¹
-e) 3.993 x 10¹
=====*_Rendition_* 1-8=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_1-->What is the root-mean-square of 9, -17, and -8?
+a) 1.203 x 10¹
-b) 1.35 x 10¹
-c) 1.514 x 10¹
-d) 1.699 x 10¹
-e) 1.906 x 10¹
=====*_Rendition_* 1-9=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_1-->What is the root-mean-square of -46, -13, and 17?
-a) 2.074 x 10¹
-b) 2.327 x 10¹
-c) 2.611 x 10¹
+d) 2.929 x 10¹
-e) 3.287 x 10¹
=====*_Rendition_* 1-10=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_1-->What is the root-mean-square of 28, 21, and 32?
-a) 2.44 x 10¹
+b) 2.738 x 10¹
-c) 3.072 x 10¹
-d) 3.447 x 10¹
-e) 3.868 x 10¹
=====*_Rendition_* 1-11=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_1-->What is the root-mean-square of 5, 7, and 0?
-a) 4.426 x 10⁰
+b) 4.967 x 10⁰
-c) 5.573 x 10⁰
-d) 6.253 x 10⁰
-e) 7.015 x 10⁰
=====*_Rendition_* 1-12=====

<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_1-->What is the root-mean-square of -19, -16, and -19?
-a) 1.278 x 10¹
-b) 1.434 x 10¹
-c) 1.609 x 10¹
+d) 1.806 x 10¹
-e) 2.026 x 10¹
=====*_Rendition_* 1-13=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_1-->What is the root-mean-square of 11, 36, and 4?
-a) 1.948 x 10¹
+b) 2.186 x 10¹
-c) 2.452 x 10¹
-d) 2.751 x 10¹
-e) 3.087 x 10¹
=====*_Rendition_* 1-14=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_1-->What is the root-mean-square of 45, 23, and -43?
-a) 3.414 x 10¹
+b) 3.831 x 10¹
-c) 4.298 x 10¹
-d) 4.823 x 10¹
-e) 5.411 x 10¹
=====*_Rendition_* 1-15=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_1-->What is the root-mean-square of 1, 9, and -10?
-a) 4.914 x 10⁰
-b) 5.514 x 10⁰
-c) 6.187 x 10⁰
-d) 6.942 x 10⁰
+e) 7.789 x 10⁰
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_2-->What is the rms speed of a molecule with an atomic mass of 20 if the temperature is 86 degrees Fahrenheit?
+a) 6.15 x 10² m/s
-b) 7.45 x 10² m/s
-c) 9.03 x 10² m/s
-d) 1.09 x 10³ m/s
-e) 1.32 x 10³ m/s
=====*_Rendition_* 2-3=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_2-->What is the rms speed of a molecule with an atomic mass of 7 if the temperature is 107 degrees Fahrenheit?
-a) 7.22 x 10² m/s
-b) 8.74 x 10² m/s
+c) 1.06 x 10³ m/s
-d) 1.28 x 10³ m/s
-e) 1.55 x 10³ m/s
=====*_Rendition_* 2-4=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_2-->What is the rms

speed of a molecule with an atomic mass of 11 if the temperature is 102 degrees Fahrenheit?
-a) 3.9 x 10² m/s
-b) 4.73 x 10² m/s
-c) 5.73 x 10² m/s
-d) 6.94 x 10² m/s
+e) 8.41 x 10² m/s
=====*_Rendition_* 2-5=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_2-->What is the rms speed of a molecule with an atomic mass of 19 if the temperature is 65 degrees Fahrenheit?
-a) 5.11 x 10² m/s
+b) 6.19 x 10² m/s
-c) 7.49 x 10² m/s
-d) 9.08 x 10² m/s
-e) 1.1 x 10³ m/s
=====*_Rendition_* 2-6=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_2-->What is the rms speed of a molecule with an atomic mass of 12 if the temperature is 93 degrees Fahrenheit?
+a) 7.99 x 10² m/s
-b) 9.68 x 10² m/s
-c) 1.17 x 10³ m/s
-d) 1.42 x 10³ m/s
-e) 1.72 x 10³ m/s
=====*_Rendition_* 2-7=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_2-->What is the rms speed of a molecule with an atomic mass of 17 if the temperature is 7 degrees Fahrenheit?
-a) 4.2 x 10² m/s
-b) 5.09 x 10² m/s
+c) 6.17 x 10² m/s
-d) 7.47 x 10² m/s
-e) 9.05 x 10² m/s
=====*_Rendition_* 2-8=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_2-->What is the rms speed of a molecule with an atomic mass of 18 if the temperature is 113 degrees Fahrenheit?
-a) 3.08 x 10² m/s
-b) 3.73 x 10² m/s
-c) 4.52 x 10² m/s
-d) 5.48 x 10² m/s
+e) 6.64 x 10² m/s
=====*_Rendition_* 2-9=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_2-->What is the rms speed of a molecule with an atomic mass of 11 if the temperature is 48 degrees Fahrenheit?
-a) 4.5 x 10² m/s
-b) 5.45 x 10² m/s
-c) 6.6 x 10² m/s
+d) 8 x 10² m/s
-e) 9.69 x 10² m/s

=====*_Rendition_* 2-10=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_2-->What is the rms speed of a molecule with an atomic mass of 14 if the temperature is 22 degrees Fahrenheit?
+a) 6.9 x 10² m/s
-b) 8.37 x 10² m/s
-c) 1.01 x 10³ m/s
-d) 1.23 x 10³ m/s
-e) 1.49 x 10³ m/s
=====*_Rendition_* 2-11=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_2-->What is the rms speed of a molecule with an atomic mass of 19 if the temperature is 78 degrees Fahrenheit?
-a) 4.27 x 10² m/s
-b) 5.17 x 10² m/s
+c) 6.26 x 10² m/s
-d) 7.59 x 10² m/s
-e) 9.19 x 10² m/s
=====*_Rendition_* 2-12=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_2-->What is the rms speed of a molecule with an atomic mass of 14 if the temperature is 10 degrees Fahrenheit?
-a) 3.16 x 10² m/s
-b) 3.83 x 10² m/s
-c) 4.65 x 10² m/s
-d) 5.63 x 10² m/s
+e) 6.82 x 10² m/s
=====*_Rendition_* 2-13=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_2-->What is the rms speed of a molecule with an atomic mass of 18 if the temperature is 12 degrees Fahrenheit?
-a) 2.8 x 10² m/s
-b) 3.39 x 10² m/s
-c) 4.11 x 10² m/s
-d) 4.97 x 10² m/s
+e) 6.03 x 10² m/s
=====*_Rendition_* 2-14=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_2-->What is the rms speed of a molecule with an atomic mass of 21 if the temperature is 58 degrees Fahrenheit?
-a) 4.82 x 10² m/s
+b) 5.84 x 10² m/s
-c) 7.08 x 10² m/s
-d) 8.58 x 10² m/s
-e) 1.04 x 10³ m/s
=====*_Rendition_* 2-15=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_2-->What is the rms speed of a molecule with an atomic mass of 17 if the temperature is 31 degrees Fahrenheit?
+a) 6.32 x 10² m/s
-b) 7.66 x 10² m/s
-c) 9.28 x 10² m/s

-d) 1.12 x 10³ m/s
-e) 1.36 x 10³ m/s
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_3-->If a molecule with atomic mass equal to 9 amu has a speed of 431 m/s, what is the speed at an atom in the same atmosphere of a molecule with an atomic mass of 23 ?
-a) 1.84 x 10² m/s
-b) 2.23 x 10² m/s
+c) 2.7 x 10² m/s
-d) 3.27 x 10² m/s
-e) 3.96 x 10² m/s
=====*_Rendition_* 3-3=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_3-->If a molecule with atomic mass equal to 7 amu has a speed of 399 m/s, what is the speed at an atom in the same atmosphere of a molecule with an atomic mass of 31 ?
-a) 8.8 x 10¹ m/s
-b) 1.07 x 10² m/s
-c) 1.29 x 10² m/s
-d) 1.56 x 10² m/s
+e) 1.9 x 10² m/s
=====*_Rendition_* 3-4=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_3-->If a molecule with atomic mass equal to 5 amu has a speed of 263 m/s, what is the speed at an atom in the same atmosphere of a molecule with an atomic mass of 21 ?
-a) 7.22 x 10¹ m/s
-b) 8.74 x 10¹ m/s
-c) 1.06 x 10² m/s
+d) 1.28 x 10² m/s
-e) 1.55 x 10² m/s
=====*_Rendition_* 3-5=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_3-->If a molecule with atomic mass equal to 2 amu has a speed of 305 m/s, what is the speed at an atom in the same atmosphere of a molecule with an atomic mass of 29 ?
+a) 8.01 x 10¹ m/s
-b) 9.7 x 10¹ m/s
-c) 1.18 x 10² m/s
-d) 1.42 x 10² m/s
-e) 1.73 x 10² m/s
=====*_Rendition_* 3-6=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_3-->If a molecule with atomic mass equal to 3 amu has a speed of 405 m/s, what is the speed at an atom in the same atmosphere of a molecule with an atomic mass of 24 ?
-a) 8.05 x 10¹ m/s
-b) 9.76 x 10¹ m/s
-c) 1.18 x 10² m/s
+d) 1.43 x 10² m/s

-e) 1.73 x 10² m/s
=====*_Rendition_* 3-7=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_3-->If a molecule with atomic mass equal to 6 amu has a speed of 265 m/s, what is the speed at an atom in the same atmosphere of a molecule with an atomic mass of 28 ?
-a) 1.01 x 10² m/s
+b) 1.23 x 10² m/s
-c) 1.49 x 10² m/s
-d) 1.8 x 10² m/s
-e) 2.18 x 10² m/s
=====*_Rendition_* 3-8=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_3-->If a molecule with atomic mass equal to 2 amu has a speed of 245 m/s, what is the speed at an atom in the same atmosphere of a molecule with an atomic mass of 31 ?
-a) 4.24 x 10¹ m/s
-b) 5.14 x 10¹ m/s
+c) 6.22 x 10¹ m/s
-d) 7.54 x 10¹ m/s
-e) 9.13 x 10¹ m/s
=====*_Rendition_* 3-9=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_3-->If a molecule with atomic mass equal to 9 amu has a speed of 445 m/s, what is the speed at an atom in the same atmosphere of a molecule with an atomic mass of 25 ?
-a) 1.82 x 10² m/s
-b) 2.2 x 10² m/s
+c) 2.67 x 10² m/s
-d) 3.23 x 10² m/s
-e) 3.92 x 10² m/s
=====*_Rendition_* 3-10=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_3-->If a molecule with atomic mass equal to 6 amu has a speed of 217 m/s, what is the speed at an atom in the same atmosphere of a molecule with an atomic mass of 30 ?
-a) 5.46 x 10¹ m/s
-b) 6.61 x 10¹ m/s
-c) 8.01 x 10¹ m/s
+d) 9.7 x 10¹ m/s
-e) 1.18 x 10² m/s
=====*_Rendition_* 3-11=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_3-->If a molecule with atomic mass equal to 8 amu has a speed of 475 m/s, what is the speed at an atom in the same atmosphere of a molecule with an atomic mass of 28 ?
-a) 1.73 x 10² m/s
-b) 2.1 x 10² m/s
+c) 2.54 x 10² m/s
-d) 3.08 x 10² m/s
-e) 3.73 x 10² m/s
=====*_Rendition_* 3-12=====

<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_3-->If a molecule with atomic mass equal to 4 amu has a speed of 353 m/s, what is the speed at an atom in the same atmosphere of a molecule with an atomic mass of 27 ?
-a) 7.64 x 10¹ m/s
-b) 9.26 x 10¹ m/s
-c) 1.12 x 10² m/s
+d) 1.36 x 10² m/s
-e) 1.65 x 10² m/s
=====*_Rendition_* 3-13=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_3-->If a molecule with atomic mass equal to 8 amu has a speed of 331 m/s, what is the speed at an atom in the same atmosphere of a molecule with an atomic mass of 27 ?
-a) 8.36 x 10¹ m/s
-b) 1.01 x 10² m/s
-c) 1.23 x 10² m/s
-d) 1.49 x 10² m/s
+e) 1.8 x 10² m/s
=====*_Rendition_* 3-14=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_3-->If a molecule with atomic mass equal to 9 amu has a speed of 249 m/s, what is the speed at an atom in the same atmosphere of a molecule with an atomic mass of 31 ?
-a) 6.23 x 10¹ m/s
-b) 7.54 x 10¹ m/s
-c) 9.14 x 10¹ m/s
-d) 1.11 x 10² m/s
+e) 1.34 x 10² m/s
=====*_Rendition_* 3-15=====
<!--a13TemperatureKineticTheoGasLaw_rmsTransfer_3-->If a molecule with atomic mass equal to 7 amu has a speed of 253 m/s, what is the speed at an atom in the same atmosphere of a molecule with an atomic mass of 26 ?
+a) 1.31 x 10² m/s
-b) 1.59 x 10² m/s
-c) 1.93 x 10² m/s
-d) 2.33 x 10² m/s
-e) 2.83 x 10² m/s
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====*_Instructions_*====
Instructions are forthcoming

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{<!--a14HeatTransfer_specifHeatConduct_1-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.98 kg is filled with 0.23 kg of water. How much heat does it take to raise both from 39.7 C to 88 C?   }
+a) 8.91 x 10⁴ J
-b) 1.05 x 10⁵ J
-c) 1.24 x 10⁵ J
-d) 1.46 x 10⁵ J
-e) 1.72 x 10⁵ J

{<!--a14HeatTransfer_specifHeatConduct_2-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.98 kg is filled with 0.23 kg of water. What fraction of the heat went into the aluminum?
}
-a) 2.9 x 10⁻¹
-b) 3.4 x 10⁻¹
-c) 4.1 x 10⁻¹
+d) 4.8 x 10⁻¹
-e) 5.6 x 10⁻¹

{<!--a14HeatTransfer_specifHeatConduct_3-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.98 kg is filled with 0.23 kg of water. You are consulting for the flat earth society, a group of people who believe that the acceleration of gravity equals 9.8 m/s/s at all altitudes. Based on this assumption, from what height must the water and container be dropped to achieve the same change in temperature? (For comparison, Earth's radius is 6,371 kilometers)   }
-a) 5.12 x 10⁰ km
-b) 6.2 x 10⁰ km
+c) 7.51 x 10⁰ km
-d) 9.1 x 10⁰ km

-e) 1.1 x 10¹ km

{<!--a14HeatTransfer_specifHeatConduct_4-->A window is square, with a length of each side equal to 0.86 meters. The glass has a thickness of 14 mm. To decrease the heat loss, you reduce the size of the window by decreasing the length of each side by a factor of 1.46. You also increase the thickness of the glass by a factor of 2.31. If the inside and outside temperatures are unchanged, by what factor have you decreased the heat flow?. By what factor have you decreased the heat flow (assuming the same inside and outside temperatures).}
-a) 4.06 x 10⁰ unit
+b) 4.92 x 10⁰ unit
-c) 5.97 x 10⁰ unit
-d) 7.23 x 10⁰ unit
-e) 8.76 x 10⁰ unit

</quiz>

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Other renditions
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====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a14HeatTransfer_specifHeatConduct_1-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.71 kg is filled with 0.19 kg of water. How much heat does it take to raise both from 53.5 C to 86.9 C?
+a) 4.79 x 10⁴ J
-b) 5.65 x 10⁴ J
-c) 6.66 x 10⁴ J
-d) 7.85 x 10⁴ J
-e) 9.25 x 10⁴ J
=====*_Rendition_* 1-3=====
<!--a14HeatTransfer_specifHeatConduct_1-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.82 kg is filled with 0.11 kg of water. How much heat does it take to raise both from 20.2 C to 96.9 C?
-a) 6.62 x 10⁴ J
-b) 7.8 x 10⁴ J
+c) 9.19 x 10⁴ J
-d) 1.08 x 10⁵ J
-e) 1.28 x 10⁵ J
=====*_Rendition_* 1-4=====
<!--a14HeatTransfer_specifHeatConduct_1-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.68 kg is filled with 0.17 kg of water. How much heat does it take to raise both from 47.8

C to 83.2 C?
-a) 3.37 x 10⁴ J
-b) 3.98 x 10⁴ J
+c) 4.69 x 10⁴ J
-d) 5.52 x 10⁴ J
-e) 6.51 x 10⁴ J
=====*_Rendition_* 1-5=====
<!--a14HeatTransfer_specifHeatConduct_1-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.99 kg is filled with 0.26 kg of water. How much heat does it take to raise both from 54.4 C to 78.1 C?
-a) 2.43 x 10⁴ J
-b) 2.86 x 10⁴ J
-c) 3.38 x 10⁴ J
-d) 3.98 x 10⁴ J
+e) 4.69 x 10⁴ J
=====*_Rendition_* 1-6=====
<!--a14HeatTransfer_specifHeatConduct_1-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.95 kg is filled with 0.19 kg of water. How much heat does it take to raise both from 32.6 C to 75.6 C?
-a) 3.68 x 10⁴ J
-b) 4.33 x 10⁴ J
-c) 5.11 x 10⁴ J
-d) 6.02 x 10⁴ J
+e) 7.1 x 10⁴ J
=====*_Rendition_* 1-7=====
<!--a14HeatTransfer_specifHeatConduct_1-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.61 kg is filled with 0.21 kg of water. How much heat does it take to raise both from 21.9 C to 98.6 C?
-a) 7.88 x 10⁴ J
-b) 9.29 x 10⁴ J
+c) 1.1 x 10⁵ J
-d) 1.29 x 10⁵ J
-e) 1.52 x 10⁵ J
=====*_Rendition_* 1-8=====
<!--a14HeatTransfer_specifHeatConduct_1-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.66 kg is filled with 0.11 kg of water. How much heat does it take to raise both from 57.1 C to 78 C?
-a) 1.59 x 10⁴ J
-b) 1.87 x 10⁴ J
+c) 2.2 x 10⁴ J
-d) 2.6 x 10⁴ J
-e) 3.06 x 10⁴ J
====*_Question_* 2====
=====*_Rendition_* 2-2=====

<!--a14HeatTransfer_specifHeatConduct_2-->{The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.71 kg is filled with 0.19 kg of water. What fraction of the heat went into the aluminum?

-a) 2.3 x 10⁻¹
-b) 2.7 x 10⁻¹
-c) 3.2 x 10⁻¹
-d) 3.8 x 10⁻¹
+e) 4.5 x 10⁻¹
=====*_Rendition_* 2-3=====
<!--a14HeatTransfer_specifHeatConduct_2-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.82 kg is filled with 0.11 kg of water. What fraction of the heat went into the aluminum?

-a) 3.8 x 10⁻¹
-b) 4.4 x 10⁻¹
-c) 5.2 x 10⁻¹
+d) 6.2 x 10⁻¹
-e) 7.3 x 10⁻¹
=====*_Rendition_* 2-4=====
<!--a14HeatTransfer_specifHeatConduct_2-->{The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.68 kg is filled with 0.17 kg of water. What fraction of the heat went into the aluminum?

-a) 2.8 x 10⁻¹
-b) 3.3 x 10⁻¹
-c) 3.9 x 10⁻¹
+d) 4.6 x 10⁻¹
-e) 5.5 x 10⁻¹
=====*_Rendition_* 2-5=====
<!--a14HeatTransfer_specifHeatConduct_2-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.99 kg is filled with 0.26 kg of water. What fraction of the heat went into the aluminum?

-a) 2.7 x 10⁻¹
-b) 3.2 x 10⁻¹
-c) 3.8 x 10⁻¹
+d) 4.5 x 10⁻¹
-e) 5.3 x 10⁻¹
=====*_Rendition_* 2-6=====
<!--a14HeatTransfer_specifHeatConduct_2-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.95 kg is filled with 0.19 kg of water. What fraction of the heat went into the aluminum?

+a) 5.2 x 10⁻¹
-b) 6.1 x 10⁻¹
-c) 7.2 x 10⁻¹

-d) 8.5 x 10⁻¹
-e) 1 x 10⁰
=====*_Rendition_* 2-7=====
<!--a14HeatTransfer_specifHeatConduct_2-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.61 kg is filled with 0.21 kg of water. What fraction of the heat went into the aluminum?

-a) 3.3 x 10⁻¹
+b) 3.8 x 10⁻¹
-c) 4.5 x 10⁻¹
-d) 5.3 x 10⁻¹
-e) 6.3 x 10⁻¹
=====*_Rendition_* 2-8=====
<!--a14HeatTransfer_specifHeatConduct_2-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.66 kg is filled with 0.11 kg of water. What fraction of the heat went into the aluminum?

-a) 3.4 x 10⁻¹
-b) 4.1 x 10⁻¹
-c) 4.8 x 10⁻¹
+d) 5.6 x 10⁻¹
-e) 6.6 x 10⁻¹
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a14HeatTransfer_specifHeatConduct_3-->{The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.71 kg is filled with 0.19 kg of water. You are consulting for the flat earth society, a group of people who believe that the acceleration of gravity equals 9.8 m/s/s at all altitudes. Based on this assumption, from what height must the water and container be dropped to achieve the same change in temperature? (For comparison, Earth's radius is 6,371 kilometers)
+a) 5.43 x 10⁰ km
-b) 6.58 x 10⁰ km
-c) 7.97 x 10⁰ km
-d) 9.66 x 10⁰ km
-e) 1.17 x 10¹ km
=====*_Rendition_* 3-3=====
<!--a14HeatTransfer_specifHeatConduct_3-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.82 kg is filled with 0.11 kg of water. You are consulting for the flat earth society, a group of people who believe that the acceleration of gravity equals 9.8 m/s/s at all altitudes. Based on this assumption, from what height must the water and container be dropped to achieve the same change in temperature? (For comparison, Earth's radius is 6,371 kilometers)
-a) 4.68 x 10⁰ km
-b) 5.67 x 10⁰ km

-c) 6.87 x 10⁰ km
-d) 8.32 x 10⁰ km
+e) 1.01 x 10¹ km
=====*_Rendition_* 3-4=====
<!--a14HeatTransfer_specifHeatConduct_3-->{The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.68 kg is filled with 0.17 kg of water. You are consulting for the flat earth society, a group of people who believe that the acceleration of gravity equals 9.8 m/s/s at all altitudes. Based on this assumption, from what height must the water and container be dropped to achieve the same change in temperature? (For comparison, Earth's radius is 6,371 kilometers)
-a) 2.61 x 10⁰ km
-b) 3.16 x 10⁰ km
-c) 3.83 x 10⁰ km
-d) 4.64 x 10⁰ km
+e) 5.62 x 10⁰ km
=====*_Rendition_* 3-5=====
<!--a14HeatTransfer_specifHeatConduct_3-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.99 kg is filled with 0.26 kg of water. You are consulting for the flat earth society, a group of people who believe that the acceleration of gravity equals 9.8 m/s/s at all altitudes. Based on this assumption, from what height must the water and container be dropped to achieve the same change in temperature? (For comparison, Earth's radius is 6,371 kilometers)
-a) 3.16 x 10⁰ km
+b) 3.83 x 10⁰ km
-c) 4.64 x 10⁰ km
-d) 5.62 x 10⁰ km
-e) 6.81 x 10⁰ km
=====*_Rendition_* 3-6=====
<!--a14HeatTransfer_specifHeatConduct_3-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.95 kg is filled with 0.19 kg of water. You are consulting for the flat earth society, a group of people who believe that the acceleration of gravity equals 9.8 m/s/s at all altitudes. Based on this assumption, from what height must the water and container be dropped to achieve the same change in temperature? (For comparison, Earth's radius is 6,371 kilometers)
-a) 5.24 x 10⁰ km
+b) 6.35 x 10⁰ km
-c) 7.7 x 10⁰ km
-d) 9.32 x 10⁰ km
-e) 1.13 x 10¹ km
=====*_Rendition_* 3-7=====
<!--a14HeatTransfer_specifHeatConduct_3-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.61 kg is filled with

0.21 kg of water. You are consulting for the flat earth society, a group of people who believe that the acceleration of gravity equals 9.8 m/s/s at all altitudes. Based on this assumption, from what height must the water and container be dropped to achieve the same change in temperature? (For comparison, Earth's radius is 6,371 kilometers)
-a) 6.33 x 10⁰ km
-b) 7.66 x 10⁰ km
-c) 9.29 x 10⁰ km
-d) 1.13 x 10¹ km
+e) 1.36 x 10¹ km
=====*_Rendition_* 3-8=====
<!--a14HeatTransfer_specifHeatConduct_3-->The specific heat of water and aluminum are 4186 and 900, respectively, where the units are J/kg/Celsius. An aluminum container of mass 0.66 kg is filled with 0.11 kg of water. You are consulting for the flat earth society, a group of people who believe that the acceleration of gravity equals 9.8 m/s/s at all altitudes. Based on this assumption, from what height must the water and container be dropped to achieve the same change in temperature? (For comparison, Earth's radius is 6,371 kilometers)
-a) 1.64 x 10⁰ km
-b) 1.99 x 10⁰ km
-c) 2.41 x 10⁰ km
+d) 2.92 x 10⁰ km
-e) 3.54 x 10⁰ km
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a14HeatTransfer_specifHeatConduct_4-->A window is square, with a length of each side equal to 0.95 meters. The glass has a thickness of 13 mm. To decrease the heat loss, you reduce the size of the window by decreasing the length of each side by a factor of 1.59. You also increase the thickness of the glass by a factor of 2.84. If the inside and outside temperatures are unchanged, by what factor have you decreased the heat flow?. By what factor have you decreased the heat flow (assuming the same inside and outside temperatures).
+a) 7.18 x 10⁰ unit
-b) 8.7 x 10⁰ unit
-c) 1.05 x 10¹ unit
-d) 1.28 x 10¹ unit
-e) 1.55 x 10¹ unit
=====*_Rendition_* 4-3=====
<!--a14HeatTransfer_specifHeatConduct_4-->A window is square, with a length of each side equal to 0.81 meters. The glass has a thickness of 13 mm. To decrease the heat loss, you reduce the size of the window by decreasing the length of each side by a factor of 1.24. You also increase the thickness of the glass by a factor of 2.15. If the inside and outside temperatures are unchanged, by what factor have you decreased the heat flow?. By what factor have you decreased the heat flow (assuming the same inside and outside temperatures).
-a) 1.53 x 10⁰ unit
-b) 1.86 x 10⁰ unit

-c) 2.25 x 10⁰ unit
-d) 2.73 x 10⁰ unit
+e) 3.31 x 10⁰ unit
=====*_Rendition_* 4-4=====
<!--a14HeatTransfer_specifHeatConduct_4-->A window is square, with a length of each side equal to 0.78 meters. The glass has a thickness of 11 mm. To decrease the heat loss, you reduce the size of the window by decreasing the length of each side by a factor of 1.31. You also increase the thickness of the glass by a factor of 2.97. If the inside and outside temperatures are unchanged, by what factor have you decreased the heat flow?. By what factor have you decreased the heat flow (assuming the same inside and outside temperatures).
-a) 2.37 x 10⁰ unit
-b) 2.87 x 10⁰ unit
-c) 3.47 x 10⁰ unit
-d) 4.21 x 10⁰ unit
+e) 5.1 x 10⁰ unit
=====*_Rendition_* 4-5=====
<!--a14HeatTransfer_specifHeatConduct_4-->A window is square, with a length of each side equal to 0.79 meters. The glass has a thickness of 15 mm. To decrease the heat loss, you reduce the size of the window by decreasing the length of each side by a factor of 1.33. You also increase the thickness of the glass by a factor of 2.17. If the inside and outside temperatures are unchanged, by what factor have you decreased the heat flow?. By what factor have you decreased the heat flow (assuming the same inside and outside temperatures).
-a) 2.16 x 10⁰ unit
-b) 2.62 x 10⁰ unit
-c) 3.17 x 10⁰ unit
+d) 3.84 x 10⁰ unit
-e) 4.65 x 10⁰ unit
=====*_Rendition_* 4-6=====
<!--a14HeatTransfer_specifHeatConduct_4-->A window is square, with a length of each side equal to 0.73 meters. The glass has a thickness of 16 mm. To decrease the heat loss, you reduce the size of the window by decreasing the length of each side by a factor of 1.27. You also increase the thickness of the glass by a factor of 2. If the inside and outside temperatures are unchanged, by what factor have you decreased the heat flow?. By what factor have you decreased the heat flow (assuming the same inside and outside temperatures).
-a) 1.5 x 10⁰ unit
-b) 1.81 x 10⁰ unit
-c) 2.2 x 10⁰ unit
-d) 2.66 x 10⁰ unit
+e) 3.23 x 10⁰ unit
=====*_Rendition_* 4-7=====
<!--a14HeatTransfer_specifHeatConduct_4-->A window is square, with a length of each side equal to 0.93 meters. The glass has a thickness of 15 mm. To decrease the heat loss, you reduce the size of the window by decreasing the length of each side by a factor of 1.55. You also increase the thickness of the glass by a factor of 2.54. If the inside and outside temperatures are unchanged, by what factor have

you decreased the heat flow?. By what factor have you decreased the
heat flow (assuming the same inside and outside temperatures).
-a) 4.16 x 10⁰ unit
-b) 5.04 x 10⁰ unit
+c) 6.1 x 10⁰ unit
-d) 7.39 x 10⁰ unit
-e) 8.96 x 10⁰ unit
=====*_Rendition_* 4-8=====
<!--a14HeatTransfer_specifHeatConduct_4-->A window is square, with a
length of each side equal to 0.73 meters. The glass has a thickness
of 14 mm. To decrease the heat loss, you reduce the size of the
window by decreasing the length of each side by a factor of 1.45.
You also increase the thickness of the glass by a factor of 2.4. If
the inside and outside temperatures are unchanged, by what factor have
you decreased the heat flow?. By what factor have you decreased the
heat flow (assuming the same inside and outside temperatures).
+a) 5.05 x 10⁰ unit
-b) 6.11 x 10⁰ unit
-c) 7.41 x 10⁰ unit
-d) 8.97 x 10⁰ unit
-e) 1.09 x 10¹ unit
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Instructions are forthcoming

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{<!--a15Thermodynamics_heatEngine_1-->[[File:Thermodynamic cycles for

quizzes.svg|right|180px]] A 1241 heat cycle uses 2.8 moles of an ideal gas. The pressures and volumes are: P₁= 1.4 kPa, P₂= 2.8 kPa. The volumes are V₁= 2.8m³ and V₄= 5.1m³. How much work is done in in one cycle?}
-a) 5.09 x 10² J
+b) 1.61 x 10³ J
-c) 5.09 x 10³ J
-d) 1.61 x 10⁴ J
-e) 5.09 x 10⁴ J

{<!--a15Thermodynamics_heatEngine_2-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 2.6 moles of an ideal gas. The pressures and volumes are: P₁= 3 kPa, P₂= 5.9 kPa. The volumes are V₁= 2.5m³ and V₄= 3.6m³. How much work is involved between 1 and 4?}
-a) 3.3 x 10² J
-b) 1.04 x 10³ J
+c) 3.3 x 10³ J
-d) 1.04 x 10⁴ J
-e) 3.3 x 10⁴ J

{<!--a15Thermodynamics_heatEngine_3-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 2.1 moles of an ideal gas. The pressures and volumes are: P₁= 1.2 kPa, P₂= 4.1 kPa. The volumes are V₁= 3.1m³ and V₄= 4.3m³.   How much work is involved between 2 and 4?}
-a) 1.01 x 10³ J
+b) 3.18 x 10³ J
-c) 1.01 x 10⁴ J
-d) 3.18 x 10⁴ J
-e) 1.01 x 10⁵ J

{<!--a15Thermodynamics_heatEngine_4-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 1.4 moles of an ideal gas. The pressures and volumes are: P₁= 2.2 kPa, P₂= 4 kPa. The volumes are V₁= 1.4m³ and V₄= 3.3m³. What is the temperature at step 4?}
-a) 1.97 x 10² K
+b) 6.24 x 10² K
-c) 1.97 x 10³ K
-d) 6.24 x 10³ K
-e) 1.97 x 10⁴ K

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====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a15Thermodynamics_heatEngine_1-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 2.1 moles of an ideal gas. The pressures and volumes are: P₁= 2.2 kPa, P₂= 4.4 kPa. The volumes are V₁= 2.6m³ and V₄= 4m³. How much work is done in in one cycle?
-a) 4.87 x 10¹ J
-b) 1.54 x 10² J
-c) 4.87 x 10² J
+d) 1.54 x 10³ J
-e) 4.87 x 10³ J
=====*_Rendition_* 1-3=====
<!--a15Thermodynamics_heatEngine_1-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 2.1 moles of an ideal gas. The pressures and volumes are: P₁= 2.8 kPa, P₂= 5.6 kPa. The volumes are V₁= 2.1m³ and V₄= 4.8m³. How much work is done in in one cycle?
-a) 3.78 x 10² J
-b) 1.2 x 10³ J
+c) 3.78 x 10³ J
-d) 1.2 x 10⁴ J
-e) 3.78 x 10⁴ J
=====*_Rendition_* 1-4=====
<!--a15Thermodynamics_heatEngine_1-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 3.1 moles of an ideal gas. The pressures and volumes are: P₁= 2.5 kPa, P₂= 4.5 kPa. The volumes are V₁= 1.4m³ and V₄= 2.9m³. How much work is done in in one cycle?
-a) 4.74 x 10² J
+b) 1.5 x 10³ J
-c) 4.74 x 10³ J
-d) 1.5 x 10⁴ J
-e) 4.74 x 10⁴ J
=====*_Rendition_* 1-5=====
<!--a15Thermodynamics_heatEngine_1-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 1.6 moles of an ideal gas. The pressures and volumes are: P₁= 1.9 kPa, P₂= 3.6 kPa. The volumes are V₁= 1.6m³ and V₄= 3.3m³. How much work is done in in one cycle?
-a) 4.57 x 10¹ J
-b) 1.45 x 10² J
-c) 4.57 x 10² J
+d) 1.45 x 10³ J
-e) 4.57 x 10³ J

=====*_Rendition_* 1-6=====
<!--a15Thermodynamics_heatEngine_1-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 1.1 moles of an ideal gas. The pressures and volumes are: P₁= 2 kPa, P₂= 4.1 kPa. The volumes are V₁= 2.1m³ and V₄= 4.3m³. How much work is done in in one cycle?
-a) 7.3 x 10² J
+b) 2.31 x 10³ J
-c) 7.3 x 10³ J
-d) 2.31 x 10⁴ J
-e) 7.3 x 10⁴ J
=====*_Rendition_* 1-7=====
<!--a15Thermodynamics_heatEngine_1-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 2.9 moles of an ideal gas. The pressures and volumes are: P₁= 2.3 kPa, P₂= 4.8 kPa. The volumes are V₁= 2.1m³ and V₄= 3.5m³. How much work is done in in one cycle?
-a) 1.75 x 10¹ J
-b) 5.53 x 10¹ J
-c) 1.75 x 10² J
-d) 5.53 x 10² J
+e) 1.75 x 10³ J
=====*_Rendition_* 1-8=====
<!--a15Thermodynamics_heatEngine_1-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 1.9 moles of an ideal gas. The pressures and volumes are: P₁= 1.2 kPa, P₂= 2.9 kPa. The volumes are V₁= 2.6m³ and V₄= 4.7m³. How much work is done in in one cycle?
-a) 5.64 x 10² J
+b) 1.79 x 10³ J
-c) 5.64 x 10³ J
-d) 1.79 x 10⁴ J
-e) 5.64 x 10⁴ J
=====*_Rendition_* 1-9=====
<!--a15Thermodynamics_heatEngine_1-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 2 moles of an ideal gas. The pressures and volumes are: P₁= 2.9 kPa, P₂= 4 kPa. The volumes are V₁= 2m³ and V₄= 3.2m³. How much work is done in in one cycle?
-a) 6.6 x 10⁰ J
-b) 2.09 x 10¹ J
-c) 6.6 x 10¹ J
-d) 2.09 x 10² J
+e) 6.6 x 10² J
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a15Thermodynamics_heatEngine_2-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 1.2 moles of an

ideal gas. The pressures and volumes are: P₁= 2.7 kPa, P₂= 3.8 kPa. The volumes are V₁= 1.8m³ and V₄= 4.7m³. How much work is involved between 1 and 4?
+a) 7.83 x 10³ J
-b) 2.48 x 10⁴ J
-c) 7.83 x 10⁴ J
-d) 2.48 x 10⁵ J
-e) 7.83 x 10⁵ J
=====*_Rendition_* 2-3=====
<!--a15Thermodynamics_heatEngine_2-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 2.4 moles of an ideal gas. The pressures and volumes are: P₁= 2.1 kPa, P₂= 3.2 kPa. The volumes are V₁= 1.1m³ and V₄= 2.2m³. How much work is involved between 1 and 4?
-a) 2.31 x 10² J
-b) 7.3 x 10² J
+c) 2.31 x 10³ J
-d) 7.3 x 10³ J
-e) 2.31 x 10⁴ J
=====*_Rendition_* 2-4=====
<!--a15Thermodynamics_heatEngine_2-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 2 moles of an ideal gas. The pressures and volumes are: P₁= 1.5 kPa, P₂= 2.7 kPa. The volumes are V₁= 1.9m³ and V₄= 3.3m³. How much work is involved between 1 and 4?
-a) 6.64 x 10² J
+b) 2.1 x 10³ J
-c) 6.64 x 10³ J
-d) 2.1 x 10⁴ J
-e) 6.64 x 10⁴ J
=====*_Rendition_* 2-5=====
<!--a15Thermodynamics_heatEngine_2-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 1.2 moles of an ideal gas. The pressures and volumes are: P₁= 1.1 kPa, P₂= 3.5 kPa. The volumes are V₁= 1.2m³ and V₄= 2.5m³. How much work is involved between 1 and 4?
-a) 1.43 x 10¹ J
-b) 4.52 x 10¹ J
-c) 1.43 x 10² J
-d) 4.52 x 10² J
+e) 1.43 x 10³ J
=====*_Rendition_* 2-6=====
<!--a15Thermodynamics_heatEngine_2-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 1.3 moles of an ideal gas. The pressures and volumes are: P₁= 1.6 kPa, P₂= 4.3 kPa. The volumes are V₁= 1.6m³ and V₄= 3.2m³. How much work is involved between 1 and 4?

+a) 2.56 x 10³ J
-b) 8.1 x 10³ J
-c) 2.56 x 10⁴ J
-d) 8.1 x 10⁴ J
-e) 2.56 x 10⁵ J
=====*_Rendition_* 2-7=====
<!--a15Thermodynamics_heatEngine_2-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 2.8 moles of an ideal gas. The pressures and volumes are: P₁= 1.5 kPa, P₂= 2.7 kPa. The volumes are V₁= 1.9m³ and V₄= 4.4m³. How much work is involved between 1 and 4?
-a) 3.75 x 10² J
-b) 1.19 x 10³ J
+c) 3.75 x 10³ J
-d) 1.19 x 10⁴ J
-e) 3.75 x 10⁴ J
=====*_Rendition_* 2-8=====
<!--a15Thermodynamics_heatEngine_2-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 1.3 moles of an ideal gas. The pressures and volumes are: P₁= 3.1 kPa, P₂= 4.3 kPa. The volumes are V₁= 1.1m³ and V₄= 2.8m³. How much work is involved between 1 and 4?
-a) 1.67 x 10³ J
+b) 5.27 x 10³ J
-c) 1.67 x 10⁴ J
-d) 5.27 x 10⁴ J
-e) 1.67 x 10⁵ J
=====*_Rendition_* 2-9=====
<!--a15Thermodynamics_heatEngine_2-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 2.2 moles of an ideal gas. The pressures and volumes are: P₁= 2.2 kPa, P₂= 3.7 kPa. The volumes are V₁= 1.8m³ and V₄= 4.4m³. How much work is involved between 1 and 4?
-a) 1.81 x 10² J
-b) 5.72 x 10² J
-c) 1.81 x 10³ J
+d) 5.72 x 10³ J
-e) 1.81 x 10⁴ J
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a15Thermodynamics_heatEngine_3-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 1.1 moles of an ideal gas. The pressures and volumes are: P₁= 1.4 kPa, P₂= 2.8 kPa. The volumes are V₁= 2.7m³ and V₄= 4.6m³.   How much work is involved between 2 and 4?
-a) 3.99 x 10¹ J
-b) 1.26 x 10² J
-c) 3.99 x 10² J

-d) 1.26 x 10³ J
+e) 3.99 x 10³ J
=====*_Rendition_* 3-3=====
<!--a15Thermodynamics_heatEngine_3-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 3 moles of an ideal gas. The pressures and volumes are: P₁= 1.3 kPa, P₂= 3.7 kPa. The volumes are V₁= 1.1m³ and V₄= 2.2m³.   How much work is involved between 2 and 4?
-a) 8.7 x 10² J
+b) 2.75 x 10³ J
-c) 8.7 x 10³ J
-d) 2.75 x 10⁴ J
-e) 8.7 x 10⁴ J
=====*_Rendition_* 3-4=====
<!--a15Thermodynamics_heatEngine_3-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 2.9 moles of an ideal gas. The pressures and volumes are: P₁= 1.7 kPa, P₂= 3.1 kPa. The volumes are V₁= 2.8m³ and V₄= 4.3m³.   How much work is involved between 2 and 4?
+a) 3.6 x 10³ J
-b) 1.14 x 10⁴ J
-c) 3.6 x 10⁴ J
-d) 1.14 x 10⁵ J
-e) 3.6 x 10⁵ J
=====*_Rendition_* 3-5=====
<!--a15Thermodynamics_heatEngine_3-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 1.9 moles of an ideal gas. The pressures and volumes are: P₁= 2.3 kPa, P₂= 5.3 kPa. The volumes are V₁= 1.8m³ and V₄= 3m³.   How much work is involved between 2 and 4?
-a) 1.44 x 10² J
-b) 4.56 x 10² J
-c) 1.44 x 10³ J
+d) 4.56 x 10³ J
-e) 1.44 x 10⁴ J
=====*_Rendition_* 3-6=====
<!--a15Thermodynamics_heatEngine_3-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 2.5 moles of an ideal gas. The pressures and volumes are: P₁= 2 kPa, P₂= 3.2 kPa. The volumes are V₁= 1.1m³ and V₄= 3.1m³.   How much work is involved between 2 and 4?
-a) 1.64 x 10³ J
+b) 5.2 x 10³ J
-c) 1.64 x 10⁴ J
-d) 5.2 x 10⁴ J
-e) 1.64 x 10⁵ J
=====*_Rendition_* 3-7=====
<!--a15Thermodynamics_heatEngine_3-->[[File:Thermodynamic cycles for

quizzes.svg|right|180px]] A 1241 heat cycle uses 2.5 moles of an ideal gas. The pressures and volumes are: P₁= 1.7 kPa, P₂= 4.5 kPa. The volumes are V₁= 1.6m³ and V₄= 2.7m³.   How much work is involved between 2 and 4?
-a) 1.08 x 10³ J
+b) 3.41 x 10³ J
-c) 1.08 x 10⁴ J
-d) 3.41 x 10⁴ J
-e) 1.08 x 10⁵ J
=====*_Rendition_* 3-8=====
<!--a15Thermodynamics_heatEngine_3-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 2.5 moles of an ideal gas. The pressures and volumes are: P₁= 3 kPa, P₂= 5.4 kPa. The volumes are V₁= 2.6m³ and V₄= 5m³.   How much work is involved between 2 and 4?
-a) 1.01 x 10² J
-b) 3.19 x 10² J
-c) 1.01 x 10³ J
-d) 3.19 x 10³ J
+e) 1.01 x 10⁴ J
=====*_Rendition_* 3-9=====
<!--a15Thermodynamics_heatEngine_3-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 2.9 moles of an ideal gas. The pressures and volumes are: P₁= 1.3 kPa, P₂= 3.4 kPa. The volumes are V₁= 2.5m³ and V₄= 4.3m³.   How much work is involved between 2 and 4?
-a) 1.34 x 10² J
-b) 4.23 x 10² J
-c) 1.34 x 10³ J
+d) 4.23 x 10³ J
-e) 1.34 x 10⁴ J
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a15Thermodynamics_heatEngine_4-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 2.5 moles of an ideal gas. The pressures and volumes are: P₁= 2.9 kPa, P₂= 4.9 kPa. The volumes are V₁= 2.5m³ and V₄= 4.7m³. What is the temperature at step 4?
-a) 2.07 x 10² K
+b) 6.56 x 10² K
-c) 2.07 x 10³ K
-d) 6.56 x 10³ K
-e) 2.07 x 10⁴ K
=====*_Rendition_* 4-3=====
<!--a15Thermodynamics_heatEngine_4-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 1.3 moles of an ideal gas. The pressures and volumes are: P₁= 1.6 kPa, P₂= 4.3 kPa. The volumes are V₁=

2.9m³ and V₄= 5.8m³. What is the temperature at step 4?
-a) 8.59 x 10⁰ K
-b) 2.71 x 10¹ K
-c) 8.59 x 10¹ K
-d) 2.71 x 10² K
+e) 8.59 x 10² K
=====*_Rendition_* 4-4=====
<!--a15Thermodynamics_heatEngine_4-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 2.5 moles of an ideal gas. The pressures and volumes are: P₁= 2.2 kPa, P₂= 3.8 kPa. The volumes are V₁= 2.9m³ and V₄= 5.4m³. What is the temperature at step 4?
-a) 5.71 x 10⁰ K
-b) 1.81 x 10¹ K
-c) 5.71 x 10¹ K
-d) 1.81 x 10² K
+e) 5.71 x 10² K
=====*_Rendition_* 4-5=====
<!--a15Thermodynamics_heatEngine_4-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 1.5 moles of an ideal gas. The pressures and volumes are: P₁= 2.6 kPa, P₂= 5.7 kPa. The volumes are V₁= 2.7m³ and V₄= 5.5m³. What is the temperature at step 4?
+a) 1.15 x 10³ K
-b) 3.63 x 10³ K
-c) 1.15 x 10⁴ K
-d) 3.63 x 10⁴ K
-e) 1.15 x 10⁵ K
=====*_Rendition_* 4-6=====
<!--a15Thermodynamics_heatEngine_4-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 1.6 moles of an ideal gas. The pressures and volumes are: P₁= 1.5 kPa, P₂= 3 kPa. The volumes are V₁= 2.4m³ and V₄= 4.5m³. What is the temperature at step 4?
-a) 1.6 x 10¹ K
-b) 5.07 x 10¹ K
-c) 1.6 x 10² K
+d) 5.07 x 10² K
-e) 1.6 x 10³ K
=====*_Rendition_* 4-7=====
<!--a15Thermodynamics_heatEngine_4-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 2 moles of an ideal gas. The pressures and volumes are: P₁= 2.6 kPa, P₂= 4.9 kPa. The volumes are V₁= 1.2m³ and V₄= 3.5m³. What is the temperature at step 4?
-a) 5.47 x 10¹ K
-b) 1.73 x 10² K

+c) 5.47 x 10² K
-d) 1.73 x 10³ K
-e) 5.47 x 10³ K
=====*_Rendition_* 4-8=====
<!--a15Thermodynamics_heatEngine_4-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 1.9 moles of an ideal gas. The pressures and volumes are: P₁= 2.9 kPa, P₂= 4.7 kPa. The volumes are V₁= 2.7m³ and V₄= 5.6m³. What is the temperature at step 4?
-a) 1.03 x 10¹ K
-b) 3.25 x 10¹ K
-c) 1.03 x 10² K
-d) 3.25 x 10² K
+e) 1.03 x 10³ K
=====*_Rendition_* 4-9=====
<!--a15Thermodynamics_heatEngine_4-->[[File:Thermodynamic cycles for quizzes.svg|right|180px]] A 1241 heat cycle uses 1.4 moles of an ideal gas. The pressures and volumes are: P₁= 1.4 kPa, P₂= 4.1 kPa. The volumes are V₁= 2.1m³ and V₄= 4.7m³. What is the temperature at step 4?
-a) 1.79 x 10² K
+b) 5.65 x 10² K
-c) 1.79 x 10³ K
-d) 5.65 x 10³ K
-e) 1.79 x 10⁴ K
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<quiz display=simple>
{<!--a16OscillationsWaves_amplitudes_1-->A 0.156 kg mass is on a spring that causes the frequency of oscillation to be 95 cycles per second. The maximum velocity is 50.6 m/s. What is the maximum force on the mass?}
-a) 2.2 x 10³ N
+b) 4.7 x 10³ N
-c) 1 x 10⁴ N
-d) 2.2 x 10⁴ N
-e) 4.7 x 10⁴ N

{<!--a16OscillationsWaves_amplitudes_2-->A spring with spring constant 5.5 kN/m is attached to a 9.8 gram mass. The maximum acelleration is 3.4 m/s². What is the maximum displacement?}
-a) 1.92 x 10⁻⁷ m
-b) 6.06 x 10⁻⁷ m
-c) 1.92 x 10⁻⁶ m
+d) 6.06 x 10⁻⁶ m
-e) 1.92 x 10⁻⁵ m

{<!--a16OscillationsWaves_amplitudes_3-->A spring of spring constant 9.1 kN/m causes a mass to move with a period of 6.5 ms. The maximum displacement is 8.1 mm. What is the maximum kinetic energy?}
-a) 9.44 x 10⁻³ J
-b) 2.99 x 10⁻² J
-c) 9.44 x 10⁻² J
+d) 2.99 x 10⁻¹ J
-e) 9.44 x 10⁻¹ J

{<!--a16OscillationsWaves_amplitudes_4-->A spring with spring constant 3.1 kN/m undergoes simple harmonic motion with a frequency of 2.9 kHz. The maximum force is 2.3 N. What is the total energy?}
-a) 2.7 x 10⁻⁴ J
+b) 8.53 x 10⁻⁴ J
-c) 2.7 x 10⁻³ J
-d) 8.53 x 10⁻³ J
-e) 2.7 x 10⁻² J

</quiz>

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Other renditions
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====*_Question_* 1====
=====*_Rendition_* 1-2=====

<!--a16OscillationsWaves_amplitudes_1-->A 0.047 kg mass is on a spring that causes the frequency of oscillation to be 26 cycles per second. The maximum velocity is 90.5 m/s. What is the maximum force on the mass?
-a) 1.5 x 10² N
-b) 3.2 x 10² N
+c) 6.9 x 10² N
-d) 1.5 x 10³ N
-e) 3.2 x 10³ N
=====*_Rendition_* 1-3=====
<!--a16OscillationsWaves_amplitudes_1-->A 0.111 kg mass is on a spring that causes the frequency of oscillation to be 63 cycles per second. The maximum velocity is 20.3 m/s. What is the maximum force on the mass?
-a) 1.9 x 10² N
-b) 4.1 x 10² N
+c) 8.9 x 10² N
-d) 1.9 x 10³ N
-e) 4.1 x 10³ N
=====*_Rendition_* 1-4=====
<!--a16OscillationsWaves_amplitudes_1-->A 0.062 kg mass is on a spring that causes the frequency of oscillation to be 65 cycles per second. The maximum velocity is 70.2 m/s. What is the maximum force on the mass?
+a) 1.8 x 10³ N
-b) 3.8 x 10³ N
-c) 8.3 x 10³ N
-d) 1.8 x 10⁴ N
-e) 3.8 x 10⁴ N
=====*_Rendition_* 1-5=====
<!--a16OscillationsWaves_amplitudes_1-->A 0.177 kg mass is on a spring that causes the frequency of oscillation to be 71 cycles per second. The maximum velocity is 60.9 m/s. What is the maximum force on the mass?
-a) 2.2 x 10³ N
+b) 4.8 x 10³ N
-c) 1 x 10⁴ N
-d) 2.2 x 10⁴ N
-e) 4.8 x 10⁴ N
=====*_Rendition_* 1-6=====
<!--a16OscillationsWaves_amplitudes_1-->A 0.187 kg mass is on a spring that causes the frequency of oscillation to be 34 cycles per second. The maximum velocity is 90.3 m/s. What is the maximum force on the mass?
-a) 1.7 x 10² N
-b) 3.6 x 10² N
-c) 7.8 x 10² N
-d) 1.7 x 10³ N
+e) 3.6 x 10³ N
=====*_Rendition_* 1-7=====
<!--a16OscillationsWaves_amplitudes_1-->A 0.035 kg mass is on a spring that causes the frequency of oscillation to be 36 cycles per second.

The maximum velocity is 60.7 m/s. What is the maximum force on the mass?
-a) 1 x 10² N
-b) 2.2 x 10² N
+c) 4.8 x 10² N
-d) 1 x 10³ N
-e) 2.2 x 10³ N
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a16OscillationsWaves_amplitudes_2-->A spring with spring constant 5.9 kN/m is attached to a 6.5 gram mass. The maximum acelleration is 3.6 m/s². What is the maximum displacement?
-a) 1.25 x 10⁻⁶ m
+b) 3.97 x 10⁻⁶ m
-c) 1.25 x 10⁻⁵ m
-d) 3.97 x 10⁻⁵ m
-e) 1.25 x 10⁻⁴ m
=====*_Rendition_* 2-3=====
<!--a16OscillationsWaves_amplitudes_2-->A spring with spring constant 7.8 kN/m is attached to a 2.5 gram mass. The maximum acelleration is 6.8 m/s². What is the maximum displacement?
-a) 6.89 x 10⁻⁷ m
+b) 2.18 x 10⁻⁶ m
-c) 6.89 x 10⁻⁶ m
-d) 2.18 x 10⁻⁵ m
-e) 6.89 x 10⁻⁵ m
=====*_Rendition_* 2-4=====
<!--a16OscillationsWaves_amplitudes_2-->A spring with spring constant 2.9 kN/m is attached to a 6.7 gram mass. The maximum acelleration is 3.8 m/s². What is the maximum displacement?
-a) 8.78 x 10⁻⁸ m
-b) 2.78 x 10⁻⁷ m
-c) 8.78 x 10⁻⁷ m
-d) 2.78 x 10⁻⁶ m
+e) 8.78 x 10⁻⁶ m
=====*_Rendition_* 2-5=====
<!--a16OscillationsWaves_amplitudes_2-->A spring with spring constant 7.8 kN/m is attached to a 5.7 gram mass. The maximum acelleration is 5.9 m/s². What is the maximum displacement?
-a) 1.36 x 10⁻⁷ m
-b) 4.31 x 10⁻⁷ m
-c) 1.36 x 10⁻⁶ m
+d) 4.31 x 10⁻⁶ m
-e) 1.36 x 10⁻⁵ m
=====*_Rendition_* 2-6=====
<!--a16OscillationsWaves_amplitudes_2-->A spring with spring constant 9.6 kN/m is attached to a 9.1 gram mass. The maximum acelleration is 1.6 m/s². What is the maximum displacement?
-a) 4.8 x 10⁻⁷ m
+b) 1.52 x 10⁻⁶ m
-c) 4.8 x 10⁻⁶ m
-d) 1.52 x 10⁻⁵ m

-e) 4.8 x 10⁻⁵ m
=====*_Rendition_* 2-7=====
<!--a16OscillationsWaves_amplitudes_2-->A spring with spring constant 2.5 kN/m is attached to a 7.7 gram mass. The maximum acelleration is 1.2 m/s². What is the maximum displacement?
-a) 3.7 x 10⁻⁸ m
-b) 1.17 x 10⁻⁷ m
-c) 3.7 x 10⁻⁷ m
-d) 1.17 x 10⁻⁶ m
+e) 3.7 x 10⁻⁶ m
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a16OscillationsWaves_amplitudes_3-->A spring of spring constant 8.7 kN/m causes a mass to move with a period of 5.2 ms. The maximum displacement is 7.1 mm. What is the maximum kinetic energy?
+a) 2.19 x 10⁻¹ J
-b) 6.93 x 10⁻¹ J
-c) 2.19 x 10⁰ J
-d) 6.93 x 10⁰ J
-e) 2.19 x 10¹ J
=====*_Rendition_* 3-3=====
<!--a16OscillationsWaves_amplitudes_3-->A spring of spring constant 8.4 kN/m causes a mass to move with a period of 2.2 ms. The maximum displacement is 2.1 mm. What is the maximum kinetic energy?
-a) 1.85 x 10⁻³ J
-b) 5.86 x 10⁻³ J
+c) 1.85 x 10⁻² J
-d) 5.86 x 10⁻² J
-e) 1.85 x 10⁻¹ J
=====*_Rendition_* 3-4=====
<!--a16OscillationsWaves_amplitudes_3-->A spring of spring constant 2.1 kN/m causes a mass to move with a period of 1.4 ms. The maximum displacement is 6.6 mm. What is the maximum kinetic energy?
-a) 1.45 x 10⁻³ J
-b) 4.57 x 10⁻³ J
-c) 1.45 x 10⁻² J
+d) 4.57 x 10⁻² J
-e) 1.45 x 10⁻¹ J
=====*_Rendition_* 3-5=====
<!--a16OscillationsWaves_amplitudes_3-->A spring of spring constant 6.9 kN/m causes a mass to move with a period of 8.6 ms. The maximum displacement is 2.3 mm. What is the maximum kinetic energy?
-a) 5.77 x 10⁻³ J
+b) 1.83 x 10⁻² J
-c) 5.77 x 10⁻² J
-d) 1.83 x 10⁻¹ J
-e) 5.77 x 10⁻¹ J
=====*_Rendition_* 3-6=====
<!--a16OscillationsWaves_amplitudes_3-->A spring of spring constant 4.9 kN/m causes a mass to move with a period of 8.8 ms. The maximum displacement is 2.1 mm. What is the maximum kinetic energy?
-a) 3.42 x 10⁻³ J

+b) 1.08 x 10⁻² J
-c) 3.42 x 10⁻² J
-d) 1.08 x 10⁻¹ J
-e) 3.42 x 10⁻¹ J
=====*_Rendition_* 3-7=====
<!--a16OscillationsWaves_amplitudes_3-->A spring of spring constant 2.9 kN/m causes a mass to move with a period of 5.2 ms. The maximum displacement is 3.8 mm. What is the maximum kinetic energy?
-a) 2.09 x 10⁻³ J
-b) 6.62 x 10⁻³ J
+c) 2.09 x 10⁻² J
-d) 6.62 x 10⁻² J
-e) 2.09 x 10⁻¹ J
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a16OscillationsWaves_amplitudes_4-->A spring with spring constant 1.7 kN/m undergoes simple harmonic motion with a frequency of 3.9 kHz. The maximum force is 8.6 N. What is the total energy?
-a) 2.18 x 10⁻⁴ J
-b) 6.88 x 10⁻⁴ J
-c) 2.18 x 10⁻³ J
-d) 6.88 x 10⁻³ J
+e) 2.18 x 10⁻² J
=====*_Rendition_* 4-3=====
<!--a16OscillationsWaves_amplitudes_4-->A spring with spring constant 2.8 kN/m undergoes simple harmonic motion with a frequency of 8.5 kHz. The maximum force is 8.2 N. What is the total energy?
+a) 1.2 x 10⁻² J
-b) 3.8 x 10⁻² J
-c) 1.2 x 10⁻¹ J
-d) 3.8 x 10⁻¹ J
-e) 1.2 x 10⁰ J
=====*_Rendition_* 4-4=====
<!--a16OscillationsWaves_amplitudes_4-->A spring with spring constant 2.7 kN/m undergoes simple harmonic motion with a frequency of 3.1 kHz. The maximum force is 6.3 N. What is the total energy?
-a) 2.32 x 10⁻³ J
+b) 7.35 x 10⁻³ J
-c) 2.32 x 10⁻² J
-d) 7.35 x 10⁻² J
-e) 2.32 x 10⁻¹ J
=====*_Rendition_* 4-5=====
<!--a16OscillationsWaves_amplitudes_4-->A spring with spring constant 1.2 kN/m undergoes simple harmonic motion with a frequency of 5.3 kHz. The maximum force is 1.5 N. What is the total energy?
-a) 2.96 x 10⁻⁵ J
-b) 9.38 x 10⁻⁵ J
-c) 2.96 x 10⁻⁴ J
+d) 9.38 x 10⁻⁴ J
-e) 2.96 x 10⁻³ J
=====*_Rendition_* 4-6=====
<!--a16OscillationsWaves_amplitudes_4-->A spring with spring constant

7.7 kN/m undergoes simple harmonic motion with a frequency of 4.4 kHz.
 The maximum force is 9.4 N. What is the total energy?
-a) 5.74 x 10⁻⁵ J
-b) 1.81 x 10⁻⁴ J
-c) 5.74 x 10⁻⁴ J
-d) 1.81 x 10⁻³ J
+e) 5.74 x 10⁻³ J
=====*_Rendition_* 4-7=====
<!--a16OscillationsWaves_amplitudes_4-->A spring with spring constant 1.1 kN/m undergoes simple harmonic motion with a frequency of 8.4 kHz.
 The maximum force is 3.8 N. What is the total energy?
-a) 6.56 x 10⁻⁴ J
-b) 2.08 x 10⁻³ J
+c) 6.56 x 10⁻³ J
-d) 2.08 x 10⁻² J
-e) 6.56 x 10⁻² J
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Instructions are forthcoming

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<quiz display=simple>
{<!--a17PhysHearing_echoString_1-->The temperature is -2 degrees Celsius, and you are standing 0.88 km from a cliff. What is the echo time?}
-a) 4.238 x 10⁰ seconds
-b) 4.576 x 10⁰ seconds
-c) 4.941 x 10⁰ seconds

+d) 5.335 x 10⁰ seconds
-e) 5.761 x 10⁰ seconds

{<!--a17PhysHearing_echoString_2-->While standing 0.88 km from a cliff, you measure the echo time to be 5.069 seconds. What is the temperature?}
+a) 2.72 x 10¹Celsius
-b) 3.15 x 10¹Celsius
-c) 3.63 x 10¹Celsius
-d) 4.19 x 10¹Celsius
-e) 4.84 x 10¹Celsius

{<!--a17PhysHearing_echoString_3-->What is the speed of a transverse wave on a string if the string is 1.11 m long, clamped at both ends, and harmonic number 4 has a frequency of 611 Hz?}
-a) 1.57 x 10² unit
-b) 1.91 x 10² unit
-c) 2.31 x 10² unit
-d) 2.8 x 10² unit
+e) 3.39 x 10² unit

</quiz>

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Other renditions
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====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a17PhysHearing_echoString_1-->The temperature is -1.3 degrees Celsius, and you are standing 0.89 km from a cliff. What is the echo time?
+a) 5.389 x 10⁰ seconds
-b) 5.819 x 10⁰ seconds
-c) 6.283 x 10⁰ seconds
-d) 6.784 x 10⁰ seconds
-e) 7.326 x 10⁰ seconds
=====*_Rendition_* 1-3=====
<!--a17PhysHearing_echoString_1-->The temperature is -2.9 degrees Celsius, and you are standing 0.77 km from a cliff. What is the echo time?
-a) 3.714 x 10⁰ seconds
-b) 4.011 x 10⁰ seconds
-c) 4.331 x 10⁰ seconds
+d) 4.676 x 10⁰ seconds
-e) 5.049 x 10⁰ seconds
=====*_Rendition_* 1-4=====
<!--a17PhysHearing_echoString_1-->The temperature is -2.7 degrees Celsius, and you are standing 0.58 km from a cliff. What is the echo time?

-a) 2.797 x 10⁰ seconds
-b) 3.02 x 10⁰ seconds
-c) 3.261 x 10⁰ seconds
+d) 3.521 x 10⁰ seconds
-e) 3.802 x 10⁰ seconds
=====*_Rendition_* 1-5=====
<!--a17PhysHearing_echoString_1-->The temperature is -2.9 degrees Celsius, and you are standing 0.76 km from a cliff. What is the echo time?
-a) 3.395 x 10⁰ seconds
-b) 3.666 x 10⁰ seconds
-c) 3.959 x 10⁰ seconds
-d) 4.274 x 10⁰ seconds
+e) 4.615 x 10⁰ seconds
=====*_Rendition_* 1-6=====
<!--a17PhysHearing_echoString_1-->The temperature is -1.4 degrees Celsius, and you are standing 0.94 km from a cliff. What is the echo time?
-a) 4.883 x 10⁰ seconds
-b) 5.272 x 10⁰ seconds
+c) 5.693 x 10⁰ seconds
-d) 6.147 x 10⁰ seconds
-e) 6.637 x 10⁰ seconds
=====*_Rendition_* 1-7=====
<!--a17PhysHearing_echoString_1-->The temperature is -2.4 degrees Celsius, and you are standing 0.94 km from a cliff. What is the echo time?
-a) 4.53 x 10⁰ seconds
-b) 4.892 x 10⁰ seconds
-c) 5.282 x 10⁰ seconds
+d) 5.703 x 10⁰ seconds
-e) 6.158 x 10⁰ seconds
=====*_Rendition_* 1-8=====
<!--a17PhysHearing_echoString_1-->The temperature is -3 degrees Celsius, and you are standing 0.66 km from a cliff. What is the echo time?
-a) 2.949 x 10⁰ seconds
-b) 3.184 x 10⁰ seconds
-c) 3.438 x 10⁰ seconds
-d) 3.713 x 10⁰ seconds
+e) 4.009 x 10⁰ seconds
=====*_Rendition_* 1-9=====
<!--a17PhysHearing_echoString_1-->The temperature is -2.3 degrees Celsius, and you are standing 0.62 km from a cliff. What is the echo time?
-a) 3.226 x 10⁰ seconds
-b) 3.483 x 10⁰ seconds
+c) 3.761 x 10⁰ seconds
-d) 4.061 x 10⁰ seconds
-e) 4.385 x 10⁰ seconds
=====*_Rendition_* 1-10=====
<!--a17PhysHearing_echoString_1-->The temperature is -2.1 degrees

Celsius, and you are standing 0.83 km from a cliff. What is the echo time?
+a) 5.033 x 10⁰ seconds
-b) 5.435 x 10⁰ seconds
-c) 5.868 x 10⁰ seconds
-d) 6.336 x 10⁰ seconds
-e) 6.842 x 10⁰ seconds
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a17PhysHearing_echoString_2-->While standing 0.89 km from a cliff, you measure the echo time to be 5.227 seconds. What is the temperature?
+a) 1.58 x 10¹Celsius
-b) 1.83 x 10¹Celsius
-c) 2.11 x 10¹Celsius
-d) 2.44 x 10¹Celsius
-e) 2.81 x 10¹Celsius
=====*_Rendition_* 2-3=====
<!--a17PhysHearing_echoString_2-->While standing 0.77 km from a cliff, you measure the echo time to be 4.442 seconds. What is the temperature?
-a) 1.48 x 10¹Celsius
-b) 1.71 x 10¹Celsius
-c) 1.98 x 10¹Celsius
-d) 2.28 x 10¹Celsius
+e) 2.63 x 10¹Celsius
=====*_Rendition_* 2-4=====
<!--a17PhysHearing_echoString_2-->While standing 0.58 km from a cliff, you measure the echo time to be 3.38 seconds. What is the temperature?
-a) 1.53 x 10¹Celsius
-b) 1.76 x 10¹Celsius
+c) 2.03 x 10¹Celsius
-d) 2.35 x 10¹Celsius
-e) 2.71 x 10¹Celsius
=====*_Rendition_* 2-5=====
<!--a17PhysHearing_echoString_2-->While standing 0.76 km from a cliff, you measure the echo time to be 4.339 seconds. What is the temperature?
-a) 2.83 x 10¹Celsius
+b) 3.26 x 10¹Celsius
-c) 3.77 x 10¹Celsius
-d) 4.35 x 10¹Celsius
-e) 5.03 x 10¹Celsius
=====*_Rendition_* 2-6=====
<!--a17PhysHearing_echoString_2-->While standing 0.94 km from a cliff, you measure the echo time to be 5.522 seconds. What is the temperature?
+a) 1.57 x 10¹Celsius
-b) 1.81 x 10¹Celsius
-c) 2.09 x 10¹Celsius
-d) 2.41 x 10¹Celsius

-e) 2.79 x 10¹Celsius
=====*_Rendition_* 2-7=====
<!--a17PhysHearing_echoString_2-->While standing 0.94 km from a cliff, you measure the echo time to be 5.418 seconds. What is the temperature?
-a) 2.33 x 10¹Celsius
+b) 2.69 x 10¹Celsius
-c) 3.1 x 10¹Celsius
-d) 3.58 x 10¹Celsius
-e) 4.14 x 10¹Celsius
=====*_Rendition_* 2-8=====
<!--a17PhysHearing_echoString_2-->While standing 0.66 km from a cliff, you measure the echo time to be 3.768 seconds. What is the temperature?
+a) 3.26 x 10¹Celsius
-b) 3.77 x 10¹Celsius
-c) 4.35 x 10¹Celsius
-d) 5.03 x 10¹Celsius
-e) 5.81 x 10¹Celsius
=====*_Rendition_* 2-9=====
<!--a17PhysHearing_echoString_2-->While standing 0.62 km from a cliff, you measure the echo time to be 3.648 seconds. What is the temperature?
+a) 1.47 x 10¹Celsius
-b) 1.7 x 10¹Celsius
-c) 1.97 x 10¹Celsius
-d) 2.27 x 10¹Celsius
-e) 2.62 x 10¹Celsius
=====*_Rendition_* 2-10=====
<!--a17PhysHearing_echoString_2-->While standing 0.83 km from a cliff, you measure the echo time to be 4.832 seconds. What is the temperature?
-a) 1.57 x 10¹Celsius
-b) 1.81 x 10¹Celsius
+c) 2.09 x 10¹Celsius
-d) 2.42 x 10¹Celsius
-e) 2.79 x 10¹Celsius
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a17PhysHearing_echoString_3-->What is the speed of a transverse wave on a string if the string is 0.68 m long, clamped at both ends, and harmonic number 3 has a frequency of 756 Hz?
+a) 3.43 x 10² unit
-b) 4.15 x 10² unit
-c) 5.03 x 10² unit
-d) 6.09 x 10² unit
-e) 7.38 x 10² unit
=====*_Rendition_* 3-3=====
<!--a17PhysHearing_echoString_3-->What is the speed of a transverse wave on a string if the string is 0.94 m long, clamped at both ends, and harmonic number 5 has a frequency of 715 Hz?
-a) 1.83 x 10² unit

-b) 2.22 x 10² unit
+c) 2.69 x 10² unit
-d) 3.26 x 10² unit
-e) 3.95 x 10² unit
=====*_Rendition_* 3-4=====
<!--a17PhysHearing_echoString_3-->What is the speed of a transverse wave on a string if the string is 1.19 m long, clamped at both ends, and harmonic number 6 has a frequency of 834 Hz?
-a) 2.25 x 10² unit
-b) 2.73 x 10² unit
+c) 3.31 x 10² unit
-d) 4.01 x 10² unit
-e) 4.86 x 10² unit
=====*_Rendition_* 3-5=====
<!--a17PhysHearing_echoString_3-->What is the speed of a transverse wave on a string if the string is 0.5 m long, clamped at both ends, and harmonic number 4 has a frequency of 316 Hz?
+a) 7.9 x 10¹ unit
-b) 9.57 x 10¹ unit
-c) 1.16 x 10² unit
-d) 1.4 x 10² unit
-e) 1.7 x 10² unit
=====*_Rendition_* 3-6=====
<!--a17PhysHearing_echoString_3-->What is the speed of a transverse wave on a string if the string is 1.13 m long, clamped at both ends, and harmonic number 5 has a frequency of 409 Hz?
-a) 1.26 x 10² unit
-b) 1.53 x 10² unit
+c) 1.85 x 10² unit
-d) 2.24 x 10² unit
-e) 2.71 x 10² unit
=====*_Rendition_* 3-7=====
<!--a17PhysHearing_echoString_3-->What is the speed of a transverse wave on a string if the string is 1.05 m long, clamped at both ends, and harmonic number 5 has a frequency of 110 Hz?
-a) 3.15 x 10¹ unit
-b) 3.81 x 10¹ unit
+c) 4.62 x 10¹ unit
-d) 5.6 x 10¹ unit
-e) 6.78 x 10¹ unit
=====*_Rendition_* 3-8=====
<!--a17PhysHearing_echoString_3-->What is the speed of a transverse wave on a string if the string is 0.58 m long, clamped at both ends, and harmonic number 4 has a frequency of 543 Hz?
-a) 8.86 x 10¹ unit
-b) 1.07 x 10² unit
-c) 1.3 x 10² unit
+d) 1.57 x 10² unit
-e) 1.91 x 10² unit
=====*_Rendition_* 3-9=====
<!--a17PhysHearing_echoString_3-->What is the speed of a transverse wave on a string if the string is 0.45 m long, clamped at both ends,

and harmonic number 4 has a frequency of 996 Hz?
-a) 1.53 x 10² unit
-b) 1.85 x 10² unit
+c) 2.24 x 10² unit
-d) 2.72 x 10² unit
-e) 3.29 x 10² unit
=====*_Rendition_* 3-10=====
<!--a17PhysHearing_echoString_3-->What is the speed of a transverse wave on a string if the string is 1.05 m long, clamped at both ends, and harmonic number 5 has a frequency of 153 Hz?
-a) 5.3 x 10¹ unit
+b) 6.43 x 10¹ unit
-c) 7.79 x 10¹ unit
-d) 9.43 x 10¹ unit
-e) 1.14 x 10² unit
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====*_Instructions_*====
Instructions are forthcoming

Transclusion from [[Quizbank/Instructions_0]]:
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[[Category:QB/Numerical]]
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*_numerical_*
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http://en.wikiversity.org/w/index.php?title=Physics_equations/18-Electric_charge_and_field/Q:findE&oldid=1378605
*_See_* [[User:Guy vandegrift]]
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===*_Quiz_*===
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{<!--a18ElectricChargeField_findE_1-->What is the magnitude of the electric field at the origin if a 1.8 nC charge is placed at x = 7.9 m, and a 2.1 nC charge is placed at y = 7 m?}
-a) 2.61 x 10⁻¹N/C
-b) 3.02 x 10⁻¹N/C
-c) 3.48 x 10⁻¹N/C
-d) 4.02 x 10⁻¹N/C

+e) 4.64 x 10⁻¹N/C

{<!--a18ElectricChargeField_findE_2-->What angle does the electric field at the origin make with the x-axis if a 1.1 nC charge is placed at x = -6.5 m, and a 1.4 nC charge is placed at y = -8.3 m?}
+a) 3.8 x 10¹degrees
-b) 4.39 x 10¹degrees
-c) 5.06 x 10¹degrees
-d) 5.85 x 10¹degrees
-e) 6.75 x 10¹degrees

{<!--a18ElectricChargeField_findE_3-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(6a, 4a) is βkQ/a², where β equals}
-a) 1.33 x 10⁻³
-b) 1.61 x 10⁻³
-c) 1.95 x 10⁻³
-d) 2.37 x 10⁻³
+e) 2.87 x 10⁻³

{<!--a18ElectricChargeField_findE_4-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the y component of the electric field at (x,y) =(1.1a, 1.2a) is βkQ/a², where β equals }
-a) 2.36 x 10⁻¹
-b) 2.86 x 10⁻¹
+c) 3.47 x 10⁻¹
-d) 4.2 x 10⁻¹
-e) 5.09 x 10⁻¹

</quiz>

<div class="toccolours mw-collapsible mw-collapsed" style="width:100%">

Other renditions
<div class="mw-collapsible-content">
====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a18ElectricChargeField_findE_1-->What is the magnitude of the electric field at the origin if a 2.9 nC charge is placed at x = 5.9 m, and a 2.7 nC charge is placed at y = 9.2 m?
+a) 8.02 x 10⁻¹N/C
-b) 9.26 x 10⁻¹N/C
-c) 1.07 x 10⁰N/C
-d) 1.23 x 10⁰N/C
-e) 1.43 x 10⁰N/C
=====*_Rendition_* 1-3=====

<!--a18ElectricChargeField_findE_1-->What is the magnitude of the electric field at the origin if a 2.1 nC charge is placed at x = 7 m, and a 2.1 nC charge is placed at y = 8.6 m?
-a) 3 x 10⁻¹N/C
-b) 3.47 x 10⁻¹N/C
-c) 4 x 10⁻¹N/C
+d) 4.62 x 10⁻¹N/C
-e) 5.34 x 10⁻¹N/C
=====*_Rendition_* 1-4=====
<!--a18ElectricChargeField_findE_1-->What is the magnitude of the electric field at the origin if a 3.1 nC charge is placed at x = 6.2 m, and a 2.6 nC charge is placed at y = 6 m?
-a) 5.47 x 10⁻¹N/C
-b) 6.32 x 10⁻¹N/C
-c) 7.3 x 10⁻¹N/C
-d) 8.43 x 10⁻¹N/C
+e) 9.73 x 10⁻¹N/C
=====*_Rendition_* 1-5=====
<!--a18ElectricChargeField_findE_1-->What is the magnitude of the electric field at the origin if a 3 nC charge is placed at x = 5.1 m, and a 2 nC charge is placed at y = 8.6 m?
-a) 7.99 x 10⁻¹N/C
-b) 9.22 x 10⁻¹N/C
+c) 1.07 x 10⁰N/C
-d) 1.23 x 10⁰N/C
-e) 1.42 x 10⁰N/C
=====*_Rendition_* 1-6=====
<!--a18ElectricChargeField_findE_1-->What is the magnitude of the electric field at the origin if a 1.8 nC charge is placed at x = 9.6 m, and a 2 nC charge is placed at y = 8.7 m?
+a) 2.95 x 10⁻¹N/C
-b) 3.41 x 10⁻¹N/C
-c) 3.94 x 10⁻¹N/C
-d) 4.55 x 10⁻¹N/C
-e) 5.25 x 10⁻¹N/C
=====*_Rendition_* 1-7=====
<!--a18ElectricChargeField_findE_1-->What is the magnitude of the electric field at the origin if a 1.7 nC charge is placed at x = 6.4 m, and a 3 nC charge is placed at y = 8 m?
-a) 4.22 x 10⁻¹N/C
-b) 4.87 x 10⁻¹N/C
+c) 5.63 x 10⁻¹N/C
-d) 6.5 x 10⁻¹N/C
-e) 7.51 x 10⁻¹N/C
=====*_Rendition_* 1-8=====
<!--a18ElectricChargeField_findE_1-->What is the magnitude of the electric field at the origin if a 1.9 nC charge is placed at x = 9.7 m, and a 3.1 nC charge is placed at y = 5.5 m?
-a) 5.28 x 10⁻¹N/C
-b) 6.1 x 10⁻¹N/C
-c) 7.04 x 10⁻¹N/C
-d) 8.13 x 10⁻¹N/C

+e) 9.39 x 10⁻¹N/C
=====*_Rendition_* 1-9=====
<!--a18ElectricChargeField_findE_1-->What is the magnitude of the electric field at the origin if a 2.7 nC charge is placed at x = 9.1 m, and a 2.5 nC charge is placed at y = 5.9 m?
-a) 3.99 x 10⁻¹N/C
-b) 4.6 x 10⁻¹N/C
-c) 5.32 x 10⁻¹N/C
-d) 6.14 x 10⁻¹N/C
+e) 7.09 x 10⁻¹N/C
=====*_Rendition_* 1-10=====
<!--a18ElectricChargeField_findE_1-->What is the magnitude of the electric field at the origin if a 1.2 nC charge is placed at x = 5.9 m, and a 3.1 nC charge is placed at y = 6.1 m?
-a) 7.02 x 10⁻¹N/C
+b) 8.11 x 10⁻¹N/C
-c) 9.36 x 10⁻¹N/C
-d) 1.08 x 10⁰N/C
-e) 1.25 x 10⁰N/C
=====*_Rendition_* 1-11=====
<!--a18ElectricChargeField_findE_1-->What is the magnitude of the electric field at the origin if a 1.4 nC charge is placed at x = 8.2 m, and a 2.3 nC charge is placed at y = 5.9 m?
-a) 5.39 x 10⁻¹N/C
+b) 6.23 x 10⁻¹N/C
-c) 7.19 x 10⁻¹N/C
-d) 8.31 x 10⁻¹N/C
-e) 9.59 x 10⁻¹N/C
=====*_Rendition_* 1-12=====
<!--a18ElectricChargeField_findE_1-->What is the magnitude of the electric field at the origin if a 3 nC charge is placed at x = 8.8 m, and a 2.9 nC charge is placed at y = 6.9 m?
-a) 4.87 x 10⁻¹N/C
-b) 5.62 x 10⁻¹N/C
+c) 6.49 x 10⁻¹N/C
-d) 7.49 x 10⁻¹N/C
-e) 8.65 x 10⁻¹N/C
=====*_Rendition_* 1-13=====
<!--a18ElectricChargeField_findE_1-->What is the magnitude of the electric field at the origin if a 2.5 nC charge is placed at x = 5.3 m, and a 1.9 nC charge is placed at y = 5.6 m?
-a) 7.26 x 10⁻¹N/C
-b) 8.38 x 10⁻¹N/C
+c) 9.68 x 10⁻¹N/C
-d) 1.12 x 10⁰N/C
-e) 1.29 x 10⁰N/C
=====*_Rendition_* 1-14=====
<!--a18ElectricChargeField_findE_1-->What is the magnitude of the electric field at the origin if a 1.8 nC charge is placed at x = 5.2 m, and a 3.1 nC charge is placed at y = 7.6 m?
+a) 7.69 x 10⁻¹N/C
-b) 8.88 x 10⁻¹N/C

-c) 1.03 x 10⁰N/C
-d) 1.18 x 10⁰N/C
-e) 1.37 x 10⁰N/C
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a18ElectricChargeField_findE_2-->What angle does the electric field at the origin make with the x-axis if a 1.3 nC charge is placed at x = -9 m, and a 1.5 nC charge is placed at y = -5.2 m?
-a) 4.15 x 10¹degrees
-b) 4.8 x 10¹degrees
-c) 5.54 x 10¹degrees
-d) 6.4 x 10¹degrees
+e) 7.39 x 10¹degrees
=====*_Rendition_* 2-3=====
<!--a18ElectricChargeField_findE_2-->What angle does the electric field at the origin make with the x-axis if a 1.4 nC charge is placed at x = -8.7 m, and a 2.7 nC charge is placed at y = -8.3 m?
-a) 4.85 x 10¹degrees
-b) 5.61 x 10¹degrees
+c) 6.47 x 10¹degrees
-d) 7.48 x 10¹degrees
-e) 8.63 x 10¹degrees
=====*_Rendition_* 2-4=====
<!--a18ElectricChargeField_findE_2-->What angle does the electric field at the origin make with the x-axis if a 2 nC charge is placed at x = -8.7 m, and a 2.7 nC charge is placed at y = -5.2 m?
-a) 4.23 x 10¹degrees
-b) 4.88 x 10¹degrees
-c) 5.64 x 10¹degrees
-d) 6.51 x 10¹degrees
+e) 7.52 x 10¹degrees
=====*_Rendition_* 2-5=====
<!--a18ElectricChargeField_findE_2-->What angle does the electric field at the origin make with the x-axis if a 2 nC charge is placed at x = -8 m, and a 1.4 nC charge is placed at y = -9.3 m?
-a) 2.37 x 10¹degrees
+b) 2.74 x 10¹degrees
-c) 3.16 x 10¹degrees
-d) 3.65 x 10¹degrees
-e) 4.22 x 10¹degrees
=====*_Rendition_* 2-6=====
<!--a18ElectricChargeField_findE_2-->What angle does the electric field at the origin make with the x-axis if a 1.9 nC charge is placed at x = -5.4 m, and a 1.5 nC charge is placed at y = -7.1 m?
-a) 1.38 x 10¹degrees
-b) 1.59 x 10¹degrees
-c) 1.84 x 10¹degrees
-d) 2.13 x 10¹degrees
+e) 2.45 x 10¹degrees
=====*_Rendition_* 2-7=====
<!--a18ElectricChargeField_findE_2-->What angle does the electric field at the origin make with the x-axis if a 1.8 nC charge is placed

at x = -6.9 m, and a 2.5 nC charge is placed at y = -7.5 m?
-a) 2.79 x 10¹degrees
-b) 3.22 x 10¹degrees
-c) 3.72 x 10¹degrees
-d) 4.3 x 10¹degrees
+e) 4.96 x 10¹degrees
=====*_Rendition_* 2-8=====
<!--a18ElectricChargeField_findE_2-->What angle does the electric field at the origin make with the x-axis if a 1.4 nC charge is placed at x = -5.5 m, and a 2.8 nC charge is placed at y = -6.8 m?
-a) 3.95 x 10¹degrees
-b) 4.56 x 10¹degrees
+c) 5.26 x 10¹degrees
-d) 6.08 x 10¹degrees
-e) 7.02 x 10¹degrees
=====*_Rendition_* 2-9=====
<!--a18ElectricChargeField_findE_2-->What angle does the electric field at the origin make with the x-axis if a 2.6 nC charge is placed at x = -8.3 m, and a 2.5 nC charge is placed at y = -9.6 m?
-a) 2.32 x 10¹degrees
-b) 2.68 x 10¹degrees
-c) 3.09 x 10¹degrees
+d) 3.57 x 10¹degrees
-e) 4.12 x 10¹degrees
=====*_Rendition_* 2-10=====
<!--a18ElectricChargeField_findE_2-->What angle does the electric field at the origin make with the x-axis if a 2.8 nC charge is placed at x = -8 m, and a 1.5 nC charge is placed at y = -8.7 m?
+a) 2.44 x 10¹degrees
-b) 2.81 x 10¹degrees
-c) 3.25 x 10¹degrees
-d) 3.75 x 10¹degrees
-e) 4.33 x 10¹degrees
=====*_Rendition_* 2-11=====
<!--a18ElectricChargeField_findE_2-->What angle does the electric field at the origin make with the x-axis if a 2.9 nC charge is placed at x = -7.3 m, and a 1.7 nC charge is placed at y = -8.1 m?
+a) 2.55 x 10¹degrees
-b) 2.94 x 10¹degrees
-c) 3.4 x 10¹degrees
-d) 3.92 x 10¹degrees
-e) 4.53 x 10¹degrees
=====*_Rendition_* 2-12=====
<!--a18ElectricChargeField_findE_2-->What angle does the electric field at the origin make with the x-axis if a 2.8 nC charge is placed at x = -9.8 m, and a 2.8 nC charge is placed at y = -5.8 m?
+a) 7.07 x 10¹degrees
-b) 8.16 x 10¹degrees
-c) 9.43 x 10¹degrees
-d) 1.09 x 10²degrees
-e) 1.26 x 10²degrees
=====*_Rendition_* 2-13=====

<!--a18ElectricChargeField_findE_2-->What angle does the electric field at the origin make with the x-axis if a 1.2 nC charge is placed at x = -6.7 m, and a 1.7 nC charge is placed at y = -6.1 m?
-a) 4.47 x 10¹degrees
-b) 5.17 x 10¹degrees
+c) 5.97 x 10¹degrees
-d) 6.89 x 10¹degrees
-e) 7.96 x 10¹degrees
=====*_Rendition_* 2-14=====
<!--a18ElectricChargeField_findE_2-->What angle does the electric field at the origin make with the x-axis if a 2.9 nC charge is placed at x = -6.3 m, and a 2.1 nC charge is placed at y = -8.8 m?
-a) 1.32 x 10¹degrees
-b) 1.53 x 10¹degrees
-c) 1.76 x 10¹degrees
+d) 2.04 x 10¹degrees
-e) 2.35 x 10¹degrees
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a18ElectricChargeField_findE_3-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(4a, 3a) is βkQ/a², where β equals
-a) 4.1 x 10⁻³
-b) 4.96 x 10⁻³
-c) 6.01 x 10⁻³
+d) 7.28 x 10⁻³
-e) 8.82 x 10⁻³
=====*_Rendition_* 3-3=====
<!--a18ElectricChargeField_findE_3-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(4a, 5a) is βkQ/a², where β equals
+a) 6.11 x 10⁻⁴
-b) 7.4 x 10⁻⁴
-c) 8.97 x 10⁻⁴
-d) 1.09 x 10⁻³
-e) 1.32 x 10⁻³
=====*_Rendition_* 3-4=====
<!--a18ElectricChargeField_findE_3-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(6a, 5a) is βkQ/a², where β equals
+a) 1.61 x 10⁻³ unit
-b) 1.95 x 10⁻³ unit
-c) 2.36 x 10⁻³ unit
-d) 2.86 x 10⁻³ unit
-e) 3.46 x 10⁻³ unit
=====*_Rendition_* 3-5=====

<!--a18ElectricChargeField_findE_3-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(4a, 3a) is βkQ/a², where β equals
-a) 3.38 x 10⁻³ unit
-b) 4.1 x 10⁻³ unit
-c) 4.96 x 10⁻³ unit
-d) 6.01 x 10⁻³ unit
+e) 7.28 x 10⁻³ unit
=====*_Rendition_* 3-6=====
<!--a18ElectricChargeField_findE_3-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(5a, 4a) is βkQ/a², where β equals
-a) 1.76 x 10⁻³ unit
-b) 2.13 x 10⁻³ unit
-c) 2.59 x 10⁻³ unit
+d) 3.13 x 10⁻³ unit
-e) 3.79 x 10⁻³ unit
=====*_Rendition_* 3-7=====
<!--a18ElectricChargeField_findE_3-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(4a, 6a) is βkQ/a², where β equals
-a) 1.52 x 10⁻⁴ unit
-b) 1.85 x 10⁻⁴ unit
+c) 2.24 x 10⁻⁴ unit
-d) 2.71 x 10⁻⁴ unit
-e) 3.28 x 10⁻⁴ unit
=====*_Rendition_* 3-8=====
<!--a18ElectricChargeField_findE_3-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(4a, 4a) is βkQ/a², where β equals
-a) 2.22 x 10⁻³ unit
+b) 2.69 x 10⁻³ unit
-c) 3.26 x 10⁻³ unit
-d) 3.95 x 10⁻³ unit
-e) 4.79 x 10⁻³ unit
=====*_Rendition_* 3-9=====
<!--a18ElectricChargeField_findE_3-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(6a, 5a) is βkQ/a², where β equals
-a) 1.09 x 10⁻³ unit
-b) 1.33 x 10⁻³ unit
+c) 1.61 x 10⁻³ unit

-d) 1.95 x 10⁻³ unit
-e) 2.36 x 10⁻³ unit
=====*_Rendition_* 3-10=====
<!--a18ElectricChargeField_findE_3-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(3a, 5a) is βkQ/a², where β equals
+a) 1.08 x 10⁻³ unit
-b) 1.31 x 10⁻³ unit
-c) 1.59 x 10⁻³ unit
-d) 1.93 x 10⁻³ unit
-e) 2.34 x 10⁻³ unit
=====*_Rendition_* 3-11=====
<!--a18ElectricChargeField_findE_3-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(4a, 2a) is βkQ/a², where β equals
-a) 7.31 x 10⁻³ unit
-b) 8.86 x 10⁻³ unit
-c) 1.07 x 10⁻² unit
-d) 1.3 x 10⁻² unit
+e) 1.57 x 10⁻² unit
=====*_Rendition_* 3-12=====
<!--a18ElectricChargeField_findE_3-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(6a, 4a) is βkQ/a², where β equals
-a) 1.33 x 10⁻³ unit
-b) 1.61 x 10⁻³ unit
-c) 1.95 x 10⁻³ unit
-d) 2.37 x 10⁻³ unit
+e) 2.87 x 10⁻³ unit
=====*_Rendition_* 3-13=====
<!--a18ElectricChargeField_findE_3-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(5a, 5a) is βkQ/a², where β equals
-a) 6.46 x 10⁻⁴ unit
-b) 7.82 x 10⁻⁴ unit
-c) 9.48 x 10⁻⁴ unit
-d) 1.15 x 10⁻³ unit
+e) 1.39 x 10⁻³ unit
=====*_Rendition_* 3-14=====
<!--a18ElectricChargeField_findE_3-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(6a, 5a) is βkQ/a², where β equals

-a) 1.33 x 10⁻³ unit
+b) 1.61 x 10⁻³ unit
-c) 1.95 x 10⁻³ unit
-d) 2.36 x 10⁻³ unit
-e) 2.86 x 10⁻³ unit
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a18ElectricChargeField_findE_4-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the y component of the electric field at (x,y) =(1.1a, 1.2a) is βkQ/a², where β equals
-a) 1.61 x 10⁻¹
-b) 1.95 x 10⁻¹
-c) 2.36 x 10⁻¹
-d) 2.86 x 10⁻¹
+e) 3.47 x 10⁻¹
=====*_Rendition_* 4-3=====
<!--a18ElectricChargeField_findE_4-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the y component of the electric field at (x,y) =(1.1a, 1.2a) is βkQ/a², where β equals
-a) 2.86 x 10⁻¹
+b) 3.47 x 10⁻¹
-c) 4.2 x 10⁻¹
-d) 5.09 x 10⁻¹
-e) 6.17 x 10⁻¹
=====*_Rendition_* 4-4=====
<!--a18ElectricChargeField_findE_4-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the y component of the electric field at (x,y) =(1.1a, 1.2a) is βkQ/a², where β equals
+a) 3.47 x 10⁻¹ unit
-b) 4.2 x 10⁻¹ unit
-c) 5.09 x 10⁻¹ unit
-d) 6.17 x 10⁻¹ unit
-e) 7.47 x 10⁻¹ unit
=====*_Rendition_* 4-5=====
<!--a18ElectricChargeField_findE_4-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the y component of the electric field at (x,y) =(1.1a, 1.2a) is βkQ/a², where β equals
-a) 2.36 x 10⁻¹ unit
-b) 2.86 x 10⁻¹ unit
+c) 3.47 x 10⁻¹ unit
-d) 4.2 x 10⁻¹ unit
-e) 5.09 x 10⁻¹ unit
=====*_Rendition_* 4-6=====
<!--a18ElectricChargeField_findE_4-->A dipole at the origin consists

of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a.
The absolute value of the y component of the electric field at
(x,y) =(1.1a, 1.2a) is βkQ/a², where β
equals
-a) 1.61 x 10⁻¹ unit
-b) 1.95 x 10⁻¹ unit
-c) 2.36 x 10⁻¹ unit
-d) 2.86 x 10⁻¹ unit
+e) 3.47 x 10⁻¹ unit
=====*_Rendition_* 4-7=====
<!--a18ElectricChargeField_findE_4-->A dipole at the origin consists
of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a.
The absolute value of the y component of the electric field at
(x,y) =(1.1a, 1.2a) is βkQ/a², where β
equals
-a) 2.36 x 10⁻¹ unit
-b) 2.86 x 10⁻¹ unit
+c) 3.47 x 10⁻¹ unit
-d) 4.2 x 10⁻¹ unit
-e) 5.09 x 10⁻¹ unit
=====*_Rendition_* 4-8=====
<!--a18ElectricChargeField_findE_4-->A dipole at the origin consists
of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a.
The absolute value of the y component of the electric field at
(x,y) =(1.1a, 1.2a) is βkQ/a², where β
equals
-a) 2.86 x 10⁻¹ unit
+b) 3.47 x 10⁻¹ unit
-c) 4.2 x 10⁻¹ unit
-d) 5.09 x 10⁻¹ unit
-e) 6.17 x 10⁻¹ unit
=====*_Rendition_* 4-9=====
<!--a18ElectricChargeField_findE_4-->A dipole at the origin consists
of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a.
The absolute value of the y component of the electric field at
(x,y) =(1.1a, 1.2a) is βkQ/a², where β
equals
+a) 3.47 x 10⁻¹ unit
-b) 4.2 x 10⁻¹ unit
-c) 5.09 x 10⁻¹ unit
-d) 6.17 x 10⁻¹ unit
-e) 7.47 x 10⁻¹ unit
=====*_Rendition_* 4-10=====
<!--a18ElectricChargeField_findE_4-->A dipole at the origin consists
of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a.
The absolute value of the y component of the electric field at
(x,y) =(1.1a, 1.2a) is βkQ/a², where β
equals
-a) 1.95 x 10⁻¹ unit
-b) 2.36 x 10⁻¹ unit
-c) 2.86 x 10⁻¹ unit
+d) 3.47 x 10⁻¹ unit

-e) 4.2 x 10⁻¹ unit
=====*_Rendition_* 4-11=====
<!--a18ElectricChargeField_findE_4-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the y component of the electric field at (x,y) =(1.1a, 1.2a) is βkQ/a², where β equals
-a) 1.95 x 10⁻¹ unit
-b) 2.36 x 10⁻¹ unit
-c) 2.86 x 10⁻¹ unit
+d) 3.47 x 10⁻¹ unit
-e) 4.2 x 10⁻¹ unit
=====*_Rendition_* 4-12=====
<!--a18ElectricChargeField_findE_4-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the y component of the electric field at (x,y) =(1.1a, 1.2a) is βkQ/a², where β equals
-a) 1.61 x 10⁻¹ unit
-b) 1.95 x 10⁻¹ unit
-c) 2.36 x 10⁻¹ unit
-d) 2.86 x 10⁻¹ unit
+e) 3.47 x 10⁻¹ unit
=====*_Rendition_* 4-13=====
<!--a18ElectricChargeField_findE_4-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the y component of the electric field at (x,y) =(1.1a, 1.2a) is βkQ/a², where β equals
-a) 1.95 x 10⁻¹ unit
-b) 2.36 x 10⁻¹ unit
-c) 2.86 x 10⁻¹ unit
+d) 3.47 x 10⁻¹ unit
-e) 4.2 x 10⁻¹ unit
=====*_Rendition_* 4-14=====
<!--a18ElectricChargeField_findE_4-->A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the y component of the electric field at (x,y) =(1.1a, 1.2a) is βkQ/a², where β equals
-a) 1.95 x 10⁻¹ unit
-b) 2.36 x 10⁻¹ unit
-c) 2.86 x 10⁻¹ unit
+d) 3.47 x 10⁻¹ unit
-e) 4.2 x 10⁻¹ unit
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====*_Instructions_*====
Instructions are forthcoming

Transclusion from [[Quizbank/Instructions_0]]:
{{:Quizbank/Instructions_0}}
[[Category:QB/Numerical]]

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===*_Quiz_*===
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{<!--a19ElectricPotentialField_Capacitance_1-->A parallel plate
capacitor has both plates with an area of 1.05 m<sup>2</sup>. The
separation between the plates is   0.63mm.  Applied to the plates is a
potential difference of 2.85 kV.  What is the capacitance?}
-a) 8.44 nF.
-b) 9.7 nF.
-c) 11.16 nF.
-d) 12.83 nF.
+e) 14.76 nF.

{<!--a19ElectricPotentialField_Capacitance_2-->The same parallel plate
capacitor, with area 1.05 m<sup>2</sup>, plate separation   0.63mm,
and an applied voltage of 2.85 kV.  How much charge is stored?}
-a) 24.05 &mu;C.
-b) 27.65 &mu;C.
-c) 31.8 &mu;C.
-d) 36.57 &mu;C.
+e) 42.06 &mu;C.

{<!--a19ElectricPotentialField_Capacitance_3-->A 0.8 Farad capacitor
is charged with 1.5 Coulombs.  What is the value of the electric field
if the plates are 0.7 mm apart?}
-a) 1.76 kV/m.
-b) 2.03 kV/m.
-c) 2.33 kV/m.
+d) 2.68 kV/m.
-e) 3.08 kV/m.

{<!--a19ElectricPotentialField_Capacitance_4-->A 0.8  Farad capacitor
```

charged with 1.5 Coulombs. What is the energy stored in the capacitor if the plates are 0.7 mm apart?}
-a) 0.8 J.
-b) 0.92 J.
-c) 1.06 J.
-d) 1.22 J.
+e) 1.41 J.

{<!--a19ElectricPotentialField_Capacitance_5-->A 0.8 Farad capacitor charged with 1.5 Coulombs. What is the force between the plates if they are 0.7 mm apart?}
+a) 2009 N.
-b) 2310 N.
-c) 2657 N.
-d) 3055 N.
-e) 3514 N.

</quiz>

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Other renditions
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====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a19ElectricPotentialField_Capacitance_1-->A parallel plate capacitor has both plates with an area of 1.25 m². The separation between the plates is   0.83mm. Applied to the plates is a potential difference of 4.65 kV. What is the capacitance?
-a) 8.77 nF.
-b) 10.08 nF.
-c) 11.6 nF.
+d) 13.33 nF.
-e) 15.33 nF.
=====*_Rendition_* 1-3=====
<!--a19ElectricPotentialField_Capacitance_1-->A parallel plate capacitor has both plates with an area of 1.45 m². The separation between the plates is   1.53mm. Applied to the plates is a potential difference of 2.55 kV. What is the capacitance?
+a) 8.39 nF.
-b) 9.65 nF.
-c) 11.1 nF.
-d) 12.76 nF.
-e) 14.68 nF.
=====*_Rendition_* 1-4=====
<!--a19ElectricPotentialField_Capacitance_1-->A parallel plate capacitor has both plates with an area of 0.75 m². The separation between the plates is   1.53mm. Applied to the plates is a potential difference of 5.05 kV. What is the capacitance?
-a) 3.28 nF.

-b) 3.77 nF.
+c) 4.34 nF.
-d) 4.99 nF.
-e) 5.74 nF.
=====*_Rendition_* 1-5=====
<!--a19ElectricPotentialField_Capacitance_1-->A parallel plate capacitor has both plates with an area of 1.45 m². The separation between the plates is   0.93mm. Applied to the plates is a potential difference of 4.45 kV. What is the capacitance?
-a) 12 nF.
+b) 13.8 nF.
-c) 15.88 nF.
-d) 18.26 nF.
-e) 21 nF.
=====*_Rendition_* 1-6=====
<!--a19ElectricPotentialField_Capacitance_1-->A parallel plate capacitor has both plates with an area of 1.05 m². The separation between the plates is   0.63mm. Applied to the plates is a potential difference of 4.35 kV. What is the capacitance?
-a) 11.16 nF.
-b) 12.83 nF.
+c) 14.76 nF.
-d) 16.97 nF.
-e) 19.52 nF.
=====*_Rendition_* 1-7=====
<!--a19ElectricPotentialField_Capacitance_1-->A parallel plate capacitor has both plates with an area of 0.55 m². The separation between the plates is   0.53mm. Applied to the plates is a potential difference of 4.25 kV. What is the capacitance?
-a) 6.95 nF.
-b) 7.99 nF.
+c) 9.19 nF.
-d) 10.57 nF.
-e) 12.15 nF.
=====*_Rendition_* 1-8=====
<!--a19ElectricPotentialField_Capacitance_1-->A parallel plate capacitor has both plates with an area of 1.35 m². The separation between the plates is   1.23mm. Applied to the plates is a potential difference of 2.65 kV. What is the capacitance?
-a) 7.35 nF.
-b) 8.45 nF.
+c) 9.72 nF.
-d) 11.18 nF.
-e) 12.85 nF.
=====*_Rendition_* 1-9=====
<!--a19ElectricPotentialField_Capacitance_1-->A parallel plate capacitor has both plates with an area of 1.15 m². The separation between the plates is   0.63mm. Applied to the plates is a potential difference of 2.25 kV. What is the capacitance?
+a) 16.16 nF.
-b) 18.59 nF.
-c) 21.37 nF.

-d) 24.58 nF.
-e) 28.27 nF.
=====*_Rendition_* 1-10=====
<!--a19ElectricPotentialField_Capacitance_1-->A parallel plate capacitor has both plates with an area of 0.75 m². The separation between the plates is 0.53mm. Applied to the plates is a potential difference of 3.55 kV. What is the capacitance?
-a) 7.16 nF.
-b) 8.24 nF.
-c) 9.47 nF.
-d) 10.9 nF.
+e) 12.53 nF.
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a19ElectricPotentialField_Capacitance_2-->The same parallel plate capacitor, with area 1.25 m², plate separation 0.83mm, and an applied voltage of 4.65 kV. How much charge is stored?
-a) 35.45 μC.
-b) 40.77 μC.
-c) 46.89 μC.
-d) 53.92 μC.
+e) 62.01 μC.
=====*_Rendition_* 2-3=====
<!--a19ElectricPotentialField_Capacitance_2-->The same parallel plate capacitor, with area 1.45 m², plate separation 1.53mm, and an applied voltage of 2.55 kV. How much charge is stored?
-a) 12.23 μC.
-b) 14.07 μC.
-c) 16.18 μC.
-d) 18.61 μC.
+e) 21.4 μC.
=====*_Rendition_* 2-4=====
<!--a19ElectricPotentialField_Capacitance_2-->The same parallel plate capacitor, with area 0.75 m², plate separation 1.53mm, and an applied voltage of 5.05 kV. How much charge is stored?
-a) 16.57 μC.
-b) 19.06 μC.
+c) 21.92 μC.
-d) 25.21 μC.
-e) 28.99 μC.
=====*_Rendition_* 2-5=====
<!--a19ElectricPotentialField_Capacitance_2-->The same parallel plate capacitor, with area 1.45 m², plate separation 0.93mm, and an applied voltage of 4.45 kV. How much charge is stored?
-a) 40.39 μC.
-b) 46.45 μC.
-c) 53.42 μC.
+d) 61.43 μC.
-e) 70.65 μC.
=====*_Rendition_* 2-6=====
<!--a19ElectricPotentialField_Capacitance_2-->The same parallel plate capacitor, with area 1.05 m², plate separation 0.63mm,

and an applied voltage of 4.35 kV. How much charge is stored?
-a) 42.21 μC.
-b) 48.54 μC.
-c) 55.82 μC.
+d) 64.19 μC.
-e) 73.82 μC.
=====*_Rendition_* 2-7=====
<!--a19ElectricPotentialField_Capacitance_2-->The same parallel plate capacitor, with area 0.55 m², plate separation   0.53mm, and an applied voltage of 4.25 kV. How much charge is stored?
+a) 39.05 μC.
-b) 44.91 μC.
-c) 51.64 μC.
-d) 59.39 μC.
-e) 68.3 μC.
=====*_Rendition_* 2-8=====
<!--a19ElectricPotentialField_Capacitance_2-->The same parallel plate capacitor, with area 1.35 m², plate separation   1.23mm, and an applied voltage of 2.65 kV. How much charge is stored?
-a) 16.93 μC.
-b) 19.47 μC.
-c) 22.39 μC.
+d) 25.75 μC.
-e) 29.62 μC.
=====*_Rendition_* 2-9=====
<!--a19ElectricPotentialField_Capacitance_2-->The same parallel plate capacitor, with area 1.15 m², plate separation   0.63mm, and an applied voltage of 2.25 kV. How much charge is stored?
-a) 23.91 μC.
-b) 27.5 μC.
-c) 31.62 μC.
+d) 36.37 μC.
-e) 41.82 μC.
=====*_Rendition_* 2-10=====
<!--a19ElectricPotentialField_Capacitance_2-->The same parallel plate capacitor, with area 0.75 m², plate separation   0.53mm, and an applied voltage of 3.55 kV. How much charge is stored?
-a) 29.25 μC.
-b) 33.63 μC.
-c) 38.68 μC.
+d) 44.48 μC.
-e) 51.15 μC.
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a19ElectricPotentialField_Capacitance_3-->A 0.6 Farad capacitor is charged with 1.5 Coulombs. What is the value of the electric field if the plates are 0.8 mm apart?
+a) 3.13 kV/m.
-b) 3.59 kV/m.
-c) 4.13 kV/m.
-d) 4.75 kV/m.
-e) 5.47 kV/m.

=====*_Rendition_* 3-3=====
<!--a19ElectricPotentialField_Capacitance_3-->A 0.9 Farad capacitor is charged with 1.1 Coulombs. What is the value of the electric field if the plates are 0.3 mm apart?
-a) 2.68 kV/m.
-b) 3.08 kV/m.
-c) 3.54 kV/m.
+d) 4.07 kV/m.
-e) 4.69 kV/m.
=====*_Rendition_* 3-4=====
<!--a19ElectricPotentialField_Capacitance_3-->A 0.5 Farad capacitor is charged with 1.6 Coulombs. What is the value of the electric field if the plates are 0.7 mm apart?
-a) 3.46 kV/m.
-b) 3.98 kV/m.
+c) 4.57 kV/m.
-d) 5.26 kV/m.
-e) 6.05 kV/m.
=====*_Rendition_* 3-5=====
<!--a19ElectricPotentialField_Capacitance_3-->A 1.4 Farad capacitor is charged with 2.3 Coulombs. What is the value of the electric field if the plates are 0.6 mm apart?
-a) 1.57 kV/m.
-b) 1.8 kV/m.
-c) 2.07 kV/m.
-d) 2.38 kV/m.
+e) 2.74 kV/m.
=====*_Rendition_* 3-6=====
<!--a19ElectricPotentialField_Capacitance_3-->A 1.2 Farad capacitor is charged with 1.6 Coulombs. What is the value of the electric field if the plates are 0.4 mm apart?
-a) 1.91 kV/m.
-b) 2.19 kV/m.
-c) 2.52 kV/m.
-d) 2.9 kV/m.
+e) 3.33 kV/m.
=====*_Rendition_* 3-7=====
<!--a19ElectricPotentialField_Capacitance_3-->A 1.4 Farad capacitor is charged with 1.1 Coulombs. What is the value of the electric field if the plates are 0.6 mm apart?
-a) 0.86 kV/m.
-b) 0.99 kV/m.
-c) 1.14 kV/m.
+d) 1.31 kV/m.
-e) 1.51 kV/m.
=====*_Rendition_* 3-8=====
<!--a19ElectricPotentialField_Capacitance_3-->A 1.3 Farad capacitor is charged with 1.9 Coulombs. What is the value of the electric field if the plates are 0.3 mm apart?
-a) 3.2 kV/m.
-b) 3.68 kV/m.
-c) 4.24 kV/m.

+d) 4.87 kV/m.
-e) 5.6 kV/m.
=====*_Rendition_* 3-9=====
<!--a19ElectricPotentialField_Capacitance_3-->A 0.5 Farad capacitor is charged with 1.3 Coulombs. What is the value of the electric field if the plates are 0.7 mm apart?
+a) 3.71 kV/m.
-b) 4.27 kV/m.
-c) 4.91 kV/m.
-d) 5.65 kV/m.
-e) 6.5 kV/m.
=====*_Rendition_* 3-10=====
<!--a19ElectricPotentialField_Capacitance_3-->A 0.8 Farad capacitor is charged with 1.7 Coulombs. What is the value of the electric field if the plates are 0.5 mm apart?
-a) 2.43 kV/m.
-b) 2.79 kV/m.
-c) 3.21 kV/m.
-d) 3.7 kV/m.
+e) 4.25 kV/m.
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a19ElectricPotentialField_Capacitance_4-->A 0.6 Farad capacitor charged with 1.5 Coulombs. What is the energy stored in the capacitor if the plates are 0.8 mm apart?
-a) 1.07 J.
-b) 1.23 J.
-c) 1.42 J.
-d) 1.63 J.
+e) 1.88 J.
=====*_Rendition_* 4-3=====
<!--a19ElectricPotentialField_Capacitance_4-->A 0.9 Farad capacitor charged with 1.1 Coulombs. What is the energy stored in the capacitor if the plates are 0.3 mm apart?
-a) 0.44 J.
-b) 0.51 J.
-c) 0.58 J.
+d) 0.67 J.
-e) 0.77 J.
=====*_Rendition_* 4-4=====
<!--a19ElectricPotentialField_Capacitance_4-->A 0.5 Farad capacitor charged with 1.6 Coulombs. What is the energy stored in the capacitor if the plates are 0.7 mm apart?
-a) 2.23 J.
+b) 2.56 J.
-c) 2.94 J.
-d) 3.39 J.
-e) 3.89 J.
=====*_Rendition_* 4-5=====
<!--a19ElectricPotentialField_Capacitance_4-->A 1.4 Farad capacitor charged with 2.3 Coulombs. What is the energy stored in the capacitor if the plates are 0.6 mm apart?

-a) 1.08 J.
-b) 1.24 J.
-c) 1.43 J.
-d) 1.64 J.
+e) 1.89 J.
=====*_Rendition_* 4-6=====
<!--a19ElectricPotentialField_Capacitance_4-->A 1.2 Farad capacitor charged with 1.6 Coulombs. What is the energy stored in the capacitor if the plates are 0.4 mm apart?
-a) 0.81 J.
-b) 0.93 J.
+c) 1.07 J.
-d) 1.23 J.
-e) 1.41 J.
=====*_Rendition_* 4-7=====
<!--a19ElectricPotentialField_Capacitance_4-->A 1.4 Farad capacitor charged with 1.1 Coulombs. What is the energy stored in the capacitor if the plates are 0.6 mm apart?
-a) 0.38 J.
+b) 0.43 J.
-c) 0.5 J.
-d) 0.57 J.
-e) 0.66 J.
=====*_Rendition_* 4-8=====
<!--a19ElectricPotentialField_Capacitance_4-->A 1.3 Farad capacitor charged with 1.9 Coulombs. What is the energy stored in the capacitor if the plates are 0.3 mm apart?
-a) 0.91 J.
-b) 1.05 J.
-c) 1.21 J.
+d) 1.39 J.
-e) 1.6 J.
=====*_Rendition_* 4-9=====
<!--a19ElectricPotentialField_Capacitance_4-->A 0.5 Farad capacitor charged with 1.3 Coulombs. What is the energy stored in the capacitor if the plates are 0.7 mm apart?
-a) 1.28 J.
-b) 1.47 J.
+c) 1.69 J.
-d) 1.94 J.
-e) 2.24 J.
=====*_Rendition_* 4-10=====
<!--a19ElectricPotentialField_Capacitance_4-->A 0.8 Farad capacitor charged with 1.7 Coulombs. What is the energy stored in the capacitor if the plates are 0.5 mm apart?
+a) 1.81 J.
-b) 2.08 J.
-c) 2.39 J.
-d) 2.75 J.
-e) 3.16 J.
====*_Question_* 5====
=====*_Rendition_* 5-2=====

<!--a19ElectricPotentialField_Capacitance_5-->A 0.6 Farad capacitor charged with 1.5 Coulombs. What is the force between the plates if they are 0.8 mm apart?
-a) 1772 N.
-b) 2038 N.
+c) 2344 N.
-d) 2695 N.
-e) 3100 N.
=====*_Rendition_* 5-3=====
<!--a19ElectricPotentialField_Capacitance_5-->A 0.9 Farad capacitor charged with 1.1 Coulombs. What is the force between the plates if they are 0.3 mm apart?
-a) 1473 N.
-b) 1694 N.
-c) 1948 N.
+d) 2241 N.
-e) 2577 N.
=====*_Rendition_* 5-4=====
<!--a19ElectricPotentialField_Capacitance_5-->A 0.5 Farad capacitor charged with 1.6 Coulombs. What is the force between the plates if they are 0.7 mm apart?
-a) 3180 N.
+b) 3657 N.
-c) 4206 N.
-d) 4837 N.
-e) 5562 N.
=====*_Rendition_* 5-5=====
<!--a19ElectricPotentialField_Capacitance_5-->A 1.4 Farad capacitor charged with 2.3 Coulombs. What is the force between the plates if they are 0.6 mm apart?
-a) 2381 N.
-b) 2738 N.
+c) 3149 N.
-d) 3621 N.
-e) 4164 N.
=====*_Rendition_* 5-6=====
<!--a19ElectricPotentialField_Capacitance_5-->A 1.2 Farad capacitor charged with 1.6 Coulombs. What is the force between the plates if they are 0.4 mm apart?
-a) 2319 N.
+b) 2667 N.
-c) 3067 N.
-d) 3527 N.
-e) 4056 N.
=====*_Rendition_* 5-7=====
<!--a19ElectricPotentialField_Capacitance_5-->A 1.4 Farad capacitor charged with 1.1 Coulombs. What is the force between the plates if they are 0.6 mm apart?
-a) 412 N.
-b) 474 N.
-c) 545 N.
-d) 626 N.

+e) 720 N.
=====*_Rendition_* 5-8=====
<!--a19ElectricPotentialField_Capacitance_5-->A 1.3 Farad capacitor charged with 1.9 Coulombs. What is the force between the plates if they are 0.3 mm apart?
-a) 4025 N.
+b) 4628 N.
-c) 5322 N.
-d) 6121 N.
-e) 7039 N.
=====*_Rendition_* 5-9=====
<!--a19ElectricPotentialField_Capacitance_5-->A 0.5 Farad capacitor charged with 1.3 Coulombs. What is the force between the plates if they are 0.7 mm apart?
-a) 1826 N.
-b) 2099 N.
+c) 2414 N.
-d) 2776 N.
-e) 3193 N.
=====*_Rendition_* 5-10=====
<!--a19ElectricPotentialField_Capacitance_5-->A 0.8 Farad capacitor charged with 1.7 Coulombs. What is the force between the plates if they are 0.5 mm apart?
-a) 2065 N.
-b) 2375 N.
-c) 2732 N.
-d) 3141 N.
+e) 3613 N.
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{<!--a19ElectricPotentialField_KE_PE_1-->How fast is a 2642 eV electron moving?}
+a) 3 x 10⁷ m/s.
-b) 4.6 x 10⁷ m/s.
-c) 6.9 x 10⁷ m/s.
-d) 1 x 10⁸ m/s.
-e) 1.5 x 10⁸ m/s.

{<!--a19ElectricPotentialField_KE_PE_2-->A proton is accelerated (at rest) from a plate held at 45.3 volts to a plate at zero volts. What is the final speed?}
-a) 2.8 x 10⁴ m/s.
-b) 4.1 x 10⁴ m/s.
-c) 6.2 x 10⁴ m/s.
+d) 9.3 x 10⁴ m/s.
-e) 1.4 x 10⁵ m/s.

{<!--a19ElectricPotentialField_KE_PE_3-->What voltage is required accelerate an electron at rest to a speed of 9.4 x 10⁶ m/s?}
-a) 7.4 x 10¹ volts
-b) 1.1 x 10² volts
-c) 1.7 x 10² volts
+d) 2.5 x 10² volts
-e) 3.8 x 10² volts

{<!--a19ElectricPotentialField_KE_PE_4-->What voltage is required to stop a proton moving at a speed of 8.5 x 10⁴ m/s?}
-a) 7.4 x 10⁰ volts
-b) 1.1 x 10¹ volts
-c) 1.7 x 10¹ volts
-d) 2.5 x 10¹ volts
+e) 3.8 x 10¹ volts

</quiz>

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Other renditions
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=====*_Rendition_* 1-2=====
<!--a19ElectricPotentialField_KE_PE_1-->How fast is a 2212 eV electron moving?

-a) 8.3 x 10⁶ m/s.
-b) 1.2 x 10⁷ m/s.
-c) 1.9 x 10⁷ m/s.
+d) 2.8 x 10⁷ m/s.
-e) 4.2 x 10⁷ m/s.
=====*_Rendition_* 1-3=====
<!--a19ElectricPotentialField_KE_PE_1-->How fast is a 2928 eV electron moving?
-a) 6.3 x 10⁶ m/s.
-b) 9.5 x 10⁶ m/s.
-c) 1.4 x 10⁷ m/s.
-d) 2.1 x 10⁷ m/s.
+e) 3.2 x 10⁷ m/s.
=====*_Rendition_* 1-4=====
<!--a19ElectricPotentialField_KE_PE_1-->How fast is a 2952 eV electron moving?
-a) 6.4 x 10⁶ m/s.
-b) 9.5 x 10⁶ m/s.
-c) 1.4 x 10⁷ m/s.
-d) 2.1 x 10⁷ m/s.
+e) 3.2 x 10⁷ m/s.
=====*_Rendition_* 1-5=====
<!--a19ElectricPotentialField_KE_PE_1-->How fast is a 2355 eV electron moving?
-a) 1.9 x 10⁷ m/s.
+b) 2.9 x 10⁷ m/s.
-c) 4.3 x 10⁷ m/s.
-d) 6.5 x 10⁷ m/s.
-e) 9.7 x 10⁷ m/s.
=====*_Rendition_* 1-6=====
<!--a19ElectricPotentialField_KE_PE_1-->How fast is a 2672 eV electron moving?
-a) 6.1 x 10⁶ m/s.
-b) 9.1 x 10⁶ m/s.
-c) 1.4 x 10⁷ m/s.
-d) 2 x 10⁷ m/s.
+e) 3.1 x 10⁷ m/s.
=====*_Rendition_* 1-7=====
<!--a19ElectricPotentialField_KE_PE_1-->How fast is a 2663 eV electron moving?
+a) 3.1 x 10⁷ m/s.
-b) 4.6 x 10⁷ m/s.
-c) 6.9 x 10⁷ m/s.
-d) 1 x 10⁸ m/s.
-e) 1.5 x 10⁸ m/s.
=====*_Rendition_* 1-8=====
<!--a19ElectricPotentialField_KE_PE_1-->How fast is a 2493 eV electron moving?
-a) 1.3 x 10⁷ m/s.
-b) 2 x 10⁷ m/s.
+c) 3 x 10⁷ m/s.
-d) 4.4 x 10⁷ m/s.

-e) 6.7 x 10⁷ m/s.
=====*_Rendition_* 1-9=====
<!--a19ElectricPotentialField_KE_PE_1-->How fast is a 2648 eV electron moving?
+a) 3.1 x 10⁷ m/s.
-b) 4.6 x 10⁷ m/s.
-c) 6.9 x 10⁷ m/s.
-d) 1 x 10⁸ m/s.
-e) 1.5 x 10⁸ m/s.
=====*_Rendition_* 1-10=====
<!--a19ElectricPotentialField_KE_PE_1-->How fast is a 2758 eV electron moving?
-a) 9.2 x 10⁶ m/s.
-b) 1.4 x 10⁷ m/s.
-c) 2.1 x 10⁷ m/s.
+d) 3.1 x 10⁷ m/s.
-e) 4.7 x 10⁷ m/s.
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a19ElectricPotentialField_KE_PE_2-->A proton is accelerated (at rest) from a plate held at 552.1 volts to a plate at zero volts. What is the final speed?
+a) 3.3 x 10⁵ m/s.
-b) 4.9 x 10⁵ m/s.
-c) 7.3 x 10⁵ m/s.
-d) 1.1 x 10⁶ m/s.
-e) 1.6 x 10⁶ m/s.
=====*_Rendition_* 2-3=====
<!--a19ElectricPotentialField_KE_PE_2-->A proton is accelerated (at rest) from a plate held at 333.6 volts to a plate at zero volts. What is the final speed?
-a) 1.1 x 10⁵ m/s.
-b) 1.7 x 10⁵ m/s.
+c) 2.5 x 10⁵ m/s.
-d) 3.8 x 10⁵ m/s.
-e) 5.7 x 10⁵ m/s.
=====*_Rendition_* 2-4=====
<!--a19ElectricPotentialField_KE_PE_2-->A proton is accellerated (at rest) from a plate held at 767.8 volts to a plate at zero volts. What is the final speed?
-a) 1.1 x 10⁵ m/s.
-b) 1.7 x 10⁵ m/s.
-c) 2.6 x 10⁵ m/s.
+d) 3.8 x 10⁵ m/s.
-e) 5.8 x 10⁵ m/s.
=====*_Rendition_* 2-5=====
<!--a19ElectricPotentialField_KE_PE_2-->A proton is accellerated (at rest) from a plate held at 4.7 volts to a plate at zero volts. What is the final speed?
-a) 5.9 x 10³ m/s.
-b) 8.9 x 10³ m/s.
-c) 1.3 x 10⁴ m/s.

-d) 2 x 10⁴ m/s.
+e) 3 x 10⁴ m/s.
=====*_Rendition_* 2-6=====
<!--a19ElectricPotentialField_KE_PE_2-->A proton is accellerated (at rest) from a plate held at 318.6 volts to a plate at zero volts. What is the final speed?
-a) 1.6 x 10⁵ m/s.
+b) 2.5 x 10⁵ m/s.
-c) 3.7 x 10⁵ m/s.
-d) 5.6 x 10⁵ m/s.
-e) 8.3 x 10⁵ m/s.
=====*_Rendition_* 2-7=====
<!--a19ElectricPotentialField_KE_PE_2-->A proton is accellerated (at rest) from a plate held at 775.8 volts to a plate at zero volts. What is the final speed?
-a) 7.6 x 10⁴ m/s.
-b) 1.1 x 10⁵ m/s.
-c) 1.7 x 10⁵ m/s.
-d) 2.6 x 10⁵ m/s.
+e) 3.9 x 10⁵ m/s.
=====*_Rendition_* 2-8=====
<!--a19ElectricPotentialField_KE_PE_2-->A proton is accellerated (at rest) from a plate held at 39.7 volts to a plate at zero volts. What is the final speed?
-a) 3.9 x 10⁴ m/s.
-b) 5.8 x 10⁴ m/s.
+c) 8.7 x 10⁴ m/s.
-d) 1.3 x 10⁵ m/s.
-e) 2 x 10⁵ m/s.
=====*_Rendition_* 2-9=====
<!--a19ElectricPotentialField_KE_PE_2-->A proton is accellerated (at rest) from a plate held at 588.2 volts to a plate at zero volts. What is the final speed?
-a) 6.6 x 10⁴ m/s.
-b) 10 x 10⁴ m/s.
-c) 1.5 x 10⁵ m/s.
-d) 2.2 x 10⁵ m/s.
+e) 3.4 x 10⁵ m/s.
=====*_Rendition_* 2-10=====
<!--a19ElectricPotentialField_KE_PE_2-->A proton is accellerated (at rest) from a plate held at 729.8 volts to a plate at zero volts. What is the final speed?
-a) 1.7 x 10⁵ m/s.
-b) 2.5 x 10⁵ m/s.
+c) 3.7 x 10⁵ m/s.
-d) 5.6 x 10⁵ m/s.
-e) 8.4 x 10⁵ m/s.
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a19ElectricPotentialField_KE_PE_3-->What voltage is required accelerate an electron at rest to a speed of 9.7 x 10⁴ m/s?
-a) 1.8 x 10⁻² volts

+b) 2.7 x 10⁻² volts
-c) 4 x 10⁻² volts
-d) 6 x 10⁻² volts
-e) 9 x 10⁻² volts
=====*_Rendition_* 3-3=====
<!--a19ElectricPotentialField_KE_PE_3-->What voltage is required accelerate an electron at rest to a speed of 1.7 x 10⁵ m/s?
-a) 1.6 x 10⁻² volts
-b) 2.4 x 10⁻² volts
-c) 3.7 x 10⁻² volts
-d) 5.5 x 10⁻² volts
+e) 8.2 x 10⁻² volts
=====*_Rendition_* 3-4=====
<!--a19ElectricPotentialField_KE_PE_3-->What voltage is required accelerate an electron at rest to a speed of 3 x 10⁵ m/s?
-a) 1.7 x 10⁻¹ volts
+b) 2.6 x 10⁻¹ volts
-c) 3.8 x 10⁻¹ volts
-d) 5.8 x 10⁻¹ volts
-e) 8.6 x 10⁻¹ volts
=====*_Rendition_* 3-5=====
<!--a19ElectricPotentialField_KE_PE_3-->What voltage is required accelerate an electron at rest to a speed of 2.8 x 10³ m/s?
-a) 4.4 x 10⁻⁶ volts
-b) 6.6 x 10⁻⁶ volts
-c) 9.9 x 10⁻⁶ volts
-d) 1.5 x 10⁻⁵ volts
+e) 2.2 x 10⁻⁵ volts
=====*_Rendition_* 3-6=====
<!--a19ElectricPotentialField_KE_PE_3-->What voltage is required accelerate an electron at rest to a speed of 9.5 x 10⁶ m/s?

-a) 1.1 x 10² volts
-b) 1.7 x 10² volts
+c) 2.6 x 10² volts
-d) 3.8 x 10² volts
-e) 5.8 x 10² volts
=====*_Rendition_* 3-7=====
<!--a19ElectricPotentialField_KE_PE_3-->What voltage is required accelerate an electron at rest to a speed of 5.6 x 10⁴ m/s?
-a) 5.9 x 10⁻³ volts
+b) 8.9 x 10⁻³ volts
-c) 1.3 x 10⁻² volts
-d) 2 x 10⁻² volts
-e) 3 x 10⁻² volts
=====*_Rendition_* 3-8=====
<!--a19ElectricPotentialField_KE_PE_3-->What voltage is required accelerate an electron at rest to a speed of 7.6 x 10⁷ m/s?
-a) 3.2 x 10³ volts
-b) 4.9 x 10³ volts
-c) 7.3 x 10³ volts
-d) 1.1 x 10⁴ volts

+e) 1.6 x 10⁴ volts
=====*_Rendition_* 3-9=====
<!--a19ElectricPotentialField_KE_PE_3-->What voltage is required accelerate an electron at rest to a speed of 5.5 x 10⁵ m/s?
-a) 2.5 x 10⁻¹ volts
-b) 3.8 x 10⁻¹ volts
-c) 5.7 x 10⁻¹ volts
+d) 8.6 x 10⁻¹ volts
-e) 1.3 x 10⁰ volts
=====*_Rendition_* 3-10=====
<!--a19ElectricPotentialField_KE_PE_3-->What voltage is required accelerate an electron at rest to a speed of 1.5 x 10³ m/s?
-a) 1.9 x 10⁻⁶ volts
-b) 2.8 x 10⁻⁶ volts
-c) 4.3 x 10⁻⁶ volts
+d) 6.4 x 10⁻⁶ volts
-e) 9.6 x 10⁻⁶ volts
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a19ElectricPotentialField_KE_PE_4-->What voltage is required to stop a proton moving at a speed of 3 x 10⁴ m/s?
-a) 1.4 x 10⁰ volts
-b) 2.1 x 10⁰ volts
-c) 3.1 x 10⁰ volts
+d) 4.7 x 10⁰ volts
-e) 7 x 10⁰ volts
=====*_Rendition_* 4-3=====
<!--a19ElectricPotentialField_KE_PE_4-->What voltage is required to stop a proton moving at a speed of 8.1 x 10⁶ m/s?
-a) 2.3 x 10⁵ volts
+b) 3.4 x 10⁵ volts
-c) 5.1 x 10⁵ volts
-d) 7.7 x 10⁵ volts
-e) 1.2 x 10⁶ volts
=====*_Rendition_* 4-4=====
<!--a19ElectricPotentialField_KE_PE_4-->What voltage is required to stop a proton moving at a speed of 3.9 x 10³ m/s?
-a) 3.5 x 10⁻² volts
-b) 5.3 x 10⁻² volts
+c) 7.9 x 10⁻² volts
-d) 1.2 x 10⁻¹ volts
-e) 1.8 x 10⁻¹ volts
=====*_Rendition_* 4-5=====
<!--a19ElectricPotentialField_KE_PE_4-->What voltage is required to stop a proton moving at a speed of 7.6 x 10⁶ m/s?
+a) 3 x 10⁵ volts
-b) 4.5 x 10⁵ volts
-c) 6.8 x 10⁵ volts
-d) 1 x 10⁶ volts
-e) 1.5 x 10⁶ volts
=====*_Rendition_* 4-6=====
<!--a19ElectricPotentialField_KE_PE_4-->What voltage is required to

stop a proton moving at a speed of 4.2 x 10³ m/s?
-a) 6.1 x 10⁻² volts
+b) 9.2 x 10⁻² volts
-c) 1.4 x 10⁻¹ volts
-d) 2.1 x 10⁻¹ volts
-e) 3.1 x 10⁻¹ volts
=====*_Rendition_* 4-7=====
<!--a19ElectricPotentialField_KE_PE_4-->What voltage is required to stop a proton moving at a speed of 8 x 10⁷ m/s?
+a) 3.3 x 10⁷ volts
-b) 5 x 10⁷ volts
-c) 7.5 x 10⁷ volts
-d) 1.1 x 10⁸ volts
-e) 1.7 x 10⁸ volts
=====*_Rendition_* 4-8=====
<!--a19ElectricPotentialField_KE_PE_4-->What voltage is required to stop a proton moving at a speed of 1.6 x 10⁴ m/s?
-a) 4 x 10⁻¹ volts
-b) 5.9 x 10⁻¹ volts
-c) 8.9 x 10⁻¹ volts
+d) 1.3 x 10⁰ volts
-e) 2 x 10⁰ volts
=====*_Rendition_* 4-9=====
<!--a19ElectricPotentialField_KE_PE_4-->What voltage is required to stop a proton moving at a speed of 8.1 x 10⁴ m/s?
+a) 3.4 x 10¹ volts
-b) 5.1 x 10¹ volts
-c) 7.7 x 10¹ volts
-d) 1.2 x 10² volts
-e) 1.7 x 10² volts
=====*_Rendition_* 4-10=====
<!--a19ElectricPotentialField_KE_PE_4-->What voltage is required to stop a proton moving at a speed of 5.2 x 10⁷ m/s?
-a) 9.4 x 10⁶ volts
+b) 1.4 x 10⁷ volts
-c) 2.1 x 10⁷ volts
-d) 3.2 x 10⁷ volts
-e) 4.8 x 10⁷ volts
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{<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 4 volt battery moves 27 Coulombs of charge in 2.6 hours. What is the power?}
-a) 7.86 x 10⁻³ W
-b) 9.52 x 10⁻³ W
+c) 1.15 x 10⁻² W
-d) 1.4 x 10⁻² W
-e) 1.69 x 10⁻² W

{<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 5.5 mm, and it carries a current of 76 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)}
-a) 1.35 x 10⁻⁴m/s
-b) 1.63 x 10⁻⁴m/s
-c) 1.98 x 10⁻⁴m/s
+d) 2.39 x 10⁻⁴m/s
-e) 2.9 x 10⁻⁴m/s

{<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 168 Watt DC motor draws 0.3 amps of current. What is effective resistance?}
+a) 1.87 x 10³ Ω
-b) 2.26 x 10³ Ω
-c) 2.74 x 10³ Ω
-d) 3.32 x 10³ Ω
-e) 4.02 x 10³ Ω

{<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 113 watts of power to a 104 ohm resistor. What was the applied voltage?}
-a) 5.03 x 10¹ volts
-b) 6.1 x 10¹ volts
-c) 7.39 x 10¹ volts
-d) 8.95 x 10¹ volts
+e) 1.08 x 10² volts

</quiz>

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=====*_Rendition_* 1-2=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 5.3 volt battery moves 11 Coulombs of charge in 2.1 hours. What is the power?
+a) 7.71 x 10⁻³ W
-b) 9.34 x 10⁻³ W
-c) 1.13 x 10⁻² W
-d) 1.37 x 10⁻² W
-e) 1.66 x 10⁻² W
=====*_Rendition_* 1-3=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 1.4 volt battery moves 87 Coulombs of charge in 2 hours. What is the power?
-a) 7.85 x 10⁻³ W
-b) 9.51 x 10⁻³ W
-c) 1.15 x 10⁻² W
-d) 1.4 x 10⁻² W
+e) 1.69 x 10⁻² W
=====*_Rendition_* 1-4=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 5.8 volt battery moves 95 Coulombs of charge in 0.3 hours. What is the power?
-a) 4.21 x 10⁻¹ W
+b) 5.1 x 10⁻¹ W
-c) 6.18 x 10⁻¹ W
-d) 7.49 x 10⁻¹ W
-e) 9.07 x 10⁻¹ W
=====*_Rendition_* 1-5=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 4.7 volt battery moves 50 Coulombs of charge in 1.3 hours. What is the power?
-a) 4.14 x 10⁻² W
+b) 5.02 x 10⁻² W
-c) 6.08 x 10⁻² W
-d) 7.37 x 10⁻² W
-e) 8.93 x 10⁻² W
=====*_Rendition_* 1-6=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 3.9 volt battery moves 90 Coulombs of charge in 2.2 hours. What is the power?
+a) 4.43 x 10⁻² W
-b) 5.37 x 10⁻² W
-c) 6.51 x 10⁻² W
-d) 7.88 x 10⁻² W
-e) 9.55 x 10⁻² W
=====*_Rendition_* 1-7=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 5.1 volt

battery moves 43 Coulombs of charge in 1.5 hours. What is the power?
+a) 4.06 x 10⁻² W
-b) 4.92 x 10⁻² W
-c) 5.96 x 10⁻² W
-d) 7.22 x 10⁻² W
-e) 8.75 x 10⁻² W
=====*_Rendition_* 1-8=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 4 volt battery moves 19 Coulombs of charge in 1.3 hours. What is the power?
+a) 1.62 x 10⁻² W
-b) 1.97 x 10⁻² W
-c) 2.38 x 10⁻² W
-d) 2.89 x 10⁻² W
-e) 3.5 x 10⁻² W
=====*_Rendition_* 1-9=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 3.1 volt battery moves 52 Coulombs of charge in 1.7 hours. What is the power?
-a) 1.79 x 10⁻² W
-b) 2.17 x 10⁻² W
+c) 2.63 x 10⁻² W
-d) 3.19 x 10⁻² W
-e) 3.87 x 10⁻² W
=====*_Rendition_* 1-10=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 3.1 volt battery moves 40 Coulombs of charge in 0.9 hours. What is the power?
-a) 2.61 x 10⁻² W
-b) 3.16 x 10⁻² W
+c) 3.83 x 10⁻² W
-d) 4.64 x 10⁻² W
-e) 5.62 x 10⁻² W
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 1.7 mm, and it carries a current of 92 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
-a) 2.07 x 10⁻³m/s
-b) 2.5 x 10⁻³m/s
+c) 3.03 x 10⁻³m/s
-d) 3.67 x 10⁻³m/s
-e) 4.45 x 10⁻³m/s
=====*_Rendition_* 2-3=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 8.7 mm, and it carries a current of 22 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
+a) 2.77 x 10⁻⁵m/s
-b) 3.36 x 10⁻⁵m/s
-c) 4.06 x 10⁻⁵m/s
-d) 4.92 x 10⁻⁵m/s

-e) 5.97 x 10⁻⁵m/s
=====*_Rendition_* 2-4=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 3.6 mm, and it carries a current of 52 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
+a) 3.82 x 10⁻⁴m/s
-b) 4.63 x 10⁻⁴m/s
-c) 5.61 x 10⁻⁴m/s
-d) 6.8 x 10⁻⁴m/s
-e) 8.24 x 10⁻⁴m/s
=====*_Rendition_* 2-5=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 9.9 mm, and it carries a current of 41 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
-a) 2.24 x 10⁻⁵m/s
-b) 2.72 x 10⁻⁵m/s
-c) 3.29 x 10⁻⁵m/s
+d) 3.99 x 10⁻⁵m/s
-e) 4.83 x 10⁻⁵m/s
=====*_Rendition_* 2-6=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 9.2 mm, and it carries a current of 64 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
-a) 4.91 x 10⁻⁵m/s
-b) 5.95 x 10⁻⁵m/s
+c) 7.2 x 10⁻⁵m/s
-d) 8.73 x 10⁻⁵m/s
-e) 1.06 x 10⁻⁴m/s
=====*_Rendition_* 2-7=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 3.8 mm, and it carries a current of 88 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
-a) 2.7 x 10⁻⁴m/s
-b) 3.27 x 10⁻⁴m/s
-c) 3.96 x 10⁻⁴m/s
-d) 4.79 x 10⁻⁴m/s
+e) 5.81 x 10⁻⁴m/s
=====*_Rendition_* 2-8=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 1.9 mm, and it carries a current of 33 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
-a) 5.93 x 10⁻⁴m/s

-b) 7.19 x 10⁻⁴m/s
+c) 8.71 x 10⁻⁴m/s
-d) 1.06 x 10⁻³m/s
-e) 1.28 x 10⁻³m/s
=====*_Rendition_* 2-9=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 7.4 mm, and it carries a current of 38 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
-a) 3.07 x 10⁻⁵m/s
-b) 3.72 x 10⁻⁵m/s
-c) 4.5 x 10⁻⁵m/s
-d) 5.46 x 10⁻⁵m/s
+e) 6.61 x 10⁻⁵m/s
=====*_Rendition_* 2-10=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 8.3 mm, and it carries a current of 87 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
-a) 6.77 x 10⁻⁵m/s
-b) 8.2 x 10⁻⁵m/s
-c) 9.93 x 10⁻⁵m/s
+d) 1.2 x 10⁻⁴m/s
-e) 1.46 x 10⁻⁴m/s
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 164 Watt DC motor draws 0.25 amps of current. What is effective resistance?
-a) 1.22 x 10³ Ω
-b) 1.48 x 10³ Ω
-c) 1.79 x 10³ Ω
-d) 2.17 x 10³ Ω
+e) 2.62 x 10³ Ω
=====*_Rendition_* 3-3=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 162 Watt DC motor draws 0.41 amps of current. What is effective resistance?
-a) 5.42 x 10² Ω
-b) 6.57 x 10² Ω
-c) 7.95 x 10² Ω
+d) 9.64 x 10² Ω
-e) 1.17 x 10³ Ω
=====*_Rendition_* 3-4=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 195 Watt DC motor draws 0.49 amps of current. What is effective resistance?
+a) 8.12 x 10² Ω
-b) 9.84 x 10² Ω
-c) 1.19 x 10³ Ω
-d) 1.44 x 10³ Ω
-e) 1.75 x 10³ Ω
=====*_Rendition_* 3-5=====

<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 130 Watt DC motor draws 0.3 amps of current. What is effective resistance?
-a) 8.12 x 10² Ω
-b) 9.84 x 10² Ω
-c) 1.19 x 10³ Ω
+d) 1.44 x 10³ Ω
-e) 1.75 x 10³ Ω
=====*_Rendition_* 3-6=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 104 Watt DC motor draws 0.13 amps of current. What is effective resistance?
-a) 3.46 x 10³ Ω
-b) 4.19 x 10³ Ω
-c) 5.08 x 10³ Ω
+d) 6.15 x 10³ Ω
-e) 7.46 x 10³ Ω
=====*_Rendition_* 3-7=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 196 Watt DC motor draws 0.35 amps of current. What is effective resistance?
+a) 1.6 x 10³ Ω
-b) 1.94 x 10³ Ω
-c) 2.35 x 10³ Ω
-d) 2.85 x 10³ Ω
-e) 3.45 x 10³ Ω
=====*_Rendition_* 3-8=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 171 Watt DC motor draws 0.47 amps of current. What is effective resistance?
+a) 7.74 x 10² Ω
-b) 9.38 x 10² Ω
-c) 1.14 x 10³ Ω
-d) 1.38 x 10³ Ω
-e) 1.67 x 10³ Ω
=====*_Rendition_* 3-9=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 129 Watt DC motor draws 0.22 amps of current. What is effective resistance?
-a) 2.2 x 10³ Ω
+b) 2.67 x 10³ Ω
-c) 3.23 x 10³ Ω
-d) 3.91 x 10³ Ω
-e) 4.74 x 10³ Ω
=====*_Rendition_* 3-10=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 146 Watt DC motor draws 0.23 amps of current. What is effective resistance?
-a) 2.28 x 10³ Ω
+b) 2.76 x 10³ Ω
-c) 3.34 x 10³ Ω
-d) 4.05 x 10³ Ω
-e) 4.91 x 10³ Ω
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 149 watts of power to a 153 ohm resistor. What was the applied voltage?

-a) 8.49 x 10¹ volts
-b) 1.03 x 10² volts
-c) 1.25 x 10² volts
+d) 1.51 x 10² volts
-e) 1.83 x 10² volts
=====*_Rendition_* 4-3=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 101 watts of power to a 219 ohm resistor. What was the applied voltage?
+a) 1.49 x 10² volts
-b) 1.8 x 10² volts
-c) 2.18 x 10² volts
-d) 2.64 x 10² volts
-e) 3.2 x 10² volts
=====*_Rendition_* 4-4=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 145 watts of power to a 132 ohm resistor. What was the applied voltage?
-a) 6.42 x 10¹ volts
-b) 7.78 x 10¹ volts
-c) 9.43 x 10¹ volts
-d) 1.14 x 10² volts
+e) 1.38 x 10² volts
=====*_Rendition_* 4-5=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 145 watts of power to a 244 ohm resistor. What was the applied voltage?
+a) 1.88 x 10² volts
-b) 2.28 x 10² volts
-c) 2.76 x 10² volts
-d) 3.34 x 10² volts
-e) 4.05 x 10² volts
=====*_Rendition_* 4-6=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 138 watts of power to a 206 ohm resistor. What was the applied voltage?
-a) 1.39 x 10² volts
+b) 1.69 x 10² volts
-c) 2.04 x 10² volts
-d) 2.47 x 10² volts
-e) 3 x 10² volts
=====*_Rendition_* 4-7=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 187 watts of power to a 287 ohm resistor. What was the applied voltage?
+a) 2.32 x 10² volts
-b) 2.81 x 10² volts
-c) 3.4 x 10² volts
-d) 4.12 x 10² volts
-e) 4.99 x 10² volts
=====*_Rendition_* 4-8=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply

delivers 169 watts of power to a 219 ohm resistor. What was the applied voltage?
-a) 8.93 x 10¹ volts
-b) 1.08 x 10² volts
-c) 1.31 x 10² volts
-d) 1.59 x 10² volts
+e) 1.92 x 10² volts
=====*_Rendition_* 4-9=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 110 watts of power to a 299 ohm resistor. What was the applied voltage?
-a) 8.42 x 10¹ volts
-b) 1.02 x 10² volts
-c) 1.24 x 10² volts
-d) 1.5 x 10² volts
+e) 1.81 x 10² volts
=====*_Rendition_* 4-10=====
<!--a20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 114 watts of power to a 294 ohm resistor. What was the applied voltage?
-a) 1.25 x 10² volts
-b) 1.51 x 10² volts
+c) 1.83 x 10² volts
-d) 2.22 x 10² volts
-e) 2.69 x 10² volts
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<quiz display=simple>
{<!--a21CircuitsBioInstDC_circAnalQuiz1_1-->3 amps flow through a 1 Ohm resistor. What is the voltage?}
+ $3V$
- $1V$
- $\frac{1}{3}V$
- None these are correct.

{<!--a21CircuitsBioInstDC_circAnalQuiz1_10-->A 1 ohm resistor has 5 volts DC across its terminals. What is the current (I) and the power consumed?}
- I = 5A & P = 3W.
- I = 5A & P = 5W.
+ I = 5A & P = 25W.
- I = 5A & P = 9W

{<!--a21CircuitsBioInstDC_circAnalQuiz1_11-->The voltage across two resistors in series is 10 volts. One resistor is twice as large as the other. What is the voltage across the larger resistor? What is the voltage across the smaller one? }
- $V_{Big-Resistor} = 3.33V$ and$V_{small-Resistor} = 6.67V$.
- $V_{small-Resistor} = 5V$ and $V_{Big-Resistor} = 5V$.
+ $V_{Big-Resistor} = 6.67V$ and $V_{small-Resistor} = 3.33V$.
- None of these are true.

{<!--a21CircuitsBioInstDC_circAnalQuiz1_12-->A 1 ohm, 2 ohm, and 3 ohm resistor are connected in series. What is the total resistance?}
- $R_{Total} = 0.5454\Omega$.
- $R_{Total} = 3\Omega$.
+ $R_{Total} = 6\Omega$.
- None of these are true.

{<!--a21CircuitsBioInstDC_circAnalQuiz1_13-->Two identical resistors are connected in series. The voltage across both of them is 250 volts. What is the voltage across each one?}
- $R_1 = 150V$ and $R_2 = 100V$.
- None of these are true.
+ $R_1 = 125V$ and $R_2 = 125V$.
- $R_1 = 250V$ and $R_2 = 0V$.

{<!--a21CircuitsBioInstDC_circAnalQuiz1_14-->A 1 ohm, 2 ohm, and 3 ohm resistor are connected in ''parallel''. What is the total resistance?}

- $\frac{11}{6}\Omega$.
- $\frac{3}{6}\Omega$.
+ $\frac{6}{11}\Omega$.
- $\frac{6}{3}\Omega$.

{<!--a21CircuitsBioInstDC_circAnalQuiz1_15-->A 5 ohm and a 2 ohm resistor are connected in parallel. What is the total resistance?}
-   $\frac{6}{10}\Omega$.
- $\frac{7}{10}\Omega$.
- $\frac{10}{6}\Omega$.
+ $\frac{10}{7}\Omega$.

{<!--a21CircuitsBioInstDC_circAnalQuiz1_16-->A 7 ohm and a 3 ohm resistor are connected in parallel. What is the total resistance?}
+ $\frac{21}{10}\Omega$.
- $\frac{11}{7}\Omega$.
- $\frac{7}{11}\Omega$.
- $\frac{10}{21}\Omega$.

{<!--a21CircuitsBioInstDC_circAnalQuiz1_17-->Three 1 ohm resistors are connected in parallel. What is the total resistance?}
- 3Ω.
+ $\frac{1}{3}\Omega$.
- $\frac{3}{2}\Omega$.
- $\frac{2}{3}\Omega$.

{<!--a21CircuitsBioInstDC_circAnalQuiz1_18-->If you put an infinite number of resistors in parallel, what would the total resistance be?}
+ R_{total} would approach Zero as The No. of Resistors In parallel Approaches Infinity.
-   None of these are true.
- R_{total} would approach 1 as The No. of Resistors In parallel Approaches Infinity
- It is not possible to connect that Number of Resistors in parallel.

{<!--a21CircuitsBioInstDC_circAnalQuiz1_19-->What is the current through R1 and R2 in the figure shown? [[Image:Circuit1.JPG|right]]}
-   $I_1 = 0.1A$ and $I_2 = 0.1667A$.
-   $I_1 = 10A$ and $I_2 = 16.67A$.
- $I_1 = 1A$ and $I_2 = 25A$.
+ $I_1 = 1A$ and $I_2 = 1.667A$.

{<!--a21CircuitsBioInstDC_circAnalQuiz1_2-->Why do we say the "voltage across" or "the voltage with respect to?" Why can't we just say voltage?}
- It's an Electrical ''Cliche''.
- The other point could be Negative or positive.
- None these are correct
+ Voltage is a measure of Electric Potential difference between two electrical points.

{<!--a21CircuitsBioInstDC_circAnalQuiz1_20-->What is the current through R1, R2, R3, and R4 in the figure shown? [[Image:Circuit3.PNG|right]]}
-   $I_1 = 10A$; $I_2 = 50A$; $I_3 = 33A$; $I_4 = 25A$..

- $I_1 = 1A$; $I_2 = 5A$; $I_3 = 3.3A$; $I_4 = 2.5A$.
+ $I_1 = 1A$; $I_2 = 0.5A$; $I_3 = 0.33A$; $I_4 = 0.25A$.
- $I_1 = 0.25A$; $I_2 = 0.33A$; $I_3 = 0.5A$; $I_4 = 0.1A$.

{<!--a21CircuitsBioInstDC_circAnalQuiz1_21-->Two resistors are in parallel with a voltage source. How do their voltages compare?}
+ The voltage across both resistors is the same as the source.
- None of these are true.
- One has full voltage, the other has none.
- The voltage across both resistors is half the voltage of the source.

{<!--a21CircuitsBioInstDC_circAnalQuiz1_3-->A resistor consumes 5 watts, and its current is 10 amps. What is its voltage?}
- 2V.
- 10V.
+ 0.5V.
- 15V.

{<!--a21CircuitsBioInstDC_circAnalQuiz1_4-->A resistor has 10 volts across it and 4 amps going through it. What is its resistance?}
- None of these are true.
- $3.5\Omega.$
- $4.5\Omega.$
+ $2.5\Omega.$

{<!--a21CircuitsBioInstDC_circAnalQuiz1_5-->If you plot voltage vs. current in a circuit, and you get a linear line, what is the significance of the slope? }
- Power.
+ Resistance.
- Discriminant.
- None of these are true.

{<!--a21CircuitsBioInstDC_circAnalQuiz1_6-->A resistor has 3 volts across it. Its resistance is 1.5 ohms. What is the current?}
- 12A
- 3A
+ 2A
- 1.5A

{<!--a21CircuitsBioInstDC_circAnalQuiz1_7-->A resistor has 8 volts across it and 3 Amps going through it. What is the power consumed?}
- 2.2W
+ 24W
- 8W
- 3W

{<!--a21CircuitsBioInstDC_circAnalQuiz1_8-->A resistor has a voltage of 5 volts and a resistance of 15 ohms. What is the power consumed? }

- None of these are ture.
- 11.67 Joules
+ 1.67 Watts
- 2.5 Watts

{<!--a21CircuitsBioInstDC_circAnalQuiz1_9-->A resistor is on for 5 seconds. It consumes power at a rate of 5 watts. How many joules are used?}
+ 25 Joules
- 3 Joules
- 5 Joules
- None of these are true

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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<quiz display=simple>
{<!--a21CircuitsBioInstDC_circuits_1-->An ideal 5.2 V voltage source is connected to two resistors in parallel. One is 1.2$k\Omega$, and the other is 2.8 $k\Omega$. What is the current through the larger resistor?}
-a) 0.7 mA.
-b) 0.9 mA.
-c) 1.1 mA.
+d) 1.3 mA.

-e) 1.5 mA.

{<!--a21CircuitsBioInstDC_circuits_2-->A 7.7 ohm resistor is connected in series to a pair of 5.8 ohm resistors that are in parallel. What is the net resistance?}
-a) 6.1 ohms.
-b) 7 ohms.
-c) 8 ohms.
-d) 9.2 ohms.
+e) 10.6 ohms.

{<!--a21CircuitsBioInstDC_circuits_3-->Two 8 ohm resistors are connected in parallel. This combination is then connected in series to a 6.6 ohm resistor. What is the net resistance?}
-a) 9.2 ohms.
+b) 10.6 ohms.
-c) 12.2 ohms.
-d) 14 ohms.
-e) 16.1 ohms.

{<!--a21CircuitsBioInstDC_circuits_4-->An ideal 7.9 volt battery is connected to a 0.09 ohm resistor. To measure the current an ammeter with a resistance of 20$m\Omega$ is used. What current does the ammeter actually read?}
+a) 71.8 A.
-b) 82.6 A.
-c) 95 A.
-d) 109.2 A.
-e) 125.6 A.

{<!--a21CircuitsBioInstDC_circuits_5-->A battery has an emf of 5.3 volts, and an internal resistance of 326 $k\Omega$. It is connected to a 3 $M\Omega$ resistor. What power is developed in the 3 $M\Omega$ resistor?}
-a) 5.01 μW.
-b) 5.76 μW.
-c) 6.62 μW.
+d) 7.62 μW.
-e) 8.76 μW.

</quiz>

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=====*_Rendition_* 1-2=====
<!--a21CircuitsBioInstDC_circuits_1-->An ideal 6.1 V voltage source is connected to two resistors in parallel. One is

2.4$k\Omega$, and the other is 4.2 $k\Omega$.
What is the current through the larger resistor?
-a) 0.61 mA.
-b) 0.7 mA.
-c) 0.8 mA.
+d) 0.92 mA.
-e) 1.06 mA.
=====*_Rendition_* 1-3=====
<!--a21CircuitsBioInstDC_circuits_1-->An ideal 3.1 V voltage source is connected to two resistors in parallel. One is
1.5$k\Omega$, and the other is 2.2 $k\Omega$.
What is the current through the larger resistor?
-a) 0.55 mA.
-b) 0.63 mA.
-c) 0.73 mA.
+d) 0.84 mA.
-e) 0.96 mA.
=====*_Rendition_* 1-4=====
<!--a21CircuitsBioInstDC_circuits_1-->An ideal 7.9 V voltage source is connected to two resistors in parallel. One is
2.4$k\Omega$, and the other is 5.2 $k\Omega$.
What is the current through the larger resistor?
-a) 0.68 mA.
-b) 0.79 mA.
-c) 0.9 mA.
+d) 1.04 mA.
-e) 1.2 mA.
=====*_Rendition_* 1-5=====
<!--a21CircuitsBioInstDC_circuits_1-->An ideal 5.6 V voltage source is connected to two resistors in parallel. One is
2.3$k\Omega$, and the other is 4.3 $k\Omega$.
What is the current through the larger resistor?
-a) 0.56 mA.
-b) 0.64 mA.
-c) 0.74 mA.
+d) 0.85 mA.
-e) 0.98 mA.
=====*_Rendition_* 1-6=====
<!--a21CircuitsBioInstDC_circuits_1-->An ideal 9.9 V voltage source is connected to two resistors in parallel. One is
0.9$k\Omega$, and the other is 1.8 $k\Omega$.
What is the current through the larger resistor?
+a) 3.67 mA.
-b) 4.22 mA.
-c) 4.85 mA.
-d) 5.58 mA.
-e) 6.41 mA.
=====*_Rendition_* 1-7=====
<!--a21CircuitsBioInstDC_circuits_1-->An ideal 9.2 V voltage source is connected to two resistors in parallel. One is
1.1$k\Omega$, and the other is 2.4 $k\Omega$.
What is the current through the larger resistor?

-a) 2.29 mA.
+b) 2.63 mA.
-c) 3.02 mA.
-d) 3.48 mA.
-e) 4 mA.
=====*_Rendition_* 1-8=====
<!--a21CircuitsBioInstDC_circuits_1-->An ideal 9.4 V voltage source is connected to two resistors in parallel. One is 2.1$k\Omega$, and the other is 4.3 $k\Omega$. What is the current through the larger resistor?
+a) 1.47 mA.
-b) 1.69 mA.
-c) 1.94 mA.
-d) 2.23 mA.
-e) 2.57 mA.
=====*_Rendition_* 1-9=====
<!--a21CircuitsBioInstDC_circuits_1-->An ideal 3.6 V voltage source is connected to two resistors in parallel. One is 2.2$k\Omega$, and the other is 4.2 $k\Omega$. What is the current through the larger resistor?
-a) 0.43 mA.
-b) 0.49 mA.
+c) 0.56 mA.
-d) 0.65 mA.
-e) 0.74 mA.
=====*_Rendition_* 1-10=====
<!--a21CircuitsBioInstDC_circuits_1-->An ideal 8.9 V voltage source is connected to two resistors in parallel. One is 2.1$k\Omega$, and the other is 4.4 $k\Omega$. What is the current through the larger resistor?
+a) 1.37 mA.
-b) 1.57 mA.
-c) 1.81 mA.
-d) 2.08 mA.
-e) 2.39 mA.
=====*_Rendition_* 1-11=====
<!--a21CircuitsBioInstDC_circuits_1-->An ideal 4.2 V voltage source is connected to two resistors in parallel. One is 1.6$k\Omega$, and the other is 2.1 $k\Omega$. What is the current through the larger resistor?
-a) 0.75 mA.
-b) 0.86 mA.
-c) 0.99 mA.
+d) 1.14 mA.
-e) 1.31 mA.
=====*_Rendition_* 1-12=====
<!--a21CircuitsBioInstDC_circuits_1-->An ideal 5.2 V voltage source is connected to two resistors in parallel. One is 1.2$k\Omega$, and the other is 3.6 $k\Omega$. What is the current through the larger resistor?
-a) 0.94 mA.
+b) 1.08 mA.

-c) 1.25 mA.
-d) 1.43 mA.
-e) 1.65 mA.
=====*_Rendition_* 1-13=====
<!--a21CircuitsBioInstDC_circuits_1-->An ideal 8.8 V voltage source is connected to two resistors in parallel. One is 0.8$k\Omega$, and the other is 2.9 $k\Omega$. What is the current through the larger resistor?
-a) 1.56 mA.
-b) 1.8 mA.
-c) 2.07 mA.
+d) 2.38 mA.
-e) 2.74 mA.
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a21CircuitsBioInstDC_circuits_2-->A 6 ohm resistor is connected in series to a pair of 5 ohm resistors that are in parallel. What is the net resistance?
-a) 7.4 ohms.
+b) 8.5 ohms.
-c) 9.8 ohms.
-d) 11.2 ohms.
-e) 12.9 ohms.
=====*_Rendition_* 2-3=====
<!--a21CircuitsBioInstDC_circuits_2-->A 8 ohm resistor is connected in series to a pair of 5.6 ohm resistors that are in parallel. What is the net resistance?
-a) 7.1 ohms.
-b) 8.2 ohms.
-c) 9.4 ohms.
+d) 10.8 ohms.
-e) 12.4 ohms.
=====*_Rendition_* 2-4=====
<!--a21CircuitsBioInstDC_circuits_2-->A 6.6 ohm resistor is connected in series to a pair of 6.4 ohm resistors that are in parallel. What is the net resistance?
-a) 6.4 ohms.
-b) 7.4 ohms.
-c) 8.5 ohms.
+d) 9.8 ohms.
-e) 11.3 ohms.
=====*_Rendition_* 2-5=====
<!--a21CircuitsBioInstDC_circuits_2-->A 5.9 ohm resistor is connected in series to a pair of 3 ohm resistors that are in parallel. What is the net resistance?
-a) 5.6 ohms.
-b) 6.4 ohms.
+c) 7.4 ohms.
-d) 8.5 ohms.
-e) 9.8 ohms.
=====*_Rendition_* 2-6=====
<!--a21CircuitsBioInstDC_circuits_2-->A 5.7 ohm resistor is connected

in series to a pair of 3.8 ohm resistors that are in parallel. What is the net resistance?
-a) 5 ohms.
-b) 5.7 ohms.
-c) 6.6 ohms.
+d) 7.6 ohms.
-e) 8.7 ohms.
=====*_Rendition_* 2-7=====
<!--a21CircuitsBioInstDC_circuits_2-->A 6.4 ohm resistor is connected in series to a pair of 7.4 ohm resistors that are in parallel. What is the net resistance?
+a) 10.1 ohms.
-b) 11.6 ohms.
-c) 13.4 ohms.
-d) 15.4 ohms.
-e) 17.7 ohms.
=====*_Rendition_* 2-8=====
<!--a21CircuitsBioInstDC_circuits_2-->A 5.6 ohm resistor is connected in series to a pair of 7.2 ohm resistors that are in parallel. What is the net resistance?
-a) 7 ohms.
-b) 8 ohms.
+c) 9.2 ohms.
-d) 10.6 ohms.
-e) 12.2 ohms.
=====*_Rendition_* 2-9=====
<!--a21CircuitsBioInstDC_circuits_2-->A 8.1 ohm resistor is connected in series to a pair of 5.2 ohm resistors that are in parallel. What is the net resistance?
-a) 6.1 ohms.
-b) 7 ohms.
-c) 8.1 ohms.
-d) 9.3 ohms.
+e) 10.7 ohms.
=====*_Rendition_* 2-10=====
<!--a21CircuitsBioInstDC_circuits_2-->A 5.8 ohm resistor is connected in series to a pair of 2.8 ohm resistors that are in parallel. What is the net resistance?
+a) 7.2 ohms.
-b) 8.3 ohms.
-c) 9.5 ohms.
-d) 11 ohms.
-e) 12.6 ohms.
=====*_Rendition_* 2-11=====
<!--a21CircuitsBioInstDC_circuits_2-->A 7 ohm resistor is connected in series to a pair of 3.4 ohm resistors that are in parallel. What is the net resistance?
-a) 6.6 ohms.
-b) 7.6 ohms.
+c) 8.7 ohms.
-d) 10 ohms.
-e) 11.5 ohms.

=====*_Rendition_* 2-12=====
<!--a21CircuitsBioInstDC_circuits_2-->A 6.3 ohm resistor is connected in series to a pair of 3.4 ohm resistors that are in parallel. What is the net resistance?
-a) 5.3 ohms.
-b) 6 ohms.
-c) 7 ohms.
+d) 8 ohms.
-e) 9.2 ohms.
=====*_Rendition_* 2-13=====
<!--a21CircuitsBioInstDC_circuits_2-->A 7.5 ohm resistor is connected in series to a pair of 7 ohm resistors that are in parallel. What is the net resistance?
-a) 8.3 ohms.
-b) 9.6 ohms.
+c) 11 ohms.
-d) 12.7 ohms.
-e) 14.5 ohms.
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a21CircuitsBioInstDC_circuits_3-->Two 8.8 ohm resistors are connected in parallel. This combination is then connected in series to a 2.8 ohm resistor. What is the net resistance?
-a) 6.3 ohms.
+b) 7.2 ohms.
-c) 8.3 ohms.
-d) 9.5 ohms.
-e) 11 ohms.
=====*_Rendition_* 3-3=====
<!--a21CircuitsBioInstDC_circuits_3-->Two 6.2 ohm resistors are connected in parallel. This combination is then connected in series to a 2.4 ohm resistor. What is the net resistance?
-a) 3.1 ohms.
-b) 3.6 ohms.
-c) 4.2 ohms.
-d) 4.8 ohms.
+e) 5.5 ohms.
=====*_Rendition_* 3-4=====
<!--a21CircuitsBioInstDC_circuits_3-->Two 6.6 ohm resistors are connected in parallel. This combination is then connected in series to a 3.4 ohm resistor. What is the net resistance?
-a) 4.4 ohms.
-b) 5.1 ohms.
-c) 5.8 ohms.
+d) 6.7 ohms.
-e) 7.7 ohms.
=====*_Rendition_* 3-5=====
<!--a21CircuitsBioInstDC_circuits_3-->Two 6.2 ohm resistors are connected in parallel. This combination is then connected in series to a 2.6 ohm resistor. What is the net resistance?
-a) 3.7 ohms.
-b) 4.3 ohms.

-c) 5 ohms.
+d) 5.7 ohms.
-e) 6.6 ohms.
=====*_Rendition_* 3-6=====
<!--a21CircuitsBioInstDC_circuits_3-->Two 6.4 ohm resistors are connected in parallel. This combination is then connected in series to a 6.6 ohm resistor. What is the net resistance?
-a) 8.5 ohms.
+b) 9.8 ohms.
-c) 11.3 ohms.
-d) 13 ohms.
-e) 14.9 ohms.
=====*_Rendition_* 3-7=====
<!--a21CircuitsBioInstDC_circuits_3-->Two 8.2 ohm resistors are connected in parallel. This combination is then connected in series to a 5.8 ohm resistor. What is the net resistance?
+a) 9.9 ohms.
-b) 11.4 ohms.
-c) 13.1 ohms.
-d) 15.1 ohms.
-e) 17.3 ohms.
=====*_Rendition_* 3-8=====
<!--a21CircuitsBioInstDC_circuits_3-->Two 6.2 ohm resistors are connected in parallel. This combination is then connected in series to a 3.4 ohm resistor. What is the net resistance?
+a) 6.5 ohms.
-b) 7.5 ohms.
-c) 8.6 ohms.
-d) 9.9 ohms.
-e) 11.4 ohms.
=====*_Rendition_* 3-9=====
<!--a21CircuitsBioInstDC_circuits_3-->Two 7 ohm resistors are connected in parallel. This combination is then connected in series to a 2.8 ohm resistor. What is the net resistance?
-a) 5.5 ohms.
+b) 6.3 ohms.
-c) 7.2 ohms.
-d) 8.3 ohms.
-e) 9.6 ohms.
=====*_Rendition_* 3-10=====
<!--a21CircuitsBioInstDC_circuits_3-->Two 9.4 ohm resistors are connected in parallel. This combination is then connected in series to a 2.4 ohm resistor. What is the net resistance?
-a) 5.4 ohms.
-b) 6.2 ohms.
+c) 7.1 ohms.
-d) 8.2 ohms.
-e) 9.4 ohms.
=====*_Rendition_* 3-11=====
<!--a21CircuitsBioInstDC_circuits_3-->Two 7.4 ohm resistors are connected in parallel. This combination is then connected in series to a 2.8 ohm resistor. What is the net resistance?

-a) 5.7 ohms.
+b) 6.5 ohms.
-c) 7.5 ohms.
-d) 8.6 ohms.
-e) 9.9 ohms.
=====*_Rendition_* 3-12=====
<!--a21CircuitsBioInstDC_circuits_3-->Two 8.2 ohm resistors are connected in parallel. This combination is then connected in series to a 5.8 ohm resistor. What is the net resistance?
+a) 9.9 ohms.
-b) 11.4 ohms.
-c) 13.1 ohms.
-d) 15.1 ohms.
-e) 17.3 ohms.
=====*_Rendition_* 3-13=====
<!--a21CircuitsBioInstDC_circuits_3-->Two 7.8 ohm resistors are connected in parallel. This combination is then connected in series to a 5.4 ohm resistor. What is the net resistance?
+a) 9.3 ohms.
-b) 10.7 ohms.
-c) 12.3 ohms.
-d) 14.1 ohms.
-e) 16.3 ohms.
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a21CircuitsBioInstDC_circuits_4-->An ideal 6 volt battery is connected to a 0.073 ohm resistor. To measure the current an ammeter with a resistance of 14$m\Omega$ is used. What current does the ammeter actually read?
-a) 60 A.
+b) 69 A.
-c) 79.3 A.
-d) 91.2 A.
-e) 104.9 A.
=====*_Rendition_* 4-3=====
<!--a21CircuitsBioInstDC_circuits_4-->An ideal 7.5 volt battery is connected to a 0.06 ohm resistor. To measure the current an ammeter with a resistance of 19$m\Omega$ is used. What current does the ammeter actually read?
-a) 54.3 A.
-b) 62.4 A.
-c) 71.8 A.
-d) 82.6 A.
+e) 94.9 A.
=====*_Rendition_* 4-4=====
<!--a21CircuitsBioInstDC_circuits_4-->An ideal 7.3 volt battery is connected to a 0.071 ohm resistor. To measure the current an ammeter with a resistance of 27$m\Omega$ is used. What current does the ammeter actually read?
-a) 49 A.
-b) 56.3 A.
-c) 64.8 A.

+d) 74.5 A.
-e) 85.7 A.
=====*_Rendition_* 4-5=====
<!--a21CircuitsBioInstDC_circuits_4-->An ideal 6.4 volt battery is connected to a 0.071 ohm resistor. To measure the current an ammeter with a resistance of 21$m\Omega$ is used. What current does the ammeter actually read?
-a) 60.5 A.
+b) 69.6 A.
-c) 80 A.
-d) 92 A.
-e) 105.8 A.
=====*_Rendition_* 4-6=====
<!--a21CircuitsBioInstDC_circuits_4-->An ideal 6.8 volt battery is connected to a 0.096 ohm resistor. To measure the current an ammeter with a resistance of 29$m\Omega$ is used. What current does the ammeter actually read?
-a) 35.8 A.
-b) 41.1 A.
-c) 47.3 A.
+d) 54.4 A.
-e) 62.6 A.
=====*_Rendition_* 4-7=====
<!--a21CircuitsBioInstDC_circuits_4-->An ideal 6 volt battery is connected to a 0.06 ohm resistor. To measure the current an ammeter with a resistance of 25$m\Omega$ is used. What current does the ammeter actually read?
+a) 70.6 A.
-b) 81.2 A.
-c) 93.4 A.
-d) 107.4 A.
-e) 123.5 A.
=====*_Rendition_* 4-8=====
<!--a21CircuitsBioInstDC_circuits_4-->An ideal 7.5 volt battery is connected to a 0.084 ohm resistor. To measure the current an ammeter with a resistance of 14$m\Omega$ is used. What current does the ammeter actually read?
-a) 43.8 A.
-b) 50.3 A.
-c) 57.9 A.
-d) 66.5 A.
+e) 76.5 A.
=====*_Rendition_* 4-9=====
<!--a21CircuitsBioInstDC_circuits_4-->An ideal 7.4 volt battery is connected to a 0.074 ohm resistor. To measure the current an ammeter with a resistance of 12$m\Omega$ is used. What current does the ammeter actually read?
-a) 49.2 A.
-b) 56.6 A.
-c) 65.1 A.
-d) 74.8 A.
+e) 86 A.

=====*_Rendition_* 4-10=====
<!--a21CircuitsBioInstDC_circuits_4-->An ideal 5.9 volt battery is connected to a 0.059 ohm resistor. To measure the current an ammeter with a resistance of 24$m\Omega$ is used. What current does the ammeter actually read?
+a) 71.1 A.
-b) 81.7 A.
-c) 94 A.
-d) 108.1 A.
-e) 124.3 A.
=====*_Rendition_* 4-11=====
<!--a21CircuitsBioInstDC_circuits_4-->An ideal 7.8 volt battery is connected to a 0.064 ohm resistor. To measure the current an ammeter with a resistance of 17$m\Omega$ is used. What current does the ammeter actually read?
-a) 63.3 A.
-b) 72.8 A.
-c) 83.7 A.
+d) 96.3 A.
-e) 110.7 A.
=====*_Rendition_* 4-12=====
<!--a21CircuitsBioInstDC_circuits_4-->An ideal 5.7 volt battery is connected to a 0.091 ohm resistor. To measure the current an ammeter with a resistance of 23$m\Omega$ is used. What current does the ammeter actually read?
+a) 50 A.
-b) 57.5 A.
-c) 66.1 A.
-d) 76 A.
-e) 87.5 A.
=====*_Rendition_* 4-13=====
<!--a21CircuitsBioInstDC_circuits_4-->An ideal 5.7 volt battery is connected to a 0.054 ohm resistor. To measure the current an ammeter with a resistance of 13$m\Omega$ is used. What current does the ammeter actually read?
-a) 64.3 A.
-b) 74 A.
+c) 85.1 A.
-d) 97.8 A.
-e) 112.5 A.
====*_Question_* 5====
=====*_Rendition_* 5-2=====
<!--a21CircuitsBioInstDC_circuits_5-->A battery has an emf of 6.1 volts, and an internal resistance of 366 $k\Omega$. It is connected to a 3.6 $M\Omega$ resistor. What power is developed in the 3.6 $M\Omega$ resistor?
-a) 6.44 μW.
-b) 7.41 μW.
+c) 8.52 μW.
-d) 9.79 μW.
-e) 11.26 μW.
=====*_Rendition_* 5-3=====

<!--a21CircuitsBioInstDC_circuits_5-->A battery has an emf of 6.5 volts, and an internal resistance of 446 $k\Omega$. It is connected to a 3.5 $M\Omega$ resistor. What power is developed in the 3.5 $M\Omega$ resistor?
-a) 8.26 μW.
+b) 9.5 μW.
-c) 10.92 μW.
-d) 12.56 μW.
-e) 14.44 μW.
=====*_Rendition_* 5-4=====
<!--a21CircuitsBioInstDC_circuits_5-->A battery has an emf of 5.6 volts, and an internal resistance of 295 $k\Omega$. It is connected to a 4.1 $M\Omega$ resistor. What power is developed in the 4.1 $M\Omega$ resistor?
-a) 3.81 μW.
-b) 4.38 μW.
-c) 5.03 μW.
-d) 5.79 μW.
+e) 6.66 μW.
=====*_Rendition_* 5-5=====
<!--a21CircuitsBioInstDC_circuits_5-->A battery has an emf of 5.3 volts, and an internal resistance of 428 $k\Omega$. It is connected to a 2.3 $M\Omega$ resistor. What power is developed in the 2.3 $M\Omega$ resistor?
-a) 4.96 μW.
-b) 5.71 μW.
-c) 6.56 μW.
-d) 7.55 μW.
+e) 8.68 μW.
=====*_Rendition_* 5-6=====
<!--a21CircuitsBioInstDC_circuits_5-->A battery has an emf of 5.5 volts, and an internal resistance of 296 $k\Omega$. It is connected to a 3.3 $M\Omega$ resistor. What power is developed in the 3.3 $M\Omega$ resistor?
+a) 7.72 μW.
-b) 8.88 μW.
-c) 10.21 μW.
-d) 11.74 μW.
-e) 13.5 μW.
=====*_Rendition_* 5-7=====
<!--a21CircuitsBioInstDC_circuits_5-->A battery has an emf of 7.8 volts, and an internal resistance of 351 $k\Omega$. It is connected to a 4.2 $M\Omega$ resistor. What power is developed in the 4.2 $M\Omega$ resistor?
+a) 12.34 μW.
-b) 14.19 μW.
-c) 16.32 μW.
-d) 18.76 μW.
-e) 21.58 μW.
=====*_Rendition_* 5-8=====
<!--a21CircuitsBioInstDC_circuits_5-->A battery has an emf of 5.6 volts, and an internal resistance of 450 $k\Omega$. It is

connected to a 2.7 $M\Omega$ resistor. What power is developed in the 2.7 $M\Omega$ resistor?
-a) 4.88 μW.
-b) 5.61 μW.
-c) 6.45 μW.
-d) 7.42 μW.
+e) 8.53 μW.
=====*_Rendition_* 5-9=====
<!--a21CircuitsBioInstDC_circuits_5-->A battery has an emf of 6.7 volts, and an internal resistance of 348 $k\Omega$. It is connected to a 3.8 $M\Omega$ resistor. What power is developed in the 3.8 $M\Omega$ resistor?
+a) 9.91 μW.
-b) 11.4 μW.
-c) 13.11 μW.
-d) 15.08 μW.
-e) 17.34 μW.
=====*_Rendition_* 5-10=====
<!--a21CircuitsBioInstDC_circuits_5-->A battery has an emf of 7.1 volts, and an internal resistance of 246 $k\Omega$. It is connected to a 3.3 $M\Omega$ resistor. What power is developed in the 3.3 $M\Omega$ resistor?
-a) 10 μW.
-b) 11.5 μW.
+c) 13.23 μW.
-d) 15.21 μW.
-e) 17.5 μW.
=====*_Rendition_* 5-11=====
<!--a21CircuitsBioInstDC_circuits_5-->A battery has an emf of 5.6 volts, and an internal resistance of 460 $k\Omega$. It is connected to a 2.4 $M\Omega$ resistor. What power is developed in the 2.4 $M\Omega$ resistor?
-a) 6.05 μW.
-b) 6.96 μW.
-c) 8 μW.
+d) 9.2 μW.
-e) 10.58 μW.
=====*_Rendition_* 5-12=====
<!--a21CircuitsBioInstDC_circuits_5-->A battery has an emf of 7 volts, and an internal resistance of 357 $k\Omega$. It is connected to a 2.9 $M\Omega$ resistor. What power is developed in the 2.9 $M\Omega$ resistor?
+a) 13.4 μW.
-b) 15.4 μW.
-c) 17.72 μW.
-d) 20.37 μW.
-e) 23.43 μW.
=====*_Rendition_* 5-13=====
<!--a21CircuitsBioInstDC_circuits_5-->A battery has an emf of 6.5 volts, and an internal resistance of 244 $k\Omega$. It is connected to a 4 $M\Omega$ resistor. What power is developed in the 4 $M\Omega$ resistor?

-a) 7.09 μW.
-b) 8.16 μW.
+c) 9.38 μW.
-d) 10.79 μW.
-e) 12.41 μW.
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====*_Instructions_*====
Instructions are forthcoming

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{<!--a21CircuitsBioInstDC_RCdecaySimple_1-->A 621 mF capacitor is connected in series to a 628 kΩ resistor. If the capacitor is discharged, how long does it take to fall by a factor of e³? (where e =2.7...)}
-a) 1.17 x 10⁵ s.
-b) 3.7 x 10⁵ s.
+c) 1.17 x 10⁶ s.
-d) 3.7 x 10⁶ s.
-e) 1.17 x 10⁷ s.

{<!--a21CircuitsBioInstDC_RCdecaySimple_2-->A 784 μF capacitor is connected in series to a 543 kΩ resistor. If the capacitor is discharged, how long does it take to fall by a factor of e³? (where e =2.7...)}
-a) 4.04 x 10¹ s.
-b) 1.28 x 10² s.
-c) 4.04 x 10² s.

+d) 1.28 x 10³ s.
-e) 4.04 x 10³ s.

{<!--a21CircuitsBioInstDC_RCdecaySimple_3-->A 354 mF capacitor is connected in series to a 407 MΩ resistor. If the capacitor is discharged, how long does it take to fall by a factor of e³? (where e =2.7...)}
-a) 4.32 x 10⁷ s.
-b) 1.37 x 10⁸ s.
+c) 4.32 x 10⁸ s.
-d) 1.37 x 10⁹ s.
-e) 4.32 x 10⁹ s.

{<!--a21CircuitsBioInstDC_RCdecaySimple_4-->A 10 F capacitor is connected in series to a 9Ω resistor. If the capacitor is discharged, how long does it take to fall by a factor of e⁴? (where e =2.7...)}
+a) 3.6 x 10² s.
-b) 1.14 x 10³ s.
-c) 3.6 x 10³ s.
-d) 1.14 x 10⁴ s.
-e) 3.6 x 10⁴ s.

</quiz>

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Other renditions
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=====*_Rendition_* 1-2=====
<!--a21CircuitsBioInstDC_RCdecaySimple_1-->A 547 mF capacitor is connected in series to a 2 kΩ resistor. If the capacitor is discharged, how long does it take to fall by a factor of e⁴? (where e =2.7...)
-a) 1.38 x 10³ s.
+b) 4.38 x 10³ s.
-c) 1.38 x 10⁴ s.
-d) 4.38 x 10⁴ s.
-e) 1.38 x 10⁵ s.
=====*_Rendition_* 1-3=====
<!--a21CircuitsBioInstDC_RCdecaySimple_1-->A 819 mF capacitor is connected in series to a 798 kΩ resistor. If the capacitor is discharged, how long does it take to fall by a factor of e⁴? (where e =2.7...)
-a) 8.27 x 10⁵ s.
+b) 2.61 x 10⁶ s.
-c) 8.27 x 10⁶ s.
-d) 2.61 x 10⁷ s.
-e) 8.27 x 10⁷ s.

====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a21CircuitsBioInstDC_RCdecaySimple_2-->A 665 μF capacitor is connected in series to a 806 kΩ resistor. If the capacitor is discharged, how long does it take to fall by a factor of e²? (where e =2.7...)
-a) 3.39 x 10¹ s.
-b) 1.07 x 10² s.
-c) 3.39 x 10² s.
+d) 1.07 x 10³ s.
-e) 3.39 x 10³ s.
=====*_Rendition_* 2-3=====
<!--a21CircuitsBioInstDC_RCdecaySimple_2-->A 65 μF capacitor is connected in series to a 414 kΩ resistor. If the capacitor is discharged, how long does it take to fall by a factor of e⁴? (where e =2.7...)
-a) 1.08 x 10¹ s.
-b) 3.4 x 10¹ s.
+c) 1.08 x 10² s.
-d) 3.4 x 10² s.
-e) 1.08 x 10³ s.
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a21CircuitsBioInstDC_RCdecaySimple_3-->A 206 mF capacitor is connected in series to a 990 MΩ resistor. If the capacitor is discharged, how long does it take to fall by a factor of e⁴? (where e =2.7...)
+a) 8.16 x 10⁸ s.
-b) 2.58 x 10⁹ s.
-c) 8.16 x 10⁹ s.
-d) 2.58 x 10¹⁰ s.
-e) 8.16 x 10¹⁰ s.
=====*_Rendition_* 3-3=====
<!--a21CircuitsBioInstDC_RCdecaySimple_3-->A 727 mF capacitor is connected in series to a 860 MΩ resistor. If the capacitor is discharged, how long does it take to fall by a factor of e³? (where e =2.7...)
+a) 1.88 x 10⁹ s.
-b) 5.93 x 10⁹ s.
-c) 1.88 x 10¹⁰ s.
-d) 5.93 x 10¹⁰ s.
-e) 1.88 x 10¹¹ s.
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a21CircuitsBioInstDC_RCdecaySimple_4-->A 5 F capacitor is connected in series to a 8Ω resistor. If the capacitor is discharged, how long does it take to fall by a factor of e⁴? (where e =2.7...)
-a) 1.6 x 10¹ s.
-b) 5.06 x 10¹ s.
+c) 1.6 x 10² s.
-d) 5.06 x 10² s.

-e) 1.6 x 10³ s.
=====*_Rendition_* 4-3=====
<!--a21CircuitsBioInstDC_RCdecaySimple_4-->A 10 F capacitor is connected in series to a 10Ω resistor. If the capacitor is discharged, how long does it take to fall by a factor of e⁴? (where e =2.7...)
-a) 4 x 10⁰ s.
-b) 1.26 x 10¹ s.
-c) 4 x 10¹ s.
-d) 1.26 x 10² s.
+e) 4 x 10² s.
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Instructions are forthcoming

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<quiz display=simple>
{<!--a22Magnetism_forces_1-->A cosmic ray alpha particle encounters Earth's magnetic field at right angles to a field of 5.7 μT. The kinetic energy is 361 keV. What is the radius of particle's orbit?}
-a) 1.5 x 10² m.
-b) 4.8 x 10² m.
-c) 1.5 x 10³ m.
-d) 4.8 x 10³ m.
+e) 1.5 x 10⁴ m.

{<!--a22Magnetism_forces_2-->Two parallel wires are 7.2 meters long, and are separated by 6.9 mm. What is the force if both wires carry a

current of 13.7 amps?}
-a) 1.24 x 10⁻² newtons
+b) 3.92 x 10⁻² newtons
-c) 1.24 x 10⁻¹ newtons
-d) 3.92 x 10⁻¹ newtons
-e) 1.24 x 10⁰ newtons

{<!--a22Magnetism_forces_3-->Blood is flowing at an average rate of 21.5 cm/s in an artery that has an inner diameter of 3.5 mm. What is the voltage across a hall probe placed across the inner diameter of the artery if the perpendicular magnetic field is 0.11 Tesla?}
-a) 8.28 x 10⁻⁶ Volts
-b) 2.62 x 10⁻⁵ Volts
+c) 8.28 x 10⁻⁵ Volts
-d) 2.62 x 10⁻⁴ Volts
-e) 8.28 x 10⁻⁴ Volts

{<!--a22Magnetism_forces_4-->An electron tube on Earth's surface is oriented horizontally towards magnetic north. The electron is traveling at 0.07c, and Earth's magnetic field makes an angle of 22.5 degrees with respect to the horizontal. To counter the magnetic force, a voltage is applied between two large parallel plates that are 54 mm apart. What must be the applied voltage if the magnetic field is 45μT?}
-a) 2 x 10⁻¹ volts
-b) 6.2 x 10⁻¹ volts
-c) 2 x 10⁰ volts
-d) 6.2 x 10⁰ volts
+e) 2 x 10¹ volts

</quiz>

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Other renditions
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=====*_Rendition_* 1-2=====
<!--a22Magnetism_forces_1-->A cosmic ray alpha particle encounters Earth's magnetic field at right angles to a field of 11.4 μT. The kinetic energy is 307 keV. What is the radius of particle's orbit?
-a) 7 x 10¹ m.
-b) 2.2 x 10² m.
-c) 7 x 10² m.
-d) 2.2 x 10³ m.
+e) 7 x 10³ m.
=====*_Rendition_* 1-3=====
<!--a22Magnetism_forces_1-->A cosmic ray alpha particle encounters Earth's magnetic field at right angles to a field of 7.4 μT. The kinetic energy is 437 keV. What is the radius of particle's orbit?

-a) 1.3 x 10² m.
-b) 4.1 x 10² m.
-c) 1.3 x 10³ m.
-d) 4.1 x 10³ m.
+e) 1.3 x 10⁴ m.
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a22Magnetism_forces_2-->Two parallel wires are 6.7 meters long, and are separated by 5.7 mm. What is the force if both wires carry a current of 13.3 amps?
-a) 4.16 x 10⁻⁴ newtons
-b) 1.32 x 10⁻³ newtons
-c) 4.16 x 10⁻³ newtons
-d) 1.32 x 10⁻² newtons
+e) 4.16 x 10⁻² newtons
=====*_Rendition_* 2-3=====
<!--a22Magnetism_forces_2-->Two parallel wires are 7.5 meters long, and are separated by 4.4 mm. What is the force if both wires carry a current of 14.8 amps?
-a) 2.36 x 10⁻³ newtons
-b) 7.47 x 10⁻³ newtons
-c) 2.36 x 10⁻² newtons
+d) 7.47 x 10⁻² newtons
-e) 2.36 x 10⁻¹ newtons
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a22Magnetism_forces_3-->Blood is flowing at an average rate of 20.5 cm/s in an artery that has an inner diameter of 4.5 mm. What is the voltage across a hall probe placed across the inner diameter of the artery if the perpendicular magnetic field is 0.12 Tesla?
-a) 3.5 x 10⁻⁵ Volts
+b) 1.11 x 10⁻⁴ Volts
-c) 3.5 x 10⁻⁴ Volts
-d) 1.11 x 10⁻³ Volts
-e) 3.5 x 10⁻³ Volts
=====*_Rendition_* 3-3=====
<!--a22Magnetism_forces_3-->Blood is flowing at an average rate of 24.5 cm/s in an artery that has an inner diameter of 3.9 mm. What is the voltage across a hall probe placed across the inner diameter of the artery if the perpendicular magnetic field is 0.17 Tesla?
-a) 5.14 x 10⁻⁵ Volts
+b) 1.62 x 10⁻⁴ Volts
-c) 5.14 x 10⁻⁴ Volts
-d) 1.62 x 10⁻³ Volts
-e) 5.14 x 10⁻³ Volts
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a22Magnetism_forces_4-->An electron tube on Earth's surface is oriented horizontally towards magnetic north. The electron is traveling at 0.07c, and Earth's magnetic field makes an angle of 47.5 degrees with respect to the horizontal. To counter the magnetic force, a voltage is applied between two large parallel plates that are

57 mm apart. What must be the applied voltage if the magnetic field is 46μT?
-a) 4.1 x 10⁰ volts
-b) 1.3 x 10¹ volts
+c) 4.1 x 10¹ volts
-d) 1.3 x 10² volts
-e) 4.1 x 10² volts
=====*_Rendition_* 4-3=====
<!--a22Magnetism_forces_4-->An electron tube on Earth's surface is oriented horizontally towards magnetic north. The electron is traveling at 0.06c, and Earth's magnetic field makes an angle of 48.5 degrees with respect to the horizontal. To counter the magnetic force, a voltage is applied between two large parallel plates that are 59 mm apart. What must be the applied voltage if the magnetic field is 45μT?
-a) 1.1 x 10⁰ volts
-b) 3.6 x 10⁰ volts
-c) 1.1 x 10¹ volts
+d) 3.6 x 10¹ volts
-e) 1.1 x 10² volts
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====*_Instructions_*====
Instructions are forthcoming

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*_See_* [[User:Guy vandegrift]]
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===*_Quiz_*===
<quiz display=simple>
{<!--a23InductionACcircuits_Q1_1-->Two orbiting satellites are

orbiting at a speed of 85 km/s perpendicular to a magnetic field of 56 μT. They are connected by a cable that is 29 km long. A voltmeter is attached between a satellite and one end of the cable. The voltmeter's internal impedance far exceeds the net resistance through the ionosphere that completes the circuit. What is the measured voltage?}
-a) 7.76 x 10⁴ volts.
-b) 9.4 x 10⁴ volts.
-c) 1.14 x 10⁵ volts.
+d) 1.38 x 10⁵ volts.
-e) 1.67 x 10⁵ volts.

{<!--a23InductionACcircuits_Q1_4-->An loop of wire with 25 turns has a radius of 0.85 meters, and is oriented with its axis parallel to a magetic field of 0.58 Tesla. What is the induced voltage if this field is reduced to 49% of its original value in 1.5 seconds?}
-a) 9.24 x 10⁰ volts
+b) 1.12 x 10¹ volts
-c) 1.36 x 10¹ volts
-d) 1.64 x 10¹ volts
-e) 1.99 x 10¹ volts

</quiz>

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Other renditions
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=====*_Rendition_* 1-2=====
<!--a23InductionACcircuits_Q1_1-->Two orbiting satellites are orbiting at a speed of 77 km/s perpendicular to a magnetic field of 56 μT. They are connected by a cable that is 31 km long. A voltmeter is attached between a satellite and one end of the cable. The voltmeter's internal impedance far exceeds the net resistance through the ionosphere that completes the circuit. What is the measured voltage?
-a) 1.1 x 10⁵ volts.
+b) 1.34 x 10⁵ volts.
-c) 1.62 x 10⁵ volts.
-d) 1.96 x 10⁵ volts.
-e) 2.38 x 10⁵ volts.
=====*_Rendition_* 1-3=====
<!--a23InductionACcircuits_Q1_1-->Two orbiting satellites are orbiting at a speed of 66 km/s perpendicular to a magnetic field of 64 μT. They are connected by a cable that is 37 km long. A voltmeter is attached between a satellite and one end of the cable. The voltmeter's internal impedance far exceeds the net resistance through the ionosphere that completes the circuit. What is the

measured voltage?
-a) 1.29 x 10⁵ volts.
+b) 1.56 x 10⁵ volts.
-c) 1.89 x 10⁵ volts.
-d) 2.29 x 10⁵ volts.
-e) 2.78 x 10⁵ volts.
=====*_Rendition_* 1-4=====
<!--a23InductionACcircuits_Q1_1-->Two orbiting satellites are orbiting at a speed of 53 km/s perpendicular to a magnetic field of 58 μT. They are connected by a cable that is 29 km long. A voltmeter is attached between a satellite and one end of the cable. The voltmeter's internal impedance far exceeds the net resistance through the ionosphere that completes the circuit. What is the measured voltage?
-a) 7.36 x 10⁴ volts.
+b) 8.91 x 10⁴ volts.
-c) 1.08 x 10⁵ volts.
-d) 1.31 x 10⁵ volts.
-e) 1.59 x 10⁵ volts.
=====*_Rendition_* 1-5=====
<!--a23InductionACcircuits_Q1_1-->Two orbiting satellites are orbiting at a speed of 83 km/s perpendicular to a magnetic field of 57 μT. They are connected by a cable that is 23 km long. A voltmeter is attached between a satellite and one end of the cable. The voltmeter's internal impedance far exceeds the net resistance through the ionosphere that completes the circuit. What is the measured voltage?
-a) 8.98 x 10⁴ volts.
+b) 1.09 x 10⁵ volts.
-c) 1.32 x 10⁵ volts.
-d) 1.6 x 10⁵ volts.
-e) 1.93 x 10⁵ volts.
=====*_Rendition_* 1-6=====
<!--a23InductionACcircuits_Q1_1-->Two orbiting satellites are orbiting at a speed of 52 km/s perpendicular to a magnetic field of 41 μT. They are connected by a cable that is 33 km long. A voltmeter is attached between a satellite and one end of the cable. The voltmeter's internal impedance far exceeds the net resistance through the ionosphere that completes the circuit. What is the measured voltage?
-a) 4.79 x 10⁴ volts.
-b) 5.81 x 10⁴ volts.
+c) 7.04 x 10⁴ volts.
-d) 8.52 x 10⁴ volts.
-e) 1.03 x 10⁵ volts.
=====*_Rendition_* 1-7=====
<!--a23InductionACcircuits_Q1_1-->Two orbiting satellites are orbiting at a speed of 58 km/s perpendicular to a magnetic field of 46 μT. They are connected by a cable that is 22 km long. A voltmeter is attached between a satellite and one end of the cable. The voltmeter's internal impedance far exceeds the net resistance through the ionosphere that completes the circuit. What is the

measured voltage?
-a) 2.72 x 10⁴ volts.
-b) 3.3 x 10⁴ volts.
-c) 4 x 10⁴ volts.
-d) 4.84 x 10⁴ volts.
+e) 5.87 x 10⁴ volts.
=====*_Rendition_* 1-8=====
<!--a23InductionACcircuits_Q1_1-->Two orbiting satellites are orbiting at a speed of 70 km/s perpendicular to a magnetic field of 46 μT. They are connected by a cable that is 30 km long. A voltmeter is attached between a satellite and one end of the cable. The voltmeter's internal impedance far exceeds the net resistance through the ionosphere that completes the circuit. What is the measured voltage?
-a) 4.48 x 10⁴ volts.
-b) 5.43 x 10⁴ volts.
-c) 6.58 x 10⁴ volts.
-d) 7.97 x 10⁴ volts.
+e) 9.66 x 10⁴ volts.
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a23InductionACcircuits_Q1_4-->An loop of wire with 26 turns has a radius of 0.26 meters, and is oriented with its axis parallel to a magetic field of 0.75 Tesla. What is the induced voltage if this field is reduced to 13% of its original value in 1.8 seconds?
+a) 2 x 10⁰ volts
-b) 2.42 x 10⁰ volts
-c) 2.94 x 10⁰ volts
-d) 3.56 x 10⁰ volts
-e) 4.31 x 10⁰ volts
=====*_Rendition_* 2-3=====
<!--a23InductionACcircuits_Q1_4-->An loop of wire with 92 turns has a radius of 0.39 meters, and is oriented with its axis parallel to a magetic field of 0.97 Tesla. What is the induced voltage if this field is reduced to 16% of its original value in 1.4 seconds?
+a) 2.56 x 10¹ volts
-b) 3.1 x 10¹ volts
-c) 3.76 x 10¹ volts
-d) 4.55 x 10¹ volts
-e) 5.51 x 10¹ volts
=====*_Rendition_* 2-4=====
<!--a23InductionACcircuits_Q1_4-->An loop of wire with 80 turns has a radius of 0.52 meters, and is oriented with its axis parallel to a magetic field of 0.15 Tesla. What is the induced voltage if this field is reduced to 19% of its original value in 3.6 seconds?
-a) 1.06 x 10⁰ volts
-b) 1.29 x 10⁰ volts
-c) 1.56 x 10⁰ volts
-d) 1.89 x 10⁰ volts

+e) 2.29 x 10⁰ volts
=====*_Rendition_* 2-5=====
<!--a23InductionACcircuits_Q1_4-->An loop of wire with 43 turns has a radius of 0.27 meters, and is oriented with its axis parallel to a magetic field of 0.68 Tesla. What is the induced voltage if this field is reduced to 36% of its original value in 3.8 seconds?
-a) 6.34 x 10⁻¹ volts
-b) 7.68 x 10⁻¹ volts
-c) 9.31 x 10⁻¹ volts
+d) 1.13 x 10⁰ volts
-e) 1.37 x 10⁰ volts
=====*_Rendition_* 2-6=====
<!--a23InductionACcircuits_Q1_4-->An loop of wire with 54 turns has a radius of 0.8 meters, and is oriented with its axis parallel to a magetic field of 0.86 Tesla. What is the induced voltage if this field is reduced to 46% of its original value in 2.4 seconds?
-a) 1.43 x 10¹ volts
-b) 1.73 x 10¹ volts
+c) 2.1 x 10¹ volts
-d) 2.55 x 10¹ volts
-e) 3.08 x 10¹ volts
=====*_Rendition_* 2-7=====
<!--a23InductionACcircuits_Q1_4-->An loop of wire with 31 turns has a radius of 0.9 meters, and is oriented with its axis parallel to a magetic field of 0.83 Tesla. What is the induced voltage if this field is reduced to 35% of its original value in 1.7 seconds?
-a) 2.07 x 10¹ volts
+b) 2.5 x 10¹ volts
-c) 3.03 x 10¹ volts
-d) 3.67 x 10¹ volts
-e) 4.45 x 10¹ volts
=====*_Rendition_* 2-8=====
<!--a23InductionACcircuits_Q1_4-->An loop of wire with 33 turns has a radius of 0.55 meters, and is oriented with its axis parallel to a magetic field of 0.74 Tesla. What is the induced voltage if this field is reduced to 32% of its original value in 2.4 seconds?
-a) 5.43 x 10⁰ volts
+b) 6.58 x 10⁰ volts
-c) 7.97 x 10⁰ volts
-d) 9.65 x 10⁰ volts
-e) 1.17 x 10¹ volts
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Instructions are forthcoming

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<quiz display=simple>
{<!--a25GeometricOptics_image_1-->[[File:lens1b.svg|260px|right]] Shown is a corrective lens by a person who needs glasses. This ray diagram illustrates}
+ how a nearsighted person might see a distant object
- how a nearsighted person might see an object that is too close for comfort
- how a farsighted person might see an object that is too close for comfort
- how a farsighted person might see a distant object

{<!--a25GeometricOptics_image_2-->[[File:Lens1_leftRight_reversed.svg|260px|right]] Shown is a corrective lens by a person who needs glasses. This ray diagram illustrates}
- how a nearsighted person might see a distant object
- how a farsighted person might see a distant object
+ how a farsighted person might see an object that is too close for comfort
- how a nearsighted person might see an object that is too close for comfort

{<!--a25GeometricOptics_image_3-->In optics, '''normal''' means}
- to the left of the optical axis
- parallel to the surface
+ perpendicular to the surface
- to the right of the optical axis

{<!--a25GeometricOptics_image_4-->The law of reflection applies to}
- only light in a vacuum
- telescopes but not microscopes

- curved surfaces
+ both flat and curved surfaces
- flat surfaces

{<!--a25GeometricOptics_image_5-->When light passes from air to glass}
- the frequency decreases
- the frequency increases
- it bends away from the normal
+ it bends towards the normal
- it does not bend

{<!--a25GeometricOptics_image_6-->When light passes from glass to air}
- it does not bend
- the frequency decreases
- the frequency increases
- it bends towards the normal
+ it bends away from the normal

{<!--a25GeometricOptics_image_7-->An important principle that allows fiber optics to work is}
- the invariance of the speed of light
+ total internal reflection
- total external refraction
- partial internal absorption
- the Doppler shift

{<!--a25GeometricOptics_image_8-->The focal point is where}
- rays meet whenever they pass through a lens
+ rays meet if they were parallel to the optical axis before striking a lens
- rays meet whenever they are forming an image
- rays meet if they are parallel to each other
- the center of the lens

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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<quiz display=simple>
{<!--a25GeometricOptics_thinLenses_1-->An object is placed 5.8 cm to the left of a diverging lens with a focal length of 4.9 cm. How far is the image from the lens?}
-a) 4.72 x 10⁻¹ cm
-b) 8.4 x 10⁻¹ cm
-c) 1.49 x 10⁰ cm
+d) 2.66 x 10⁰ cm
-e) 4.72 x 10⁰ cm

{<!--a25GeometricOptics_thinLenses_2-->An object is placed 6.05 cm to the left of a converging lens with a focal length of 5.4 cm. How far is the image from the lens?}
+a) 5.03 x 10¹ cm
-b) 8.94 x 10¹ cm
-c) 1.59 x 10² cm
-d) 2.83 x 10² cm
-e) 5.03 x 10² cm

{<!--a25GeometricOptics_thinLenses_3-->An object of height 0.59 cm is placed 149 cm behind a diverging lens with a focal length of 57 cm. What is the height of the image?}
+a) 1.63 x 10⁻¹ cm
-b) 1.96 x 10⁻¹ cm
-c) 2.35 x 10⁻¹ cm
-d) 2.82 x 10⁻¹ cm
-e) 3.39 x 10⁻¹ cm

{<!--a25GeometricOptics_thinLenses_4-->An object is placed 12.1 cm to the left of a diverging lens with a focal length of 15.4 cm. On the side, at a distance of 6.5 cm from the diverging lens is a converging lens with focal length equal to 4 cm. How far is the final image from the converging lens?16.65}
+a) 5.72 x 10⁰ cm
-b) 1.81 x 10¹ cm
-c) 5.72 x 10¹ cm
-d) 1.81 x 10² cm
-e) 5.72 x 10² cm

</quiz>

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Other renditions
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====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--a25GeometricOptics_thinLenses_1-->An object is placed 8 cm to the left of a diverging lens with a focal length of 4.3 cm. How far is the image from the lens?
+a) 2.8 x 10⁰ cm
-b) 4.97 x 10⁰ cm
-c) 8.84 x 10⁰ cm
-d) 1.57 x 10¹ cm
-e) 2.8 x 10¹ cm
=====*_Rendition_* 1-3=====
<!--a25GeometricOptics_thinLenses_1-->An object is placed 6.3 cm to the left of a diverging lens with a focal length of 8.9 cm. How far is the image from the lens?
-a) 1.17 x 10⁰ cm
-b) 2.07 x 10⁰ cm
+c) 3.69 x 10⁰ cm
-d) 6.56 x 10⁰ cm
-e) 1.17 x 10¹ cm
=====*_Rendition_* 1-4=====
<!--a25GeometricOptics_thinLenses_1-->An object is placed 7.8 cm to the left of a diverging lens with a focal length of 3.6 cm. How far is the image from the lens?
-a) 7.79 x 10⁻¹ cm
-b) 1.39 x 10⁰ cm
+c) 2.46 x 10⁰ cm
-d) 4.38 x 10⁰ cm
-e) 7.79 x 10⁰ cm
=====*_Rendition_* 1-5=====
<!--a25GeometricOptics_thinLenses_1-->An object is placed 3.5 cm to the left of a diverging lens with a focal length of 5.6 cm. How far is the image from the lens?
-a) 2.15 x 10⁻¹ cm
-b) 3.83 x 10⁻¹ cm
-c) 6.81 x 10⁻¹ cm
-d) 1.21 x 10⁰ cm
+e) 2.15 x 10⁰ cm
=====*_Rendition_* 1-6=====
<!--a25GeometricOptics_thinLenses_1-->An object is placed 8.4 cm to the left of a diverging lens with a focal length of 6.2 cm. How far is the image from the lens?
-a) 2.01 x 10⁰ cm
+b) 3.57 x 10⁰ cm
-c) 6.34 x 10⁰ cm
-d) 1.13 x 10¹ cm

-e) 2.01 x 10¹ cm
=====*_Rendition_* 1-7=====
<!--a25GeometricOptics_thinLenses_1-->An object is placed 8.6 cm to the left of a diverging lens with a focal length of 6.3 cm. How far is the image from the lens?
-a) 3.64 x 10⁻¹ cm
-b) 6.47 x 10⁻¹ cm
-c) 1.15 x 10⁰ cm
-d) 2.04 x 10⁰ cm
+e) 3.64 x 10⁰ cm
=====*_Rendition_* 1-8=====
<!--a25GeometricOptics_thinLenses_1-->An object is placed 8.6 cm to the left of a diverging lens with a focal length of 9.1 cm. How far is the image from the lens?
-a) 2.49 x 10⁰ cm
+b) 4.42 x 10⁰ cm
-c) 7.86 x 10⁰ cm
-d) 1.4 x 10¹ cm
-e) 2.49 x 10¹ cm
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--a25GeometricOptics_thinLenses_2-->An object is placed 4.15 cm to the left of a converging lens with a focal length of 3.6 cm. How far is the image from the lens?
-a) 8.59 x 10⁰ cm
-b) 1.53 x 10¹ cm
+c) 2.72 x 10¹ cm
-d) 4.83 x 10¹ cm
-e) 8.59 x 10¹ cm
=====*_Rendition_* 2-3=====
<!--a25GeometricOptics_thinLenses_2-->An object is placed 4.85 cm to the left of a converging lens with a focal length of 4 cm. How far is the image from the lens?
-a) 4.06 x 10⁰ cm
-b) 7.22 x 10⁰ cm
-c) 1.28 x 10¹ cm
+d) 2.28 x 10¹ cm
-e) 4.06 x 10¹ cm
=====*_Rendition_* 2-4=====
<!--a25GeometricOptics_thinLenses_2-->An object is placed 6.55 cm to the left of a converging lens with a focal length of 5.4 cm. How far is the image from the lens?
-a) 3.08 x 10⁰ cm
-b) 5.47 x 10⁰ cm
-c) 9.73 x 10⁰ cm
-d) 1.73 x 10¹ cm
+e) 3.08 x 10¹ cm
=====*_Rendition_* 2-5=====
<!--a25GeometricOptics_thinLenses_2-->An object is placed 4.65 cm to the left of a converging lens with a focal length of 6.2 cm. How far is the image from the lens?
-a) 1.86 x 10⁰ cm

-b) 3.31 x 10⁰ cm
-c) 5.88 x 10⁰ cm
-d) 1.05 x 10¹ cm
+e) 1.86 x 10¹ cm
=====*_Rendition_* 2-6=====
<!--a25GeometricOptics_thinLenses_2-->An object is placed 3.15 cm to the left of a converging lens with a focal length of 6.7 cm. How far is the image from the lens?
-a) 3.34 x 10⁰ cm
+b) 5.95 x 10⁰ cm
-c) 1.06 x 10¹ cm
-d) 1.88 x 10¹ cm
-e) 3.34 x 10¹ cm
=====*_Rendition_* 2-7=====
<!--a25GeometricOptics_thinLenses_2-->An object is placed 3.55 cm to the left of a converging lens with a focal length of 6.8 cm. How far is the image from the lens?
-a) 4.18 x 10⁰ cm
+b) 7.43 x 10⁰ cm
-c) 1.32 x 10¹ cm
-d) 2.35 x 10¹ cm
-e) 4.18 x 10¹ cm
=====*_Rendition_* 2-8=====
<!--a25GeometricOptics_thinLenses_2-->An object is placed 4.35 cm to the left of a converging lens with a focal length of 5.7 cm. How far is the image from the lens?
-a) 1.03 x 10¹ cm
+b) 1.84 x 10¹ cm
-c) 3.27 x 10¹ cm
-d) 5.81 x 10¹ cm
-e) 1.03 x 10² cm
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--a25GeometricOptics_thinLenses_3-->An object of height 0.54 cm is placed 131 cm behind a diverging lens with a focal length of 71 cm. What is the height of the image?
-a) 9.15 x 10⁻² cm
-b) 1.1 x 10⁻¹ cm
-c) 1.32 x 10⁻¹ cm
-d) 1.58 x 10⁻¹ cm
+e) 1.9 x 10⁻¹ cm
=====*_Rendition_* 3-3=====
<!--a25GeometricOptics_thinLenses_3-->An object of height 0.67 cm is placed 106 cm behind a diverging lens with a focal length of 61 cm. What is the height of the image?
-a) 1.18 x 10⁻¹ cm
-b) 1.42 x 10⁻¹ cm
-c) 1.7 x 10⁻¹ cm
-d) 2.04 x 10⁻¹ cm
+e) 2.45 x 10⁻¹ cm
=====*_Rendition_* 3-4=====
<!--a25GeometricOptics_thinLenses_3-->An object of height 0.67 cm is

placed 107 cm behind a diverging lens with a focal length of 70 cm. What is the height of the image?
+a) 2.65 x 10⁻¹ cm
-b) 3.18 x 10⁻¹ cm
-c) 3.82 x 10⁻¹ cm
-d) 4.58 x 10⁻¹ cm
-e) 5.49 x 10⁻¹ cm
=====*_Rendition_* 3-5=====
<!--a25GeometricOptics_thinLenses_3-->An object of height 0.68 cm is placed 140 cm behind a diverging lens with a focal length of 87 cm. What is the height of the image?
-a) 1.26 x 10⁻¹ cm
-b) 1.51 x 10⁻¹ cm
-c) 1.81 x 10⁻¹ cm
-d) 2.17 x 10⁻¹ cm
+e) 2.61 x 10⁻¹ cm
=====*_Rendition_* 3-6=====
<!--a25GeometricOptics_thinLenses_3-->An object of height 0.64 cm is placed 112 cm behind a diverging lens with a focal length of 65 cm. What is the height of the image?
-a) 1.36 x 10⁻¹ cm
-b) 1.63 x 10⁻¹ cm
-c) 1.96 x 10⁻¹ cm
+d) 2.35 x 10⁻¹ cm
-e) 2.82 x 10⁻¹ cm
=====*_Rendition_* 3-7=====
<!--a25GeometricOptics_thinLenses_3-->An object of height 0.7 cm is placed 117 cm behind a diverging lens with a focal length of 70 cm. What is the height of the image?
+a) 2.62 x 10⁻¹ cm
-b) 3.14 x 10⁻¹ cm
-c) 3.77 x 10⁻¹ cm
-d) 4.53 x 10⁻¹ cm
-e) 5.43 x 10⁻¹ cm
=====*_Rendition_* 3-8=====
<!--a25GeometricOptics_thinLenses_3-->An object of height 0.75 cm is placed 147 cm behind a diverging lens with a focal length of 86 cm. What is the height of the image?
+a) 2.77 x 10⁻¹ cm
-b) 3.32 x 10⁻¹ cm
-c) 3.99 x 10⁻¹ cm
-d) 4.78 x 10⁻¹ cm
-e) 5.74 x 10⁻¹ cm
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--a25GeometricOptics_thinLenses_4-->An object is placed 13.2 cm to the left of a diverging lens with a focal length of 17.1 cm. On the side, at a distance of 5.1 cm from the diverging lens is a converging lens with focal length equal to 4 cm. How far is the final image from the converging lens?
-a) 1.86 x 10⁻¹ cm
-b) 5.87 x 10⁻¹ cm

-c) 1.86 x 10⁰ cm
+d) 5.87 x 10⁰ cm
-e) 1.86 x 10¹ cm
=====*_Rendition_* 4-3=====
<!--a25GeometricOptics_thinLenses_4-->An object is placed 10.8 cm to the left of a diverging lens with a focal length of 15.6 cm. On the side, at a distance of 5.7 cm from the diverging lens is a converging lens with focal length equal to 4 cm. How far is the final image from the converging lens?
-a) 5.98 x 10⁻¹ cm
-b) 1.89 x 10⁰ cm
+c) 5.98 x 10⁰ cm
-d) 1.89 x 10¹ cm
-e) 5.98 x 10¹ cm
=====*_Rendition_* 4-4=====
<!--a25GeometricOptics_thinLenses_4-->An object is placed 12.1 cm to the left of a diverging lens with a focal length of 16.9 cm. On the side, at a distance of 6.7 cm from the diverging lens is a converging lens with focal length equal to 4 cm. How far is the final image from the converging lens?
+a) 5.64 x 10⁰ cm
-b) 1.78 x 10¹ cm
-c) 5.64 x 10¹ cm
-d) 1.78 x 10² cm
-e) 5.64 x 10² cm
=====*_Rendition_* 4-5=====
<!--a25GeometricOptics_thinLenses_4-->An object is placed 13.7 cm to the left of a diverging lens with a focal length of 17.7 cm. On the side, at a distance of 5.5 cm from the diverging lens is a converging lens with focal length equal to 4 cm. How far is the final image from the converging lens?
-a) 5.73 x 10⁻² cm
-b) 1.81 x 10⁻¹ cm
-c) 5.73 x 10⁻¹ cm
-d) 1.81 x 10⁰ cm
+e) 5.73 x 10⁰ cm
=====*_Rendition_* 4-6=====
<!--a25GeometricOptics_thinLenses_4-->An object is placed 10.2 cm to the left of a diverging lens with a focal length of 16.6 cm. On the side, at a distance of 5.6 cm from the diverging lens is a converging lens with focal length equal to 4 cm. How far is the final image from the converging lens?
-a) 6.02 x 10⁻¹ cm
-b) 1.9 x 10⁰ cm
+c) 6.02 x 10⁰ cm
-d) 1.9 x 10¹ cm
-e) 6.02 x 10¹ cm
=====*_Rendition_* 4-7=====
<!--a25GeometricOptics_thinLenses_4-->An object is placed 10.9 cm to the left of a diverging lens with a focal length of 16.4 cm. On the side, at a distance of 6.8 cm from the diverging lens is a converging lens with focal length equal to 4 cm. How far is the final image from

the converging lens?
-a) 1.81 x 10⁻¹ cm
-b) 5.71 x 10⁻¹ cm
-c) 1.81 x 10⁰ cm
+d) 5.71 x 10⁰ cm
-e) 1.81 x 10¹ cm
=====*_Rendition_* 4-8=====
<!--a25GeometricOptics_thinLenses_4-->An object is placed 10.9 cm to the left of a diverging lens with a focal length of 16.3 cm. On the side, at a distance of 5.7 cm from the diverging lens is a converging lens with focal length equal to 4 cm. How far is the final image from the converging lens?
-a) 1.88 x 10⁰ cm
+b) 5.94 x 10⁰ cm
-c) 1.88 x 10¹ cm
-d) 5.94 x 10¹ cm
-e) 1.88 x 10² cm
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====*_Instructions_*====
Instructions are forthcoming

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*_See_* [[User:Guy vandegrift]]
</div></div>
===*_Quiz_*===
<quiz display=simple>
{<!--a25GeometricOptics_vision_1-->Which lens has the shorter focal length?}
+ [[File:Ray_drawing_eye_schematic.svg|140px]]
- [[File:Ray drawing eye schematic01.svg|140px]]
- They have the same focal lengh.

{<!--a25GeometricOptics_vision_2-->[[File:Ray drawing eye schematic01.svg|140px]] If this represents the eye looking at an object, where is this object?}
- One focal length in front of the eye
+ Two (of the other answers) are true
- very far away
- at infinity
- directly in front of the eye (almost touching)

{<!--a25GeometricOptics_vision_3-->After passing through a the lens of a camera or the eye, the focal point is defined as where the rays meet.}
- true
+ false

{<!--a25GeometricOptics_vision_4-->[[File:Ray drawing eye schematic01.svg|140px]] Mr. Smith is gazing at something as shown in the figure to the left. Suppose he does not refocus, but attempts to stare at the star shown in the figures below. Which diagram depicts how the rays from the star would travel if he does not refocus?}
- [[File:Ray_drawing_eye_schematic_alternate.svg|110px]]
- [[File:Ray drawing eye Wrong Answer.svg|110px]]
+ [[File:Ray drawing eye schematic02.svg|145px]]

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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*_See_* [[User:Guy vandegrift]]
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===*_Quiz_*===
<quiz display=simple>
{<!--AstroApparentRetroMotion_1--> ____ motion is in the usual direction, and _______ is motion that has temporarily reversed itself.
}
- direct; elliptical
- elliptical; retrograde
+ direct; retrograde
- indirect; direct
- retrograde; direct

{<!--AstroApparentRetroMotion_2--> Under what conditions would a planet not seem to rise in the east and set in the west? }
- if the planet is in retrograde motion
+ if the observer is near the north or south poles
- if the planet is in direct motion
- if the planet is in elliptical motion
- if the observer is below the equator

{<!--AstroApparentRetroMotion_3--> When the faster moving Earth overtakes a slower planet outside Earth's orbit}
+ retrograde motion occurs
- two of these are true
- all of these are true
- tidal forces can be observed on Earth
- tidal forces can be observed on the planet

{<!--AstroApparentRetroMotion_4--> Which planet spends more days in a given retrograde? }
+ Saturn
- It depends on the season
- They are all equal
- Earth
- Mars

{<!--AstroApparentRetroMotion_5--> Which planet has more days between two consecutive retrogrades? }
- Earth
+ Mars
- It depends on the season
- They are all equal
- Saturn

{<!--AstroApparentRetroMotion_6--> A planet that is very, very far from the Sun would be in retrograde for approximately ___ months.}
- 1
+ 6
- 24
- 12
- 3

{<!--AstroApparentRetroMotion_7--> If a planet that is very, very far from the Sun begins a retrograde, how many months must pass before it begins the next retrograde? }
+ 12
- 1
- 24
- 6
- 3

{<!--AstroApparentRetroMotion_8--> ''Planet'' comes from the Greek word for 'wanderer'. }
+ true
- false

{<!--AstroApparentRetroMotion_9--> We know that Galileo saw Neptune, but is not credited with its discovery because}
- he never published his drawing
- none of these are true
- he thought it was a moon of Saturn
+ it was in a transition between retrograde and direct motion
- it was too faint to be worth drawing

</quiz>

====*_Instructions_*====
Instructions are forthcoming

Transclusion from [[Quizbank/Instructions_0]]:
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*_See_* [[User:Guy vandegrift]]
</div></div>

===*_Quiz_*===
<quiz display=simple>
{<!--AstroAtmosphericLoss_1-->It is important to distinguish between molecules (collectively) in a gas and one individual molecule. This question is about an individual molecule. For a planet with a given mass, size, and density, which has the greater escape velocity? }
- the heavier molecule has the greater escape velocity
- the lighter molecule has the greater escape velocity
+ all molecules have the same escape velocity
- no molecules have escape velocity
- all molecules move at the escape velocity

{<!--AstroAtmosphericLoss_2-->It is important to distinguish between molecules (collectively) in a gas and one individual molecule. This question is about a typical molecule in the gas. For a planet with a given mass, size, and density, which type of gas is more likely to escape? }
+ atoms in a hotter gas is more likely to escape
- atoms in a denser gas are more likely to escape
- atoms in a gas with more atomic mass are more likely to escape
- all types of gas are equally likely to escape
- atoms in a colder gas are more likely to escape

{<!--AstroAtmosphericLoss_3-->Which type of gas is likely to have the faster particles?}
+ a hot gas with low mass atoms
- a hot gas with high mass atoms
- a cold gas with low mass atoms
- a cold gas with high mass atoms
- all gasses on a given planet have the same speed

{<!--AstroAtmosphericLoss_4-->What is it about the isotopes of Argon-36 and Argon-38 that causes their relative abundance to be so unusual on Mars?}
- different half-life
+ different speed
- different chemical properties
- identical mass
- identical abundance

{<!--AstroAtmosphericLoss_5-->In the formula, $\frac 1 2 m_\mathrm{atom}v_\mathrm{escape}^2=G_\mathrm{Newton}\frac{M_\mathrm{planet}m_\mathrm{atom}}{r_\mathrm{planet}}$, which of the following is FALSE?}
- v_{escape} is independent of m_{atom}
+ the formula is valid for all launch angles
- the formula is valid only if the particle is launched from the surface of planet of radius r_{planet}
- the formula can be used to estimate how fast an atom must move before exiting the planet
- the particle is assumed to have been launched vertically

{<!--AstroAtmosphericLoss_6-->What statement is FALSE about $\frac 1 2 m_\mathrm{atom}\langle v_\mathrm{atom}^2 \rangle_{ave}= \frac{1}{2} k_\mathrm{B}T$?}
- The kinetic energy is directly proportional to temperature.
- The average speed of a low mass particle is higher than the average speed of a high mass particle
- Temperature is measured in Kelvins
+ Temperature is measured in Centigrades
- This equation does not involve the size or mass of the planet.

{<!--AstroAtmosphericLoss_7-->$\frac 1 2 m_\mathrm{atom}\langle v_\mathrm{atom}^2 \rangle_{ave}= \frac{1}{2} k_\mathrm{B}T$, where ''T'' is temperature on the Kelvin scale. This formula describes:}
- The speed an atom needs to escape the planet, where m is the mass of the atom.
+ The speed of a typical atom, where m is the mass of the atom.
- The the speed an atom needs to escape the planet, where m is the mass planet.
- The speed of a typical atom, where m is the mass of the planet.
- The speed an atom needs to orbit the planet, where m is the mass of the atom.

</quiz>

====*_Instructions_*====
Instructions are forthcoming

Transclusion from [[Quizbank/Instructions_0]]:
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*_See_* [[User:Guy vandegrift]]
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===*_Quiz_*===
<quiz display=simple>
{<!--AstroChasingPluto_1-->The trip by ''New Horizons'' from Earth to Pluto took almost a}
- week
- month
- year
+ decade
- century

{<!--AstroChasingPluto_10-->The "Chasing Pluto" video showed a stellar occultation that was observed in order to learn something about Pluto's}
- mass
+ atmosphere
- size

{<!--AstroChasingPluto_11-->The "Chasing Pluto" video showed a stellar occultation that was observed}
- from the [[w:W. M. Keck Observatory|Keck Observatory]] in 1994
- from the 200 inch [[w:Hale telescope|Hale Telescope]] in 1968
- from the [[w:Hubble Space Telescope|Hubble Space Telescope]] in 1998
+ from a cargo plane in 1988

{<!--AstroChasingPluto_12-->A stellar occultation occurs when a planet passes in front of a star}
+ true
- false

{<!--AstroChasingPluto_13-->A stellar occultation occurs when the north or south pole of a planet is aligned with a star}
- true
+ false

{<!--AstroChasingPluto_14-->Stellar occultation tells something about a planet because}
- blocking the nearby stars allows a better view of the planet
+ the star acts as a light source for the detection of planetary spectral lines that are absorption lines
- the star acts as a light source for the detection of planetary spectral lines that are emission lines
- the orientation of the planet's rotation about its axis can be precisely determined

{<!--AstroChasingPluto_15-->[[w:silicon carbide|Silicon carbide]] was used to construct the telescope ''LORRI'' because this material is}
- strong
- light
- not prone to warp at low temperature
+ all of these

{<!--AstroChasingPluto_16-->The darker portions of Pluto are believe to be from "snowflakes" of}
- silicates
- water
+ hydrocarbons
- nitrogen

{<!--AstroChasingPluto_17-->"Pepssi", "Rex", "Swap", "Lorri", "Alice" and "Ralf" are}
- named after friends of the cartoon charactor 'Pluto'
+ instruments on the ''New Horizon''
- asteroids discovered by ''New Horizon''
- the people responsible for calculating the orbit of ''New Horizon''
- Kuiper objects discovered by ''New Horizon''

{<!--AstroChasingPluto_18-->What was the concern about taking a telescope/camera to the cold environment near Pluto?}
+ the telescope might bend
- the the mirror might crack
- the plates might crack
- the electronics might fail

{<!--AstroChasingPluto_19-->As ''New Horizon's'' approaches Jupiter, it was essential that }
+ it approach Jupiter closely enough for Jupiter's gravity to pull ''New Horizons'' to a 20% higher speed
- avoid hitting the moons of Jupiter
- avoid going into the rings of Jupiter

{<!--AstroChasingPluto_2-->The time to reach __________ was shortened from 9 days to 3 hours due to the speed of the rocket that delivered ''New Horizons''}
+ the Moon
- Mars
- the asteroid belt
- Jupiter

{<!--AstroChasingPluto_20-->While close to Jupiter, ''New Horizons'' the most spectacular image was of}
- the great red spot
- Jupiter's rings
- a newly discovered moon
+ a live volcano

{<!--AstroChasingPluto_21-->The Kuiper belt has been described as a ___________ made of ___________}
- deep freeze ... rock and metal
- mystery band ... rock and ice
- mystery band ... rock and metal
+ deep freeze ... rock and ice

{<!--AstroChasingPluto_22-->For most of its nine-year journey, it was

asleep, but once a week, the ''New Horizon's'' spacecraft }
- photographed EARTH
- photographed PLUTO
+ called MOM
- adjusted the ORBIT

{<!--AstroChasingPluto_23-->Clyde Tombaugh, who discovered Pluto back in the 1930s}
- privately funded the Lowell observatory
+ was self educated
- had resigned from a position at Yale to focus his efforts on discovering "Planet X"

{<!--AstroChasingPluto_24-->Clyde Tombaugh's reward for discovering Pluto was}
- a Nobel prize
+ a college education
- an invitation to teach at Yale

{<!--AstroChasingPluto_25-->The ''blink comparator'' compared}
- the atmosphere around an object with the object itself
- the size of two different objects
+ the location of an object on two different days

{<!--AstroChasingPluto_26-->A typical average radio station uses 50,000 watts to transmit a signal. The transmitter on ''New Horizons'' used }
+ 5 thousand times less power
- 5 thousand times more power
- 5 times less power
- 5 times more power
- almost the same amount of power

{<!--AstroChasingPluto_27-->Mike Brown's search for another Pluto-like object eventually led to the discovery of [[w:Eris|]] in 2005. What was the first clue that Eris was larger than Pluto?}
- It was brighter in the sky than Pluto
- it was surprisingly bright for an object moving that quickly
+ it was surprisingly bright for an object moving that slowly
- it had a surprisingly large influence on Pluto's orbit

{<!--AstroChasingPluto_28-->Pluto ceased to be called a planet in 2006, after the [[w:International Astronomical Union|IAU]] defined a planet of our Sun as an object that is (1) in orbit around the Sun, (2) roughly spherical due to it's mass, and (3): }
- lies in the same plane as the other nine planets
+ has cleared the neighborhood around its orbit.
- has a nearly circular orbit
- is larger than Earth's moon
- is more massive than Mercury

{<!--AstroChasingPluto_29-->The influence of Jupiter's gravity on

Pluto is that Jupiter gradually pushes Pluto away }
+ true
- false

{<!--AstroChasingPluto_3-->When the discovery of the "ninth planet" was made in 1930, the name ''Pluto'' was chosen after a cartoon that was a common childhood experience shared by most astronomers of the day}
- true
+ false

{<!--AstroChasingPluto_30-->The influence of Jupiter's gravity on Pluto is that Jupiter gradually brings Pluto closer}
- true
+ false

{<!--AstroChasingPluto_31-->Which was NOT listed as one of the three things commonly considered necessary for the formation of life?}
+ sunlight
- water
- energy
- organic matter

{<!--AstroChasingPluto_32-->As ''New Horizon'' approached Jupiter, it looked for new Moons, and the ground crew was glad that}
- the ''New Horizon'' discovered three new moons
+ there were no new moons because moons are debris generators
- there were no new moons because moons are capable of capturing spacecraft

{<!--AstroChasingPluto_4-->[[File:Pluto_HST_lower_left.jpg|right|200px]]The image to the right corresponds to}
+ [[File:Pluto HST upper left.jpg|100px]]
- [[File:Pluto HST upper right.jpg|100px]]

{<!--AstroChasingPluto_5-->[[File:Pluto_HST_lower_right.jpg|right|200px]]The image to the right corresponds to}
- [[File:Pluto HST upper left.jpg|100px]]
+ [[File:Pluto HST upper right.jpg|100px]]

{<!--AstroChasingPluto_6-->[[File:Hst pluto1 derivative.png|right|200px]] These two images of Pluto represent:}
- a land-based telescope and the ''Hubble Space Telescope''
+ raw and processed images
- ''New Horizon'' near Earth and mid-way to Pluto
- ''New Horizon'' mid-way to Pluto and near Pluto
- ''New Horizon'' and the ''Hubble Space Telescope''

{<!--AstroChasingPluto_7-->The atmosphere of Pluto}
+ emerges when the surface thaws as it approaches the Sun
- emerges when the surface thaws due to tidal heating from the Moons
- emerges when the surface thaws due to tidal heating from Jupiter

- emerges when the surface thaws due to tidal heating from Neptune
- is mostly oxygen

{<!--AstroChasingPluto_8-->Energy for the ''New Horizon'' is provided by}
- lithium batteries
- fuel cells
- solar power
+ nuclear power

{<!--AstroChasingPluto_9-->As it approached Pluto, ''New Horizon'' was slightly larger than}
+ a grand piano
- the Hubble Space Telescope
- a 10 story building

</quiz>

====*_Instructions_*====
Instructions are forthcoming

Transclusion from [[Quizbank/Instructions_0]]:
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<quiz display=simple>
{<!--AstroGalileanMoons_1-->How does the density of a Galilean moon depend on its distance from Jupiter? }
- all the moons have nearly the same density
+ the more dense moon is closer to Jupiter (always)
- the density of the moons is unknown

- the less dense moon is closer to Jupiter (always)
- the most dense moon is neither the closest nor the most distant

{<!--AstroGalileanMoons_2-->How does the mass of a Galilean moon depend on its distance from the central body? }
- the less massive moon is closer to Jupiter (always)
- the mass of the moons is unknown
+ the most massive moon is neither the closest nor the most distant
- the more massive moon is closer to Jupiter (always)
- all the moons have nearly the same mass

{<!--AstroGalileanMoons_3-->Does Jupiter's moon Io have craters? }
- no, the surface is too new
- yes, from impacts
+ yes, from volcanoes
- no, the surface is too old
- yes, about half from impacts and the others from volcanoes

{<!--AstroGalileanMoons_4-->The mechanism that heats the cores of the Galilean moons is }
- radiation from the Sun and from Jupiter
- tides from Jupiter
- radioactive decay of heavy elements
+ tides from the other moons and Jupiter
- radiation from the Sun

{<!--AstroGalileanMoons_5-->Immediately after publication of Newton's laws of physics (Principia), it was possible to "calculate" the mass of Jupiter. What important caveat applied to this calculation? }
- The different moons yielded slightly different values for the mass of Jupiter.
- The different moons yielded vastly different values for the mass of Jupiter.
+ Only the mass of Jupiter relative to that of the Sun could be determined.
- tides from the other moons and Jupiter.
- They needed to wait over a decade for Jupiter to make approximately one revolution around the Sun.

{<!--AstroGalileanMoons_6-->Ganymede, Europa, and Io have ratios in __________ that are 1:2:4. }
- orbital period
- Argon isotope abundance
+ Two other answers are correct (making this the only true answer).
- density
- rotational period

{<!--AstroGalileanMoons_7-->Which of Jupiter's moons has an anhydrous core? }
- Europa
- Ganymede
- Two other answers are correct (making this the only true answer).

+ Io
- Ganymede

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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<quiz display=simple>
{<!--AstroJupiter_1-->[[File:Jupiter by Cassini-Huygens.jpg|right|300px]]

 The black spot in this image of Jupiter is}
- an electric storm
- a solar eclipse
+ Two other answers are correct (making this the only true answer).
- the shadow of a moon
- a magnetic storm

{<!--AstroJupiter_10-->Although there is some doubt as to who discovered Jupiter's great red spot, it is generally credited to}
- Tycho in
- Galileo in 1605
- Newton in 1668
+ Cassini in 1665
- Messier in 1771

{<!--AstroJupiter_11-->The bands in the atmosphere of Jupiter are

associated with a patter of alternating wind velocities that are}
- easterly and westerly
- updrafts and downdrafts
+ both of these

{<!--AstroJupiter_12-->As one descends down to Jupiter's core, the temperature}
+ increases
- decreases
- stays about the same

{<!--AstroJupiter_2-->Which of the following statements is FALSE?}
- Jupiter has four large moons and many smaller ones
- The Great Red Spot is a storm that has raged for over 300 years
- Jupiter emits more energy than it receives from the Sun
+ Jupiter is the largest known planet
- Jupiter has a system of rings

{<!--AstroJupiter_3-->What is the mechanism that heats the interior of Jupiter? }
+ rain
- tides
- radioactivity
- magnetism
- electricity

{<!--AstroJupiter_4-->Why is Jupiter an oblate spheroid?}
- tides from other gas planets
- tides from the Sun
- tides from the Jupiter's moons
+ rotation about axis
- revolution around Sun

{<!--AstroJupiter_5-->What statement best describes the Wikipedia's explanation of the helium (He) content of Jupiter's upper atmosphere (relative to the hydrogen (H) content)?}
+ Jupiter's atmosphere has only 80% as much helium because the He fell to the core.
- Jupiter's atmosphere has 80% more He because Jupiter's hydrogen escaped into space.
- Jupiter's atmosphere has only 80% as much helium because the He escaped into space.
- Jupiter's atmosphere has 80% more He because Jupiter's hydrogen fell to the core.
- Jupiter and the Sun have nearly the same ratio of He to H.

{<!--AstroJupiter_6-->Where is the Sun-Jupiter barycenter?}
+ Just above the Sun's surface
- Just above Jupiter's surface
- At the center of the Sun
- At the center of Jupiter
- The question remains unresolved

{<!--AstroJupiter_7-->The barycenter of two otherwise isolated celestial bodies is?}
- a place where two bodies exert equal and opposite gravitational forces
+ the focal point of two elliptical orbital paths
- both of these are true

{<!--AstroJupiter_8-->Knowing the barycenter of two stars is useful because it tells us the total mass}
- TRUE
+ FALSE

{<!--AstroJupiter_9-->Knowing the barycenter of two stars is useful because it tells us the ratio of the two masses}
+ TRUE
- FALSE

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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*_See_* [[User:Guy vandegrift]]
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===*_Quiz_*===
<quiz display=simple>
{<!--AstroKepler_1-->Kepler began his career as a teacher of}
+ mathematics
- history

- philosophy
- theology
- astronomy

{<!--AstroKepler_10-->As a child, Kepler's interest in astronomy grew as a result of }
+ two of these
- watching his uncle make a telescope
- a solar eclipse
- a lunar eclipse
- a comet

{<!--AstroKepler_11-->When Kepler's studies at the university were over, what he really wanted to do was }
+ become a minister
- work with Newton
- visit Athens
- visit Rome
- work with Tycho

{<!--AstroKepler_12-->Which of the following is NOT associated with Kepler's Laws}
- Earth orbits the sun
- planets speed up as they approach the sun
+ circular motions with epicycles
- planets farther from the Sun have longer orbital periods.
- elliptical paths for the planets

{<!--AstroKepler_13-->As a planet orbits the Sun, the Sun is situated at one focal point of the ellipse}
+ true
- false

{<!--AstroKepler_14-->As a planet orbits the Sun, the Sun is situated midway between the two focal points of the ellipse}
- true
+ false

{<!--AstroKepler_15-->Newton was able to use the motion of the Moon to calculate the universal constant of gravity, G }
- true
+ false

{<!--AstroKepler_16-->The force of (gravitational) attraction between you and a friend is small because neither of you possess significant mass }
+ true
- false

{<!--AstroKepler_17-->Cavendish finally measured G by carefully weighing the force between}
- Earth and Sun

- Sun and Moon
- Jupiter and moons
+ two lead balls
- Earth and Moon

{<!--AstroKepler_2-->Kepler is also known for his improvements to}
- a perpetual motion machine
+ the telescope
- translations of the Bible
- the abacus
- Ptolemy's star charts

{<!--AstroKepler_3-->In Kepler's era, astronomy was usually considered a part of natural philosophy}
- true
+ false

{<!--AstroKepler_4-->In Kepler's era, astronomy was usually considered a part of mathematics}
+ true
- false

{<!--AstroKepler_5-->In Kepler's era, astronomy closely linked to astrology}
+ true
- false

{<!--AstroKepler_6-->In Kepler's era, physics (how and why things moved) was usually considered a part of natural philosophy}
+ true
- false

{<!--AstroKepler_7-->Kepler incorporated religious arguments and reasoning into his work}
+ true
- false

{<!--AstroKepler_8-->Kepler avoided religious arguments and reasoning in his work}
- true
+ false

{<!--AstroKepler_9-->How would one describe the status of Kepler's family when he was a child?}
- neither wealthy nor of noble birth
+ of noble birth, but in poverty
- his father and grandfather were scientists
- wealth and of noble birth
- wealthy but not of noble birth

</quiz>

```
====*_Instructions_*====
Instructions are forthcoming

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===*_Quiz_*===
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{<!--AstroLunarphasesAdvancedB_1-->At 6am a waning crescent moon would
be}
-  eastern horizon
-  below the western horizon
-  below the eastern horizon
-  high in western sky
+  high in eastern sky

{<!--AstroLunarphasesAdvancedB_10-->At 3pm a third quarter moon would
be}
-  high in eastern sky
+  below the western horizon
-  nadir
-  overhead
-  eastern horizon

{<!--AstroLunarphasesAdvancedB_13-->At noon a waning crescent moon
would be}
-  overhead
-  high in eastern sky
-  nadir
+  high in western sky
-  eastern horizon
```

{<!--AstroLunarphasesAdvancedB_15-->At 9pm a waxing crescent moon would be}
- below the western horizon
- overhead
- eastern horizon
- high in eastern sky
+ western horizon

{<!--AstroLunarphasesAdvancedB_16-->At 9am a waxing crescent moon would be}
+ eastern horizon
- high in eastern sky
- overhead
- below the western horizon
- nadir

{<!--AstroLunarphasesAdvancedB_18-->At 3am a waxing crescent moon would be}
- below the eastern horizon
- below the western horizon
- overhead
- high in western sky
+ nadir

{<!--AstroLunarphasesAdvancedB_20-->At 3am a waning gibbous moon would be}
- nadir
+ overhead
- eastern horizon
- high in western sky
- western horizon

{<!--AstroLunarphasesAdvancedB_21-->At 9am a third quarter moon would be}
- high in eastern sky
+ high in western sky
- nadir
- western horizon
- below the eastern horizon

{<!--AstroLunarphasesAdvancedB_23-->At 9pm a 1st quarter moon would be}
- high in eastern sky
- overhead
+ high in western sky
- eastern horizon
- below the western horizon

{<!--AstroLunarphasesAdvancedB_24-->At 3pm a new moon would be}
- below the eastern horizon
+ high in western sky

- high in eastern sky
- nadir
- overhead

{<!--AstroLunarphasesAdvancedB_25-->At 3pm a waning crescent moon would be}
- nadir
- below the eastern horizon
- high in western sky
- high in eastern sky
+ western horizon

{<!--AstroLunarphasesAdvancedB_2-->At 9pm a waxing gibbous moon would be}
- below the western horizon
+ overhead
- high in western sky
- nadir
- below the eastern horizon

{<!--AstroLunarphasesAdvancedB_27-->At 3pm a waxing gibbous moon would be}
- below the eastern horizon
- below the western horizon
- high in western sky
+ eastern horizon
- high in eastern sky

{<!--AstroLunarphasesAdvancedB_30-->At midnight a waning gibbous moon would be}
+ high in eastern sky
- high in western sky
- western horizon
- eastern horizon
- below the western horizon

{<!--AstroLunarphasesAdvancedB_32-->At 6am a waxing crescent moon would be}
- overhead
- below the western horizon
- eastern horizon
+ below the eastern horizon
- nadir

{<!--AstroLunarphasesAdvancedB_33-->At 9pm a new moon would be}
- western horizon
- high in western sky
+ below the western horizon
- below the eastern horizon
- nadir

{<!--AstroLunarphasesAdvancedB_36-->At 9pm a waning gibbous moon would

be}
+ eastern horizon
- high in eastern sky
- high in western sky
- below the western horizon
- nadir

{<!--AstroLunarphasesAdvancedB_38-->At 3am a 1st quarter moon would be}
- nadir
- eastern horizon
- high in eastern sky
+ below the western horizon
- high in western sky

{<!--AstroLunarphasesAdvancedB_40-->At 3pm a waxing crescent moon would be}
- nadir
+ overhead
- eastern horizon
- high in eastern sky
- below the eastern horizon

{<!--AstroLunarphasesAdvancedB_41-->At 9am a new moon would be}
- overhead
- high in western sky
+ high in eastern sky
- below the western horizon
- eastern horizon

{<!--AstroLunarphasesAdvancedB_43-->At 9am a waning crescent moon would be}
+ overhead
- eastern horizon
- below the eastern horizon
- western horizon
- nadir

{<!--AstroLunarphasesAdvancedB_44-->At 9am a waxing gibbous moon would be}
- western horizon
- high in eastern sky
+ nadir
- high in western sky
- eastern horizon

{<!--AstroLunarphasesAdvancedB_3-->At 3am a waning crescent moon would be}
- overhead
- nadir
- high in eastern sky
+ eastern horizon

- western horizon

{<!--AstroLunarphasesAdvancedB_46-->At midnight a waning crescent moon would be}
- below the western horizon
- western horizon
- overhead
+ below the eastern horizon
- nadir

{<!--AstroLunarphasesAdvancedB_47-->At 9pm a full moon would be}
- overhead
- nadir
+ high in eastern sky
- below the western horizon
- eastern horizon

{<!--AstroLunarphasesAdvancedB_48-->At 6am a waning gibbous moon would be}
- nadir
- below the western horizon
+ high in western sky
- below the eastern horizon
- eastern horizon

{<!--AstroLunarphasesAdvancedB_49-->At 3pm a full moon would be}
- below the western horizon
- nadir
- high in eastern sky
+ below the eastern horizon
- western horizon

{<!--AstroLunarphasesAdvancedB_50-->At midnight a waxing gibbous moon would be}
- below the western horizon
- below the eastern horizon
- overhead
+ high in western sky
- high in eastern sky

{<!--AstroLunarphasesAdvancedB_51-->At 9am a waning gibbous moon would be}
- nadir
- overhead
+ western horizon
- high in western sky
- high in eastern sky

{<!--AstroLunarphasesAdvancedB_52-->At 3am a waxing gibbous moon would be}
- below the eastern horizon
- nadir

+ western horizon
- overhead
- high in western sky

{<!--AstroLunarphasesAdvancedB_53-->At 6pm a waning crescent moon would be}
- eastern horizon
- nadir
- western horizon
+ below the western horizon
- below the eastern horizon

{<!--AstroLunarphasesAdvancedB_54-->At 3am a new moon would be}
- overhead
- eastern horizon
- nadir
+ below the eastern horizon
- high in eastern sky

{<!--AstroLunarphasesAdvancedB_55-->At noon a waxing gibbous moon would be}
- overhead
+ below the eastern horizon
- high in western sky
- nadir
- high in eastern sky

{<!--AstroLunarphasesAdvancedB_4-->At 9am a 1st quarter moon would be}

- western horizon
+ below the eastern horizon
- below the western horizon
- nadir
- high in western sky

{<!--AstroLunarphasesAdvancedB_56-->At 3pm a waning gibbous moon would be}
+ nadir
- high in western sky
- western horizon
- overhead
- eastern horizon

{<!--AstroLunarphasesAdvancedB_57-->At 9am a full moon would be}
- overhead
- eastern horizon
- western horizon
- below the eastern horizon
+ below the western horizon

{<!--AstroLunarphasesAdvancedB_58-->At 6pm a waxing gibbous moon would be}

+ high in eastern sky
- eastern horizon
- western horizon
- below the western horizon
- nadir

{<!--AstroLunarphasesAdvancedB_59-->At 9pm a third quarter moon would be}
- high in western sky
- high in eastern sky
- nadir
+ below the eastern horizon
- below the western horizon

{<!--AstroLunarphasesAdvancedB_60-->At 9pm a waning crescent moon would be}
- eastern horizon
- high in eastern sky
- high in western sky
+ nadir
- below the eastern horizon

{<!--AstroLunarphasesAdvancedB_61-->At noon a waxing crescent moon would be}
- nadir
- eastern horizon
- high in western sky
- overhead
+ high in eastern sky

{<!--AstroLunarphasesAdvancedB_62-->At 3am a third quarter moon would be}
- below the eastern horizon
- nadir
+ high in eastern sky
- below the western horizon
- eastern horizon

{<!--AstroLunarphasesAdvancedB_63-->At 3am a full moon would be}
- below the western horizon
- nadir
- high in eastern sky
+ high in western sky
- western horizon

{<!--AstroLunarphasesAdvancedB_64-->At 6pm a waxing crescent moon would be}
+ high in western sky
- overhead
- nadir
- eastern horizon
- western horizon

{<!--AstroLunarphasesAdvancedB_5-->At 3pm a 1st quarter moon would be}

- below the western horizon
+ high in eastern sky
- western horizon
- below the eastern horizon
- high in western sky

{<!--AstroLunarphasesAdvancedB_6-->At noon a waning gibbous moon would be}
- western horizon
+ below the western horizon
- overhead
- nadir
- high in western sky

{<!--AstroLunarphasesAdvancedB_7-->At midnight a waxing crescent moon would be}
- eastern horizon
- high in eastern sky
+ below the western horizon
- high in western sky
- overhead

{<!--AstroLunarphasesAdvancedB_8-->At 6am a waxing gibbous moon would be}
- nadir
- high in eastern sky
- below the eastern horizon
+ below the western horizon
- eastern horizon

{<!--AstroLunarphasesAdvancedB_9-->At 6pm a waning gibbous moon would be}
+ below the eastern horizon
- western horizon
- high in western sky
- below the western horizon
- high in eastern sky

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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- western horizon
- eastern horizon
- overhead
+ below the horizon

{<!--AstroLunarphasesSimple_10-->At midnight a full moon would be }
- below the horizon
+ overhead
- eastern horizon
- western horizon

{<!--AstroLunarphasesSimple_11-->At 6pm a third quarter moon would be
}
- overhead
- eastern horizon
- western horizon
+ below the horizon

{<!--AstroLunarphasesSimple_12-->At 6am a 1st quarter moon would be }
- eastern horizon
- western horizon
- overhead
+ below the horizon

{<!--AstroLunarphasesSimple_13-->At noon a full moon would be }
- western horizon
+ below the horizon
- eastern horizon
- overhead

{<!--AstroLunarphasesSimple_14-->At 6pm a full moon would be }
```

- western horizon
- overhead
- below the horizon
+ eastern horizon

{<!--AstroLunarphasesSimple_15-->At 6pm a 1st quarter moon would be }
- below the horizon
+ overhead
- western horizon
- eastern horizon

{<!--AstroLunarphasesSimple_16-->At 6am a full moon would be }
- overhead
+ western horizon
- below the horizon
- eastern horizon

{<!--AstroLunarphasesSimple_2-->At noon a third quarter moon would be
}
- overhead
+ western horizon
- below the horizon
- eastern horizon

{<!--AstroLunarphasesSimple_3-->At noon a 1st quarter moon would be }
- western horizon
+ eastern horizon
- overhead
- below the horizon

{<!--AstroLunarphasesSimple_4-->At noon a new moon would be }
- below the horizon
+ overhead
- western horizon
- eastern horizon

{<!--AstroLunarphasesSimple_5-->At 6pm a new moon would be }
- eastern horizon
+ western horizon
- overhead
- below the horizon

{<!--AstroLunarphasesSimple_6-->At 6am a third quarter moon would be}
+ overhead
- eastern horizon
- western horizon
- below the horizon

{<!--AstroLunarphasesSimple_7-->At midnight a third quarter moon would
be }
- below the horizon
+ eastern horizon

- western horizon
- overhead

{<!--AstroLunarphasesSimple_8-->At midnight a 1st quarter moon would be }
- below the horizon
- overhead
- eastern horizon
+ western horizon

{<!--AstroLunarphasesSimple_9-->At 6am a new moon would be }
- overhead
- western horizon
+ eastern horizon
- below the horizon

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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{<!--AstroMars_1--> {{Multiple image|direction=vertical|width=200|image1=Karte Mars Schiaparelli MKL1888.png|image2=Lowell Mars channels.jpg|caption1=Giovanni Schiaparelli 1877 |caption2=Lowell circa 1914.}} These drawings by Schiaparelli and Lowell were ultimately shown to be:

 }
- slip faults
- subduction zones
- rilles
+ optical illusions
- rift valleys

{<!--AstroMars_2-->Antipodal to the Tharsis bulge is}
+ What Wikipedia contends IS an impact basin
- What Wikipedia contends MIGHT BE an impact basin
- What Wikipedia contends IS an active volcano
- What Wikipedia contends MIGHT BE an active volcano
- the northern lowlands

{<!--AstroMars_3-->[[File:Lava flow from Arsia Mons in Daedalia Planum.jpg|thumb|160px|Martian lobate feature]] The lobate feature shown in the figure is evidence of

}
- dust storms
- plate tectonics
- water flow
+ lava flow
- wind erosion

{<!--AstroMars_4-->The Martian dichotomy separates}
- Valles Marineris from Olympus Mons
- the rift valley from the volcanoes
+ the highlands from the lowlands
- the Tharsus buldge from Hellas basin
- the crust from the mantle

{<!--AstroMars_5-->According to Wikipedia, ______ was formed due to swelling of the Tharsis bulge which caused the crust to collapse}
+ Valles Marineris
- Elysium
- the southern lowlands
- Hellas basin
- the northern lowlands

{<!--AstroMars_6-->[[File:Nasa mars opportunity rock water 150 eng 02mar04.jpg|200px|thumb|gray hematite]]What is this [[w:hematite|hematite]]?

}
+ evidence that Mars once had oceans
- irrefutable evidence that Mars once had life
- controversial evidence that Mars once had life
- evidence that Mars once had active volcanoes
- evidence that Mars now has active volcanoes

{<!--AstroMars_7-->The polar ice caps on Mars are ___}
- caused by geysers
- actually clouds above the surface of Mars
- a nearly equal mix of water and carbon dioxide
+ mostly water

- mostly carbon dioxide

{<!--AstroMars_8-->Liquid water cannot exist on Mars due to ___}
- high pressure
+ low pressure
- high temperature
- low temperature
- the solar wind

{<!--AstroMars_9-->[[File:ALH84001 structures.jpg|thumb|magnified Martian meteorite]] What is at the center of this magnified image of a Martian meteorite? fragment?

}
- evidence that Mars once had oceans
- irrefutable evidence that Mars once had life
+ controversial evidence that Mars once had life
- evidence that Mars once had active volcanoes
- evidence that Mars now has active volcanoes

</quiz>

====*_Instructions_*====
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<quiz display=simple>
{<!--AstroMercury_1-->[[Image:Discovery Rupes (rotated).jpg|thumb|horizontal crack|400px]] The horizontal crack along the center of figure is a}

- antipodal
- propodal
- meander
+ scarp
- rille

{<!--AstroMercury_2-->Antipodal to Caloris Basin is}
- an iron/nickel deposit
+ weird terrain
- a scarp
- a water deposits
- a silicon deposits

{<!--AstroMercury_3-->A volatile is a substance that }
- reacts violently with acids
- reacts violently with water
- reacts violently with oxygen
- melts or evaporates at high temperature
+ melts or evaporates at low temperature

{<!--AstroMercury_4-->The four smaller inner planets, Mercury, Venus, Earth and Mars, also called the terrestrial planets, are primarily composed of ___ and ___. }
- ice and gas
- carbon and oxygen
- ice and water
- ice and rock
+ metal and rock

{<!--AstroMercury_5-->If the universe is mostly hydrogen, why aren't terrestrial planets made of mostly hydrogen?}
+ thermonuclear fusion in the protosun turned the hydrogen into helium
- These planets lie inside the frost line for hydrogen
- tidal forces from the Sun prevented accretion
- tidal forces between the terrestrial planets prevented accretion
- tidal forces from Jupiter prevented accretion

{<!--AstroMercury_6-->Mercury's atmosphere consists mostly of}
+ hydrogen
- helium
- oxygen
- nitrogen
- carbon dioxide

{<!--AstroMercury_7-->In what sequence did Mercury's weird terrain and Caloris basin form?}
- The were formed at exactly the same time
+ The weird terrain was formed almost immediately after the Caloris basin
- The weird terrain was formed a few millions years after the Caloris basin
- The weird terrain was formed approximately 2 billions years after

the Caloris basin
- The weird terrain was formed approximately 2 billions years before the Caloris basin

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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<quiz display=simple>
{<!--AstroMirandaTitan_1-->The 1982 Voyager flyby of Miranda (a moon of Uranus) established that _____ }
- Miranda has the largest active volcano in the solar system
- Miranda has geysers.
- Miranda probably has an iron core
- Two other answers are correct (making this the only true answer).
+ inspired a theory a previous incarnation was destroyed by a collision

{<!--AstroMirandaTitan_2-->It has been suggested that Miranda's "racetrack" }
- is antipodal to an impact crater
+ Two other answers are correct (making this the only true answer).
- is associated with tidal heating
- is an impact crater
- is a series of rifts created by an upwelling of warm ice

{<!--AstroMirandaTitan_3-->According to Wikipedia, the largest lakes on Titan are probably fed by }
- rivers from the highlands
- methane rain
- geysers
- liquid water rain
+ underground aquifers

{<!--AstroMirandaTitan_4-->[[File:PIA12481 Titan specular reflection.jpg|right|240px]]

The bright spot on Saturn's moon Titan is }
- a volcano
- lightening
- aurora borealis (northern lights)
+ a lake
- solar wind particles striking the atmosphere

{<!--AstroMirandaTitan_5-->One "year" on Saturn's largest moon Titan lasts }
- 3 hours
- 3 years
- 30 hours
+ 30 years
- 300 days

{<!--AstroMirandaTitan_6-->[[File:Titan dunes crop.png|right|240px]]

The photographs compare }
- summer windstorms and winter doldrums
- northern and southern hemispheres
- winter windstorms and summer doldrums
+ Titan and Earth
- wet and dry seasons

{<!--AstroMirandaTitan_7-->The liquid water ocean of Saturn's largest moon Titan, }
- Two other answers are correct
- is less than one meter in depth
+ explains how the elevation of a smooth planet seems to rise and fall
- is postulated to cover 15-30% of its surface
- is known to contain life

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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<quiz display=simple>
{<!--AstroPlanetaryScience_1-->[[File:Apollo15DunaTisza.jpg|thumb|240p
x|incomplete rim]]The incomplete rims seen in the figure are caused
by:}
- meteorite erosion
- micrometeorite erosion
- rilles
+ vulcanism
- low surface gravity

{<!--AstroPlanetaryScience_2-->Rilles are caused by}
- meteors
- meteorites
- water
- impacts
+ lava

{<!--AstroPlanetaryScience_3-->In the Wikipedia excerpt on "Planetary
Astronomy" the mechanism by which a meander grows over time was
discussed.  Which of the the following is best describes why meanders
grow? (Pick only one best answer) }
+ a combination of deposition and erosion
- combination of deposition and underlying bedrock strength
- combination of erosion and underlying bedrock strength
- occasional periods of intense flooding
- wind erosion

</quiz>

====*_Instructions_*====
Instructions are forthcoming
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{<!--AstroPluto and planetary mass_1-->Which of the following is NOT used to measure the mass of a planet}
+ the rotation of the planet about its axis
- the motion of an artificial satellite
- the motion of a moon
- the motion of a neighboring planet
- all of these have been used

{<!--AstroPluto and planetary mass_2-->What is unusual about calculations of the mass of Pluto made in the early part of the 20th century?}
- The estimates were correct to within less than 10%
- The estimates were too low. Pluto was actually more massive than they thought.
+ The estimates were high. Pluto was less massive than they calculated
- It was the first time a moon was used to calculate the mass of a planet
- It was the first time a planet's period of orbit around the sun was used to calculate the planet's mass

{<!--AstroPluto and planetary mass_3-->Why was the discovery of Pluto peculiar?}
- It was discovered during a survey looking for stars
- It was seen by Galileo, who thought it was a star
+ It was discovered by a calculation based on flawed assumptions

- It was seen by Halley, who was looking for comets
- It was the first time a planet's period of orbit around the sun was used to calculate the planet's mass

{<!--AstroPluto and planetary mass_4-->Which of the following is NOT used to measure the mass of a planet}
- the motion of an artificial satellite
- the motion of a moon
- the motion of a neighboring planet
+ all of these have been used

{<!--AstroPluto and planetary mass_5-->Which statement describes the relation between Pluto and Neptune}
- Pluto's orbit lies outside Neptune's orbit
- Pluto's orbit intersects Neptune's orbit an the two bodies will eventually collide
- Pluto's orbit intersects Neptune's orbit but they avoid each other because Pluto's mass is too small
+ Pluto's orbit intersects Neptune's orbit but they don't collide because of an orbital resonance between the two

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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*_See_* [[User:Guy vandegrift]]
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{<!--AstroPtolCopTycho_1-->The Ptolemaic system was geocentric.}
+ TRUE
- FALSE

{<!--AstroPtolCopTycho_10-->An argument used to support the geocentric model held that heavenly bodies, while perhaps large, were able to move quickly.}
+ TRUE
- FALSE

{<!--AstroPtolCopTycho_11-->Tycho tended to favor religious arguments over scientific arguments when justifying his opinions about the geocentric/heliocentric controversy.}
- TRUE
+ FALSE

{<!--AstroPtolCopTycho_12-->Tycho was the first to propose an earth-orbiting sun had planets in orbit around the Sun.}
- TRUE
+ FALSE

{<!--AstroPtolCopTycho_2-->The Ptolemaic system was heliocentric.}
- TRUE
+ FALSE

{<!--AstroPtolCopTycho_3-->Most ancient Roman and most medieval scholars thought the Earth was flat.}
- TRUE
+ FALSE

{<!--AstroPtolCopTycho_4-->Evidence for the Copernican system is that the Earth does not seem to move.}
- TRUE
+ FALSE

{<!--AstroPtolCopTycho_5-->The ancient Greeks believed in circular orbits, causing them to devise the epicycle and the deferent.}
+ TRUE
- FALSE

{<!--AstroPtolCopTycho_6-->Copernicus was a university-trained Catholic priest dedicated to astronomy.}
+ TRUE
- FALSE

{<!--AstroPtolCopTycho_7-->In the late 16th century, Tycho Brahe invented his system to resolve philosophical and what he called “physical" problems with the geocentric theory.}
- TRUE
+ FALSE

{<!--AstroPtolCopTycho_8-->Copernicus shared his heliocentric theory

```
with colleagues decades before he died.}
+ TRUE
- FALSE

{<!--AstroPtolCopTycho_9-->In the late 16th century, Tycho Brahe
invented his system to resolve philosophical and what he called
“physical"  problems with the heliocentric theory.}
+ TRUE
- FALSE

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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{<!--AstroSizeWhitdwrfNeutstarQSO_1-->At the center of the Crab nebula
is }
+a) all of these is correct
-b) a pulsar
-c) none of these is correct
-d) a neutron star
-e) the remnants of a supernova

{<!--AstroSizeWhitdwrfNeutstarQSO_10-->One way to determine the
distance to a nebula or small cluster of clouds is to compare the
angular expansion to the spectroscopic Doppler shift.  Two clusters (A
```

and B) have the same spectroscopically measured velocity. Cluster A is moving towards the observer and exhibits the greater angular expansion. Which cluster is closer? }
+ cluster A, because it exhibits greater angular expansion
- cluster B, because it exhibits less angular expansion
- cluster A, because it exhibits a blue Doppler shift
- cluster B, because it exhibits a red Doppler shift
- either cluster might be more distant

{<!--AstroSizeWhitdwrfNeutstarQSO_11-->What causes the "finger-like" filamentary structure in the Crab nebula?}
- cyclotron motion, causing the electrons to strike oxygen molecules
- a heavy (high density) fluid underneath a light (low density) fluid, like a lava lamp
+ a light(low density) fluid underneath a heavy(high density) fluid, like a lava lamp
- electrons striking oxygen molecules, like a lava lamp
- electrons striking hydrogen molecules, like a lava lamp

{<!--AstroSizeWhitdwrfNeutstarQSO_12-->$KE=\frac{4\pi^2}{5}\frac{MR^2}{P^2}$ is the kinetic energy of a solid rotating ball, where M is mass, R is radius, and P is period. And, $power=\frac{energy}{time}$.
You are banging espressos in a little coffeehouse with your astronomy friends, talking about a new SN remnant that closely resembles the Crab. You have observed the pulsar, and wonder what the total power output of the nebula might be. You know both the period of the pulsar, as well as τ, which represents the amount of time you think the pulsar will continue pulsing if it continues slowing down at its present rate. What formula do you write on your napkin?}
- $power=\frac{4\tau\pi^2}{5}\frac{MR^2}{P^2}$
+ $power=\frac{4\pi^2}{5\tau}\frac{MR^2}{P^2}$
- $power=\frac{5}{4\tau\pi^2}\frac{MR^2}{P^2}$
- $power=\frac{4\pi^2}{5\tau^2}\frac{MR^2}{P^2}$
- $power=\frac{4\pi^2}{5}\frac{MR^2}{P^2}\tau^4$

{<!--AstroSizeWhitdwrfNeutstarQSO_13-->In one respect, the universie is arguably "young", considering how much complexity it contains. This is often illustrated by a calculation of}
- recalibration of supernovae luminosity
- recalibration of supernovae relative magnitude
- cosmic expansion
+ chimps typing Shakespeare
- cosmic redshift

{<!--AstroSizeWhitdwrfNeutstarQSO_14-->Comparing Hubble's original (1929) plot of redshift versus distance with the later one in 2007, the latter extends farther into space by a factor of}
+ 10
- 100
- 1000
- 10,000

- 100,000

{<!--AstroSizeWhitdwrfNeutstarQSO_15-->The course materials present two cosmic expansion plots.   Hubble's original (1929) plot used}
- Cepheid variables
- red giants
- novae
- supernovae
+ entire galaxies

{<!--AstroSizeWhitdwrfNeutstarQSO_16-->The course materials present two cosmic expansion plots.   The more recent (2007) plot used}
- Cepheid variables
- red giants
- novae
+ supernovae
- entire galaxies

{<!--AstroSizeWhitdwrfNeutstarQSO_17-->Place yourself in an expanding raisinbread model of Hubble expansion. A raisin originally situated at a distance of 4 cm expands out to 12 cm. To what distance would a raisin originally situated at a distance of 2 cm expand?}
- 2
- 3
- 4
+ 6
- 8

{<!--AstroSizeWhitdwrfNeutstarQSO_18-->You at the center raisin of an expanding raisinbread model of Hubble expansion, and from your location a raisin originally situated at a distance of 1 cm expands out to a distance of 4 cm. The nearest raisin with intelligent life is situated exactly halfway between your (central) location and the edge. How would this second "intelligent" raisin view an expansion of a raisin 1 cm away?}
- expansion from 1 cm to 8 cm (twice yours).
+ expansion from 1 cm to 4 cm (just like yours).
- expansion from 1 cm to 2 cm (half of yours)
- expansion from 1 cm to 3 cm (since 3-1=2)
- expansion from 1 cm to 9 cm (since 5-1=4)

{<!--AstroSizeWhitdwrfNeutstarQSO_19-->Place yourself in an expanding raisinbread model of Hubble expansion. A raisin originally situated at a distance of 2 cm expands out to 4 cm. To what distance would a raisin originally situated at a distance of 4 cm expand?}
- 2
- 3
- 4
- 6
+ 8

{<!--AstroSizeWhitdwrfNeutstarQSO_2-->Aside from its location on the

HR diagram, evidence that the white dwarf has a small radius can be found from}
- the expansion of the universe
- the mass as measured by Kepler's third law (modified by Newton)
- the doppler shift
- the temperature
+ the gravitational redshift

{<!--AstroSizeWhitdwrfNeutstarQSO_20-->[[File:Light-clock.png|thumb]]This light clock is associated with }
- all of these are true
- gravitational shift
- doppler shift
+ special relativity
- general relativity

{<!--AstroSizeWhitdwrfNeutstarQSO_21-->[[File:Light-clock.png|thumb]]Suppose the light clock involved a ball being tossed back and forth on a train going just under the speed of sound. In contrast to the situation for light reflecting back and forth on a train going just under the speed of light, there is virtually no time dilation. Why?}
- The observer on the ground would perceive the width the train to be greater.
+ The observer on the ground would perceive the ball to be travelling faster.
- The observer on the ground would perceive the ball to be travelling more slowly.
- The observer on the ground would perceive the width the train to be smaller.
- Special relativity is valid only for objects travelling in a vacuum.

{<!--AstroSizeWhitdwrfNeutstarQSO_3-->[[Image:A0V-blackbody SPD comparison.png|240px|right]]

This spectrum of the star Vega suggests that}
- it is an approximate black body
- if is not really a black body
+ all of these are true
- it's surface can be associated with a range of temperatures
- it can be associated with an "effective" temperature

{<!--AstroSizeWhitdwrfNeutstarQSO_4-->Which of the following is NOT an essential piece of a a strong argument that a white dwarf is not only the size of the earth, but typically has the same mass as the Sun. }
- the wobble of Sirius A
- the distance to Sirius A
+ all of these are true
- the "color" (spectral class) of Sirius B
- the relative magnitude of Sirius B

{<!--AstroSizeWhitdwrfNeutstarQSO_5-->The course materials presented three arguments suggesting that a white dwarf is roughly the size of the earth. Which best summarizes them?}

- doppler-shift...period-of-pulsation...temperature-luminosity
+ temperature-luminosity...redshift...quantum-theory-of-solids
- x-ray-emmission...doppler-shift...rotation-rate
- HR-diagram-location...X-ray-emmision...spectral-lines
- all of these are true

{<!--AstroSizeWhitdwrfNeutstarQSO_6-->As of 2008, the percent uncertainty in the distance to the Crab nebula is approximately, }
- 0.1%
- 1%
- 10%
+ 25%
- 100%

{<!--AstroSizeWhitdwrfNeutstarQSO_7-->What was Messier doing when he independently rediscovered the Crab in 1758? }
- Trying to measure the orbital radius of a planet
+ Looking for a comet that he knew would be appearing in that part of the sky.
- Looking for lobsters
- Attempting one of the first star charts
- Attempting to count asteroids

{<!--AstroSizeWhitdwrfNeutstarQSO_8-->[[File:Gravitational red-shifting2.png|thumb|180px]]

What best explains this figure?}
- The photon loses energy, not speed. By c=fλ , it loses frequency, and by E=hf it increases wavelength and turns red.
- The photon slows down, by the Doppler shift, E=hf, and therefore by c=f&;lambda it turns red.
- The photon slows down, by the Doppler shift, c=fλ, and therefore by E=hf it turns red.
- The photon slows down as it goes uphill, and by c=fλ it increases wavelength therefore by E=hf, it turns red.
+ The photon loses energy, not speed. By E=hf, it loses frequency, and by c=fλ it increases wavelength and turns red.

{<!--AstroSizeWhitdwrfNeutstarQSO_9-->What causes the blue glow of the Crab nebula?}
+ the curving motion of electrons in a magnetic field; such motion resembles a radio antenna
- the same emission found in a Lava lamp (ultra-violet)
- the curving motion of electrons in a magnetic field; such motion traps ultra-violet and blue light
- the Doppler blue shift
- the Gravitational blue shift

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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<quiz display=simple>
{<!--AstroStarCluster_1-->A grouping with 100 thousand stars would
probably be a}
- elliptical galaxy
- dwarf galaxy
- A-B association
- open cluster
+ globular cluster

{<!--AstroStarCluster_10-->Many stars in a typical open cluster are
nearly as old as the universe}
- True
+ False

{<!--AstroStarCluster_11-->Many stars in a typical globular cluster
are nearly as old as the universe}
+ True
- False

{<!--AstroStarCluster_12-->The number of globular clusters in the
Milky way galaxy is about}
- 1,500
+ 150
- 15 thousand
- 15 million

{<!--AstroStarCluster_13-->The location of open clusters can be

described as}
- uniformly distributed in a sphere centered at the Milky Way's center
+ in the spiral arms
- between the spiral arms
- uniformly distributed within the galactic disk

{<!--AstroStarCluster_14-->Stars can "evaporate" from a cluster. What does this mean?}
- The gravitational attraction between stars evaporates the gas from stars
- The solar wind from neighboring stars blows the atmosphere away
+ Close encounters between 3 or more cluster members gives one star enough speed to leave the cluster

{<!--AstroStarCluster_2-->A grouping with a hundred stars is probably a}
- elliptical galaxy
- dwarf galaxy
- A-B association
+ open cluster
- globular cluster

{<!--AstroStarCluster_3-->I gravity is what holds stars in a cluster together, what is the most important process that causes them to spread apart?}
+ random motion
- solar wind
- magnetism
- anti-gravity
- supernovae

{<!--AstroStarCluster_4-->Members of an open cluster feel significant forces only due to gravitational interaction with each other}
- True
+ False

{<!--AstroStarCluster_5-->Members of an open cluster feel significant forces from nearby giant molecular clouds}
+ True
- False

{<!--AstroStarCluster_6-->Members of a globular cluster tend to be}
- young
+ old
- of all ages

{<!--AstroStarCluster_7-->Members of a globular cluster tend to have}
+ low mass
- high mass
- a wide range of masses

{<!--AstroStarCluster_8-->In 1917, the astronomer Harlow Shapley was able to estimate the Sun's distance from the galactic centre using}
- open clusters
+ goblular clusters
- a combination of open and globular clusters

{<!--AstroStarCluster_9-->Most globular clusters that we see in the sky orbit _____ and have ______ orbits}
- the center of the Milky way ... nearly circular
+ the center of the Milky way ... elliptic orbits
- within the disk of the Milky way ... nearly circular
- within the disk of the Milky way ... elliptic orbits

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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*_See_* [[User:Guy vandegrift]]
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<quiz display=simple>
{<!--AstroStellarMeasurements_1-->Stellar parallax is }
+ an annual change in angular position of a star as seen from Earth
- an astronomical object with known luminosity.
- the total amount of energy emitted per unit time.
- a numerical measure of brightness as seen from Earth
- a numerical measure of brightness as seen from a distance of approximately 33 light-years

{<!--AstroStellarMeasurements_10-->A star that is increasing it's temperature while maintaining constant luminosity is}
+ getting smaller in size
- turning red
- in the process of dying
- on the verge of becoming a supernovae
-e) getting larger in size

{<!--AstroStellarMeasurements_11-->The range of wavelength for visible light is between}
+ 400 and 700 nanometers
- 1 and 10 nanometers
- 600 and 1200 nanometers
- 0.1 and 10 nanometers
- 5000 and 6000 nanometers

{<!--AstroStellarMeasurements_12-->Based on the HR diagrams and images in stars shown in the materials, a very large red supergiant has a diameter that is about ____ greater than a small white dwarf.}
- 3x10³
- 3x10⁹
- 3x10¹¹
- 3x10⁷
+ 3x10⁵

{<!--AstroStellarMeasurements_2-->Luminosity is }
- an annual change in angular position of a star as seen from Earth
- an astronomical object with known luminosity.
+ the total amount of energy emitted per unit time.
- a numerical measure of brightness as seen from Earth
- a numerical measure of brightness as seen from a distance of approximately 33 light-years

{<!--AstroStellarMeasurements_3-->A standard candle is}
- an annual change in angular position of a star as seen from Earth
+ an astronomical object with known luminosity.
- the total amount of energy emitted per unit time.
- a numerical measure of brightness as seen from Earth
- a numerical measure of brightness as seen from a distance of approximately 33 light-years

{<!--AstroStellarMeasurements_4-->Absolute magnitude is }
- an annual change in angular position of a star as seen from Earth
- an astronomical object with known luminosity.
- the total amount of energy emitted per unit time.
- a numerical measure of brightness as seen from Earth
+ a numerical measure of brightness as seen from a distance of approximately 33 light-years

{<!--AstroStellarMeasurements_5-->Relative magnitude is}
- an annual change in angular position of a star as seen from Earth
- an astronomical object with known luminosity.

- the total amount of energy emitted per unit time.
+ a numerical measure of brightness as seen from Earth
- a numerical measure of brightness as seen from a distance of approximately 33 light-years

{<!--AstroStellarMeasurements_6-->In 1989 the satellite [[w:Hipparcos|Hipparcos]] was launched primarily for obtaining parallaxes and [[w:proper motion|proper motions]] allowing measurements of stellar parallax for stars up to about 500 parsecs away, which is about ____ times the diameter of the [[w:Milky_Way|Milky Way Galaxy]].}
+ .015
- 0.15
- 1.5
- 15
- 150

{<!--AstroStellarMeasurements_7-->An object emits thermal (blackbody) radiation with a peak wavelength of 250nm. How does its temperature compare with the Sun? }
- The temperature is the same
- 2 times colder than the Sun
+ 2 times hotter than the Sun
- 5 times colder than the Sun
- 5 times hotter than the Sun

{<!--AstroStellarMeasurements_8-->The "normalized intensity" of a Sun-like star situated one parsec from Earth would be 4πI = 1. What is 4πI for a star with 100 times the Sun's energy output that is situated 10pc from Earth?}
- 10⁻²
- 10⁻³
- 10⁻¹
- 10⁻⁴
+ 1

{<!--AstroStellarMeasurements_9-->An orbiting satellite makes a circular orbit 5 AU from the Sun. It measures a parallax angle of 0.2 of an arcsecond (each way from the average position). What is the star's distance? }
- 10 parsecs
+ 25 parsecs
- 5 parsecs
- 1 parsec
- 50 parsecs

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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<quiz display=simple>
{<!--AstroVenus_1-->When imaged in visible light Venus appears like ______ rather than ______.}
- an asteroid ... a terrestrial planet
+ a gas dwarf ... a rocky planet
- Mars ... Venus
- Venus ... Mars

{<!--AstroVenus_10-->The clouds on Venus are made of}
- water
- steam
- carbon dioxide
- nitrogen
+ sulfuric acid

{<!--AstroVenus_11-->The geology of Venus is predominantly}
+ Basalt
- Andesite
- Picrite

{<!----AstroVenus_12---->Basalt is what type of rock?}
+ Igneous
- Sedimentary
- Metamorphic

{<!----AstroVenus_13---->The rocks on Venus are mostly}
+ from volcanoes
- from the seabed of a now non-existent ocean

- associated with plate tectonics

{<!--AstroVenus_2-->The rocky surface of the planet Venus can be detected when Venus is observed using infrared astronomy.}
- TRUE
+ FALSE

{<!--AstroVenus_3-->When Venus is viewed in the ultraviolet, its color appears brownish.}
- TRUE
+ FALSE

{<!--AstroVenus_4-->Moldavite is a mineral that may be associated with what radiation astronomy phenomenon?}
- lightening strikes
+ meteorite impacts and fireballs
- evidence that Venus was once a comet
- predicting when currently dormant volcanoes will erupt

{<!--AstroVenus_5-->According to Wikipedia, a "mineral" is a naturally occurring solid that}
- is heterogeneous
- has useful value
+ is by a chemical formula
- contains carbon
- does not contain carbon

{<!--AstroVenus_6-->Which types of radiation astronomy directly observe the rocky-object surface of Venus?}
- X-ray astronomy
- ultraviolet astronomy
- visual astronomy
- infrared astronomy
+ radio astronomy

{<!--AstroVenus_7-->One reason that Venus's atmosphere has more carbon dioxide than Earth's is that}
- the mass of Venus is slightly higher
+ Venus was too hot for oceans that could absorb the carbon dioxide
- Venus is exposed to a stronger solar wind strips away the other gasses
- Venus has a lower magnetic field that disassociates carbon dioxide

{<!--AstroVenus_8-->The surface temperature of Venus is about}
+ 850 Fahrenheit (730 Kelvin or 230 Celsius)
+ 450 Fahrenheit (500 Kelvin or 66 Celsius)
+ 150 Fahrenheit (340 Kelvin or 66 Celsius)

{<!--AstroVenus_9-->The Venetian atmosphere consists of mostly carbon dioxide and}
- oxygen
- helium

- hydrogen
+ nitrogen
- sulfuric acid

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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*_See_* [[User:Guy vandegrift]]
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<quiz display=simple>
{<!--Ast_WPAstronomy1_1-->When did astronomy split between theoretical and observational branches?}
- In the 19th century
+ In the 20th century
- After Galileo
- In the last decade
- In the 18th century

{<!--Ast_WPAstronomy1_10-->According to the Wikipedia Astronomy article, the first known efforts in the mathematical and scientific study of Astronomy began}
+ among the Babylonians
- among the Chinese
- in south America
- in ancient Greece
- in central America

{<!--Ast_WPAstronomy1_11-->How many years did it take before Europe made a device as sophisticated as Antikythera?}
- 300 years
- 3000 years
- 30 years
+ 1500 years
- 15,000 years

{<!--Ast_WPAstronomy1_12-->The saro cycle was about repeating cycles of}
- planets
+ eclipses
- seasons

{<!--Ast_WPAstronomy1_13-->[[File:Galileo moon phases.jpg|right|200px]]Who drew these sketches?

}
- Kepler
- Aristotle
- Ptolemy
+ Galileo
- Copernicus

{<!--Ast_WPAstronomy1_14-->In what century was parallax first used to measure the distance to a Star (other than our Sun)?}
- 17th century
+ 19th century
- 18th century
- 20th century
- 16th century

{<!--Ast_WPAstronomy1_15-->The largest galaxy in the local group is}
- ant-galexy
+ Andromeda
- M52
- Milky way
- M-31

{<!--Ast_WPAstronomy1_16-->What two names are associated with the first new planet found (after those known by the ancients using the naked eye)}
- Neptune and the Alabama Streaker
- Mercury and Friendship
+ Uranus and George's Star
- Mars and the Candy Bar
- Pluto and Goofy

{<!--Ast_WPAstronomy1_17-->The historical record shows that in 1066 AD a supernovae was discovered by astronomers in _____ and _____}
- China and South America
- Greece and North America
- Greece and China

- Greece and Central America
+ Egypt and China

{<!--Ast_WPAstronomy1_2-->What does the Wikipedia 'Astronomy' call astrology? }
- the study of planetary cores
- the belief that all people should learn astronomy
+ the belief system which claims that human affairs are correlated with the positions of celestial objects.
- the study of planetary atmospheres
- the study of comets and asteroids

{<!--Ast_WPAstronomy1_3-->Cosmology is the study of}
+ the universe as a whole
- the birth and death of stars
- the oceans
- the formation of the solar system
- planetary atmospheres

{<!--Ast_WPAstronomy1_4-->What does the Wikipedia 'Astronomy' article say about astronomy and astrophysics}
- They are often in conflict
- They must be in agreement or the result cannot be trusted
- They often yield different results
+ They are often considered to be synonymous
- They are often considered to be opposites

{<!--Ast_WPAstronomy1_5-->The goecentric theory put the Sun}
- orbiting around the Moon
- none of the above or below are true
- at the center of the universe
- at the center of the solar system
+ in orbit around Earth

{<!--Ast_WPAstronomy1_6-->In the 3rd century BC, Aristarchus of Samos estimated the size of }
+ the Moon and Sun
- the Sun
- Earth and the Sun
- Earth and the Moon
- the Moon

{<!--Ast_WPAstronomy1_7-->In the 19th century Fraunhoffer and Kirchoff studied light from the Sun and found}
- Mercury's shadow
- a wobble that led to the discovery of new planets
+ spectral lines and concluded that they were caused by the elements
- sunspots and the sunspot cycle
- a golden ring

{<!--Ast_WPAstronomy1_8-->The ancient Greeks discovered (named) most of the constellations}

- in the southern hemisphere
+ in the northern hemisphere
- in both all hemispheres
- in the western hemisphere
- in the eastern hemisphere

{<!--Ast_WPAstronomy1_9-->When did astronmers establish that the Milky way is only one of many billions of galaxies in the universe?}
- 14th century
- 18th century
+ 20th century
- 16th century

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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*_See_* [[User:Guy vandegrift]]
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<quiz display=simple>
{<!--Ast_WPAstronomy2_1-->[[File:Ant Nebula.jpg|220px|right]]What is this? }
- the magnetic field of Venus
- colliding galaxies
- a supernovae remnant
- the magnetic field of Saturn
+ a dying star

{<!--Ast_WPAstronomy2_10-->An active galaxy is emitting a significant amount of its energy from _____}
- magnetism
+ gravity
- nuclear fusion
- nuclear fission
- exploding stars

{<!--Ast_WPAstronomy2_2-->Wihlem Conrad Rontgen, a pioneer in X-rays is famous for his photo of }
- a double star
+ his wife
- Barnard's star
- The Sun
- a supernovae

{<!--Ast_WPAstronomy2_3-->Earth based infrared observatories tend to be located in}
- underground
- where the air is cold
+ where the air is dry
- near the equator
- near the north and south poles

{<!--Ast_WPAstronomy2_4-->The shortest wavelength of electromagnetic radiation is associated with}
- X-rays
- blue light
- infrared
+ gamma rays
- ultra violet

{<!--Ast_WPAstronomy2_5-->[[File:grav.lens1.arp.750pix.jpg|right|200px
]]What are the blue things in this figure?
</br>}
- a globular cluster
- an open cluster of stars
- a cluster of galaxy
+ one galaxy
- none of these is correct

{<!--Ast_WPAstronomy2_6-->Most of the ______ that astronomers observe from Earth is seen in the form of synchrotron radiation, which is produced when electrons oscillate around magnetic fields.}
- meteors
- photons
+ radio waves
- energy
- meteorites

{<!--Ast_WPAstronomy2_7-->Most gamma rays are}
+ in bursts
- from cold stars

- from the Sun
- the Andromeda galaxy
- from hot stars

{<!--Ast_WPAstronomy2_8-->Studies in the infrared are useful for objects that are}
- associated with supernovae
- in our own galaxy
+ cold
- inside the solar system
- in other galaxies

{<!--Ast_WPAstronomy2_9-->The best place to observe neutrinos is }
+ underground
- near the north and south poles
- near the equator
- where the air is dry
- where the air is cold

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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{<!--AstroWikipSidereNunc_1-->The Wikipedia article ''Sidereus Nuncius'' suggests that the inventor of the telescope was likely to

be}
+ a lensmaker
- a Chinese scientist
- Galileo
- A Greek scholar
- none of these

{<!--AstroWikipSidereNunc_10-->When the German astronomy Marius provided evidence that he (Marius) had first seen the moons of Jupiter, Galileo}
+ won the argument using his knowledge of calendars
- pointed out that the telescope Marius was using could not have seen the Moons
- used his political contacts to ensure that he (Galileo) would get credit
- appealed to the Pope
- didn't care; he was a true scientist

{<!--AstroWikipSidereNunc_11-->Prior to the publication of Sidereus Nuncius, the Church }
- had outlawed all discussion of the Copernican heliocentric system
- had given Galileo a commission to look into the Copernican heliocentric system
- was unaware of any controversy concerning the Copernican heliocentric system
+ accepted the Copernican heliocentric system as strictly mathematical and hypothetical
- none of these are true (according to the Wikpedia permalink to ''Sidereus Nuncius''.)

{<!--AstroWikipSidereNunc_2-->Galileo called his telescope }
- a mistake
- a double magnifying glass
- the magic eye
- the liberator
+ an optical cannon

{<!--AstroWikipSidereNunc_3-->The "terminator" for Galileo was }
- the equator
+ sunrise or sunset
- the division between east and west
- the most distant star he could see
- his trial for heresy

{<!--AstroWikipSidereNunc_4-->Galileo used the terminator to}
- deduce the color beneath the dust layer
+ correlate color with whether the region had mountains
- compensate for stellar parallax
- observe the wobble of the Moon's orbit
- none of these

{<!--AstroWikipSidereNunc_5-->Galileo used the terminator to }

- correlate dark and light regions with terrain
- measure the height of mountains
- compensate for stellar parallax
- publicize his ideas
+ two of these

{<!--AstroWikipSidereNunc_6-->What statement is FALSE about Galileo and the Median Stars }
- they were lined up
+ they were described by Aristotle
- they are actually moons
- motion could be observed after observing a moon for just one hour
- Galileo named them after a famous and wealthy family

{<!--AstroWikipSidereNunc_7-->The title of Galileo's book, ''Sidereus Nuncius'', is often translated as ____, but it is probably more proper to translate it as _______ }
- the motion of the earth - - the location of the earth
+ Starry messenger - - Starry message
- the motion of the stars - - the location of the stars
- the Moon close up - - the Moon through a telescope
- the moons of Jupiter

{<!--AstroWikipSidereNunc_8-->The Wikipedia article, ''Sidereus Nuncius'', points out that what the ancient Greek scientist thought was a cloudy star was really }
- a planetary nebula
- a supernovae remnant
- the rings of Saturn
- a comet
+ many faint stars

{<!--AstroWikipSidereNunc_9-->Galileo's naming of the "Medicean Stars"}
- caused his house arrest
- was controversial because stars were supposed to be named after Roman gods
- might have earned him a promotion
- broke an agreement he made with the Pope to stop writing about astronomy
+ two of these are true

</quiz>

====*_Instructions_*====
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</div></div>
===*_Quiz_*===
<quiz display=simple>
{<!--AstroWikipSolSys1_1-->Very far from the sun, the heliosphere}
- becomes the magnetosphere
- reverses direction
+ becomes weaker than the interstellar wind
- spins in the opposite direction
- never ends

{<!--AstroWikipSolSys1_12-->According to Wikipedia, if all the mass of the asteroid belt were combined to one object, it's mass would _______ times less than Earth's mass.}
- 1
- 10
- 100
+ 1,000
- 10,000

{<!--AstroWikipSolSys1_13-->[[File:The_View_from_Within_AU_Microscopii's_Disk.jpg|200px|thumb|planetary disk]]In this hypothetical image of a sun-like star we see a bright band of dust that we on Earth call zodiacal light. It is due to sunlight reflecting off dust in the}
- magnetic sun's magnetic field
- Oort Cloude
- Kuiper belt
- Van Allen belt
+ ecliptic plane

{<!--AstroWikipSolSys1_14-->In planetary science, the frost line refers to a distance away from }
+ the star in the middle
- the north pole of a planet
- the south pole of a planet

- either pole of a planet
- ecliptic plane

{<!--AstroWikipSolSys1_15-->Oort's cloud was hypothesized to explain the source of }
- planets
- asteroids
+ comets
- water inside the frost line
- water outside the frost line

{<!--AstroWikipSolSys1_16-->According to Wikipedia _______ and ______ are referred to as volatiles. }
- electrons and protons
+ ices and gasses
- acids and bases
- planets and moons
- asteroids and terrestrial planets

{<!--AstroWikipSolSys1_17-->Which of the following list is properly ranked, starting with objects closest to the Sun?}
- Kuiper belt, Oort's cloud, Asteroid belt
- Oort's cloud, Asteroid belt, Kuiper belt
+ Asteroid belt, Kuiper belt, Oort's cloud
- Asteroid belt, Oort's cloud, Kuiper belt
- Kuiper belt, Asteroid belt, Oort's cloud

{<!--AstroWikipSolSys1_18-->When the sun turns into a red giant, }
+ surface temperature decreases; energy output increases
- surface temperature increases; energy output increases
- surface temperature decreases; energy output decreases
- surface temperature increases; energy output decreases
- The sun will not turn into a red giant

{<!--AstroWikipSolSys1_2-->A volatile is a substance that}
- reacts violently with acids
- reacts violently with water
- reacts violently with oxygen
- melts or evaporates at high temperature
+ melts or evaporates at low temperature

{<!--AstroWikipSolSys1_4-->All planets lie within a nearly flat disc called the __________ plane}
- interstellar
- retrograde
+ ecliptic
- angular
- fissile

{<!--AstroWikipSolSys1_5-->The AU is}
- a measure of the brightness of a planet
- the size of Oort's cloud

- the most distant Kuiper object from the Sun
- the distance from Earth to the Moon
+ the distance from the Sun to Earth

{<!--AstroWikipSolSys1_6-->The Sun and Earth are about}
- 5 million years old
- 50 million years old
- 500 million years old
+ 5 billion years old
- 50 billion years old

{<!--AstroWikipSolSys1_7-->The universe is about}
- 15 million years old
- 150 million years old
- 1.5 billion years old
+ 15 billion years old
- 150 billion years old

{<!--AstroWikipSolSys1_8-->Roughly how much bigger is a gas planet than a terrestrial planet?}
- 3
+ 10
- 30
- 100
- 300

{<!--AstroWikipSolSys1_9-->Roughly how much bigger is a the Sun than a gas planet?}
- 3
+ 10
- 30
- 100
- 300

</quiz>

====*_Instructions_*====
Instructions are forthcoming

Transclusion from [[Quizbank/Instructions_0]]:
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<quiz display=simple>
{<!--AstroWikipSolSys2_1-->In astrophysics, what is accretion? }
+ the growth of a massive object by gravitationally attracting more matter
- the growth in size of a massive star as its outer atmosphere expands
- the growth of a comet's tail as it comes close to the Sun
- the increase in temperature and pressure of a star as it collapses from its own gravity
- the condensation of volatiles as a gas cools

{<!--AstroWikipSolSys2_2-->Dwarf planets are defined as objects orbiting the Sun and smaller than planets, that? }
+ have been rounded by their own gravity
- possess an atmosphere
- lack an atmosphere
- are too far from the Sun to be planets
- lie in the asteroid belt

{<!--AstroWikipSolSys2_3-->Dwarf planets have no natural satellites, }
- true
+ false

{<!--AstroWikipSolSys2_4-->Pluto is classified as }
+ a dwarf planet and a trans-Neptunian object.
- an asteroid belt object
- a dwarf planet with no natural satellites
- a natural satellite of Neptune
- a natural satellite of Uranus

{<!--AstroWikipSolSys2_5-->How many of the outer planets have rings? }
+ 4
- 3
- 2
- 1

{<!--AstroWikipSolSys2_6-->Currently there are 7 billion people on Earth, if that ever increases to 10 billion people, for every person on Earth there will be ____ stars in the Milky Way galaxy. }
+ 20

- 2
- 200
- 2000

{<!--AstroWikipSolSys2_7-->The revolution of Haley's comet around the Sun is nearly circular. }
- true
+ false

{<!--AstroWikipSolSys2_8-->The revolution of Haley's comet around the Sun is opposite that of the 8 planets.}
+ true
- false

{<!--AstroWikipSolSys2_9-->The frost line is situated approximately }
+ 5 times as far from the Sun as the Earth is from the Sun
- 10 times as far from the Sun as the Earth is from the Sun
- 5 times as far from the Earth as the Earth's surface is from its center
- 10 times as far from the Earth as the Earth's surface is from its center

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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===*_Quiz_*===

<quiz display=simple>
{<!--AstroWikipStar_1-->Why is a star made of plasma? }
+ it is so hot that electrons are stripped away from the protons
- the intense gravity liquifies the substance, just as red blood cells liquify plasma in the body
- the interstellar gas was mostly plasma
- plasma is always present when there are strong magnetic fields
- plasma is generic word for "important"

{<!--AstroWikipStar_10-->Pre-main sequence stars are often surrounded by a protoplanetary disk and powered mainly by }
- the fission of Carbon from Helium
- the fusion of Helium to Carbon
+ the release of gravitational energy
- collisions between protoplanets
- chemical reactions

{<!--AstroWikipStar_11-->Stars that begin with more than 50 solar masses will typically lose _______ while on the main sequence. }
- 1% their mass
+ 50% their mass
- 10% of their magnetic field
- 10% their mass
- all of their magnetic field

{<!--AstroWikipStar_12-->The Hayashi and Henyey tracks refer to how T Tauri of different masses will move }
- through an HR diagram as they die
- through a cluster as they die
- through a cluster as they are born
- Two of these are true
+ through an HR diagram as they are born

{<!--AstroWikipStar_13-->How do low-mass stars change as they are born?[[File:PMS evolution tracks.svg|thumb|Birth of stars HR path tracks]] }
- Increasing temperature with no change in luminosity
- Increasing luminosity with no change in temperature
- Decreasing temperature and increasing luminosity
- Decreasing temperature with no change in luminosity
+ Decreasing luminosity with no change in temperature

{<!--AstroWikipStar_14-->When a star with more than 10 solar masses ceases fuse hydrogen to helium, it }
- it fuses helium to carbon to iron (and other elements), then continues to release more energy by fusing the iron to heavier elements such as uranium.
- it fuses elements up to uranium, and continues to produce energy by the fission of uranium.
+ it fuses helium to carbon and other elements up to iron and then ceases to produce more energy
- it fuses helium to carbon and then ceases to produce more energy

- ceases to convert nuclear energy.

{<!--AstroWikipStar_15-->Many supernovae begin as a shock wave in the core that was caused by }
+ electrons being driven into protons to form neutrons
- all of these processes contribute to the shock wave
- iron fusing into heavier elements such as uranium
- the conversion of carbon into diamonds,
- carbon and other elements fusing into iron

{<!--AstroWikipStar_16-->A dying star with more than 1.4 solar masses becomes a ______, and those with more than 5 solar masses becomes a _____ }
+ neutron star....black hole
- white dwarf....black hole
- white dwarf....neutron star
- blue giant....red giant
- white dwarf...red dwarf

{<!--AstroWikipStar_17-->According to Wikipedia, a star with over 20 solar masses converts its Hyrogen to Helium in about 8 billion years, but the conversion of Oxygen to heavier elements take about _____ }
- 1 thousand years
+ 1 year
- 1 billion years
- 1 million years
- 10 billion years

{<!--AstroWikipStar_2-->What is the difference between a constellation and an asterism? }
+ constellations represent regions of the sky, like state boundaries on a map of the USA
- asterisms are smaller than constellations
- asterisms are larger than constellations
- none of these is correct
- constellations consist of never more than ten stars.

{<!--AstroWikipStar_3-->Stellar parallax is }
- None of these is correct.
+ Two of these is correct
- Triangulation to deduce the distance to nearby stars
- Using spectral lines to deduce the distance to nearby stars
- Using changes in the angular position of a star to deduce the star’s distance

{<!--AstroWikipStar_4-->Giant molecular clouds with sufficient conditions to form a star cluster would have formed them long ago. Any stellar births in the past couple of billions years probably resulted from _____ between clouds. }
- None of these is correct.
+ collisions
- photon exchange

- ion exchange
- Two of these are correct

{<!--AstroWikipStar_5-->A starburst galaxy. }
- All of these are correct
+ Two of these are correct
- has only dead or dying stars
- is a region of active stellar birth
- usually is a result of collisions between galaxies

{<!--AstroWikipStar_6-->Which of the following expresses Jean's criterion for the collapse of a giant molecular cloud of mass, M, radius, R, and temperature T, and pressure P? (Here ? is some constant) }
- P>?MT
+ M>?RT
- R>?MT
- P>?MR
- T>?RM

{<!--AstroWikipStar_7-->Which of the following changes in the properties of a giant molecular cloud might cause it to collapse? }
- Decrease mass at fixed temperature and size
- Increase size at fixed pressure and mass
- Two of these are correct
- Increase temperature at fixed mass and size
+ Increase mass at fixed temperature and size

{<!--AstroWikipStar_8-->What happens if you increase the size of a giant molecular cloud while keeping temperature and mass fixed? }
- It is less likely to collapse because temperature can never be kept fixed
- It is more likely to collapse because this will increase the temperature
- It is more likely to collapse because larger things have more gravity
+ It is less likely to collapse spreading it out weakens the force of gravity
- It is equally likely to collapse because size is not part of the Jean's criterion.

{<!--AstroWikipStar_9-->What is a Bok globule in the formation of stellar systems? }
- A supernovae precurser that attracts more gas atoms
- A cluster of giant molecular clouds that coalesce to form a solar system
- A small planet that formed before any stars have formed
- A black hole that enters a cloud and triggers the collapse
+ A small portion of a giant cloud that collapses

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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*_See_* [[User:Guy vandegrift]]
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===*_Quiz_*===
<quiz display=simple>
{<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 4 volt battery moves 27 Coulombs of charge in 2.6 hours. What is the power?}
-a) 7.86 x 10⁻³ W
-b) 9.52 x 10⁻³ W
+c) 1.15 x 10⁻² W
-d) 1.4 x 10⁻² W
-e) 1.69 x 10⁻² W

{<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 5.5 mm, and it carries a current of 76 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)}
-a) 1.35 x 10⁻⁴m/s
-b) 1.63 x 10⁻⁴m/s
-c) 1.98 x 10⁻⁴m/s
+d) 2.39 x 10⁻⁴m/s
-e) 2.9 x 10⁻⁴m/s

{<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 168 Watt DC motor draws 0.3 amps of current. What is effective resistance?}
+a) 1.87 x 10³ Ω

-b) 2.26 x 10³ Ω
-c) 2.74 x 10³ Ω
-d) 3.32 x 10³ Ω
-e) 4.02 x 10³ Ω

{<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 113 watts of power to a 104 ohm resistor. What was the applied voltage?}
-a) 5.03 x 10¹ volts
-b) 6.1 x 10¹ volts
-c) 7.39 x 10¹ volts
-d) 8.95 x 10¹ volts
+e) 1.08 x 10² volts

</quiz>

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Other renditions
<div class="mw-collapsible-content">
====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 5.3 volt battery moves 11 Coulombs of charge in 2.1 hours. What is the power?
+a) 7.71 x 10⁻³ W
-b) 9.34 x 10⁻³ W
-c) 1.13 x 10⁻² W
-d) 1.37 x 10⁻² W
-e) 1.66 x 10⁻² W
=====*_Rendition_* 1-3=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 1.4 volt battery moves 87 Coulombs of charge in 2 hours. What is the power?
-a) 7.85 x 10⁻³ W
-b) 9.51 x 10⁻³ W
-c) 1.15 x 10⁻² W
-d) 1.4 x 10⁻² W
+e) 1.69 x 10⁻² W
=====*_Rendition_* 1-4=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 5.8 volt battery moves 95 Coulombs of charge in 0.3 hours. What is the power?
-a) 4.21 x 10⁻¹ W
+b) 5.1 x 10⁻¹ W
-c) 6.18 x 10⁻¹ W
-d) 7.49 x 10⁻¹ W
-e) 9.07 x 10⁻¹ W
=====*_Rendition_* 1-5=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 4.7 volt battery moves 50 Coulombs of charge in 1.3 hours. What is the power?
-a) 4.14 x 10⁻² W
+b) 5.02 x 10⁻² W

-c) 6.08 x 10⁻² W
-d) 7.37 x 10⁻² W
-e) 8.93 x 10⁻² W
=====*_Rendition_* 1-6=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 3.9 volt battery moves 90 Coulombs of charge in 2.2 hours. What is the power?
+a) 4.43 x 10⁻² W
-b) 5.37 x 10⁻² W
-c) 6.51 x 10⁻² W
-d) 7.88 x 10⁻² W
-e) 9.55 x 10⁻² W
=====*_Rendition_* 1-7=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 5.1 volt battery moves 43 Coulombs of charge in 1.5 hours. What is the power?
+a) 4.06 x 10⁻² W
-b) 4.92 x 10⁻² W
-c) 5.96 x 10⁻² W
-d) 7.22 x 10⁻² W
-e) 8.75 x 10⁻² W
=====*_Rendition_* 1-8=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 4 volt battery moves 19 Coulombs of charge in 1.3 hours. What is the power?
+a) 1.62 x 10⁻² W
-b) 1.97 x 10⁻² W
-c) 2.38 x 10⁻² W
-d) 2.89 x 10⁻² W
-e) 3.5 x 10⁻² W
=====*_Rendition_* 1-9=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 3.1 volt battery moves 52 Coulombs of charge in 1.7 hours. What is the power?
-a) 1.79 x 10⁻² W
-b) 2.17 x 10⁻² W
+c) 2.63 x 10⁻² W
-d) 3.19 x 10⁻² W
-e) 3.87 x 10⁻² W
=====*_Rendition_* 1-10=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_1-->A 3.1 volt battery moves 40 Coulombs of charge in 0.9 hours. What is the power?
-a) 2.61 x 10⁻² W
-b) 3.16 x 10⁻² W
+c) 3.83 x 10⁻² W
-d) 4.64 x 10⁻² W
-e) 5.62 x 10⁻² W
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 1.7 mm, and it carries a current of 92 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
-a) 2.07 x 10⁻³m/s
-b) 2.5 x 10⁻³m/s

+c) 3.03 x 10⁻³m/s
-d) 3.67 x 10⁻³m/s
-e) 4.45 x 10⁻³m/s
=====*_Rendition_* 2-3=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 8.7 mm, and it carries a current of 22 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
+a) 2.77 x 10⁻⁵m/s
-b) 3.36 x 10⁻⁵m/s
-c) 4.06 x 10⁻⁵m/s
-d) 4.92 x 10⁻⁵m/s
-e) 5.97 x 10⁻⁵m/s
=====*_Rendition_* 2-4=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 3.6 mm, and it carries a current of 52 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
+a) 3.82 x 10⁻⁴m/s
-b) 4.63 x 10⁻⁴m/s
-c) 5.61 x 10⁻⁴m/s
-d) 6.8 x 10⁻⁴m/s
-e) 8.24 x 10⁻⁴m/s
=====*_Rendition_* 2-5=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 9.9 mm, and it carries a current of 41 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
-a) 2.24 x 10⁻⁵m/s
-b) 2.72 x 10⁻⁵m/s
-c) 3.29 x 10⁻⁵m/s
+d) 3.99 x 10⁻⁵m/s
-e) 4.83 x 10⁻⁵m/s
=====*_Rendition_* 2-6=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 9.2 mm, and it carries a current of 64 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
-a) 4.91 x 10⁻⁵m/s
-b) 5.95 x 10⁻⁵m/s
+c) 7.2 x 10⁻⁵m/s
-d) 8.73 x 10⁻⁵m/s
-e) 1.06 x 10⁻⁴m/s
=====*_Rendition_* 2-7=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 3.8 mm, and it carries a current of 88 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper

has one free electron per atom.)
-a) 2.7 x 10⁻⁴m/s
-b) 3.27 x 10⁻⁴m/s
-c) 3.96 x 10⁻⁴m/s
-d) 4.79 x 10⁻⁴m/s
+e) 5.81 x 10⁻⁴m/s
=====*_Rendition_* 2-8=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 1.9 mm, and it carries a current of 33 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
-a) 5.93 x 10⁻⁴m/s
-b) 7.19 x 10⁻⁴m/s
+c) 8.71 x 10⁻⁴m/s
-d) 1.06 x 10⁻³m/s
-e) 1.28 x 10⁻³m/s
=====*_Rendition_* 2-9=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 7.4 mm, and it carries a current of 38 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
-a) 3.07 x 10⁻⁵m/s
-b) 3.72 x 10⁻⁵m/s
-c) 4.5 x 10⁻⁵m/s
-d) 5.46 x 10⁻⁵m/s
+e) 6.61 x 10⁻⁵m/s
=====*_Rendition_* 2-10=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_2-->The diameter of a copper wire is 8.3 mm, and it carries a current of 87 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m³ and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
-a) 6.77 x 10⁻⁵m/s
-b) 8.2 x 10⁻⁵m/s
-c) 9.93 x 10⁻⁵m/s
+d) 1.2 x 10⁻⁴m/s
-e) 1.46 x 10⁻⁴m/s
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 164 Watt DC motor draws 0.25 amps of current. What is effective resistance?
-a) 1.22 x 10³ Ω
-b) 1.48 x 10³ Ω
-c) 1.79 x 10³ Ω
-d) 2.17 x 10³ Ω
+e) 2.62 x 10³ Ω
=====*_Rendition_* 3-3=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 162 Watt DC motor draws 0.41 amps of current. What is effective resistance?
-a) 5.42 x 10² Ω

-b) 6.57 x 10² Ω
-c) 7.95 x 10² Ω
+d) 9.64 x 10² Ω
-e) 1.17 x 10³ Ω
=====*_Rendition_* 3-4=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 195 Watt DC motor draws 0.49 amps of current. What is effective resistance?
+a) 8.12 x 10² Ω
-b) 9.84 x 10² Ω
-c) 1.19 x 10³ Ω
-d) 1.44 x 10³ Ω
-e) 1.75 x 10³ Ω
=====*_Rendition_* 3-5=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 130 Watt DC motor draws 0.3 amps of current. What is effective resistance?
-a) 8.12 x 10² Ω
-b) 9.84 x 10² Ω
-c) 1.19 x 10³ Ω
+d) 1.44 x 10³ Ω
-e) 1.75 x 10³ Ω
=====*_Rendition_* 3-6=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 104 Watt DC motor draws 0.13 amps of current. What is effective resistance?
-a) 3.46 x 10³ Ω
-b) 4.19 x 10³ Ω
-c) 5.08 x 10³ Ω
+d) 6.15 x 10³ Ω
-e) 7.46 x 10³ Ω
=====*_Rendition_* 3-7=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 196 Watt DC motor draws 0.35 amps of current. What is effective resistance?
+a) 1.6 x 10³ Ω
-b) 1.94 x 10³ Ω
-c) 2.35 x 10³ Ω
-d) 2.85 x 10³ Ω
-e) 3.45 x 10³ Ω
=====*_Rendition_* 3-8=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 171 Watt DC motor draws 0.47 amps of current. What is effective resistance?
+a) 7.74 x 10² Ω
-b) 9.38 x 10² Ω
-c) 1.14 x 10³ Ω
-d) 1.38 x 10³ Ω
-e) 1.67 x 10³ Ω
=====*_Rendition_* 3-9=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 129 Watt DC motor draws 0.22 amps of current. What is effective resistance?
-a) 2.2 x 10³ Ω
+b) 2.67 x 10³ Ω
-c) 3.23 x 10³ Ω
-d) 3.91 x 10³ Ω
-e) 4.74 x 10³ Ω

=====*_Rendition_* 3-10=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_3-->A 146 Watt DC motor draws 0.23 amps of current. What is effective resistance?
-a) 2.28 x 10³ Ω
+b) 2.76 x 10³ Ω
-c) 3.34 x 10³ Ω
-d) 4.05 x 10³ Ω
-e) 4.91 x 10³ Ω
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 149 watts of power to a 153 ohm resistor. What was the applied voltage?
-a) 8.49 x 10¹ volts
-b) 1.03 x 10² volts
-c) 1.25 x 10² volts
+d) 1.51 x 10² volts
-e) 1.83 x 10² volts
=====*_Rendition_* 4-3=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 101 watts of power to a 219 ohm resistor. What was the applied voltage?
+a) 1.49 x 10² volts
-b) 1.8 x 10² volts
-c) 2.18 x 10² volts
-d) 2.64 x 10² volts
-e) 3.2 x 10² volts
=====*_Rendition_* 4-4=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 145 watts of power to a 132 ohm resistor. What was the applied voltage?
-a) 6.42 x 10¹ volts
-b) 7.78 x 10¹ volts
-c) 9.43 x 10¹ volts
-d) 1.14 x 10² volts
+e) 1.38 x 10² volts
=====*_Rendition_* 4-5=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 145 watts of power to a 244 ohm resistor. What was the applied voltage?
+a) 1.88 x 10² volts
-b) 2.28 x 10² volts
-c) 2.76 x 10² volts
-d) 3.34 x 10² volts
-e) 4.05 x 10² volts
=====*_Rendition_* 4-6=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 138 watts of power to a 206 ohm resistor. What was the applied voltage?
-a) 1.39 x 10² volts
+b) 1.69 x 10² volts
-c) 2.04 x 10² volts

-d) 2.47 x 10² volts
-e) 3 x 10² volts
=====*_Rendition_* 4-7=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 187 watts of power to a 287 ohm resistor. What was the applied voltage?
+a) 2.32 x 10² volts
-b) 2.81 x 10² volts
-c) 3.4 x 10² volts
-d) 4.12 x 10² volts
-e) 4.99 x 10² volts
=====*_Rendition_* 4-8=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 169 watts of power to a 219 ohm resistor. What was the applied voltage?
-a) 8.93 x 10¹ volts
-b) 1.08 x 10² volts
-c) 1.31 x 10² volts
-d) 1.59 x 10² volts
+e) 1.92 x 10² volts
=====*_Rendition_* 4-9=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 110 watts of power to a 299 ohm resistor. What was the applied voltage?
-a) 8.42 x 10¹ volts
-b) 1.02 x 10² volts
-c) 1.24 x 10² volts
-d) 1.5 x 10² volts
+e) 1.81 x 10² volts
=====*_Rendition_* 4-10=====
<!--b20ElectricCurrentResistivityOhm_PowerDriftVel_4-->A power supply delivers 114 watts of power to a 294 ohm resistor. What was the applied voltage?
-a) 1.25 x 10² volts
-b) 1.51 x 10² volts
+c) 1.83 x 10² volts
-d) 2.22 x 10² volts
-e) 2.69 x 10² volts
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{<!--b_antikythera_1-->A mechanical '''[[w:analog computer|analog computer]]''' uses pulleys, levers, wheels or some other motion to solve problems of a mathematical nature.}
+ true
- false

{<!--b_antikythera_10-->As the Sun, Moon, and planets seem to move around the Earth, they remain close to a circle, called the '''[[w:ecliptic|ecliptic]]''', that can be drawn on paper or imagined in the sky. The Babylonians divided this circle into 12 equal sections of 30 degrees each, and labeled the sections after the zodiacal constellations.}
+ true
- false

{<!--b_antikythera_11-->As the Sun, Moon, and planets seem to move around the Earth, they remain close to a circle, called the '''[[w:ecliptic|ecliptic]]''', that can be drawn on paper or imagined in the sky. The Babylonians divided this circle into 12 unequal sections of approximately 30 degrees each, and labeled the sections after the zodiacal constellations.}
- true
+ false

{<!--b_antikythera_12-->Sothic calendar was an Egyptian calendar with twelve months of 30 days plus five [[wikt:intercalary|intercalary]] days to keep the year synchronous with the four seasons. }
+ true
- false

{<!--b_antikythera_13-->Sothic calendar was an Egyptian calendar with twelve months of 30 days plus five [[wikt:intercalary|intercalary]] days to keep the year synchronous with the Saros cycle.}
- true
+ false

{<!--b_antikythera_14-->Sothic calendar was an Egyptian calendar with twelve months of 30 days plus five [[wikt:intercalary|intercalary]] days to keep the year synchronous with the Lunar phases.}
- true
+ false

{<!--b_antikythera_15-->The Sothic calendar of 365 days did not include an extra day every four years. As a consequence, it advanced by _____ days in 12 years}
+ 3
- 1
- 2
- 4

{<!--b_antikythera_16-->The Sothic calendar of 365 days did not include an extra day every four years. As a consequence, it advanced by _____ days in 8 years}
- 3
- 1
+ 2
- 4

{<!--b_antikythera_17-->The months of the Antikythera device are labeled with Egyptian names ''[[wikt:transcribe|transcribed]]'' into Greek}
+ true
- false

{<!--b_antikythera_18-->The months of the Antikythera device are labeled with Greek names ''[[wikt:transcribe|transcribed]]'' into Egyptian hieroglyphs.}
- true
+ false

{<!--b_antikythera_19-->'''[[w:Eclipse seasons|Eclipse seasons]]''' last for approximately ______ and repeat just short of ______}
+ 34 days;   six months
- 7 days;   one month
- six months;   18 years
- one month;   18 years
- six months;   54 years

{<!--b_antikythera_2-->How many years did it take before Europe made a device as sophisticated as the '''[[w:Antikythera_mechanism|Antikythera mechanism]]'''?}
-300 years
-3000 years
-30 years
+1500 years
-15,000 years

{<!--b_antikythera_20-->[[File:Crown_gear.png|140px|right]]A

____________ is a gear which has teeth that projects at right angles to the face of the wheel.}
+ '''[[w:crown gear|crown gear]]'''
- '''[[w:Spiral_bevel_gear|spiral bevel gear]]'''
- '''[[w:Epicyclic gearing|epicycle gear]]'''

{<!--b_antikythera_21-->Evidence suggests that it was not possible to set the Antikythera device without referring to a written table to ascertain the dial settings for a given date.}
+ true
- false

{<!--b_antikythera_22-->How did the Antikythera mechanism compensate for leap years?}
+ Two concentric dials were independently adjusted by hand; one dial marked a 365 day calendar, and the other marked the position of the Sun with respect to the ecliptic.
- Two concentric dials were independently adjusted by a differential gear; one dial marked a 365 day calendar, and the other marked the position of the Sun with respect to the ecliptic.
- There was no need to compensate for the leap year because the Sothic calendar included a leap year every four years.

{<!--b_antikythera_3-->The Antikythera device was dated to approximately}
+ 100-150 BC
- 300-350 BC
- 300-350 AD
- 500-550 BC

{<!--b_antikythera_4-->The '''[[w:Antikythera wreck|Antikythera wreck]]''' was situated closer to Rome than to Greece.}
- true
+ false

{<!--b_antikythera_5-->The '''[[w:Antikythera wreck|Antikythera wreck]]''' was discovered by _________ in ________.}
+ sponge divers;   1900
- Jacques-Yves Cousteau;   1976

{<!--b_antikythera_6-->What clue is cited to suggest that the Antikythera device was not the first of its kind?}
+ The quality of its manufacture.
- Other boxes in the wreck seemed to have held similar devices.
- Chemical analysis of the bronze.
- Instructions for making other devices were found at the wreck site.

{<!--b_antikythera_7-->'''[[w:Bronze|Bronze]]''' is an alloy consisting primarily of ______, with other metals included ______}
+ copper;   to make it hard.
- copper;   to make it withstand corrosion.
- iron;   as impurities that served little or no purpose.

- copper;   as impurities that served little or no purpose.

{<!--b_antikythera_8-->Chemical analysis of the bronze used in the gears of the Antikythera device }
+ was not possible due to the degree of corrosion.
- suggested that Roman technology was used.
- suggested that Greek technology was used.
- suggested that a number of such devices had been produced.

{<!--b_antikythera_9-->Which of the following was NOT used as evidence in an effort to guess where the Antikythera device originated?}
- Some of the astronomical events associated with the device could have only have been seen from Corinth, a region associated with Archimedes.
- Coins at the site seemed to originate from Pergamon, where an important library was situated.
+ The Library of Alexandria, where Ptolemy would later work, would have been a likely destination or origin for the ship.
- Vases found at the site suggest an origin near the trading port of Rhodes, where Hipparchus was believed to have worked.

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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{<!--b_busyBeaver_1-->If the machine is at A: 000<u>0</u>00, what's next?[[File:2-state 2-symbol busy beaver.svg|right|120px]]}
- B: 000<u>0</u>10
+ B: 0001<u>0</u>0
- A: 0001<u>0</u>0
- A: 0000<u>1</u>0

{<!--b_busyBeaver_2-->If the machine is at B: 0001<u>0</u>0, what's next?[[File:2-state 2-symbol busy beaver.svg|right|120px]]}
- B: 000<u>1</u>10
- A: 001<u>1</u>00
- B: 0001<u>1</u>0
+ A: 000<u>1</u>10

{<!--b_busyBeaver_3-->If the machine is at A: 000<u>1</u>10, what's next?[[File:2-state 2-symbol busy beaver.svg|right|120px]]}
- B: 0011<u>0</u>0
+ B: 00<u>0</u>110
- A: 00<u>0</u>110
- A: 0011<u>1</u>0

{<!--b_busyBeaver_4-->If the machine is at B: 00<u>0</u>110 , what's next?[[File:2-state 2-symbol busy beaver.svg|right|120px]]}
- B: 0001<u>1</u>1
- B: 0<u>0</u>1110
- A: 00<u>1</u>110
+ A: 0<u>0</u>1110

{<!--b_busyBeaver_5-->If the machine is at A: 0<u>0</u>1110, what's next?[[File:2-state 2-symbol busy beaver.svg|right|120px]]}
+ B: 01<u>1</u>110
- H: 01<u>1</u>110
- A: 01<u>1</u>110
- H: 011<u>1</u>10

{<!--b_busyBeaver_6-->If the machine is at B: 01<u>1</u>110, what's next?[[File:2-state 2-symbol busy beaver.svg|right|120px]]}
- B: 011<u>1</u>10
+ H: 011<u>1</u>10
- A: 01<u>1</u>110
- H: 01<u>1</u>110

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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{<!--b_ComputerWikipedia_1-->The first English-language usage of the
word "computer" referred to}
- counting rods
- an abacus
- Roman numerals
+ a person

{<!--b_ComputerWikipedia_10-->The [[w:Turing machine|Turing machine]]
permitted a solution to the [[w:halting problem|halting problem]]}
+ true
- false

{<!--b_ComputerWikipedia_11-->The [[w:Turing machine| Turing machine]]
could not have been invented until after the [[w:halting
problem|halting problem]] was solved.}
- true
+ false

{<!--b_ComputerWikipedia_12-->The [[w:Turing machine|Turing machine]]
was a(n) ______ device}
- digital
- electromechanical
- prototype
+ conceptual
- analog

{<!--b_ComputerWikipedia_13-->This algorithm halts if it starts at 0:
<br /> * Add 3 <br /> * If the number is divisible by 10, divide by 10
<br /> * Stop if the number exceeds 100 <br /> * Go to top}
- true
+ false
```

{<!--b_ComputerWikipedia_14-->This algorithm halts if it starts at 0:
 * Add 3
 * If the number is divisible by 10, add 10
 * Stop if the number exceeds 100
 * Go to top}
+ true
- false

{<!--b_ComputerWikipedia_15-->In London (circa 1935) thousands of vacuum tubes were used to}
- calculate the value of π
+ control a telephone exchange
- count votes in an election
- control a textile mill

{<!--b_ComputerWikipedia_16-->The [[w:Bombe|Bombe]] was a(n) ______________ device used (circa 1940) to defeat the Enigma machine in World War II.}
- mechanical
- electric digital programmable
- Turing-complete
+ electromechanical

{<!--b_ComputerWikipedia_17-->The Colossus, used to defeat the German Enigma machine during World War II in 1944, was}
- Turing-complete
- mechanical
+ electric digital programmable
- electromechanical

{<!--b_ComputerWikipedia_18-->The chronological order by which electronic computers advanced is:}
- transistors, integrated circuits, and then tubes
+ tubes, transistors, and then integrated circuits
- integrated circuits, tubes, and then transistors
- tubes, integrated circuits and then transistors

{<!--b_ComputerWikipedia_2-->Babbage's account of the origin of the difference engine in the 1820s was that he was working to satisfy the Astronomical Society's desire to improve The Nautical Almanac.}
+ true
- false

{<!--b_ComputerWikipedia_3-->Babbage's account of the origin of the difference engine in the 1820s was that he was working to satisfy the Astronomical Society's desire to predict lunar eclipses}
- true
+ false

{<!--b_ComputerWikipedia_4-->Babbage's use of punch cards in the 1930s to solve a problem posed by the Astronomical Society was later adopted to the Jacquard loom.}
- true

+ false

{<!--b_ComputerWikipedia_5-->Babbage's use of punch cards in the 1930s to solve a problem posed by the Astronomical Society was preceded by such use on the Jacquard loom.}
+ true
- false

{<!--b_ComputerWikipedia_6-->A system that uses levers, pulleys, or other mechanical device to perform calculations is called an analog computer}
+ true
- false

{<!--b_ComputerWikipedia_7-->A system that uses tables of numbers is called an analog computer}
- true
+ false

{<!--b_ComputerWikipedia_8-->Analog computers were phased out by the dawn of the twentieth century (circa 1900)}
- true
+ false

{<!--b_ComputerWikipedia_9-->Analog computers continued to be developed into the twentieth century}
+ true
- false

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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{<!--b_ecliptic_quiz1_1-->The '''[[w:ecliptic|ecliptic]]''' is the set of all points on the celestial sphere}
- occupied by the Moon over the course of one month.
- occupied by the Sun and Moon during eclipse season.
+ occupied by the Sun over the course of a year.
- occupied by the Sun over the course of one day.
- occupied by the Moon over the course of one day.

{<!--b_ecliptic_quiz1_10-->$\frac{360\,\text{degrees}}{30\,\text{days}}=\frac{36}{3} \,$, calculates that the Moon moves approximately 13 ______}
- degrees per hour across the sky
- degrees per hour compared to the fixed stars
+ degrees per day compared to the fixed stars
- degrees per day across the sky

{<!--b_ecliptic_quiz1_2-->Two '''[[w:Great circle|great circles]]''' on a sphere meet at ______ point(s)}
- 0
- 1
+ 2
- 3
- 4

{<!--b_ecliptic_quiz1_3-->A star in any of the 12 [[w:zodiac|zodiacal]] constellations rises and sets near where the Sun rises and sets, except that the cycle is repeated every 24 hours minus approximately 4 minutes.}
+ true
- false

{<!--b_ecliptic_quiz1_4-->Four minutes times 365 is approximately one}
+ day
- year
- month
- week

{<!--b_ecliptic_quiz1_5-->As the Sun rises and sets it typically spends 4 minutes in each constellation of the Zodiac}
- true
+ false

{<!--b_ecliptic_quiz1_6-->One minute of arc describes and angle 60 times smaller than one degree, which is NOT equal to the observed

angular motion of a star in one minute.}
+ true
- false

{<!--b_ecliptic_quiz1_7-->One minute of arc describes and angle 60 times smaller than one degree, which nearly equals the observed angular motion of a star in one minute.}
- true
+ false

{<!--b_ecliptic_quiz1_8-->In the course of a year, the Sun is always in or near one of the 12 zodiacal constellations}
+ true
- false

{<!--b_ecliptic_quiz1_9-->$\frac{360}{24}=\frac{36\cdot 10}{12\cdot 2}=\frac{12\cdot 3\cdot 5\cdot 2}{12\cdot 2\,}$, calculates that the Sun moves 15}
- degrees per day compared to the fixed stars
+ degrees per hour across the sky
- degrees per hour compared to the fixed stars
- degrees per day across the sky

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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===*_Quiz_*===
<quiz display=simple>
{<!--b_globalWarming_1_1-->The lede's graph of the "[[:File:Global_Temperature_Anomaly.svg|Global Land Ocean Temperature Index (1880-2013)]]" shows little or no temperature rise over the last ____ years}
- 30
- 3
- 100
+ 10
- 300

{<!--b_globalWarming_1_10-->The lede's "[[:File:Global_Warming_Observed_CO2_Emissions_from_fossil_fuel_burning_vs_IPCC_scenarios.svg|CO2 Emissions per Year]]" graph (1990-2010) shows solid straight lines that represent}
+ estimates made in the year 2000 of what would happen in the future
- estimates of the contributions from everything except fossil fuels
- estimates of the contributions from fossil fuels alone
- estimates of the impact on land temperatures

{<!--b_globalWarming_1_11-->In climate science, mitigation refers to:}
- climate engineering
- adaptation to the effects of global warming
+ reduction of green house emissions
- building systems resilient to the effects of global warming

{<!--b_globalWarming_1_12-->Anthropogenic means something that}
- humans can repair
+ human caused
- humans cannot repair
- will hurt humans

{<!--b_globalWarming_1_2-->Since 1971, 90% of earth's increased energy caused by global warming has been stored in the _____________, mostly _____________}
+ sea; in the top kilometer
- sea; in the bottom kilometer
- land; near the poles
- land; near the equators
- air; in the water vapor

{<!--b_globalWarming_1_3-->The lede's graph of the "[[:File:Global_Temperature_Anomaly.svg|Global Land Ocean Temperature Index (1880-2013)]]" shows that since 1920, there has never been a decade of overall cooling}
- true
+ false

{<!--b_globalWarming_1_4-->The largest temperature increases (from 2000-2009) have occurred }
- on the ocean surface

+ near the poles
- near the equator
- in the western hemisphere

{<!--b_globalWarming_1_5-->The 2007 IPCC report stated that most global warming was likely being caused by increasing concentrations of greenhouse gases produced by human activities. Among the science academies of the major industrialized nations, this finding was recognized by}
- 90% of the academies of science
+ all of the academies of science
- all but the US academy of science
- 60% of the academies of science

{<!--b_globalWarming_1_6--> in 2013, the IPCC stated that the largest driver of global warming is carbon dioxide (CO2) emissions from fossil fuel combustion. Other important sources of CO2 are}
- population growth and waste disposal
- cement production and waste disposal
+ cement production and land use changes
- population growth

{<!--b_globalWarming_1_7-->The lede's graphs of the "[[:File:Global_Temperature_Anomaly.svg|Global Land Ocean Temperature Index (1880-2013)]]" indicates that from 1960 to 2012 the average temperature increased by approximately}
- 16° Celsius
+ 0.6° Celsius
- 0.06° Celsius
- 0.16° Celsius
- 1.6° Celsius

{<!--b_globalWarming_1_8-->Which statement is FALSE about the lede's [[:File:GISS_temperature_2000-09_lrg.png|map of the temperature anomaly]] (2000-2009)? }
+ all portions of Antarctica have warmed
- Northern Asia has warmed more than southern Asia
- Central Europe has warmed more than the continental United States
- The United States has warmed more than Australia

{<!--b_globalWarming_1_9-->The lede's "[[:File:Global_Warming_Observed_CO2_Emissions_from_fossil_fuel_burning_vs_IPCC_scenarios.svg|CO2 Emissions per Year]]" graph (1990-2010) shows dips and rises that are caused by changes in}
- worldwide efforts to curtail emissions
- the earth's distance from the sun
- the sun's energy output
+ the world economy

</quiz>

====*_Instructions_*====

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Instructions are forthcoming

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===*_Quiz_*===
<quiz display=simple>
{<!--b_globalWarming_2_1-->The Earth's average surface temperature
rose by approximately _______ per decade over the period 1906–2005.}
- 7.0&deg;C
- 0.7&deg;C
+ 0.07&deg;C

{<!--b_globalWarming_2_10-->A rise in the sea level is associated with
global warming because}
- ice and snow melts
+ both of these are true
- water tends to expand as it warms

{<!--b_globalWarming_2_11-->What happens when water is heated?}
- it expands at temperatures below 3.98&deg;C and contracts above
3.98&deg;C
+ it expands at temperatures above 3.98&deg;C and contracts below
3.98&deg;C
- it absorbs CO2

{<!--b_globalWarming_2_12-->No direct method exists that permits an
independent measurement of the heat content of the oceans, other than
the fact that the air is warming}
- true
+ false
```

{<!--b_globalWarming_2_13-->Ocean temperatures are increasing more slowly than land temperatures because oceans have more heat capacity and because evaporation cools the water.}
+ true
- false

{<!--b_globalWarming_2_14-->Ocean temperatures are increasing more slowly than land temperatures because the oceans are absorbing less heat energy from the sun}
- true
+ false

{<!--b_globalWarming_2_2-->In the twentieth century, the rate of earth's average temperature rise was closest to}
- 0.7 °C per decade
- 0.7 °C per year
+ 0.7 °C per century

{<!--b_globalWarming_2_3-->Compared with the first half of the twentieth century, the rate of earth's average temperature rise during the second (latter) half was }
- half as much
- about the same
+ twice as much

{<!--b_globalWarming_2_4-->Compared with the second half of the twentieth century, the rate of earth's average temperature rise during the first half was}
- twice as much
+ half as much
- about the same

{<!--b_globalWarming_2_5-->The urban heat island effect refers to the fact that urban areas tend to be hotter than rural areas. The urban heat island effect is estimated to account for approximately _____ of the temperature rise over the past century.}
- 0%
- 30%
- 0.3%
+ 3%

{<!--b_globalWarming_2_6-->Proxy temperatures measurements are defined as indirect inferences gathered from ice cores, tree rings, and so forth}
+ true
-false

{<!--b_globalWarming_2_7-->Proxy temperatures measurements are defined as measurements made using measurements from space.}
- true
+ false

```
{<!--b_globalWarming_2_8-->The
[[:File:2000_Year_Temperature_Comparison.png|Reconstructed
Temperature]] (0-2000 AD) plot in "Observed Temperature Changes" shows
temperature measurements.  The solid black line represents}
- tree proxy measurements
+ thermometer measurements
- the Little Ice Age
- the Medieval Warming Period
- a 10 year average

{<!--b_globalWarming_2_9-->The
[[:File:2000_Year_Temperature_Comparison.png|Reconstructed
Temperature]] (0-2000 AD) plot in "Observed Temperature Changes" shows
temperature measurements, as well as what curious feature? (See also
[[w:Divergence problem|Divergence problem]])}
- the Little Ice Age being less prominent than the Medieval Warming
period
- a divergence between the tree and pollen proxy measurements
+ a tiny gap at the end of the proxy measurements
- the fact that the different proxy measurements deviate considerably
from the average of all proxy measurements

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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===*_Quiz_*===
<quiz display=simple>
{<!--b_globalWarming_3_1-->The "[[:File:Greenhouse_Effect.svg|Greenhouse effect schematic]]" in the section on "Temperature changes..." indicates that most of the energy from the Sun is absorbed by the earth's atmosphere.}
- true
+ false

{<!--b_globalWarming_3_10-->Emissions scenarios are}
+ estimates of changes in future emission levels of greenhouse gases
- estimates of how greenhouse gasses are absorbed and emitted by nature
- estimates of how greenhouse gasses are absorbed and emitted by the world's oceans
- estimates of how greenhouse gasses are absorbed and emitted by agriculture

{<!--b_globalWarming_3_11-->It is expected that carbon emissions will begin to diminish in the 21st century as fossil fuel reserves begin to dwindle.}
- true
+ false

{<!--b_globalWarming_3_12-->The [[w:carbon cycle|carbon cycle]] }
- is a proposal to trade carbon credits.
+ describes how carbon is absorbed and emitted by the oceans, soil, plants, etc.
- is an effort to store carbon in underground caves.

{<!--b_globalWarming_3_13-->Global dimming, caused by air-born particulates produced by volcanoes and human made pollutants}
- exerts a heating effect by absorbing infra-red radiation from earth's surface
- is more related to the ozone problem than to global warming
+ exerts a cooling effect by increasing the reflection of incoming sunlight

{<!--b_globalWarming_3_14-->Soot tends to warm the earth when it accumulates in atmospheric brown clouds.}
- true
+ false

{<!--b_globalWarming_3_15-->Soot tends to cool the earth when it accumulates in atmospheric brown clouds.}
+ true
- false

{<!--b_globalWarming_3_16-->In the arctic, soot tends to cool the earth.}
- true
+ false

{<!--b_globalWarming_3_17-->In the arctic, soot tends to warm the earth.}
+ true
- false

{<!--b_globalWarming_3_18-->Approximately what percent of global warming can be attributed to a long-term trend (since 1978) in the sun's energy?}
- 50%
+ 0%
- 10%
- 30%

{<!--b_globalWarming_3_19-->Greenhouse warming acts to cool the stratosphere}
+ true
- false

{<!--b_globalWarming_3_2-->The "[[:File:Greenhouse_Effect.svg|Greenhouse effect schematic]]" in the section on "Temperature changes..." indicates that most of the energy from the Sun is absorbed at the earth's surface.}
+ true
- false

{<!--b_globalWarming_3_20-->Greenhouse warming acts to warm the stratosphere}
- true
+ false

{<!--b_globalWarming_3_21-->The distinction between the urban heat island effect and land use changes is that the latter involves the earth's average temperature while the former involves only the temperature near weather stations where the measurements are made}
+ true
- false

{<!--b_globalWarming_3_22-->Depleting the ozone layer cools the stratosphere because ozone allows UV radiation to penetrate.}
- true
+ false

{<!--b_globalWarming_3_23-->Depleting the ozone layer cools the stratosphere because ozone absorbs UV energy from the sun that heats the stratosphere.}
+ true
- false

{<!--b_globalWarming_3_3-->Which external force plays the smallest role in current efforts to model global warming?}
- greenhouse gasses

- solar luminosity (i.e. variations in energy from the sun)
- volcanic eruptions
+ orbital cycles

{<!--b_globalWarming_3_4-->"External forcings" refer to effects that can increase, but not decrease, the Earth's temperature.}
- true
+ false

{<!--b_globalWarming_3_5-->"External forcings" refer to effects that can either increase or decrease, the Earth's temperature.}
- true
+ false

{<!--b_globalWarming_3_6-->Water vapor contributes more to the greenhouse effect than does carbon dioxide.}
+ true
- false

{<!--b_globalWarming_3_7-->Carbon dioxide contributes more to the greenhouse effect than does water vapor.}
- true
+ false

{<!--b_globalWarming_3_8-->The [[:File:Mauna_Loa_Carbon_Dioxide_Apr2013.svg|Keeling curve]] shows that carbon dioxide concentrations}
+ show a steady rise in CO2 levels, with increasing slope, and regular and predictable annual fluctuations
- show a steady rise in CO2 levels, at constant slope, and regular and predictable annual fluctuations
- show a steady rise in CO2 levels, at constant slope, and irregular fluctuations due associated with El Ninos and La Ninas.

{<!--b_globalWarming_3_9-->The climate change community is divided between those who believe the goal should be to eliminate the earth's greenhouse effect altogether, and those who argue that we should attempt to minimize earth's greenhouse effect.}
- true
+ false

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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<quiz display=simple>
{<!--b_globalWarming_4_1-->Changes in ice-albedo refers to changes in}
- how much CO2 is absorbed by the sun
+ how much the Earth's surface absorbs or reflects incoming sunlight
- how much ice is melted during the summer months

{<!--b_globalWarming_4_10-->The [[w:cryosphere|cryosphere]] refers to}
- the north and south poles
- the upper atmosphere
- the highest mountains
+ two of these are true

{<!--b_globalWarming_4_11-->While computer modeling indicate that the warming since 1970 is dominated by man-made greenhouse gas emissions, they are unable to conclusively ascertain whether the warming from 1910 to 1945 was anthropogenic.}
+ true
- false

{<!--b_globalWarming_4_12-->Computer modeling has conclusively established that anthropogenic warming has occurred since 1910.}
- true
+ false

{<!--b_globalWarming_4_13-->How is the validity of a computer model typically tested?}
- by verifying its ability to calculate past climate conditions.
+ all of these are true
- by verifying its ability to calculate current climate conditions.
- by making predictions about future years and seeing if they come true.

{<!--b_globalWarming_4_2-->The Stefan-Boltzmann law plays a central

role in establishing a planets temperature as the sun heats the planet until the thermal (infra-red) radiation away the planet rises to match the solar radiation onto the planet}
+ true
- false

{<!--b_globalWarming_4_3-->The Stefan-Boltzmann law plays a central role in establishing a planets temperature as the sun heats the planet with thermal (infra-red) radiation adding to the other solar radiation onto the planet}
- true
+ false

{<!--b_globalWarming_4_4-->Stefan-Boltzmann radiation is called a negative feedback mechanism because if the sun's radiation increases, the Stefan-Boltzmann law ensures that more heat is lost from the planet to compensate.}
+ true
- false

{<!--b_globalWarming_4_5-->Stefan-Boltzmann radiation is called a negative feedback mechanism because if the sun's radiation increases, the Stefan-Boltzmann law ensures that this heat is retained by the planet.}
- true
+ false

{<!--b_globalWarming_4_6-->Computer models accurately model feedback mechanisms associated with the role of clouds as a feedback mechanism.}
- true
+ false

{<!--b_globalWarming_4_7-->Computer models accurately model feedback mechanisms associated with how the soil will retain or release CO2 as the earth warms.}
- true
+ false

{<!--b_globalWarming_4_8-->Analysis of the uncertainties associated with feedback suggests that the "worst-case" scenario is easier to model.}
- true
+ false

{<!--b_globalWarming_4_9-->Analysis of the uncertainties associated with feedback suggests that the "worst-case" scenario is more difficult to model.}
+ true
- false

</quiz>

```
====*_Instructions_*====
Instructions are forthcoming

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*_See_* [[User:Guy vandegrift]]
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<quiz display=simple>
{<!--b_industrialRevolution_1-->The Industrial Revolution began
shortly before}
- World War I (1914)
+ the American revolution (1776)
- the American civil war (1861)

{<!--b_industrialRevolution_10-->Cartwright built two textile
factories. One of them}
- burned down
+ two of these are true
- is still in use today
- was transported to Germany
- was sabotaged by workers

{<!--b_industrialRevolution_11-->The purpose of Eli Whitney's cotton
gin was to}
- clean cotton
+ remove seeds
- weave cotton
- pick cotton
- spin cotton
```

{<!--b_industrialRevolution_12-->Manchester acquired the nickname __________ during the early 19th century owing to its sprawl of ______}
- Coalopolis, coal mines
- Weavopolis, Weaving factories
+ Cottonopolis, textile factories
- Cokopolis, coke processing plants

{<!--b_industrialRevolution_13-->A major change in the metal industries during the era of the Industrial Revolution was the replacement of wood and other bio-fuels with coal. Compared to wood, coal required }
- about the same labour to mine, but was more abundant than wood.
+ less labour to mine and was also more abundant.
- less labour to mine, but was less abundant (until the Rineland coal fields were discovered).

{<!--b_industrialRevolution_14-->Henry Cort developed rolling, which is 15 times _____ than ______}
+ faster, hammering
- faster, puddling
- cheaper, hammering
- cheaper, puddling

{<!--b_industrialRevolution_15-->Puddling involved }
- stirring with a long rod and became much cheaper when steam engines replaced manual stirring
- the use of coke instead of coal greatly reduced the cost of producing pig iron
- the use of coke instead of coal and led to much strong iron
+ stirring with a long rod and was never successfully mechanised.

{<!--b_industrialRevolution_16-->For most of the period of the Industrial Revolution, the majority of industrial power was supplied by}
- steam and wind.
- water and steam.
+ water and wind.

{<!--b_industrialRevolution_17-->The ''Miner's Friend''}
- provided ventilation
- transported miners
+ pumped water
- was electrical lighting

{<!--b_industrialRevolution_18-->According to Wikipedia, the first large machine tool was used to}
- drill coal mines
- shape plates for ship hulls
+ bore cylinders for steam engines steam engines.
- plane rails for railroads

{<!--b_industrialRevolution_19-->During the Industrial Revolution, the cost of producing sulfuric acid greatly improved by}
+ replacing glass containers with lead containers
- replacing iron containers with glass containers
- replacing glass containers with iron containers
- replacing lead containers with glass containers

{<!--b_industrialRevolution_2-->The Industrial Revolution lasted just under _____ years}
- 200
- 300
- 400
- 500
+ 100

{<!--b_industrialRevolution_20-->Early uses for sulphuric acid included}
- making cement and bleaching cloth
- producing dyes and bleaching cloth
- removing rust and making cement
- producing dyes and making cement
+ removing rust and bleaching cloth

{<!--b_industrialRevolution_21-->During the Industrial Revolution, the best Chemists were trained in}
- Great Britain
+ Germany
- United States
- Italy
- Sweden

{<!--b_industrialRevolution_3-->The dominant industry of the Industrial Revolution in terms of employment, output and invested capital was}
- railroads
- military spending
- farm equipment
- ship building
+ textiles

{<!--b_industrialRevolution_4-->What impact did the industrial revolution have on living standards of ordinary people, ''according to Wikipedia?''}
+ the question is a subject of controversy
- little or no growth in the first half, but enormous growth in the second half of the industrial revolution.
- sustained growth, for the first time in history
- little or no growth until much later (19th and 20th centuries)

{<!--b_industrialRevolution_5-->The industrial revolution began in}
- simultaneously in a variety of European nations
- Germany

```
- simultaneously in Europe and the United States
+ Great Britain
- United States

{<!--b_industrialRevolution_6-->Which is NOT one of the three areas of
development that helped initiate the industrial revolution?}
+ assembly lines
- textiles
- iron making
- steam power

{<!--b_industrialRevolution_7-->The Calico Acts were initially
designed to protect}
- domestic cotton production
+ the woollen industry
- small manufacturers
- large manufacturers

{<!--b_industrialRevolution_8-->On the eve of the Industrial
Revolution, when the textile industry was largely a cottage industry,
women did the ______ and men did the _______.  If a loom was used, the
work done by the women required ______ person hours.}
+ spinning, weaving, more
- spinning, weaving, fewer
- weaving, spinning, more
- weaving, spinning, fewer

{<!--b_industrialRevolution_9-->On the eve of the Industrial
Revolution, when the textile industry was largely a cottage industry,
men did the ______ and women did the _______.  If a loom was used, the
work done by the men required ______ person hours.}
- spinning, weaving, fewer
+ weaving, spinning, fewer
- weaving, spinning, more
- spinning, weaving, more

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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<quiz display=simple>
{<!--b_motionSimpleArithmetic_1-->Mr. Smith starts from rest and accelerates to 4 m/s in 3 seconds. How far did he travel?}
- 3.0 meters
- 4.0 meters
- 5.0 meters
+ 6.0 meters
- 7.0 meters

{<!--b_motionSimpleArithmetic_10-->Mr. Smith starts from rest and accelerates to 4 m/s in 5 seconds. How far did he travel?}
- 7.0 meters
- 8.0 meters
- 9.0 meters
+ 10.0 meters
- 11.0 meters

{<!--b_motionSimpleArithmetic_11-->Mr. Smith is driving at a speed of 7 m/s, when he slows down to a speed of 5 m/s, when he hits a wall at this speed, after travelling for 2 seconds. How far did he travel? }
- 8.0 meters
- 9.0 meters
- 10.0 meters
- 11.0 meters
+ 12.0 meters

{<!--b_motionSimpleArithmetic_12-->Mr. Smith starts at rest and accelerates to a speed of 2 m/s, in 2 seconds. He then travels at this speed for an additional 1 seconds. Then he decelerates uniformly, taking 2 seconds to come to rest. How far did he travel?}
- 5.0 meters
+ 6.0 meters
- 7.0 meters
- 8.0 meters
- 9.0 meters

{<!--b_motionSimpleArithmetic_2-->Mr. Smith is driving at a speed of 4 m/s, when he slows down to a speed of 1 m/s, when he hits a wall at

this speed, after travelling for 4 seconds. How far did he travel? }
- 7.0 meters
- 8.0 meters
- 9.0 meters
+ 10.0 meters
- 11.0 meters

{<!--b_motionSimpleArithmetic_3-->Mr. Smith starts at rest and accelerates to a speed of 4 m/s, in 2 seconds. He then travels at this speed for an additional 3 seconds. Then he decelerates uniformly, taking 2 seconds to come to rest. How far did he travel?}
- 19.0 meters
+ 20.0 meters
- 21.0 meters
- 22.0 meters
- 23.0 meters

{<!--b_motionSimpleArithmetic_4-->Mr. Smith starts from rest and accelerates to 2 m/s in 3 seconds. How far did he travel?}
+ 3.0 meters
- 4.0 meters
- 5.0 meters
- 6.0 meters
- 7.0 meters

{<!--b_motionSimpleArithmetic_5-->Mr. Smith is driving at a speed of 5 m/s, when he slows down to a speed of 4 m/s, when he hits a wall at this speed, after travelling for 2 seconds. How far did he travel? }
- 8.0 meters
+ 9.0 meters
- 10.0 meters
- 11.0 meters
- 12.0 meters

{<!--b_motionSimpleArithmetic_6-->Mr. Smith starts at rest and accelerates to a speed of 2 m/s, in 6 seconds. He then travels at this speed for an additional 3 seconds. Then he decelerates uniformly, taking 4 seconds to come to rest. How far did he travel?}
+ 16.0 meters
- 17.0 meters
- 18.0 meters
- 19.0 meters
- 20.0 meters

{<!--b_motionSimpleArithmetic_7-->Mr. Smith starts from rest and accelerates to 3 m/s in 2 seconds. How far did he travel?}
- 1.0 meters
- 2.0 meters
+ 3.0 meters
- 4.0 meters
- 5.0 meters

{<!--b_motionSimpleArithmetic_8-->Mr. Smith is driving at a speed of 7 m/s, when he slows down to a speed of 5 m/s, when he hits a wall at this speed, after travelling for 4 seconds. How far did he travel? }
- 23.0 meters
+ 24.0 meters
- 25.0 meters
- 26.0 meters
- 27.0 meters

{<!--b_motionSimpleArithmetic_9-->Mr. Smith starts at rest and accelerates to a speed of 2 m/s, in 6 seconds. He then travels at this speed for an additional 3 seconds. Then he decelerates uniformly, taking 4 seconds to come to rest. How far did he travel?}
- 13.0 meters
- 14.0 meters
- 15.0 meters
+ 16.0 meters
- 17.0 meters

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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===*_Quiz_*===
<quiz display=simple>
{<!--b_nuclearPower_1_1-->What fraction of the world's electricity was produced by nuclear power in 2012?}

- 63%
+ 13%
- 3%
- 33%

{<!--b_nuclearPower_1_10-->Chadwicks discovery of the neutron was significant because}
+ neutrons permit induced radiation
- neutrons are stable
- neutrons are slow

{<!--b_nuclearPower_1_11-->Neutrons and protons both have "strong" short range interactions with the nucleus. Why can't slow protons be used to cause nuclei to undergo fission?}
+ protons are positively charged
- slow protons can induce fission but they are too expensive to produce
- slow protons are attracted to the nucleus
- protons move at the speed of light

{<!--b_nuclearPower_1_12-->Fermi used _______ to create what he thought was _______}
- slow neutrons;   "moonshine"
- "moonshine";   fast neutrons
+ slow neutrons;   a new element heavier than uranium (called a transuranic element)
- transuranic (heavy) elements;   a new source of slow neutrons

{<!--b_nuclearPower_1_13-->Fermi thought he had discovered ________, when he actually discovered ________}
- fusion;   hesparium
+ hesperium;   fission
- hesperium;   fusion
- fission;   hesparium

{<!--b_nuclearPower_1_14-->Which was developed first, nuclear power generation or nuclear weapons?}
- they were developed simultaneously
+ nuclear weapons
- nuclear power generation

{<!--b_nuclearPower_1_15-->The Manhattan project made}
- plutonium and enriched hesparium
+ plutonium and enriched uranium
- uranium and enriched plutonium

{<!--b_nuclearPower_1_16-->The Atomic Age, published in 1945, predicted ... }
- nuclear war
- a world government to prevent nuclear war
+ that fossil fuels would go unused
- widespread radiation poisoning

{<!--b_nuclearPower_1_17-->In 1953, "Atoms for Peace" was}
- a presidential speech warning of the need for nuclear arms agreements
- a congressional committee
- a protest movement centered in US universities
+ a presidential speech promoting nuclear energy production

{<!--b_nuclearPower_1_18-->The first nuclear power plant to contribute to the grid was situated in}
+ Russia
- Oak Ridge
- Virginia
- Great Britain

{<!--b_nuclearPower_1_19-->According to Wikipedia, the prediction made in 1954 that electricity would someday be "too cheap to meter" was}
- an argument that fossil fuels are so abundant that we don't need nuclear energy
- an effort to promote nuclear fission as an energy source
+ an effort to promote nuclear fusion as an energy source

{<!--b_nuclearPower_1_2-->How does Wikipedia assess the prospects of commercial fusion power production before 2050?}
- likely
+ unlikely
- impossible
- expected

{<!--b_nuclearPower_1_20-->The third worst nuclear disaster occurred in Russia (1957) and was kept secret for 30 years }
+ true
- false

{<!--b_nuclearPower_1_21-->More US nuclear submarines sank due to nuclear accidents than did Russian submarines}
- true
+ false

{<!--b_nuclearPower_1_22-->The worst nuclear disaster on record occurred in Russia}
- true
+ false

{<!--b_nuclearPower_1_23-->The worldwide number of nuclear reactors and their net capacity grew steadily from 1960, and}
- fluctuated randomly but with a strong correlation with the world economy and price of oil
+ leveled off between Three Mile Island (1979) and Chernobyl (1986).
- did not begin to level off until Chernobyl (1986)
- briefly fell sharply after Three Mile Island (1979), rose again, and again fell after Chernobyl (1986)

{<!--b_nuclearPower_1_3-->In terms of lives lost per unit of energy generated, evidence suggests that nuclear power has caused ______ fatalities per unit of energy generated than the other major sources of energy.}
+ comparable
- less
- more

{<!--b_nuclearPower_1_4-->According to Wikipedia, the amount of green house gasses associated with the construction and maintenance of nuclear power plants is ________ than the emissions associated with other renewable sources (wind, solar, and hydro power.)}
+ about the same
- less
- greater

{<!--b_nuclearPower_1_5-->Estimates of additional nuclear generating capacity to be built by 2035 fell by ______ percent after the Fukushima nuclear accident in 2011.}
+ 50
- 10
- 90

{<!--b_nuclearPower_1_6-->From the figure depicting percentage of power produced by nuclear power plants, we see that the proper ranking from greatest to least reliance on nuclear power for three nations is}
+ France, United States, with Turkey least reliant.
- France ,Turkey , with the United States least reliant.
- United States, France, with Turkey least reliant.
- United States, Turkey, France least reliant.

{<!--b_nuclearPower_1_7-->It was discovered that radioactive elements released immense amounts of energy according to the principle of mass–energy equivalence in the ______ }
- late 19th century
+ early 20th century
- early 19th century

{<!--b_nuclearPower_1_8-->Chadwick's discovery of the neutron was significant because neutrons}
- are an excellent fuel for nuclear power
- are not radioactive
+ can be used to create radioactive material at a low price

{<!--b_nuclearPower_1_9-->Ernest Rutherford's "moonshine" was}
- what called neutrons
+ what he called the idea of harnessing nuclear power
- what he called the idea of relying on fossil fuels
- what he called alpha particles

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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*_See_* [[User:Guy vandegrift]]
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===*_Quiz_*===
<quiz display=simple>
{<!--b_nuclearPower_2_1-->In a PWR reactor, the water is kept under high pressure }
+ to prevent it from boiling
- only in the reactor core
- to slow down the neutrons
- to reduce the heat required to boil it

{<!--b_nuclearPower_2_10-->A 2008 report from Oak Ridge National Laboratory concluded that the dose to the public from radiation from properly run nuclear plants is ___________ the radiation created by burning coal}
+ 100 times less than
- 100 times more than
- 10 times less than
- 10 times more than
- about the same as

{<!--b_nuclearPower_2_11-->One concern is that long term nuclear waste management is now being performed by a number of private waste management companies}
- true

+ false

{<!--b_nuclearPower_2_12-->The Waste Isolation Pilot Plant in New Mexico }
- can no longer nuclear waste from production reactors because it is full
+ is currently taking nuclear waste from production reactors
- was originally a research and development facility but is now under private ownership

{<!--b_nuclearPower_2_13-->In the United States, reprocessing of spent Uranium}
- provides 5% of our fuel needs which is consumed within the United states
+ is not allowed due to nuclear weapon proliferation concerns
- is not allowed due to waste management concerns
- provides 20% of our fuel needs and allows the United States to export nuclear fuel

{<!--b_nuclearPower_2_14-->The reprocessing of spent Uranium worsens the problem of long term waste storage}
- true
+ false

{<!--b_nuclearPower_2_15-->The reprocessing of spent Uranium helps alleviate the problem of long term waste storage}
+ true
- false

{<!--b_nuclearPower_2_16-->Nuclear power plants typically have}
- low capital costs and high fuel costs
+ high capital costs and low fuel costs
- high capital costs and high fuel costs
- low capital costs and low fuel costs

{<!--b_nuclearPower_2_17-->How many latent (cancer) deaths are estimated to result from the Three Mile Island accident?}
+ zero
- from 4000 to 25,000
- from 0 to 1000

{<!--b_nuclearPower_2_18-->It has been estimated that if Japan had never adopted nuclear power, the use of other fuels would have caused more lost years of life.}
+ true
- false

{<!--b_nuclearPower_2_19-->It has been estimated that farmland lost due to Fukushima accident will be again useful for farming in 40-60 years}
- true
+ false

{<!--b_nuclearPower_2_2-->Fuel rods spend typically ______ total now inside the reactor, generally until _____ of their uranium has been fissioned}
+ 6 years;   3%
- 6 months;   30%
- 6 months;   3%
- 6 years;   30%

{<!--b_nuclearPower_2_20-->It has been estimated that farmland lost due to Fukushima accident will not be farmed for centuries}
+ true
- false

{<!--b_nuclearPower_2_21-->The Megatons to Megawatts Program}
- purchases spent fuel that could otherwise be used to make weapons, and is considered a failure
- converts weapons grade uranium into fuel for commercial reactors, and is considered a failure
+ converts weapons grade uranium into fuel for commercial reactors, and is considered a success
- purchases spent fuel that could otherwise be used to make weapons, and is considered a success

{<!--b_nuclearPower_2_3-->After about __________ in a spent fuel pool the spent fuel can be moved to dry storage casks or reprocessed.}
- 5 months
- 50 years
+ 5 years

{<!--b_nuclearPower_2_4-->Uranium is approximately ______________ than silver in the Earth's crust.}
- 40 times less common
- 4 times more common
+ 40 times more common
- 4 times less common

{<!--b_nuclearPower_2_5-->Reactors that use natural (unenriched) uranium are}
- considered impossible
+ are already in use
- are likely to emerge in the next few decades

{<!--b_nuclearPower_2_6-->Fast breeder reactors use uranium-238, an isotope which constitutes _____ of naturally occurring uranium}
- 30%
- 3%
- 1 %
+ 99%
- 60%

{<!--b_nuclearPower_2_7-->One concern about fast breeder reactors is

that the uranium reserves will be exhausted more quickly}
- true
+ false

{<!--b_nuclearPower_2_8-->High-level radioactive waste management is a daunting problem because}
- they cannot be stored underground
+ the isotopes are long-lived
- the isotopes are short-lived

{<!--b_nuclearPower_2_9-->A 2008 report from Oak Ridge National Laboratory concluded that the dose to the public from radiation from coal plants is ___________ the radiation nuclear plants (excluding the possibility of accidental discharges of radioactive material}
- 10 times less than
- about the same as
+ 100 times more than
- 10 times more than
- 100 times less than

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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*_See_* [[User:Guy vandegrift]]
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===*_Quiz_*===
<quiz display=simple>
{<!--b_photoelectricEffect_1-->If the electron behaved as a classical

(non-quantum) particle and '''NOT''' somehow connected to a spring inside the metal, then one would expect that photoelectrons would be emitted _______}
+ above a threshold intensity
- above a threshold wavelength
- above a threshold frequency
- at a specific frequency

{<!--b_photoelectricEffect_2--> If the electron behaved as a classical (non-quantum) particle and the electron '''was''' somehow connected to a spring inside the metal, then one would expect that photoelectrons would be emitted _______}
- above a threshold intensity
- above a threshold wavelength
- above a thresholdfrequency
+ at a specific frequency

{<!--b_photoelectricEffect_3--> In the photoelectric effect, how was the maximum kinetic energy measured?}
+ by measuring the voltage required to prevent the electrons from passing between the two electrodes.
- by measuring the wavelength of the light
- by measuring the distance between the electrodes

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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*_See_* [[User:Guy vandegrift]]

</div></div>
===*_Quiz_*===
<quiz display=simple>
{<!--b_QuantumTimeline_1-->Excepting cases where where quantum jumps in energy are induced in another object (i.e., using only the uncertainty principle), which would NOT put a classical particle into the quantum regime?}
+ high speed
- confinement to a small space
- low speed
- low mass

{<!--b_QuantumTimeline_10-->How does the Bohr atom differ from Newton's theory of planetary orbits?}
- The force between proton and electron is not attractive for the atom, but it is for planets and the sun.
- The force between planets and the sun is not attractive for the atom, but it is for proton and electron.
+ planets make elliptical orbits while the electron makes circular orbits
- electrons make elliptical orbits while planets make circular orbits

{<!--b_QuantumTimeline_2-->What are the units of Plank's constant?}
- mass x velocity x distance
- energy x time
- momentum x distance
+ all of the above
- none of the above

{<!--b_QuantumTimeline_3-->What are the units of Plank's constant?}
- mass x velocity
- energy x time
- momentum x distance x mass
+ all of the above
- none of the above

{<!--b_QuantumTimeline_4-->How would you describe Old Quantum Theory}
- complete and self-consistent
- complete but not self-consistent
- self-consistent but not complete
+ neither complete nor self-consistent

{<!--b_QuantumTimeline_5-->The first paper that introduced quantum mechanics was the study of }
+ light
- electrons
- protons
- energy

{<!--b_QuantumTimeline_6-->What are examples of energy?}
- $\frac{1}{2}mv^2$
- mgh where m is mass, g is gravity, and h is height

- heat
+ all of the above

{<!--b_QuantumTimeline_7-->What are examples of energy?}
- $\frac{1}{2}mv$
- momentum
- heat
+ all of the above

{<!--b_QuantumTimeline_8-->What was Plank's understanding of the significance of his work on blackbody radiation?}
- he was afraid to publish it for fear of losing his reputation
- he eventually convinced his dissertation committee that the theory was correct
+ the thought it was some sort of mathematical trick
- he knew it would someday win him a Nobel prize

{<!--b_QuantumTimeline_9-->What was "spooky" about Taylor's 1909 experiment with wave interference?}
- The light was so dim that the photoelectric effect couldn't occur
- The light was dim, but it didn't matter because he was blind.
+ The light was so dim that only one photon at a time was near the slits.
- The interference pattern mysteriously disappeared.

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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*_See_* [[User:Guy vandegrift]]
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<quiz display=simple>
{<!--b_saros_quiz1_1-->Saros (or Sar) was the Babylonian word for the Saros cycle.}
- true
+ false

{<!--b_saros_quiz1_10-->Your best friend's pet lizard is thirsty every 2 days, hungry every 3 days, and frisky every 5 days. If she is thirsty, hungry, and frisky today, whe will be thirsty, hungry, and frisky _____ days later}
- 10
+ 30
- 15
- 40

{<!--b_saros_quiz1_11-->Between any given eclipse and the one that occurs one Saros (roughly 18 years) later, there will be approximately ________ lunar and solar eclipses.}
+ 40
- 1
- 2
- 10
- 20

{<!--b_saros_quiz1_2-->While the Babylonians invented what we call the Saros cycle, they did not call it by that name.}
+ true
- false

{<!--b_saros_quiz1_3-->Suppose that you see a full moon, but no eclipse. You can be certain that a full moon will also occur exactly one Saros later.}
+ true
- false

{<!--b_saros_quiz1_4-->The name "saros" (Greek: σαρος) was first given to the eclipse cycle by}
- an unknown Babylonian
- Hipparchus (Greek astronomer: 190 BC-120 BC)
+ Edmond Halley (A friend and colleage of Newton: 1656 AD-1742 AD)
- Ptolemy (Greek astronomer who lived in Egypt: 90 AD-168 AD)

{<!--b_saros_quiz1_5-->The Saros cycle is 18 years plus either 10.321 or 11.321 days. The reason for the variable number of days has to do with}
+ leap years
- precession of the equinoxes
- precession of the Moon's orbit

- a wobble in the Moon's orbit

{<!--b_saros_quiz1_6-->If an eclipse occurs, a simlar eclipse will occur at the next Saros(roughly 18 years later). At this eclipse, the ______ will be the same. (Pick the best answer.)}
- day of the month
- time of day
+ season of the year

{<!--b_saros_quiz1_7-->What is so special about 3 Saros cycles (triple Saros)?}
+ this eclipse will occur at the same time of day
- this eclipse terminates the Saros (and a new Saros number is assigned.)
- this eclipse will occur at the same day of the month (plus or minus one day)
- this eclipse will occur with the Moon in the same position on the zodiac.

{<!--b_saros_quiz1_8-->What remains nearly the same after a single saros cycle has occured?}
+ phase of moon and earth-moon distance
- phase of moon and position of moon relative to the background stars (i.e. zodiacal location)
- phase of moon and position of sun relative to background stars (i.e. zodiacal location)

{<!--b_saros_quiz1_9-->Your pet lizard is thirsty every 3 days and hungry every 5 days. If she is both thirsty and hungry today, she will be both thirsty and hungry ____ days later}
+ 15
- 5
- 8
- 30

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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*_See_* [[User:Guy vandegrift]]
</div></div>
===*_Quiz_*===
<quiz display=simple>
{<!--b_velocityAcceleration_1-->When a table cloth is quickly pulled out from under dishes, they hardly move. This is because}
- the cloth is more slippery when it is pulled quickly
+ the cloth is accelerating for such a brief time that there is little motion
- objects don't begin to accelerate until after the force has been applied

{<!--b_velocityAcceleration_10-->If you toss a coin into the air, the acceleration while it as its highest point is}
- up
+ down
- zero

{<!--b_velocityAcceleration_11-->If you toss a coin into the air, the velocity on the way up is}
- zero
- down
+ up

{<!--b_velocityAcceleration_12-->If you toss a coin into the air, the velocity on the way down is}
+ down
- zero
- up

{<!--b_velocityAcceleration_13-->If you toss a coin into the air, the velocity while it as its highest point is}
- up
+ zero
- down

{<!--b_velocityAcceleration_14-->A car is headed due north and increasing its speed. It is also turning left because it is also traveling in a perfect circle. The acceleration vector points}
+ northwest
- south

- southwest
- north
- northeast

{<!--b_velocityAcceleration_15-->A car is headed due north and increasing its speed. It is also turning right because it is also traveling in a perfect circle. The acceleration vector points}
- southwest
- south
- northwest
- north
+ northeast

{<!--b_velocityAcceleration_16-->A car is headed due north and increasing its speed. It is also turning left because it is also traveling in a perfect circle. The velocity vector points}
- northeast
- southeast
- northeast
- northwest
+ north

{<!--b_velocityAcceleration_17-->A car is headed due north and increasing its speed. It is also turning right because it is also traveling in a perfect circle. The velocity vector points}
+ north
- northwest
- south
- northeast
- southwest

{<!--b_velocityAcceleration_18-->A car is headed due north and decreasing its speed. It is also turning left because it is also traveling in a perfect circle. The acceleration vector points}
- west
- northwest
+ southwest
- southeast
- south

{<!--b_velocityAcceleration_19-->A car is headed due north and decreasing its speed. It is also turning right because it is also traveling in a perfect circle. The acceleration vector points}
- northwest
- north
- south
- northeast
+ southeast

{<!--b_velocityAcceleration_2-->A car is traveling west and slowing down. The acceleration is}
- zero

+ to the east
- to the west

{<!--b_velocityAcceleration_3-->A car is traveling east and slowing down. The acceleration is}
- zero
- to the east
+ to the west

{<!--b_velocityAcceleration_4-->A car is traveling east and speeding up. The acceleration is}
+ to the east
- to the west
- zero

{<!--b_velocityAcceleration_5-->If you toss a coin into the air, the acceleration on the way up is}
+ down
- zero
- up

{<!--b_velocityAcceleration_6-->A car is traveling in a perfect circle at constant speed. If the car is headed north while turning west, the acceleration is}
+ west
- zero
- south
- north
- east

{<!--b_velocityAcceleration_7-->A car is traveling in a perfect circle at constant speed. If the car is headed north while turning east, the acceleration is}
+ east
- south
- north
- zero
- west

{<!--b_velocityAcceleration_8-->As the Moon circles Earth, the acceleration of the Moon is}
- away from Earth
+ towards Earth
- opposite the direction of the Moon's velocity
- in the same direction as the Moon's velocity
- zero

{<!--b_velocityAcceleration_9-->If you toss a coin into the air, the acceleration on the way down is}
- up
+ down
- zero

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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<quiz display=simple>
{<!--b_waves_PC_1-->[[File:Pulse interference 1.svg|120px]]These two pulses will collide and produce}
+ positive interference
- negative interference
- positive diffraction
- negative diffraction

{<!--b_waves_PC_10-->If a source of sound is moving towards you, the pitch becomes}
+ higher
- lower
- unchanged

{<!--b_waves_PC_11-->Why do rough walls give a concert hall a “fuller” sound, compared to smooth walls?}
- Rough walls make for a louder sound.
+ The difference in path lengths creates more reverberation.
- The difference in path lengths creates more echo.

{<!--b_waves_PC_12-->People don't usually perceive an echo when}

+ it arrives less than a tenth of a second after the original sound
- it arrives at exactly the same pitch
- it arrives at a higher pitch
- it arrives at a lower pitch
- it takes more than a tenth of a second after the original sound to arrive

{<!--b_waves_PC_13-->A dense rope is connected to a rope with less density (i.e. fewer kilograms per meter). If the rope is stretched and a wave is sent along high density rope,}
- the low density rope supports a wave with a higher frequency
- the low density rope supports a wave with a lower frequency
+ the low density rope supports a wave with a higher speed
- the low density rope supports a wave with a lower speed

{<!--b_waves_PC_14-->What happens to the wavelength on a wave on a stretched string if the wave passes from lightweight (low density) region of the rope to a heavy (high density) rope?}
+ the wavelength gets longer
- the wavelength stays the same
- the wavelength gets shorter

{<!--b_waves_PC_15-->When a wave is reflected off a stationary barrier, the reflected wave}
+ has lower amplitude than the incident wave
- has higher frequency than the incident wave
- both of these are true

{<!--b_waves_PC_16-->Comparing a typical church to a professional baseball stadium, the church is likely to have}
+ reverberation instead of echo
- echo instead of reverberation
- both reverberation and echo
- neither reverberation nor echo

{<!--b_waves_PC_2-->[[File:Pulse interference 2.svg|120px]]These two pulses will collide and produce}
- positive interference
+ negative interference
- positive diffraction
- negative diffraction

{<!--b_waves_PC_3-->[[File:Pulse interference 4.svg|120px]]These two pulses will collide and produce}
+ positive interference
- negative interference
- positive diffraction
- negative diffraction

{<!--b_waves_PC_4-->[[File:Octave notes graphed.svg |200px]] Two signals (dashed) add to a solid}
+ octave

- fifth
- dissonance

{<!--b_waves_PC_5-->[[File:Dissonant pitches graphed.svg |200px]] Two signals (dashed) add to a solid}
- octave
- fifth
+ dissonance

{<!--b_waves_PC_6-->[[File:Perfect fifth notes graphed.svg |200px]] Two signals (dashed) add to a solid}
- octave
+ fifth
- dissonance

{<!--b_waves_PC_7-->Why don't we hear beats when two different notes on a piano are played at the same time?}
+ The beats happen so many times per second you can't hear them.
- The note is over by the time the first beat is heard
- Reverberation usually stifles the beats
- Echo usually stifles the beats

{<!--b_waves_PC_8-->A tuning fork with a frequency of 440 Hz is played simultaneously with a tuning fork of 442 Hz. How many beats are heard in 10 seconds?}
+ 20
- 30
- 40
- 50
- 60

{<!--b_waves_PC_9-->If you start moving towards a source of sound, the pitch becomes}
+ higher
- lower
- unchanged

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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<quiz display=simple>
{<!--b_WhyIsSkyDarkAtNight_1-->Approximately how often does a supernovae occur in a typical galaxy?}
- once a 5 months
- once every 5 years
+ once every 50 years

{<!--b_WhyIsSkyDarkAtNight_2-->If a star were rushing towards Earth at a high speed}
+ there would be a blue shift in the spectral lines
- there would be a red shift in the spectral lines
- there would be no shift in the spectral lines

{<!--b_WhyIsSkyDarkAtNight_3-->An example of a standard candle is}
- any part of the nighttime sky that is giving off light
- any part of the nighttime sky that is dark
+ a supernova in a distant galaxy
- all of these are standard candles

{<!--b_WhyIsSkyDarkAtNight_4-->If a galaxy that is 10 Mpc away is receding at 700km/s, how far would a galaxy be receding if it were 20 Mpc away?}
- 350km/s
- 700km/s
+ 1400km/s

{<!--b_WhyIsSkyDarkAtNight_5-->The "apparent" magnitude of a star is}
- How bright it would be if you were exactly one light year away
- How bright it would be if it were not receding due to Hubble expansion
+ How bright it is as viewed from Earth

{<!--b_WhyIsSkyDarkAtNight_6-->In the essay "Why the sky is dark at night", a graph of velocity versus distance is shown. What is odd about those galaxies in the Virgo cluster (circled in the graph)?}
- they all have nearly the same speed
+ they have a wide variety of speeds

- they are not receding away from us
- the cluster is close to us

{<!--b_WhyIsSkyDarkAtNight_7-->Why was it important to observe supernovae in galaxies that are close to us?}
+ we have other ways of knowing the distances to the nearby galaxies; this gives us the opportunity to study supernovae of known distance and ascertain their absolute magnitude.
- they have less of a red-shift, and interstellar gas absorbs red light
- it is easier to measure the doppler shift, and that is not always easy to measure.
- because supernovea are impossible to see in distant galaxies

{<!--b_WhyIsSkyDarkAtNight_8-->What if clouds of dust blocked the light from distant stars? Could that allow for an infinite and static universe?}
+ No, the clouds would get hot
- No, if there were clouds, we wouldn't see the distant galaxies
- No, there are clouds, but they remain too cold to resolve the paradox
- Yes, that is an actively pursued hypothesis

</quiz>

====*_Instructions_*====
Instructions are forthcoming

Transclusion from [[Quizbank/Instructions_0]]:
{{:Quizbank/Instructions_0}}
[[Category:QB/Conceptual]]
==*_End_*==
__NOTOC__
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==*_Quizbank_*==
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Information (click to expand)
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*_Name_* QB/c07energy_lineIntegral
*_Permalink_* [[Special:Permalink/1381800]]
*_wiki_* https://en.wikiversity.org/wiki/
*_numerical_*
*_Attribution_*
http://en.wikiversity.org/w/index.php?title=Quizbank/College_Physics/a07energy_lineIntegral&oldid=1381800
*_See_* [[User:Guy vandegrift]]
</div></div>

===*_Quiz_*===
<quiz display=simple>
{<!--c07energy_lineIntegral_1-->Integrate the line integral of, $\vec F = 9xy\hat x + 9.5y^3\hat y$, along the y axis from y = 5 to y = 14}
- a) 7.33E+04
- b) 7.84E+04
- c) 8.39E+04
+ d) 8.98E+04
- e) 9.60E+04

{<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^7\theta^9\hat r + r^7\theta^ 5\hat \theta$, along the first quadrant of a circle of radius 8}
- a) 3.43E+07
- b) 3.67E+07
- c) 3.93E+07
+ d) 4.20E+07
- e) 4.49E+07

{<!--c07energy_lineIntegral_3-->Integrate the line integral of $\vec F = 4xy\hat x + 7.7x\hat y$ from the origin to the point at x = 2.5 and y = 3.3}
+ a) 5.93E+01
- b) 6.34E+01
- c) 6.78E+01
- d) 7.26E+01
- e) 7.77E+01

{<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^2y^2\hat x + x^2y^3\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule}
- a) 4.45E-01
- b) 4.76E-01
- c) 5.10E-01
- d) 5.45E-01
+ e) 5.83E-01

</quiz>

<div class="toccolours mw-collapsible mw-collapsed" style="width:100%">

Other renditions
<div class="mw-collapsible-content">
====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of, $\vec F = 9.4xy\hat x + 7.5y^3\hat y$, along the y axis from y = 4 to y = 17

- a) 1.19E+05
- b) 1.27E+05
- c) 1.36E+05
- d) 1.46E+05
+ e) 1.56E+05
=====*_Rendition_* 1-3=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of, $\vec F = 8.2xy\hat x + 7.4y^3\hat y$, along the y axis from y = 5 to y = 12
- a) 3.25E+04
- b) 3.48E+04
+ c) 3.72E+04
- d) 3.98E+04
- e) 4.26E+04
=====*_Rendition_* 1-4=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of, $\vec F = 7.4xy\hat x + 9.3y^3\hat y$, along the y axis from y = 6 to y = 16
+ a) 1.49E+05
- b) 1.60E+05
- c) 1.71E+05
- d) 1.83E+05
- e) 1.96E+05
=====*_Rendition_* 1-5=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of, $\vec F = 5.6xy\hat x + 7.9y^3\hat y$, along the y axis from y = 5 to y = 15
+ a) 9.88E+04
- b) 1.06E+05
- c) 1.13E+05
- d) 1.21E+05
- e) 1.29E+05
=====*_Rendition_* 1-6=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of, $\vec F = 7.9xy\hat x + 8.1y^3\hat y$, along the y axis from y = 5 to y = 12
- a) 3.32E+04
- b) 3.56E+04
- c) 3.81E+04
+ d) 4.07E+04
- e) 4.36E+04
=====*_Rendition_* 1-7=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of, $\vec F = 8.9xy\hat x + 6.5y^3\hat y$, along the y axis from y = 5 to y = 13
+ a) 4.54E+04
- b) 4.86E+04
- c) 5.20E+04
- d) 5.56E+04
- e) 5.95E+04
=====*_Rendition_* 1-8=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of,

$\vec F = 9xy\hat x + 5.4y^3\hat y$, along the y axis from y = 3 to y = 19
- a) 1.54E+05
- b) 1.64E+05
+ c) 1.76E+05
- d) 1.88E+05
- e) 2.01E+05
=====*_Rendition_* 1-9=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of,
$\vec F = 7.9xy\hat x + 9.7y^3\hat y$, along the y axis from y = 3 to y = 18
- a) 1.94E+05
- b) 2.08E+05
- c) 2.22E+05
- d) 2.38E+05
+ e) 2.54E+05
=====*_Rendition_* 1-10=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of,
$\vec F = 6.1xy\hat x + 5.9y^3\hat y$, along the y axis from y = 6 to y = 12
+ a) 2.87E+04
- b) 3.07E+04
- c) 3.28E+04
- d) 3.51E+04
- e) 3.76E+04
=====*_Rendition_* 1-11=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of,
$\vec F = 6.8xy\hat x + 7y^3\hat y$, along the y axis from y = 3 to y = 17
- a) 1.28E+05
- b) 1.36E+05
+ c) 1.46E+05
- d) 1.56E+05
- e) 1.67E+05
=====*_Rendition_* 1-12=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of,
$\vec F = 9.9xy\hat x + 6.1y^3\hat y$, along the y axis from y = 7 to y = 16
- a) 7.86E+04
- b) 8.41E+04
- c) 9.00E+04
+ d) 9.63E+04
- e) 1.03E+05
=====*_Rendition_* 1-13=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of,
$\vec F = 6.9xy\hat x + 7.4y^3\hat y$, along the y axis from y = 3 to y = 18
- a) 1.69E+05
- b) 1.81E+05
+ c) 1.94E+05
- d) 2.08E+05
- e) 2.22E+05

=====*_Rendition_* 1-14=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of,
$\vec F = 8.3xy\hat x + 8.6y^3\hat y$, along the y axis
from y = 4 to y = 16
- a) 1.31E+05
+ b) 1.40E+05
- c) 1.50E+05
- d) 1.61E+05
- e) 1.72E+05
=====*_Rendition_* 1-15=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of,
$\vec F = 8.9xy\hat x + 5.4y^3\hat y$, along the y axis
from y = 7 to y = 17
+ a) 1.10E+05
- b) 1.17E+05
- c) 1.25E+05
- d) 1.34E+05
- e) 1.44E+05
=====*_Rendition_* 1-16=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of,
$\vec F = 9.4xy\hat x + 9.3y^3\hat y$, along the y axis
from y = 6 to y = 18
- a) 2.11E+05
- b) 2.25E+05
+ c) 2.41E+05
- d) 2.58E+05
- e) 2.76E+05
=====*_Rendition_* 1-17=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of,
$\vec F = 6.9xy\hat x + 5.5y^3\hat y$, along the y axis
from y = 7 to y = 18
+ a) 1.41E+05
- b) 1.51E+05
- c) 1.61E+05
- d) 1.73E+05
- e) 1.85E+05
=====*_Rendition_* 1-18=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of,
$\vec F = 8.4xy\hat x + 8.3y^3\hat y$, along the y axis
from y = 5 to y = 15
- a) 9.70E+04
+ b) 1.04E+05
- c) 1.11E+05
- d) 1.19E+05
- e) 1.27E+05
=====*_Rendition_* 1-19=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of,
$\vec F = 7.3xy\hat x + 5.2y^3\hat y$, along the y axis
from y = 5 to y = 11
+ a) 1.82E+04
- b) 1.95E+04
- c) 2.09E+04

- d) 2.23E+04
- e) 2.39E+04
=====*_Rendition_* 1-20=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of, $\vec F = 7.8xy\hat x + 8y^3\hat y$, along the y axis from y = 6 to y = 13
- a) 4.45E+04
- b) 4.76E+04
- c) 5.10E+04
+ d) 5.45E+04
- e) 5.83E+04
=====*_Rendition_* 1-21=====
<!--c07energy_lineIntegral_1-->Integrate the line integral of, $\vec F = 8.5xy\hat x + 7.5y^3\hat y$, along the y axis from y = 7 to y = 18
- a) 1.68E+05
- b) 1.80E+05
+ c) 1.92E+05
- d) 2.06E+05
- e) 2.20E+05
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^6\theta^8\hat r + r^7\theta^ 6\hat \theta$, along the first quadrant of a circle of radius 5
- a) 1.15E+06
- b) 1.23E+06
+ c) 1.32E+06
- d) 1.41E+06
- e) 1.51E+06
=====*_Rendition_* 2-3=====
<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^6\theta^6\hat r + r^8\theta^ 7\hat \theta$, along the first quadrant of a circle of radius 3
- a) 6.96E+04
- b) 7.44E+04
- c) 7.97E+04
- d) 8.52E+04
+ e) 9.12E+04
=====*_Rendition_* 2-4=====
<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^4\theta^6\hat r + r^7\theta^ 8\hat \theta$, along the first quadrant of a circle of radius 6
+ a) 1.09E+07
- b) 1.16E+07
- c) 1.24E+07
- d) 1.33E+07
- e) 1.42E+07
=====*_Rendition_* 2-5=====
<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^8\theta^9\hat r + r^8\theta^ 5\hat \theta$, along the first quadrant of a circle of radius 6

- a) 2.06E+07
- b) 2.20E+07
- c) 2.36E+07
+ d) 2.52E+07
- e) 2.70E+07
=====*_Rendition_* 2-6=====
<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^7\theta^8\hat r + r^9\theta^ 4\hat \theta$, along the first quadrant of a circle of radius 8
- a) 1.68E+09
- b) 1.79E+09
- c) 1.92E+09
+ d) 2.05E+09
- e) 2.20E+09
=====*_Rendition_* 2-7=====
<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^9\theta^3\hat r + r^8\theta^ 7\hat \theta$, along the first quadrant of a circle of radius 4
- a) 1.14E+06
+ b) 1.21E+06
- c) 1.30E+06
- d) 1.39E+06
- e) 1.49E+06
=====*_Rendition_* 2-8=====
<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^5\theta^7\hat r + r^4\theta^ 4\hat \theta$, along the first quadrant of a circle of radius 9
- a) 1.06E+05
+ b) 1.13E+05
- c) 1.21E+05
- d) 1.29E+05
- e) 1.38E+05
=====*_Rendition_* 2-9=====
<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^3\theta^4\hat r + r^6\theta^ 5\hat \theta$, along the first quadrant of a circle of radius 9
- a) 1.12E+07
+ b) 1.20E+07
- c) 1.28E+07
- d) 1.37E+07
- e) 1.47E+07
=====*_Rendition_* 2-10=====
<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^4\theta^3\hat r + r^6\theta^ 7\hat \theta$, along the first quadrant of a circle of radius 7
- a) 3.33E+06
- b) 3.57E+06
+ c) 3.82E+06
- d) 4.08E+06
- e) 4.37E+06
=====*_Rendition_* 2-11=====
<!--c07energy_lineIntegral_2-->Integrate the function, <math>\vec F =

r^3\theta^7\hat r + r^7\theta^ 4\hat \theta</math> , along the first quadrant of a circle of radius 4
- a) 1.02E+05
- b) 1.09E+05
- c) 1.17E+05
+ d) 1.25E+05
- e) 1.34E+05
=====*_Rendition_* 2-12=====
<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^5\theta^4\hat r + r^5\theta^ 8\hat \theta$, along the first quadrant of a circle of radius 5
- a) 8.25E+04
- b) 8.83E+04
- c) 9.45E+04
+ d) 1.01E+05
- e) 1.08E+05
=====*_Rendition_* 2-13=====
<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^6\theta^8\hat r + r^8\theta^ 9\hat \theta$, along the first quadrant of a circle of radius 3
- a) 1.37E+05
- b) 1.47E+05
- c) 1.57E+05
- d) 1.68E+05
+ e) 1.80E+05
=====*_Rendition_* 2-14=====
<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^8\theta^5\hat r + r^4\theta^ 6\hat \theta$, along the first quadrant of a circle of radius 4
- a) 2.63E+03
- b) 2.82E+03
- c) 3.01E+03
- d) 3.23E+03
+ e) 3.45E+03
=====*_Rendition_* 2-15=====
<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^5\theta^3\hat r + r^6\theta^ 6\hat \theta$, along the first quadrant of a circle of radius 3
- a) 6.44E+03
- b) 6.89E+03
+ c) 7.37E+03
- d) 7.89E+03
- e) 8.44E+03
=====*_Rendition_* 2-16=====
<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^7\theta^4\hat r + r^5\theta^ 6\hat \theta$, along the first quadrant of a circle of radius 7
- a) 3.03E+05
- b) 3.24E+05
- c) 3.46E+05
- d) 3.71E+05
+ e) 3.97E+05

=====*_Rendition_* 2-17=====
<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^9\theta^6\hat r + r^4\theta^ 4\hat \theta$, along the first quadrant of a circle of radius 7
- a) 2.45E+04
- b) 2.62E+04
- c) 2.81E+04
- d) 3.00E+04
+ e) 3.21E+04
=====*_Rendition_* 2-18=====
<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^9\theta^4\hat r + r^7\theta^ 8\hat \theta$, along the first quadrant of a circle of radius 8
- a) 8.86E+07
- b) 9.48E+07
- c) 1.01E+08
+ d) 1.09E+08
- e) 1.16E+08
=====*_Rendition_* 2-19=====
<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^9\theta^5\hat r + r^8\theta^ 7\hat \theta$, along the first quadrant of a circle of radius 4
- a) 1.14E+06
+ b) 1.21E+06
- c) 1.30E+06
- d) 1.39E+06
- e) 1.49E+06
=====*_Rendition_* 2-20=====
<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^7\theta^3\hat r + r^4\theta^ 7\hat \theta$, along the first quadrant of a circle of radius 3
- a) 1.05E+03
+ b) 1.13E+03
- c) 1.20E+03
- d) 1.29E+03
- e) 1.38E+03
=====*_Rendition_* 2-21=====
<!--c07energy_lineIntegral_2-->Integrate the function, $\vec F = r^6\theta^5\hat r + r^9\theta^ 7\hat \theta$, along the first quadrant of a circle of radius 3
- a) 2.09E+05
- b) 2.23E+05
- c) 2.39E+05
- d) 2.56E+05
+ e) 2.74E+05
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of $\vec F = 3xy\hat x + 6.9x\hat y$ from the origin to the point at x = 2.3 and y = 3.8
- a) 4.70E+01
+ b) 5.03E+01

- c) 5.38E+01
- d) 5.75E+01
- e) 6.16E+01
=====*_Rendition_* 3-3=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of $\vec F = 2.9xy\hat x + 7.3x\hat y$ from the origin to the point at x = 2.3 and y = 3.8
- a) 4.48E+01
- b) 4.80E+01
+ c) 5.13E+01
- d) 5.49E+01
- e) 5.88E+01
=====*_Rendition_* 3-4=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of $\vec F = 1.3xy\hat x + 6.4x\hat y$ from the origin to the point at x = 2.2 and y = 3.6
- a) 3.07E+01
+ b) 3.29E+01
- c) 3.52E+01
- d) 3.77E+01
- e) 4.03E+01
=====*_Rendition_* 3-5=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of $\vec F = 2.6xy\hat x + 8.6x\hat y$ from the origin to the point at x = 2.9 and y = 3.7
+ a) 7.31E+01
- b) 7.82E+01
- c) 8.37E+01
- d) 8.96E+01
- e) 9.58E+01
=====*_Rendition_* 3-6=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of $\vec F = 4xy\hat x + 9.8x\hat y$ from the origin to the point at x = 2.6 and y = 3.9
- a) 7.93E+01
+ b) 8.48E+01
- c) 9.08E+01
- d) 9.71E+01
- e) 1.04E+02
=====*_Rendition_* 3-7=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of $\vec F = 3.8xy\hat x + 5.1x\hat y$ from the origin to the point at x = 2.5 and y = 3.2
- a) 4.27E+01
+ b) 4.57E+01
- c) 4.89E+01
- d) 5.24E+01
- e) 5.60E+01
=====*_Rendition_* 3-8=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of $\vec F = 1.6xy\hat x + 8x\hat y$ from the origin to the point at x = 2.6 and y = 3.4

+ a) 4.76E+01
- b) 5.10E+01
- c) 5.45E+01
- d) 5.83E+01
- e) 6.24E+01
=====*_Rendition_* 3-9=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of
$\vec F = 1.2xy\hat x + 5.3x\hat y$ from the origin to
the point at x = 2.1 and y = 3.1
- a) 1.73E+01
- b) 1.85E+01
- c) 1.98E+01
- d) 2.12E+01
+ e) 2.27E+01
=====*_Rendition_* 3-10=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of
$\vec F = 3.3xy\hat x + 8.7x\hat y$ from the origin to
the point at x = 2.1 and y = 3.2
- a) 4.18E+01
+ b) 4.48E+01
- c) 4.79E+01
- d) 5.12E+01
- e) 5.48E+01
=====*_Rendition_* 3-11=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of
$\vec F = 3.8xy\hat x + 9.8x\hat y$ from the origin to
the point at x = 2.9 and y = 3.4
- a) 7.90E+01
+ b) 8.45E+01
- c) 9.05E+01
- d) 9.68E+01
- e) 1.04E+02
=====*_Rendition_* 3-12=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of
$\vec F = 1.6xy\hat x + 8.7x\hat y$ from the origin to
the point at x = 2.7 and y = 3.2
- a) 4.37E+01
- b) 4.68E+01
+ c) 5.00E+01
- d) 5.35E+01
- e) 5.73E+01
=====*_Rendition_* 3-13=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of
$\vec F = 1.2xy\hat x + 8.3x\hat y$ from the origin to
the point at x = 2.8 and y = 3.8
- a) 4.58E+01
- b) 4.90E+01
- c) 5.24E+01
+ d) 5.61E+01
- e) 6.00E+01
=====*_Rendition_* 3-14=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of

$\vec F = 2.4xy\hat x + 6.8x\hat y$ from the origin to the point at x = 2.1 and y = 3.8
+ a) 4.05E+01
- b) 4.34E+01
- c) 4.64E+01
- d) 4.97E+01
- e) 5.31E+01
=====*_Rendition_* 3-15=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of $\vec F = 1.1xy\hat x + 6.4x\hat y$ from the origin to the point at x = 2.9 and y = 3.7
- a) 4.28E+01
+ b) 4.57E+01
- c) 4.89E+01
- d) 5.24E+01
- e) 5.60E+01
=====*_Rendition_* 3-16=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of $\vec F = 3.7xy\hat x + 8.4x\hat y$ from the origin to the point at x = 2.6 and y = 3.4
- a) 5.00E+01
- b) 5.34E+01
- c) 5.72E+01
- d) 6.12E+01
+ e) 6.55E+01
=====*_Rendition_* 3-17=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of $\vec F = 3.6xy\hat x + 5.1x\hat y$ from the origin to the point at x = 2.2 and y = 3.5
- a) 3.49E+01
- b) 3.73E+01
+ c) 4.00E+01
- d) 4.28E+01
- e) 4.58E+01
=====*_Rendition_* 3-18=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of $\vec F = 2xy\hat x + 7.2x\hat y$ from the origin to the point at x = 2.4 and y = 3.2
- a) 3.05E+01
- b) 3.26E+01
- c) 3.49E+01
- d) 3.73E+01
+ e) 3.99E+01
=====*_Rendition_* 3-19=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of $\vec F = 2.2xy\hat x + 9.2x\hat y$ from the origin to the point at x = 2.1 and y = 3.4
+ a) 4.38E+01
- b) 4.69E+01
- c) 5.02E+01
- d) 5.37E+01
- e) 5.75E+01

=====*_Rendition_* 3-20=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of
$\vec F = 2xy\hat x + 9.7x\hat y$ from the origin to the point at x = 2.8 and y = 3.2
- a) 5.26E+01
- b) 5.62E+01
+ c) 6.02E+01
- d) 6.44E+01
- e) 6.89E+01

=====*_Rendition_* 3-21=====
<!--c07energy_lineIntegral_3-->Integrate the line integral of
$\vec F = 2xy\hat x + 9.5x\hat y$ from the origin to the point at x = 2.1 and y = 3.8
+ a) 4.91E+01
- b) 5.25E+01
- c) 5.62E+01
- d) 6.01E+01
- e) 6.43E+01

====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^2y^3\hat x + x^2y^4\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
- a) 4.66E-01
- b) 4.98E-01
+ c) 5.33E-01
- d) 5.71E-01
- e) 6.11E-01

=====*_Rendition_* 4-3=====
<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^3y^5\hat x + x^2y^3\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
- a) 3.81E-01
- b) 4.08E-01
- c) 4.37E-01
- d) 4.67E-01
+ e) 5.00E-01

=====*_Rendition_* 4-4=====
<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^5y^2\hat x + x^5y^3\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
- a) 3.64E-01
- b) 3.89E-01
+ c) 4.17E-01
- d) 4.46E-01
- e) 4.77E-01

=====*_Rendition_* 4-5=====
<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^4y^4\hat x + x^5y^4\hat y$, as a line integral around a unit

square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
- a) 3.27E-01
- b) 3.49E-01
- c) 3.74E-01
+ d) 4.00E-01
- e) 4.28E-01
=====*_Rendition_* 4-6=====
<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^3y^5\hat x + x^5y^2\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
- a) 4.76E-01
- b) 5.10E-01
- c) 5.45E-01
+ d) 5.83E-01
- e) 6.24E-01
=====*_Rendition_* 4-7=====
<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^5y^4\hat x + x^5y^4\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
+ a) 3.67E-01
- b) 3.92E-01
- c) 4.20E-01
- d) 4.49E-01
- e) 4.81E-01
=====*_Rendition_* 4-8=====
<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^4y^5\hat x + x^3y^3\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
- a) 4.21E-01
+ b) 4.50E-01
- c) 4.82E-01
- d) 5.15E-01
- e) 5.51E-01
=====*_Rendition_* 4-9=====
<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^5y^3\hat x + x^5y^4\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
- a) 3.43E-01
+ b) 3.67E-01
- c) 3.92E-01
- d) 4.20E-01
- e) 4.49E-01
=====*_Rendition_* 4-10=====
<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^2y^2\hat x + x^4y^3\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule

- a) 5.10E-01
- b) 5.45E-01
+ c) 5.83E-01
- d) 6.24E-01
- e) 6.68E-01
=====*_Rendition_* 4-11=====
<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^2y^5\hat x + x^2y^4\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
+ a) 5.33E-01
- b) 5.71E-01
- c) 6.11E-01
- d) 6.53E-01
- e) 6.99E-01
=====*_Rendition_* 4-12=====
<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^3y^4\hat x + x^4y^4\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
- a) 3.43E-01
- b) 3.67E-01
- c) 3.93E-01
- d) 4.21E-01
+ e) 4.50E-01
=====*_Rendition_* 4-13=====
<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^2y^4\hat x + x^4y^5\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
- a) 4.08E-01
- b) 4.37E-01
- c) 4.67E-01
+ d) 5.00E-01
- e) 5.35E-01
=====*_Rendition_* 4-14=====
<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^5y^2\hat x + x^2y^4\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
- a) 3.43E-01
+ b) 3.67E-01
- c) 3.92E-01
- d) 4.20E-01
- e) 4.49E-01
=====*_Rendition_* 4-15=====
<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^4y^2\hat x + x^4y^5\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
+ a) 3.67E-01
- b) 3.92E-01

- c) 4.20E-01
- d) 4.49E-01
- e) 4.81E-01
=====*_Rendition_* 4-16=====
<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^3y^2\hat x + x^2y^4\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
- a) 3.43E-01
- b) 3.67E-01
- c) 3.93E-01
- d) 4.21E-01
+ e) 4.50E-01
=====*_Rendition_* 4-17=====
<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^4y^2\hat x + x^3y^4\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
- a) 3.74E-01
+ b) 4.00E-01
- c) 4.28E-01
- d) 4.58E-01
- e) 4.90E-01
=====*_Rendition_* 4-18=====
<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^2y^4\hat x + x^4y^3\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
- a) 5.10E-01
- b) 5.45E-01
+ c) 5.83E-01
- d) 6.24E-01
- e) 6.68E-01
=====*_Rendition_* 4-19=====
<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^4y^2\hat x + x^2y^3\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
+ a) 4.50E-01
- b) 4.82E-01
- c) 5.15E-01
- d) 5.51E-01
- e) 5.90E-01
=====*_Rendition_* 4-20=====
<!--c07energy_lineIntegral_4-->Integrate the function, $\vec F = -x^5y^5\hat x + x^5y^5\hat y$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
- a) 3.12E-01
+ b) 3.33E-01
- c) 3.57E-01
- d) 3.82E-01

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- e) 4.08E-01
=====*_Rendition_* 4-21=====
<!--c07energy_lineIntegral_4-->Integrate the function, <math>\vec F =
-x^3y^2\hat x + x^5y^3\hat y</math>, as a line integral around a unit
square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its
direction is out of the paper by the right hand rule
+ a) 5.00E-01
- b) 5.35E-01
- c) 5.72E-01
- d) 6.13E-01
- e) 6.55E-01
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<quiz display=simple>
{<!--c16OscillationsWaves_calculus_1-->If a particle's position is
given by ''x(t) = 7sin(3t-&pi;/6)'', what is the velocity?}
- ''v(t) = 21sin(3t-&pi;/6)''
- ''v(t) = 7cos(3t-&pi;/6)''
+ ''v(t) = 21cos(3t-&pi;/6)''
- ''v(t) = -21sin(3t-&pi;/6)''
- ''v(t) = -21cos(3t-&pi;/6)''

{<!--c16OscillationsWaves_calculus_2-->If a particle's position is
given by ''x(t) = 7sin(3t-&pi;/6)'', what is the acceleration?}
+ ''a(t) = -63sin(3t-&pi;/6)''
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- ''a(t) = +63sin(3t-&pi;/6)''
- ''a(t) = -21cos(3t-&pi;/6)''
- ''a(t) = -21sin(3t-&pi;/6)''
- ''a(t) = +21sin(3t-&pi;/6)''

{<!--c16OscillationsWaves_calculus_3-->If a particle's position is
given by ''x(t) = 5cos(4t-&pi;/6)'', what is the velocity?}
- ''v(t) = 5sin(4t-&pi;/6)''
+ ''v(t) = -20sin(4t-&pi;/6)''
- ''v(t) = 20sin(4t-&pi;/6)''
- ''v(t) = -20cos(4t-&pi;/6)''
- ''v(t) = 20cos(4t-&pi;/6)''

{<!--c16OscillationsWaves_calculus_4-->If a particle's position is
given by ''x(t) = 5sin(4t-&pi;/6)'', what is the velocity?}
- ''v(t) = 20sin(4t-&pi;/6)''
+ ''v(t) = 20cos(4t-&pi;/6)''
- ''v(t) = -20cos(4t-&pi;/6)''
- ''v(t) = 5cos(4t-&pi;/6)''
- ''v(t) = -20sin(4t-&pi;/6)''

{<!--c16OscillationsWaves_calculus_5-->If a particle's position is
given by ''x(t) = 7cos(3t-&pi;/6)'', what is the velocity?}
- ''v(t) = 7sin(3t-&pi;/6)''
- ''v(t) = -21cos(3t-&pi;/6)''
+ ''v(t) = -21sin(3t-&pi;/6)''
- ''v(t) = 21sin(3t-&pi;/6)''
- ''v(t) = 21cos(3t-&pi;/6)''

{<!--c16OscillationsWaves_calculus_6-->If a particle's position is
given by ''x(t) = 5sin(4t-&pi;/6)'', what is the acceleration?}
+ ''a(t) = -80sin(4t-&pi;/6)''
- ''a(t) = +80sin(4t-&pi;/6)''
- ''a(t) = -100cos(4t-&pi;/6)''
- ''a(t) = -100sin(4t-&pi;/6)''
- ''a(t) = +20sin(4t-&pi;/6)''

</quiz>

====*_Instructions_*====
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<quiz display=simple>
{<!--c18ElectricChargeField_lineCharges_1-->A line of charge density
&lambda; situated on the y axis extends from y = -3 to y = 2. What is
the y component of the electric field at the point (3,
7)?<br/><math>Answer</math>  (assuming <math>\mathcal B > \mathcal
A</math>) <math> is: \frac{1}{4\pi\epsilon_0}\int_\mathcal A^\mathcal
B\frac{ \mathcal C\;\lambda ds}{\left[\mathcal D^2+\mathcal
E^2\right]^\mathcal F\;}</math>, where <math>\mathcal B=</math>}
- &minus;7
- &minus;3
- &minus;3
- 3
+ 2

{<!--c18ElectricChargeField_lineCharges_10-->A line of charge density
&lambda; situated on the y axis extends from y = 4 to y = 6. What is
the y component of the electric field at the point (5, 1)?<br
/><math>Answer</math>  (assuming <math>\mathcal B > \mathcal A</math>)
<math> is: \frac{1}{4\pi\epsilon_0}\int_\mathcal A^\mathcal B\frac{
\mathcal C\;\lambda ds}{\left[\mathcal D^2+\mathcal
E^2\right]^\mathcal F\;}</math>, where <math>\mathcal C=</math>:}
-  a) 5
-  b) s&minus;4
-  c) 5&minus;s
+  d) 1&minus;s
-  e) s&minus;1

{<!--c18ElectricChargeField_lineCharges_11-->A line of charge density
&lambda; situated on the y axis extends from y = 4 to y = 6. What is
the y component of the electric field at the point (5, 1)?<br
/><math>Answer</math>  (assuming <math>\mathcal B > \mathcal A</math>)
<math> is: \frac{1}{4\pi\epsilon_0}\int_\mathcal A^\mathcal B\frac{
\mathcal C\;\lambda ds}{\left[\mathcal D^2+\mathcal
E^2\right]^\mathcal F\;}</math>, where <math>\mathcal F=</math>:}
-  1/2
-  2/3
-  2
```

+ 3/2
- 3

{<!--c18ElectricChargeField_lineCharges_12-->A line of charge density
λ situated on the x axis extends from x = 3 to x = 7. What is
the x component of the electric field at the point (7, 8)?
$Answer$ (assuming $\mathcal B > \mathcal A$)
<math> is: \frac{1}{4\pi\epsilon_0}\int_\mathcal A^\mathcal B\frac{
\mathcal C\;\lambda ds}{\left[\mathcal D^2+\mathcal
E^2\right]^\mathcal F\;}</math>, where $\mathcal C=$:}
- s−3
- 3−s
- 8
- s−7
+ 7−s

{<!--c18ElectricChargeField_lineCharges_13-->A line of charge density
λ situated on the x axis extends from x = 3 to x = 7. What is
the x component of the electric field at the point (7, 8)?
$Answer$ (assuming $\mathcal B > \mathcal A$)
<math> is: \frac{1}{4\pi\epsilon_0}\int_\mathcal A^\mathcal B\frac{
\mathcal C\;\lambda ds}{\left[\mathcal D^2+\mathcal
E^2\right]^\mathcal F\;}</math>, where <math>\mathcal D^2 + \mathcal
E^2=</math>:}
- 7² + (8−s)²
- 7² + 8²
+ (7-s)² + 8²
- 7² + (3−s)²
- 3² + 8²

{<!--c18ElectricChargeField_lineCharges_2-->A line of charge density
λ situated on the y axis extends from y = -3 to y = 2. What is
the y component of the electric field at the point (3,
7)?
$Answer$ (assuming <math>\mathcal B > \mathcal
A</math>) <math> is: \frac{1}{4\pi\epsilon_0}\int_\mathcal A^\mathcal
B\frac{ \mathcal C\;\lambda ds}{\left[\mathcal D^2+\mathcal
E^2\right]^\mathcal F\;}</math>, where $\mathcal C=$}
- 3−s
- 3
- s−7
+ 7−s
- s−3

{<!--c18ElectricChargeField_lineCharges_3-->A line of charge density
λ situated on the y axis extends from y = -3 to y = 2. What is
the y component of the electric field at the point (3,
7)?
$Answer$ (assuming <math>\mathcal B > \mathcal
A</math>) <math> is: \frac{1}{4\pi\epsilon_0}\int_\mathcal A^\mathcal
B\frac{ \mathcal C\;\lambda ds}{\left[\mathcal D^2+\mathcal
E^2\right]^\mathcal F\;}</math>, where$\mathcal F=$}
- 2
- 3

+ 3/2
- 1/2

{<!--c18ElectricChargeField_lineCharges_4-->A line of charge density λ situated on the y axis extends from y = 2 to y = 7. What is the y component of the electric field at the point (2, 9)?
$Answer$ (assuming $\mathcal B > \mathcal A$)
<math> is: \frac{1}{4\pi\epsilon_0}\int_\mathcal A^\mathcal B\frac{
\mathcal C\;\lambda ds}{\left[\mathcal D^2+\mathcal
E^2\right]^\mathcal F\;}</math>, where $\mathcal C=$:}
- 2
- s − 2
- 2 − s
- s − 9
+ 9 − s

{<!--c18ElectricChargeField_lineCharges_5-->A line of charge density λ situated on the y axis extends from y = 2 to y = 7. What is the y component of the electric field at the point (2, 9)?
$Answer$ (assuming $\mathcal B > \mathcal A$)
<math> is: \frac{1}{4\pi\epsilon_0}\int_\mathcal A^\mathcal B\frac{
\mathcal C\;\lambda ds}{\left[\mathcal D^2+\mathcal
E^2\right]^\mathcal F\;}</math>, where <math>\mathcal D^2 + \mathcal
E^2=</math>:}
- 9² + (7-s)²
- 9² + (2-s)²
- 7² + (2-s)²
- 2² + (7-s)²
+ 2² + (9-s)²

{<!--c18ElectricChargeField_lineCharges_6-->A line of charge density λ situated on the x axis extends from x = 4 to x = 8. What is the y component of the electric field at the point (8, 4)?
$Answer$ (assuming $\mathcal B > \mathcal A$)
<math> is: \frac{1}{4\pi\epsilon_0}\int_\mathcal A^\mathcal B\frac{
\mathcal C\;\lambda ds}{\left[\mathcal D^2+\mathcal
E^2\right]^\mathcal F\;}</math>, where $\mathcal A=$:}
- 1/2
+ 4
- 2
- 8

{<!--c18ElectricChargeField_lineCharges_7-->A line of charge density λ situated on the x axis extends from x = 4 to x = 8. What is the y component of the electric field at the point (8, 4)?
$Answer$ (assuming $\mathcal B > \mathcal A$)
<math> is: \frac{1}{4\pi\epsilon_0}\int_\mathcal A^\mathcal B\frac{
\mathcal C\;\lambda ds}{\left[\mathcal D^2+\mathcal
E^2\right]^\mathcal F\;}</math>, where $\mathcal C=$:}
- s−8
- 8−s
- s−4

- 4−s
+ 4

{<!--c18ElectricChargeField_lineCharges_8-->A line of charge density λ situated on the x axis extends from x = 4 to x = 8. What is the x component of the electric field at the point (8, 4)?
$Answer$ (assuming $\mathcal B > \mathcal A$) $is: \frac{1}{4\pi\epsilon_0}\int_\mathcal A^\mathcal B\frac{ \mathcal C\;\lambda ds}{\left[\mathcal D^2+\mathcal E^2\right]^\mathcal F\;}$, where $\mathcal C=$:}
- s−8
+ 8−s
- s−4
- 4−s
- 4

{<!--c18ElectricChargeField_lineCharges_9-->A line of charge density λ situated on the y axis extends from y = 4 to y = 6. What is the x component of the electric field at the point (5, 1)?
$Answer$ (assuming $\mathcal B > \mathcal A$) $is: \frac{1}{4\pi\epsilon_0}\int_\mathcal A^\mathcal B\frac{ \mathcal C\;\lambda ds}{\left[\mathcal D^2+\mathcal E^2\right]^\mathcal F\;}$, where $\mathcal C=$:}
+ 5
- s−4
- 5−s
- 1−s
- s−1

</quiz>

====*_Instructions_*====
Instructions are forthcoming

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{<!--c19ElectricPotentialField_GaussLaw_1-->A cylinder of radius, R,
and height H has a uniform charge density of ρ. The
height is much less than the radius: {{nowrap|H << R}}. The electric
field at the center vanishes. What formula describes the electric
field at a distance, z, on axis from the center if z > H/2?}
- $\varepsilon_0 E=   \rho z$
-b) $\varepsilon_0 E=   H\rho$
-c) $\varepsilon_0 E=   H\rho z$
-d) none of these are correct
+e) $\varepsilon_0 E = H\rho /2$

{<!--c19ElectricPotentialField_GaussLaw_2-->A cylinder of radius, R,
and height H has a uniform charge density of ρ. The
height is much less than the radius: {{nowrap|H << R}}. The electric
field at the center vanishes. What formula describes the electric
field at a distance, z, on axis from the center if z < H/2?}
- $\varepsilon_0 E = H\rho /2$
-b) none of these are correct
+c) $\varepsilon_0 E=   \rho z$
-d) $\varepsilon_0 E=   H\rho$
-e) $\varepsilon_0 E=   H\rho z$

{<!--c19ElectricPotentialField_GaussLaw_3-->A sphere has a uniform
charge density of ρ, and a radius or R. What formula
describes the electric field at a distance r > R?}
- none of these are correct
-b) $r^2\varepsilon_0 E=R^3\rho /2$
-c) $r^2\varepsilon_0 E= r^3\rho/3$
-d) $r^2\varepsilon_0 E=r^3\rho /2$
+e) $r^2\varepsilon_0 E=R^3\rho /3$

{<!--c19ElectricPotentialField_GaussLaw_4-->A sphere has a uniform
charge density of ρ, and a radius equal to R. What
formula describes the electric field at a distance r < R?}
- $r^2\varepsilon_0 E=r^3\rho /2$
-b) $r^2\varepsilon_0 E=R^3\rho /3$
-c) none of these are correct
+d) $r^2\varepsilon_0 E=r^3\rho /3$
-e) $r^2\varepsilon_0 E=R^3\rho /2$

{<!--c19ElectricPotentialField_GaussLaw_5-->A cylinder of radius, R,
and height H has a uniform charge density of ρ. The
height is much greater than the radius: {{nowrap|H >> R}}. The
electric field at the center vanishes. What formula describes the

```
electric field at a distance, r, radially from the center if
r < R? }
- <math>2R\varepsilon_0 E=   r^2\rho </math>
-b) <math>2r\varepsilon_0 E =  R^2\rho </math>
+c) <math>2\varepsilon_0 E =  r\rho </math>
-d) none of these are correct
-e) <math>2r^2\varepsilon_0 E=  R^3  \rho </math>

{<!--c19ElectricPotentialField_GaussLaw_6-->A cylinder of radius, R,
and height H has a uniform charge density of <math>\rho</math>.  The
height is much greater than the radius: {{nowrap|H >> R}}. The
electric field at the center vanishes.  What formula describes the
electric field at a distance, r, radially from the center if
r > R?}
- <math>2R\varepsilon_0 E=   r^2\rho </math>
-b) <math>2\varepsilon_0 E =  r\rho </math>
+c) <math>2r\varepsilon_0 E =  R^2\rho </math>
-d) none of these are correct
-e) <math>2r^2\varepsilon_0 E=  R^3  \rho </math>

</quiz>

====*_Instructions_*====
Instructions are forthcoming

Transclusion from [[Quizbank/Instructions_0]]:<br/>
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625
*_See_* [[User:Guy vandegrift]]
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===*_Quiz_*===
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{<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of radius, r=3, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.35+2.57z)\rho^3\hat\rho +7.45z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{top}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the top surface of the cylinder.}
-a) 1.148E+03
-b) 1.391E+03
+c) 1.685E+03
-d) 2.042E+03
-e) 2.473E+03

{<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=3, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.35+2.57z)\rho^3\hat\rho +7.45z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.}
-a) 2.221E+03
-b) 2.690E+03
-c) 3.259E+03
-d) 3.949E+03
+e) 4.784E+03

{<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of radius, r=3, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.35+2.57z)\rho^3\hat\rho +7.45z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\oint\vec\mathfrak F\cdot\hat n dA\right|\,$
over the entire surface of the cylinder.}
-a) 4.59E+03
-b) 5.56E+03
-c) 6.73E+03
+d) 8.15E+03
-e) 9.88E+03

</quiz>

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Other renditions
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====*_Question_* 1====
=====*_Rendition_* 1-2=====

<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of radius, r=3, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.05+2.59z)\rho^2\hat\rho +7.4z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{top}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the top surface of the cylinder.
-a) 6.908E+02
+b) 8.369E+02
-c) 1.014E+03
-d) 1.228E+03
-e) 1.488E+03
=====*_Rendition_* 1-3=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.12+1.85z)\rho^3\hat\rho +8.88z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{top}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the top surface of the cylinder.
-a) 3.041E+02
-b) 3.684E+02
+c) 4.464E+02
-d) 5.408E+02
-e) 6.552E+02
=====*_Rendition_* 1-4=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2+1.45z)\rho^2\hat\rho +8.02z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{top}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the top surface of the cylinder.
-a) 3.742E+02
-b) 4.534E+02
-c) 5.493E+02
-d) 6.655E+02
+e) 8.063E+02
=====*_Rendition_* 1-5=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.14+2.8z)\rho^2\hat\rho +9.94z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{top}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the top surface of the cylinder.
-a) 2.810E+02
-b) 3.404E+02

-c) 4.124E+02
+d) 4.996E+02
-e) 6.053E+02
=====*_Rendition_* 1-6=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (1.85+1.33z)\rho^3\hat\rho +7.52z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{top}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the top surface of the cylinder.
-a) 1.304E+03
-b) 1.579E+03
+c) 1.914E+03
-d) 2.318E+03
-e) 2.809E+03
=====*_Rendition_* 1-7=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.07+2.87z)\rho^2\hat\rho +9.56z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{top}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the top surface of the cylinder.
-a) 7.933E+02
+b) 9.611E+02
-c) 1.164E+03
-d) 1.411E+03
-e) 1.709E+03
=====*_Rendition_* 1-8=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.17+1.5z)\rho^2\hat\rho +8.75z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{top}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the top surface of the cylinder.
-a) 3.630E+02
+b) 4.398E+02
-c) 5.329E+02
-d) 6.456E+02
-e) 7.821E+02
=====*_Rendition_* 1-9=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.28+1.72z)\rho^3\hat\rho +7.33z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 <math>\left |\int_{top}\vec\mathfrak F\cdot\hat n
dA\right|\,</math>
over the top surface of the cylinder.
-a) 2.597E+03
-b) 3.147E+03
-c) 3.812E+03
-d) 4.619E+03
+e) 5.596E+03
=====*_Rendition_* 1-10=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of
radius, r=3, and height, h=4, is centered at the origin and oriented
along the z axis. A vector field can be expressed in cylindrical
coordinates as,
 <math>\vec\mathfrak F =
(2.04+1.66z)\rho^2\hat\rho +7.54z^2\hat z </math>
 Let <math>\hat
n</math> be the outward unit normal to this cylinder and evaluate ,
 <math>\left |\int_{top}\vec\mathfrak F\cdot\hat n
dA\right|\,</math>
over the top surface of the cylinder.
+a) 8.528E+02
-b) 1.033E+03
-c) 1.252E+03
-d) 1.516E+03
-e) 1.837E+03
=====*_Rendition_* 1-11=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of
radius, r=3, and height, h=6, is centered at the origin and oriented
along the z axis. A vector field can be expressed in cylindrical
coordinates as,
 <math>\vec\mathfrak F =
(2.21+1.16z)\rho^2\hat\rho +7.96z^3\hat z </math>
 Let <math>\hat
n</math> be the outward unit normal to this cylinder and evaluate ,
 <math>\left |\int_{top}\vec\mathfrak F\cdot\hat n
dA\right|\,</math>
over the top surface of the cylinder.
-a) 3.417E+03
-b) 4.140E+03
-c) 5.016E+03
+d) 6.077E+03
-e) 7.362E+03
=====*_Rendition_* 1-12=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of
radius, r=3, and height, h=6, is centered at the origin and oriented
along the z axis. A vector field can be expressed in cylindrical
coordinates as,
 <math>\vec\mathfrak F =
(2.12+1.68z)\rho^2\hat\rho +8.83z^3\hat z </math>
 Let <math>\hat
n</math> be the outward unit normal to this cylinder and evaluate ,
 <math>\left |\int_{top}\vec\mathfrak F\cdot\hat n
dA\right|\,</math>
over the top surface of the cylinder.
-a) 4.593E+03
-b) 5.564E+03
+c) 6.741E+03
-d) 8.167E+03
-e) 9.894E+03
=====*_Rendition_* 1-13=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of
radius, r=2, and height, h=4, is centered at the origin and oriented

along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.05+2.05z)\rho^2\hat\rho +9.62z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{top}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the top surface of the cylinder.
-a) 4.489E+02
-b) 5.438E+02
-c) 6.589E+02
-d) 7.983E+02
+e) 9.671E+02
=====*_Rendition_* 1-14=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (1.93+2.31z)\rho^3\hat\rho +7.21z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{top}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the top surface of the cylinder.
-a) 6.731E+02
+b) 8.154E+02
-c) 9.879E+02
-d) 1.197E+03
-e) 1.450E+03
=====*_Rendition_* 1-15=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.24+1.11z)\rho^3\hat\rho +8.16z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{top}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the top surface of the cylinder.
+a) 2.769E+03
-b) 3.354E+03
-c) 4.064E+03
-d) 4.923E+03
-e) 5.965E+03
=====*_Rendition_* 1-16=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (1.96+2.52z)\rho^2\hat\rho +7.11z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{top}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the top surface of the cylinder.
-a) 4.522E+02
-b) 5.478E+02
-c) 6.637E+02
+d) 8.041E+02

-e) 9.742E+02
=====*_Rendition_* 1-17=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (1.86+2.43z)\rho^2\hat\rho +9.75z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{top}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the top surface of the cylinder.
-a) 6.201E+02
-b) 7.513E+02
-c) 9.102E+02
+d) 1.103E+03
-e) 1.336E+03
=====*_Rendition_* 1-18=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.24+2.08z)\rho^2\hat\rho +8.93z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{top}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the top surface of the cylinder.
-a) 1.704E+03
-b) 2.064E+03
-c) 2.501E+03
+d) 3.030E+03
-e) 3.671E+03
=====*_Rendition_* 1-19=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (1.89+1.31z)\rho^3\hat\rho +8.35z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{top}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the top surface of the cylinder.
-a) 5.311E+02
-b) 6.434E+02
-c) 7.795E+02
+d) 9.444E+02
-e) 1.144E+03
=====*_Rendition_* 1-20=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of radius, r=3, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.37+2.6z)\rho^2\hat\rho +8.84z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{top}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the top surface of the cylinder.

-a) 1.362E+03
-b) 1.650E+03
+c) 2.000E+03
-d) 2.423E+03
-e) 2.935E+03
=====*_Rendition_* 1-21=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.45+2.26z)\rho^2\hat\rho +8.92z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{top}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the top surface of the cylinder.
-a) 5.043E+02
-b) 6.109E+02
-c) 7.402E+02
+d) 8.967E+02
-e) 1.086E+03
=====*_Rendition_* 1-22=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (1.88+1.29z)\rho^2\hat\rho +7.2z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{top}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the top surface of the cylinder.
-a) 1.248E+03
-b) 1.512E+03
+c) 1.832E+03
-d) 2.220E+03
-e) 2.689E+03
=====*_Rendition_* 1-23=====
<!--c19ElectricPotentialField_SurfaceIntegral_1-->A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.44+2.86z)\rho^2\hat\rho +7.42z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{top}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the top surface of the cylinder.
+a) 5.664E+03
-b) 6.863E+03
-c) 8.314E+03
-d) 1.007E+04
-e) 1.220E+04
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=3, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical

coordinates as,
 <math>\vec\mathfrak F =
(2.05+2.59z)\rho^2\hat\rho +7.4z^2\hat z </math>
 Let <math>\hat
n</math> be the outward unit normal to this cylinder and evaluate ,
 <math>\left |\int_{side}\vec\mathfrak F\cdot\hat n
dA\right|\,</math>
over the curved side surface of the cylinder.
-a) 6.457E+02
-b) 7.823E+02
-c) 9.477E+02
-d) 1.148E+03
+e) 1.391E+03
=====*_Rendition_* 2-3=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of
radius, r=2, and height, h=4, is centered at the origin and oriented
along the z axis. A vector field can be expressed in cylindrical
coordinates as,
 <math>\vec\mathfrak F =
(2.12+1.85z)\rho^3\hat\rho +8.88z^2\hat z </math>
 Let <math>\hat
n</math> be the outward unit normal to this cylinder and evaluate ,
 <math>\left |\int_{side}\vec\mathfrak F\cdot\hat n
dA\right|\,</math>
over the curved side surface of the cylinder.
+a) 8.525E+02
-b) 1.033E+03
-c) 1.251E+03
-d) 1.516E+03
-e) 1.837E+03
=====*_Rendition_* 2-4=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of
radius, r=2, and height, h=4, is centered at the origin and oriented
along the z axis. A vector field can be expressed in cylindrical
coordinates as,
 <math>\vec\mathfrak F =
(2+1.45z)\rho^2\hat\rho +8.02z^3\hat z </math>
 Let <math>\hat
n</math> be the outward unit normal to this cylinder and evaluate ,
 <math>\left |\int_{side}\vec\mathfrak F\cdot\hat n
dA\right|\,</math>
over the curved side surface of the cylinder.
+a) 4.021E+02
-b) 4.872E+02
-c) 5.902E+02
-d) 7.151E+02
-e) 8.663E+02
=====*_Rendition_* 2-5=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of
radius, r=2, and height, h=4, is centered at the origin and oriented
along the z axis. A vector field can be expressed in cylindrical
coordinates as,
 <math>\vec\mathfrak F =
(2.14+2.8z)\rho^2\hat\rho +9.94z^2\hat z </math>
 Let <math>\hat
n</math> be the outward unit normal to this cylinder and evaluate ,
 <math>\left |\int_{side}\vec\mathfrak F\cdot\hat n
dA\right|\,</math>
over the curved side surface of the cylinder.
-a) 2.420E+02
-b) 2.931E+02
-c) 3.551E+02
+d) 4.303E+02
-e) 5.213E+02

=====*_Rendition_* 2-6=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (1.85+1.33z)\rho^3\hat\rho +7.52z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.
-a) 2.622E+03
-b) 3.177E+03
-c) 3.849E+03
-d) 4.663E+03
+e) 5.649E+03
=====*_Rendition_* 2-7=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.07+2.87z)\rho^2\hat\rho +9.56z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.
+a) 4.162E+02
-b) 5.042E+02
-c) 6.109E+02
-d) 7.401E+02
-e) 8.967E+02
=====*_Rendition_* 2-8=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.17+1.5z)\rho^2\hat\rho +8.75z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.
-a) 2.454E+02
-b) 2.973E+02
-c) 3.601E+02
+d) 4.363E+02
-e) 5.286E+02
=====*_Rendition_* 2-9=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.28+1.72z)\rho^3\hat\rho +7.33z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.
-a) 3.232E+03

-b) 3.915E+03
-c) 4.743E+03
-d) 5.747E+03
+e) 6.962E+03
=====*_Rendition_* 2-10=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=3, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.04+1.66z)\rho^2\hat\rho +7.54z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.
-a) 9.431E+02
-b) 1.143E+03
+c) 1.384E+03
-d) 1.677E+03
-e) 2.032E+03
=====*_Rendition_* 2-11=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.21+1.16z)\rho^2\hat\rho +7.96z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.
-a) 1.533E+03
-b) 1.857E+03
+c) 2.250E+03
-d) 2.725E+03
-e) 3.302E+03
=====*_Rendition_* 2-12=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.12+1.68z)\rho^2\hat\rho +8.83z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.
+a) 2.158E+03
-b) 2.614E+03
-c) 3.167E+03
-d) 3.837E+03
-e) 4.649E+03
=====*_Rendition_* 2-13=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.05+2.05z)\rho^2\hat\rho +9.62z^3\hat z$
 Let <math>\hat

n</math> be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.
-a) 2.318E+02
-b) 2.808E+02
-c) 3.402E+02
+d) 4.122E+02
-e) 4.994E+02
=====*_Rendition_* 2-14=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (1.93+2.31z)\rho^3\hat\rho +7.21z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.
-a) 6.546E+02
-b) 7.931E+02
-c) 9.609E+02
+d) 1.164E+03
-e) 1.410E+03
=====*_Rendition_* 2-15=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.24+1.11z)\rho^3\hat\rho +8.16z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.
-a) 9.205E+02
-b) 1.115E+03
+c) 1.351E+03
-d) 1.637E+03
-e) 1.983E+03
=====*_Rendition_* 2-16=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (1.96+2.52z)\rho^2\hat\rho +7.11z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.
-a) 4.027E+02
-b) 4.879E+02
+c) 5.911E+02
-d) 7.162E+02
-e) 8.676E+02
=====*_Rendition_* 2-17=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of

radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (1.86+2.43z)\rho^2\hat\rho +9.75z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.
+a) 5.610E+02
-b) 6.796E+02
-c) 8.234E+02
-d) 9.975E+02
-e) 1.209E+03
=====*_Rendition_* 2-18=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.24+2.08z)\rho^2\hat\rho +8.93z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.
-a) 3.799E+02
-b) 4.603E+02
-c) 5.576E+02
+d) 6.756E+02
-e) 8.185E+02
=====*_Rendition_* 2-19=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (1.89+1.31z)\rho^3\hat\rho +8.35z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.
-a) 6.411E+02
-b) 7.767E+02
-c) 9.410E+02
+d) 1.140E+03
-e) 1.381E+03
=====*_Rendition_* 2-20=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=3, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.37+2.6z)\rho^2\hat\rho +8.84z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.
-a) 7.465E+02
-b) 9.044E+02
-c) 1.096E+03

-d) 1.327E+03
+e) 1.608E+03
=====*_Rendition_* 2-21=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.45+2.26z)\rho^2\hat\rho +8.92z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.
-a) 3.356E+02
-b) 4.066E+02
+c) 4.926E+02
-d) 5.968E+02
-e) 7.230E+02
=====*_Rendition_* 2-22=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (1.88+1.29z)\rho^2\hat\rho +7.2z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.
-a) 1.579E+03
+b) 1.914E+03
-c) 2.318E+03
-d) 2.809E+03
-e) 3.403E+03
=====*_Rendition_* 2-23=====
<!--c19ElectricPotentialField_SurfaceIntegral_2-->A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.44+2.86z)\rho^2\hat\rho +7.42z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\int_{side}\vec\mathfrak F\cdot\hat n dA\right|\,$
over the curved side surface of the cylinder.
-a) 1.692E+03
-b) 2.050E+03
+c) 2.484E+03
-d) 3.009E+03
-e) 3.645E+03
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of radius, r=3, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.05+2.59z)\rho^2\hat\rho +7.4z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 <math>\left |\oint\vec\mathfrak F\cdot\hat n
dA\right|\,</math>
over the entire surface of the cylinder.
-a) 6.46E+02
-b) 7.82E+02
-c) 9.48E+02
-d) 1.15E+03
+e) 1.39E+03
=====*_Rendition_* 3-3=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of
radius, r=2, and height, h=4, is centered at the origin and oriented
along the z axis. A vector field can be expressed in cylindrical
coordinates as,
 <math>\vec\mathfrak F =
(2.12+1.85z)\rho^3\hat\rho +8.88z^2\hat z </math>
 Let <math>\hat
n</math> be the outward unit normal to this cylinder and evaluate ,
 <math>\left |\oint\vec\mathfrak F\cdot\hat n
dA\right|\,</math>
over the entire surface of the cylinder.
-a) 3.96E+02
-b) 4.79E+02
-c) 5.81E+02
-d) 7.04E+02
+e) 8.53E+02
=====*_Rendition_* 3-4=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of
radius, r=2, and height, h=4, is centered at the origin and oriented
along the z axis. A vector field can be expressed in cylindrical
coordinates as,
 <math>\vec\mathfrak F =
(2+1.45z)\rho^2\hat\rho +8.02z^3\hat z </math>
 Let <math>\hat
n</math> be the outward unit normal to this cylinder and evaluate ,
 <math>\left |\oint\vec\mathfrak F\cdot\hat n
dA\right|\,</math>
over the entire surface of the cylinder.
-a) 1.13E+03
-b) 1.37E+03
-c) 1.66E+03
+d) 2.01E+03
-e) 2.44E+03
=====*_Rendition_* 3-5=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of
radius, r=2, and height, h=4, is centered at the origin and oriented
along the z axis. A vector field can be expressed in cylindrical
coordinates as,
 <math>\vec\mathfrak F =
(2.14+2.8z)\rho^2\hat\rho +9.94z^2\hat z </math>
 Let <math>\hat
n</math> be the outward unit normal to this cylinder and evaluate ,
 <math>\left |\oint\vec\mathfrak F\cdot\hat n
dA\right|\,</math>
over the entire surface of the cylinder.
-a) 2.93E+02
-b) 3.55E+02
+c) 4.30E+02
-d) 5.21E+02
-e) 6.32E+02
=====*_Rendition_* 3-6=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of
radius, r=3, and height, h=6, is centered at the origin and oriented

along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (1.85+1.33z)\rho^3\hat\rho +7.52z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\oint\vec\mathfrak F\cdot\hat n dA\right|\,$
over the entire surface of the cylinder.
-a) 3.18E+03
-b) 3.85E+03
-c) 4.66E+03
+d) 5.65E+03
-e) 6.84E+03
=====*_Rendition_* 3-7=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.07+2.87z)\rho^2\hat\rho +9.56z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\oint\vec\mathfrak F\cdot\hat n dA\right|\,$
over the entire surface of the cylinder.
-a) 1.59E+03
-b) 1.93E+03
+c) 2.34E+03
-d) 2.83E+03
-e) 3.43E+03
=====*_Rendition_* 3-8=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.17+1.5z)\rho^2\hat\rho +8.75z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\oint\vec\mathfrak F\cdot\hat n dA\right|\,$
over the entire surface of the cylinder.
-a) 3.60E+02
+b) 4.36E+02
-c) 5.29E+02
-d) 6.40E+02
-e) 7.76E+02
=====*_Rendition_* 3-9=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.28+1.72z)\rho^3\hat\rho +7.33z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\oint\vec\mathfrak F\cdot\hat n dA\right|\,$
over the entire surface of the cylinder.
-a) 1.50E+04
+b) 1.82E+04
-c) 2.20E+04
-d) 2.66E+04

-e) 3.23E+04
=====*_Rendition_* 3-10=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of radius, r=3, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.04+1.66z)\rho^2\hat\rho +7.54z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\oint\vec\mathfrak F\cdot\hat n dA\right|\,$
over the entire surface of the cylinder.
-a) 9.43E+02
-b) 1.14E+03
+c) 1.38E+03
-d) 1.68E+03
-e) 2.03E+03
=====*_Rendition_* 3-11=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.21+1.16z)\rho^2\hat\rho +7.96z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\oint\vec\mathfrak F\cdot\hat n dA\right|\,$
over the entire surface of the cylinder.
-a) 6.69E+03
-b) 8.10E+03
-c) 9.81E+03
-d) 1.19E+04
+e) 1.44E+04
=====*_Rendition_* 3-12=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.12+1.68z)\rho^2\hat\rho +8.83z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\oint\vec\mathfrak F\cdot\hat n dA\right|\,$
over the entire surface of the cylinder.
-a) 1.29E+04
+b) 1.56E+04
-c) 1.89E+04
-d) 2.30E+04
-e) 2.78E+04
=====*_Rendition_* 3-13=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.05+2.05z)\rho^2\hat\rho +9.62z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\oint\vec\mathfrak F\cdot\hat n dA\right|\,$
over the entire surface of the cylinder.

-a) 1.09E+03
-b) 1.32E+03
-c) 1.60E+03
-d) 1.94E+03
+e) 2.35E+03
=====*_Rendition_* 3-14=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of
radius, r=2, and height, h=6, is centered at the origin and oriented
along the z axis. A vector field can be expressed in cylindrical
coordinates as,
 <math>\vec\mathfrak F =
(1.93+2.31z)\rho^3\hat\rho +7.21z^2\hat z </math>
 Let <math>\hat
n</math> be the outward unit normal to this cylinder and evaluate ,
 <math>\left |\oint\vec\mathfrak F\cdot\hat n
dA\right|\,</math>
over the entire surface of the cylinder.
-a) 5.40E+02
-b) 6.55E+02
-c) 7.93E+02
-d) 9.61E+02
+e) 1.16E+03
=====*_Rendition_* 3-15=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of
radius, r=2, and height, h=6, is centered at the origin and oriented
along the z axis. A vector field can be expressed in cylindrical
coordinates as,
 <math>\vec\mathfrak F =
(2.24+1.11z)\rho^3\hat\rho +8.16z^3\hat z </math>
 Let <math>\hat
n</math> be the outward unit normal to this cylinder and evaluate ,
 <math>\left |\oint\vec\mathfrak F\cdot\hat n
dA\right|\,</math>
over the entire surface of the cylinder.
-a) 4.69E+03
-b) 5.69E+03
+c) 6.89E+03
-d) 8.35E+03
-e) 1.01E+04
=====*_Rendition_* 3-16=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of
radius, r=2, and height, h=6, is centered at the origin and oriented
along the z axis. A vector field can be expressed in cylindrical
coordinates as,
 <math>\vec\mathfrak F =
(1.96+2.52z)\rho^2\hat\rho +7.11z^2\hat z </math>
 Let <math>\hat
n</math> be the outward unit normal to this cylinder and evaluate ,
 <math>\left |\oint\vec\mathfrak F\cdot\hat n
dA\right|\,</math>
over the entire surface of the cylinder.
+a) 5.91E+02
-b) 7.16E+02
-c) 8.68E+02
-d) 1.05E+03
-e) 1.27E+03
=====*_Rendition_* 3-17=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of
radius, r=2, and height, h=6, is centered at the origin and oriented
along the z axis. A vector field can be expressed in cylindrical
coordinates as,
 <math>\vec\mathfrak F =

(1.86+2.43z)\rho^2\hat\rho +9.75z^2\hat z </math>
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\oint\vec\mathfrak F\cdot\hat n dA\right|\,$
over the entire surface of the cylinder.
-a) 4.63E+02
+b) 5.61E+02
-c) 6.80E+02
-d) 8.23E+02
-e) 9.98E+02
=====*_Rendition_* 3-18=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.24+2.08z)\rho^2\hat\rho +8.93z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\oint\vec\mathfrak F\cdot\hat n dA\right|\,$
over the entire surface of the cylinder.
-a) 3.13E+03
-b) 3.79E+03
-c) 4.59E+03
-d) 5.56E+03
+e) 6.74E+03
=====*_Rendition_* 3-19=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (1.89+1.31z)\rho^3\hat\rho +8.35z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\oint\vec\mathfrak F\cdot\hat n dA\right|\,$
over the entire surface of the cylinder.
-a) 9.41E+02
+b) 1.14E+03
-c) 1.38E+03
-d) 1.67E+03
-e) 2.03E+03
=====*_Rendition_* 3-20=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of radius, r=3, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.37+2.6z)\rho^2\hat\rho +8.84z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\oint\vec\mathfrak F\cdot\hat n dA\right|\,$
over the entire surface of the cylinder.
-a) 4.63E+03
+b) 5.61E+03
-c) 6.79E+03
-d) 8.23E+03
-e) 9.97E+03
=====*_Rendition_* 3-21=====

<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.45+2.26z)\rho^2\hat\rho +8.92z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\oint\vec\mathfrak F\cdot\hat n dA\right|\,$
over the entire surface of the cylinder.
-a) 1.29E+03
-b) 1.56E+03
-c) 1.89E+03
+d) 2.29E+03
-e) 2.77E+03
=====*_Rendition_* 3-22=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (1.88+1.29z)\rho^2\hat\rho +7.2z^2\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\oint\vec\mathfrak F\cdot\hat n dA\right|\,$
over the entire surface of the cylinder.
-a) 1.08E+03
-b) 1.30E+03
-c) 1.58E+03
+d) 1.91E+03
-e) 2.32E+03
=====*_Rendition_* 3-23=====
<!--c19ElectricPotentialField_SurfaceIntegral_3-->A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as,
 $\vec\mathfrak F = (2.44+2.86z)\rho^2\hat\rho +7.42z^3\hat z$
 Let $\hat n$ be the outward unit normal to this cylinder and evaluate ,
 $\left |\oint\vec\mathfrak F\cdot\hat n dA\right|\,$
over the entire surface of the cylinder.
-a) 9.41E+03
-b) 1.14E+04
+c) 1.38E+04
-d) 1.67E+04
-e) 2.03E+04
</div></div>
====*_Instructions_*====
Instructions are forthcoming

Transclusion from [[Quizbank/Instructions_0]]:
{{:Quizbank/Instructions_0}}
[[Category:QB/Numerical]]
==*_End_*==
__NOTOC__
<div style="text-align: right; direction: ltr; margin-left: 1em;">{{REVISIONID}}</div>

==*_Quizbank_*==
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Information (click to expand)
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[[#*_Instructions_*]]
*_Name_* QB/c22Magnetism_ampereLaw
*_Permalink_* [[Special:Permalink/1391173]]
*_wiki_* https://en.wikiversity.org/wiki/
*_numerical_*
*_Attribution_*
http://en.wikiversity.org/w/index.php?title=Physics_equations/22-Magnetism/Q:AmpereLaw&oldid=1391173
*_See_* [[User:Guy vandegrift]]
</div></div>
===*_Quiz_*===
<quiz display=simple>
{<!--c22Magnetism_ampereLaw_1-->Amphere's law for
[[w:magnetostatics|magnetostatic]] currents is that <math>\oint\vec
H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}</math> equals the current
enclosed by the closed loop, and $B=\mu_0H$ is the magnetic
field. A current of 8.5A flows upward along the z axis. Noting that
for this geometry, <math>\oint \vec B \cdot\vec{d\ell} = B\oint
d\ell</math>, calculate the line integral $\oint d\ell$ for
a circle of radius 4.7m.}
-a) 2.69E+01 m
+b) 2.95E+01 m
-c) 3.24E+01 m
-d) 3.55E+01 m
-e) 3.89E+01 m

{<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where
B is magnetic field, what is H at a distance
of 4.7m from a wire carrying a current of 8.5A?}
-a) 2.63E-01 A/m
+b) 2.88E-01 A/m
-c) 3.16E-01 A/m
-d) 3.46E-01 A/m
-e) 3.79E-01 A/m

{<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where
B is magnetic field, what is H_y at the
point (3.4389,3.2037) if a current of 8.5A flows through a wire that
runs along the z axis?}
-a) 1.46E-01 A/m
-b) 1.60E-01 A/m
-c) 1.75E-01 A/m
-d) 1.92E-01 A/m
+e) 2.11E-01 A/m

{<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 1331 turns and is 140 meters long. The wire carrys a current of 9.6A. What is the magnetic field in the center?}
-a) 8.70E-05 Tesla
-b) 9.54E-05 Tesla
-c) 1.05E-04 Tesla
+d) 1.15E-04 Tesla
-e) 1.26E-04 Tesla

{<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 1770 turns and is 140 meters long. The wire carrys a current of 9.6A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 25 meters from the center and stops 98 meters from the center?}
-a) 4.54E+03 A
-b) 4.98E+03 A
+c) 5.46E+03 A
-d) 5.99E+03 A
-e) 6.57E+03 A

{<!--dummy_1-->[[File:KaisekiGairon-371-3.svg|right|240px|KaisekiGairon-371-3]]A torus is centered around the x-y plane, with major radius, a = 1.56 m, and minor radius, r = 0.65m. A wire carrying 4.4A is uniformly wrapped with 890 turns. If B=μ₀H is the magnetic field, what is H inside the torus, at a point on the xy plane that is 0.26m from the outermost edge of the torus?}
-a) 2.22E+02 amps per meter
+b) 2.40E+02 amps per meter
-c) 2.59E+02 amps per meter
-d) 2.79E+02 amps per meter
-e) 3.02E+02 amps per meter

</quiz>

<div class="toccolours mw-collapsible mw-collapsed" style="width:100%">

Other renditions
<div class="mw-collapsible-content">
====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 8.2A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 9.6m.
+a) 6.03E+01 m
-b) 6.61E+01 m

-c) 7.25E+01 m
-d) 7.95E+01 m
-e) 8.72E+01 m
=====*_Rendition_* 1-3=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 7.9A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 4.2m.
-a) 1.83E+01 m
-b) 2.00E+01 m
-c) 2.19E+01 m
-d) 2.41E+01 m
+e) 2.64E+01 m
=====*_Rendition_* 1-4=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 6.9A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 9.9m.
+a) 6.22E+01 m
-b) 6.82E+01 m
-c) 7.48E+01 m
-d) 8.20E+01 m
-e) 8.99E+01 m
=====*_Rendition_* 1-5=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 7.3A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 8.3m.
-a) 4.76E+01 m
+b) 5.22E+01 m
-c) 5.72E+01 m
-d) 6.27E+01 m
-e) 6.87E+01 m
=====*_Rendition_* 1-6=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 9.6A flows upward along the z axis. Noting that for this geometry, <math>\oint \vec B \cdot\vec{d\ell} = B\oint

d\ell</math>, calculate the line integral $\oint d\ell$ for a circle of radius 9.8m.
-a) 4.26E+01 m
-b) 4.67E+01 m
-c) 5.12E+01 m
-d) 5.62E+01 m
+e) 6.16E+01 m
=====*_Rendition_* 1-7=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 7.2A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 8.2m.
-a) 4.70E+01 m
+b) 5.15E+01 m
-c) 5.65E+01 m
-d) 6.19E+01 m
-e) 6.79E+01 m
=====*_Rendition_* 1-8=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 8.6A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 8.8m.
-a) 3.83E+01 m
-b) 4.19E+01 m
-c) 4.60E+01 m
-d) 5.04E+01 m
+e) 5.53E+01 m
=====*_Rendition_* 1-9=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 7.4A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 6.3m.
-a) 2.74E+01 m
-b) 3.00E+01 m
-c) 3.29E+01 m
-d) 3.61E+01 m
+e) 3.96E+01 m
=====*_Rendition_* 1-10=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that <math>\oint\vec

H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}</math> equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 6.9A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 9.8m.
+a) 6.16E+01 m
-b) 6.75E+01 m
-c) 7.40E+01 m
-d) 8.12E+01 m
-e) 8.90E+01 m
=====*_Rendition_* 1-11=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 9.8A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 4.6m.
+a) 2.89E+01 m
-b) 3.17E+01 m
-c) 3.47E+01 m
-d) 3.81E+01 m
-e) 4.18E+01 m
=====*_Rendition_* 1-12=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 5.8A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 4.4m.
-a) 2.30E+01 m
-b) 2.52E+01 m
+c) 2.76E+01 m
-d) 3.03E+01 m
-e) 3.32E+01 m
=====*_Rendition_* 1-13=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 4.8A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 7.7m.
+a) 4.84E+01 m
-b) 5.30E+01 m
-c) 5.82E+01 m
-d) 6.38E+01 m

-e) 6.99E+01 m
=====*_Rendition_* 1-14=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 4.7A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 6.5m.
-a) 3.10E+01 m
-b) 3.40E+01 m
-c) 3.72E+01 m
+d) 4.08E+01 m
-e) 4.48E+01 m
=====*_Rendition_* 1-15=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 5A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 5.4m.
-a) 3.09E+01 m
+b) 3.39E+01 m
-c) 3.72E+01 m
-d) 4.08E+01 m
-e) 4.47E+01 m
=====*_Rendition_* 1-16=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 6.8A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 7.9m.
+a) 4.96E+01 m
-b) 5.44E+01 m
-c) 5.97E+01 m
-d) 6.54E+01 m
-e) 7.17E+01 m
=====*_Rendition_* 1-17=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 4.9A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 4.2m.

-a) 2.00E+01 m
-b) 2.19E+01 m
-c) 2.41E+01 m
+d) 2.64E+01 m
-e) 2.89E+01 m
=====*_Rendition_* 1-18=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 6.9A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 4.4m.
-a) 2.10E+01 m
-b) 2.30E+01 m
-c) 2.52E+01 m
+d) 2.76E+01 m
-e) 3.03E+01 m
=====*_Rendition_* 1-19=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 5.8A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 6.1m.
+a) 3.83E+01 m
-b) 4.20E+01 m
-c) 4.61E+01 m
-d) 5.05E+01 m
-e) 5.54E+01 m
=====*_Rendition_* 1-20=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 6.7A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 4.1m.
+a) 2.58E+01 m
-b) 2.82E+01 m
-c) 3.10E+01 m
-d) 3.40E+01 m
-e) 3.72E+01 m
=====*_Rendition_* 1-21=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic

field. A current of 4.8A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 6.2m.
-a) 2.70E+01 m
-b) 2.96E+01 m
-c) 3.24E+01 m
-d) 3.55E+01 m
+e) 3.90E+01 m
=====*_Rendition_* 1-22=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 5.7A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 9.2m.
-a) 4.38E+01 m
-b) 4.81E+01 m
-c) 5.27E+01 m
+d) 5.78E+01 m
-e) 6.34E+01 m
=====*_Rendition_* 1-23=====
<!--c22Magnetism_ampereLaw_1-->Amphere's law for [[w:magnetostatics|magnetostatic]] currents is that $\oint\vec H\cdot\vec{d\ell}=\int\vec J\cdot \vec {dA}$ equals the current enclosed by the closed loop, and $B=\mu_0H$ is the magnetic field. A current of 6.5A flows upward along the z axis. Noting that for this geometry, $\oint \vec B \cdot\vec{d\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 6.8m.
+a) 4.27E+01 m
-b) 4.68E+01 m
-c) 5.14E+01 m
-d) 5.63E+01 m
-e) 6.18E+01 m
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 9.6m from a wire carrying a current of 8.2A?
-a) 1.24E-01 A/m
+b) 1.36E-01 A/m
-c) 1.49E-01 A/m
-d) 1.63E-01 A/m
-e) 1.79E-01 A/m
=====*_Rendition_* 2-3=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 4.2m from a wire carrying a current of 7.9A?
-a) 2.73E-01 A/m

+b) 2.99E-01 A/m
-c) 3.28E-01 A/m
-d) 3.60E-01 A/m
-e) 3.95E-01 A/m
=====*_Rendition_* 2-4=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 9.9m from a wire carrying a current of 6.9A?
+a) 1.11E-01 A/m
-b) 1.22E-01 A/m
-c) 1.33E-01 A/m
-d) 1.46E-01 A/m
-e) 1.60E-01 A/m
=====*_Rendition_* 2-5=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 8.3m from a wire carrying a current of 7.3A?
+a) 1.40E-01 A/m
-b) 1.53E-01 A/m
-c) 1.68E-01 A/m
-d) 1.85E-01 A/m
-e) 2.02E-01 A/m
=====*_Rendition_* 2-6=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 9.8m from a wire carrying a current of 9.6A?
-a) 1.30E-01 A/m
-b) 1.42E-01 A/m
+c) 1.56E-01 A/m
-d) 1.71E-01 A/m
-e) 1.87E-01 A/m
=====*_Rendition_* 2-7=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 8.2m from a wire carrying a current of 7.2A?
-a) 9.67E-02 A/m
-b) 1.06E-01 A/m
-c) 1.16E-01 A/m
-d) 1.27E-01 A/m
+e) 1.40E-01 A/m
=====*_Rendition_* 2-8=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 8.8m from a wire carrying a current of 8.6A?
+a) 1.56E-01 A/m
-b) 1.71E-01 A/m
-c) 1.87E-01 A/m
-d) 2.05E-01 A/m
-e) 2.25E-01 A/m
=====*_Rendition_* 2-9=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance

of 6.3m from a wire carrying a current of 7.4A?
+a) 1.87E-01 A/m
-b) 2.05E-01 A/m
-c) 2.25E-01 A/m
-d) 2.46E-01 A/m
-e) 2.70E-01 A/m
=====*_Rendition_* 2-10=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 9.8m from a wire carrying a current of 6.9A?
-a) 1.02E-01 A/m
+b) 1.12E-01 A/m
-c) 1.23E-01 A/m
-d) 1.35E-01 A/m
-e) 1.48E-01 A/m
=====*_Rendition_* 2-11=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 4.6m from a wire carrying a current of 9.8A?
-a) 2.57E-01 A/m
-b) 2.82E-01 A/m
-c) 3.09E-01 A/m
+d) 3.39E-01 A/m
-e) 3.72E-01 A/m
=====*_Rendition_* 2-12=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 4.4m from a wire carrying a current of 5.8A?
-a) 1.91E-01 A/m
+b) 2.10E-01 A/m
-c) 2.30E-01 A/m
-d) 2.52E-01 A/m
-e) 2.77E-01 A/m
=====*_Rendition_* 2-13=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 7.7m from a wire carrying a current of 4.8A?
+a) 9.92E-02 A/m
-b) 1.09E-01 A/m
-c) 1.19E-01 A/m
-d) 1.31E-01 A/m
-e) 1.43E-01 A/m
=====*_Rendition_* 2-14=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 6.5m from a wire carrying a current of 4.7A?
-a) 7.96E-02 A/m
-b) 8.73E-02 A/m
-c) 9.57E-02 A/m
-d) 1.05E-01 A/m
+e) 1.15E-01 A/m
=====*_Rendition_* 2-15=====

<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 5.4m from a wire carrying a current of 5A?
-a) 1.34E-01 A/m
+b) 1.47E-01 A/m
-c) 1.62E-01 A/m
-d) 1.77E-01 A/m
-e) 1.94E-01 A/m
=====*_Rendition_* 2-16=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 7.9m from a wire carrying a current of 6.8A?
-a) 1.14E-01 A/m
-b) 1.25E-01 A/m
+c) 1.37E-01 A/m
-d) 1.50E-01 A/m
-e) 1.65E-01 A/m
=====*_Rendition_* 2-17=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 4.2m from a wire carrying a current of 4.9A?
-a) 1.28E-01 A/m
-b) 1.41E-01 A/m
-c) 1.54E-01 A/m
-d) 1.69E-01 A/m
+e) 1.86E-01 A/m
=====*_Rendition_* 2-18=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 4.4m from a wire carrying a current of 6.9A?
-a) 2.28E-01 A/m
+b) 2.50E-01 A/m
-c) 2.74E-01 A/m
-d) 3.00E-01 A/m
-e) 3.29E-01 A/m
=====*_Rendition_* 2-19=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 6.1m from a wire carrying a current of 5.8A?
-a) 1.38E-01 A/m
+b) 1.51E-01 A/m
-c) 1.66E-01 A/m
-d) 1.82E-01 A/m
-e) 1.99E-01 A/m
=====*_Rendition_* 2-20=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 4.1m from a wire carrying a current of 6.7A?
+a) 2.60E-01 A/m
-b) 2.85E-01 A/m
-c) 3.13E-01 A/m
-d) 3.43E-01 A/m

-e) 3.76E-01 A/m
=====*_Rendition_* 2-21=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 6.2m from a wire carrying a current of 4.8A?
-a) 9.35E-02 A/m
-b) 1.02E-01 A/m
-c) 1.12E-01 A/m
+d) 1.23E-01 A/m
-e) 1.35E-01 A/m
=====*_Rendition_* 2-22=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 9.2m from a wire carrying a current of 5.7A?
-a) 7.48E-02 A/m
-b) 8.20E-02 A/m
-c) 8.99E-02 A/m
+d) 9.86E-02 A/m
-e) 1.08E-01 A/m
=====*_Rendition_* 2-23=====
<!--c22Magnetism_ampereLaw_2-->If $H=B/\mu_0$, where B is magnetic field, what is H at a distance of 6.8m from a wire carrying a current of 6.5A?
-a) 1.39E-01 A/m
+b) 1.52E-01 A/m
-c) 1.67E-01 A/m
-d) 1.83E-01 A/m
-e) 2.01E-01 A/m
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (8.6443,4.1757) if a current of 8.2A flows through a wire that runs along the z axis?
-a) 8.47E-02 A/m
-b) 9.29E-02 A/m
-c) 1.02E-01 A/m
-d) 1.12E-01 A/m
+e) 1.22E-01 A/m
=====*_Rendition_* 3-3=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (2.0898,3.6432) if a current of 7.9A flows through a wire that runs along the z axis?
-a) 1.36E-01 A/m
+b) 1.49E-01 A/m
-c) 1.63E-01 A/m
-d) 1.79E-01 A/m
-e) 1.96E-01 A/m
=====*_Rendition_* 3-4=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the

point (6.1539,7.7549) if a current of 6.9A flows through a wire that runs along the z axis?
-a) 5.23E-02 A/m
-b) 5.74E-02 A/m
-c) 6.29E-02 A/m
+d) 6.90E-02 A/m
-e) 7.56E-02 A/m
=====*_Rendition_* 3-5=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (7.9293,2.4528) if a current of 7.3A flows through a wire that runs along the z axis?
-a) 1.11E-01 A/m
-b) 1.22E-01 A/m
+c) 1.34E-01 A/m
-d) 1.47E-01 A/m
-e) 1.61E-01 A/m
=====*_Rendition_* 3-6=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (8.0883,5.5335) if a current of 9.6A flows through a wire that runs along the z axis?
-a) 8.90E-02 A/m
-b) 9.76E-02 A/m
-c) 1.07E-01 A/m
-d) 1.17E-01 A/m
+e) 1.29E-01 A/m
=====*_Rendition_* 3-7=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (7.8338,2.4233) if a current of 7.2A flows through a wire that runs along the z axis?
-a) 1.01E-01 A/m
-b) 1.11E-01 A/m
-c) 1.22E-01 A/m
+d) 1.34E-01 A/m
-e) 1.46E-01 A/m
=====*_Rendition_* 3-8=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (8.407,2.6006) if a current of 8.6A flows through a wire that runs along the z axis?
-a) 1.13E-01 A/m
-b) 1.24E-01 A/m
-c) 1.36E-01 A/m
+d) 1.49E-01 A/m
-e) 1.63E-01 A/m
=====*_Rendition_* 3-9=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (5.6728,2.7403) if a current of 7.4A flows through a wire that runs along the z axis?

-a) 1.28E-01 A/m
-b) 1.40E-01 A/m
-c) 1.54E-01 A/m
+d) 1.68E-01 A/m
-e) 1.85E-01 A/m
=====*_Rendition_* 3-10=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (9.3623,2.8961) if a current of 6.9A flows through a wire that runs along the z axis?
-a) 8.90E-02 A/m
-b) 9.76E-02 A/m
+c) 1.07E-01 A/m
-d) 1.17E-01 A/m
-e) 1.29E-01 A/m
=====*_Rendition_* 3-11=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (2.8594,3.6033) if a current of 9.8A flows through a wire that runs along the z axis?
-a) 1.75E-01 A/m
-b) 1.92E-01 A/m
+c) 2.11E-01 A/m
-d) 2.31E-01 A/m
-e) 2.53E-01 A/m
=====*_Rendition_* 3-12=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (3.2194,2.9992) if a current of 5.8A flows through a wire that runs along the z axis?
-a) 1.06E-01 A/m
-b) 1.16E-01 A/m
-c) 1.28E-01 A/m
-d) 1.40E-01 A/m
+e) 1.54E-01 A/m
=====*_Rendition_* 3-13=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (6.3551,4.3477) if a current of 4.8A flows through a wire that runs along the z axis?
+a) 8.19E-02 A/m
-b) 8.98E-02 A/m
-c) 9.84E-02 A/m
-d) 1.08E-01 A/m
-e) 1.18E-01 A/m
=====*_Rendition_* 3-14=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (6.2097,1.9209) if a current of 4.7A flows through a wire that runs along the z axis?
-a) 8.34E-02 A/m
-b) 9.14E-02 A/m

-c) 1.00E-01 A/m
+d) 1.10E-01 A/m
-e) 1.21E-01 A/m
=====*_Rendition_* 3-15=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (5.1588,1.5958) if a current of 5A flows through a wire that runs along the z axis?
+a) 1.41E-01 A/m
-b) 1.54E-01 A/m
-c) 1.69E-01 A/m
-d) 1.86E-01 A/m
-e) 2.03E-01 A/m
=====*_Rendition_* 3-16=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (5.7803,5.3849) if a current of 6.8A flows through a wire that runs along the z axis?
-a) 6.93E-02 A/m
-b) 7.60E-02 A/m
-c) 8.34E-02 A/m
-d) 9.14E-02 A/m
+e) 1.00E-01 A/m
=====*_Rendition_* 3-17=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (2.0898,3.6432) if a current of 4.9A flows through a wire that runs along the z axis?
-a) 6.39E-02 A/m
-b) 7.01E-02 A/m
-c) 7.68E-02 A/m
-d) 8.43E-02 A/m
+e) 9.24E-02 A/m
=====*_Rendition_* 3-18=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (1.5944,4.101) if a current of 6.9A flows through a wire that runs along the z axis?
-a) 6.86E-02 A/m
-b) 7.52E-02 A/m
-c) 8.25E-02 A/m
+d) 9.04E-02 A/m
-e) 9.92E-02 A/m
=====*_Rendition_* 3-19=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (2.2104,5.6854) if a current of 5.8A flows through a wire that runs along the z axis?
-a) 4.16E-02 A/m
-b) 4.56E-02 A/m
-c) 5.00E-02 A/m
+d) 5.48E-02 A/m

-e) 6.01E-02 A/m
=====*_Rendition_* 3-20=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (2.5486,3.2116) if a current of 6.7A flows through a wire that runs along the z axis?
-a) 1.23E-01 A/m
-b) 1.34E-01 A/m
-c) 1.47E-01 A/m
+d) 1.62E-01 A/m
-e) 1.77E-01 A/m
=====*_Rendition_* 3-21=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (3.854,4.8566) if a current of 4.8A flows through a wire that runs along the z axis?
-a) 6.37E-02 A/m
-b) 6.99E-02 A/m
+c) 7.66E-02 A/m
-d) 8.40E-02 A/m
-e) 9.21E-02 A/m
=====*_Rendition_* 3-22=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (5.7188,7.2066) if a current of 5.7A flows through a wire that runs along the z axis?
+a) 6.13E-02 A/m
-b) 6.72E-02 A/m
-c) 7.37E-02 A/m
-d) 8.08E-02 A/m
-e) 8.86E-02 A/m
=====*_Rendition_* 3-23=====
<!--c22Magnetism_ampereLaw_3-->If $H=B/\mu_0$, where B is magnetic field, what is H_y at the point (6.4963,2.0095) if a current of 6.5A flows through a wire that runs along the z axis?
-a) 1.33E-01 A/m
+b) 1.45E-01 A/m
-c) 1.59E-01 A/m
-d) 1.75E-01 A/m
-e) 1.92E-01 A/m
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 2705 turns and is 134 meters long. The wire carrys a current of 8.2A. What is the magnetic field in the center?
-a) 1.90E-04 Tesla
+b) 2.08E-04 Tesla
-c) 2.28E-04 Tesla
-d) 2.50E-04 Tesla
-e) 2.74E-04 Tesla
=====*_Rendition_* 4-3=====

<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 1254 turns and is 164 meters long. The wire carrys a current of 9.3A. What is the magnetic field in the center?
-a) 7.43E-05 Tesla
-b) 8.15E-05 Tesla
+c) 8.94E-05 Tesla
-d) 9.80E-05 Tesla
-e) 1.07E-04 Tesla
=====*_Rendition_* 4-4=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 2543 turns and is 166 meters long. The wire carrys a current of 9.2A. What is the magnetic field in the center?
-a) 1.34E-04 Tesla
-b) 1.47E-04 Tesla
-c) 1.62E-04 Tesla
+d) 1.77E-04 Tesla
-e) 1.94E-04 Tesla
=====*_Rendition_* 4-5=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 2762 turns and is 142 meters long. The wire carrys a current of 9.7A. What is the magnetic field in the center?
+a) 2.37E-04 Tesla
-b) 2.60E-04 Tesla
-c) 2.85E-04 Tesla
-d) 3.13E-04 Tesla
-e) 3.43E-04 Tesla
=====*_Rendition_* 4-6=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 1070 turns and is 122 meters long. The wire carrys a current of 8.4A. What is the magnetic field in the center?
-a) 7.02E-05 Tesla
-b) 7.70E-05 Tesla
-c) 8.44E-05 Tesla
+d) 9.26E-05 Tesla
-e) 1.02E-04 Tesla
=====*_Rendition_* 4-7=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 2647 turns and is 180 meters long. The wire carrys a current of 9.3A. What is the magnetic field in the center?
+a) 1.72E-04 Tesla
-b) 1.88E-04 Tesla
-c) 2.07E-04 Tesla
-d) 2.27E-04 Tesla
-e) 2.48E-04 Tesla
=====*_Rendition_* 4-8=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 1634 turns and is 122 meters long. The wire carrys a current of 9.5A. What is the magnetic field in the center?
+a) 1.60E-04 Tesla
-b) 1.75E-04 Tesla
-c) 1.92E-04 Tesla
-d) 2.11E-04 Tesla

-e) 2.31E-04 Tesla
=====*_Rendition_* 4-9=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 1016 turns and is 136 meters long. The wire carrys a current of 7.6A. What is the magnetic field in the center?
-a) 5.41E-05 Tesla
-b) 5.93E-05 Tesla
-c) 6.51E-05 Tesla
+d) 7.13E-05 Tesla
-e) 7.82E-05 Tesla
=====*_Rendition_* 4-10=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 1992 turns and is 162 meters long. The wire carrys a current of 8.7A. What is the magnetic field in the center?
-a) 1.02E-04 Tesla
-b) 1.12E-04 Tesla
-c) 1.23E-04 Tesla
+d) 1.34E-04 Tesla
-e) 1.47E-04 Tesla
=====*_Rendition_* 4-11=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 1946 turns and is 144 meters long. The wire carrys a current of 9A. What is the magnetic field in the center?
-a) 1.06E-04 Tesla
-b) 1.16E-04 Tesla
-c) 1.27E-04 Tesla
-d) 1.39E-04 Tesla
+e) 1.53E-04 Tesla
=====*_Rendition_* 4-12=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 1656 turns and is 144 meters long. The wire carrys a current of 8.4A. What is the magnetic field in the center?
-a) 8.40E-05 Tesla
-b) 9.21E-05 Tesla
-c) 1.01E-04 Tesla
-d) 1.11E-04 Tesla
+e) 1.21E-04 Tesla
=====*_Rendition_* 4-13=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 2066 turns and is 156 meters long. The wire carrys a current of 7.6A. What is the magnetic field in the center?
-a) 8.75E-05 Tesla
-b) 9.59E-05 Tesla
-c) 1.05E-04 Tesla
-d) 1.15E-04 Tesla
+e) 1.26E-04 Tesla
=====*_Rendition_* 4-14=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 2979 turns and is 170 meters long. The wire carrys a current of 8.1A. What is the magnetic field in the center?
+a) 1.78E-04 Tesla
-b) 1.96E-04 Tesla

-c) 2.14E-04 Tesla
-d) 2.35E-04 Tesla
-e) 2.58E-04 Tesla
=====*_Rendition_* 4-15=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 2662 turns and is 182 meters long. The wire carrys a current of 9.2A. What is the magnetic field in the center?
-a) 1.54E-04 Tesla
+b) 1.69E-04 Tesla
-c) 1.85E-04 Tesla
-d) 2.03E-04 Tesla
-e) 2.23E-04 Tesla
=====*_Rendition_* 4-16=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 2175 turns and is 134 meters long. The wire carrys a current of 7.6A. What is the magnetic field in the center?
-a) 1.29E-04 Tesla
-b) 1.41E-04 Tesla
+c) 1.55E-04 Tesla
-d) 1.70E-04 Tesla
-e) 1.86E-04 Tesla
=====*_Rendition_* 4-17=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 1744 turns and is 146 meters long. The wire carrys a current of 9.5A. What is the magnetic field in the center?
+a) 1.43E-04 Tesla
-b) 1.56E-04 Tesla
-c) 1.71E-04 Tesla
-d) 1.88E-04 Tesla
-e) 2.06E-04 Tesla
=====*_Rendition_* 4-18=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 1518 turns and is 156 meters long. The wire carrys a current of 8.9A. What is the magnetic field in the center?
-a) 8.26E-05 Tesla
-b) 9.05E-05 Tesla
-c) 9.93E-05 Tesla
+d) 1.09E-04 Tesla
-e) 1.19E-04 Tesla
=====*_Rendition_* 4-19=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 2890 turns and is 134 meters long. The wire carrys a current of 7.7A. What is the magnetic field in the center?
-a) 1.90E-04 Tesla
+b) 2.09E-04 Tesla
-c) 2.29E-04 Tesla
-d) 2.51E-04 Tesla
-e) 2.75E-04 Tesla
=====*_Rendition_* 4-20=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 1982 turns and is 154 meters long. The wire carrys a current of 9.1A. What is the magnetic field in the center?

-a) 1.12E-04 Tesla
-b) 1.22E-04 Tesla
-c) 1.34E-04 Tesla
+d) 1.47E-04 Tesla
-e) 1.61E-04 Tesla
=====*_Rendition_* 4-21=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 1259 turns and is 154 meters long. The wire carrys a current of 9A. What is the magnetic field in the center?
+a) 9.25E-05 Tesla
-b) 1.01E-04 Tesla
-c) 1.11E-04 Tesla
-d) 1.22E-04 Tesla
-e) 1.34E-04 Tesla
=====*_Rendition_* 4-22=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 2806 turns and is 118 meters long. The wire carrys a current of 9.7A. What is the magnetic field in the center?
-a) 2.41E-04 Tesla
-b) 2.64E-04 Tesla
+c) 2.90E-04 Tesla
-d) 3.18E-04 Tesla
-e) 3.48E-04 Tesla
=====*_Rendition_* 4-23=====
<!--c22Magnetism_ampereLaw_4-->A very long and thin solenoid has 1727 turns and is 138 meters long. The wire carrys a current of 8.1A. What is the magnetic field in the center?
-a) 9.66E-05 Tesla
-b) 1.06E-04 Tesla
-c) 1.16E-04 Tesla
+d) 1.27E-04 Tesla
-e) 1.40E-04 Tesla
====*_Question_* 5====
=====*_Rendition_* 5-2=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 1223 turns and is 134 meters long. The wire carrys a current of 8.2A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 28 meters from the center and stops 93 meters from the center?
-a) 2.21E+03 A
-b) 2.43E+03 A
-c) 2.66E+03 A
+d) 2.92E+03 A
-e) 3.20E+03 A
=====*_Rendition_* 5-3=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 2850 turns and is 164 meters long. The wire carrys a current of 9.3A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 47 meters from the center and stops 108 meters from the center?
-a) 5.16E+03 A
+b) 5.66E+03 A

-c) 6.20E+03 A
-d) 6.80E+03 A
-e) 7.46E+03 A
=====*_Rendition_* 5-4=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 1880 turns and is 166 meters long. The wire carrys a current of 9.2A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 48 meters from the center and stops 102 meters from the center?
+a) 3.65E+03 A
-b) 4.00E+03 A
-c) 4.38E+03 A
-d) 4.81E+03 A
-e) 5.27E+03 A
=====*_Rendition_* 5-5=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 1016 turns and is 142 meters long. The wire carrys a current of 9.7A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 27 meters from the center and stops 84 meters from the center?
+a) 3.05E+03 A
-b) 3.35E+03 A
-c) 3.67E+03 A
-d) 4.03E+03 A
-e) 4.41E+03 A
=====*_Rendition_* 5-6=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 1292 turns and is 122 meters long. The wire carrys a current of 8.4A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 39 meters from the center and stops 75 meters from the center?
-a) 1.63E+03 A
-b) 1.78E+03 A
+c) 1.96E+03 A
-d) 2.15E+03 A
-e) 2.35E+03 A
=====*_Rendition_* 5-7=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 2994 turns and is 180 meters long. The wire carrys a current of 9.3A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 43 meters from the center and stops 101 meters from the center?
-a) 6.63E+03 A
+b) 7.27E+03 A
-c) 7.97E+03 A
-d) 8.74E+03 A
-e) 9.58E+03 A
=====*_Rendition_* 5-8=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 1513 turns and is 122 meters long. The wire carrys a current of 9.5A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that

starts 34 meters from the center and stops 89 meters from the center?
-a) 2.41E+03 A
-b) 2.65E+03 A
-c) 2.90E+03 A
+d) 3.18E+03 A
-e) 3.49E+03 A
=====*_Rendition_* 5-9=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 1965 turns and is 136 meters long. The wire carrys a current of 7.6A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 43 meters from the center and stops 88 meters from the center?
+a) 2.75E+03 A
-b) 3.01E+03 A
-c) 3.30E+03 A
-d) 3.62E+03 A
-e) 3.97E+03 A
=====*_Rendition_* 5-10=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 1847 turns and is 162 meters long. The wire carrys a current of 8.7A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 42 meters from the center and stops 103 meters from the center?
-a) 2.68E+03 A
-b) 2.93E+03 A
-c) 3.22E+03 A
-d) 3.53E+03 A
+e) 3.87E+03 A
=====*_Rendition_* 5-11=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 2918 turns and is 144 meters long. The wire carrys a current of 9A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 38 meters from the center and stops 89 meters from the center?
+a) 6.20E+03 A
-b) 6.80E+03 A
-c) 7.45E+03 A
-d) 8.17E+03 A
-e) 8.96E+03 A
=====*_Rendition_* 5-12=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 2472 turns and is 144 meters long. The wire carrys a current of 8.4A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 43 meters from the center and stops 87 meters from the center?
-a) 3.17E+03 A
-b) 3.48E+03 A
-c) 3.81E+03 A
+d) 4.18E+03 A
-e) 4.59E+03 A
=====*_Rendition_* 5-13=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 2376

turns and is 156 meters long. The wire carrys a current of 7.6A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 49 meters from the center and stops 102 meters from the center?
-a) 2.32E+03 A
-b) 2.55E+03 A
-c) 2.79E+03 A
-d) 3.06E+03 A
+e) 3.36E+03 A
=====*_Rendition_* 5-14=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 1409 turns and is 170 meters long. The wire carrys a current of 8.1A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 37 meters from the center and stops 100 meters from the center?
-a) 2.94E+03 A
+b) 3.22E+03 A
-c) 3.53E+03 A
-d) 3.87E+03 A
-e) 4.25E+03 A
=====*_Rendition_* 5-15=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 2240 turns and is 182 meters long. The wire carrys a current of 9.2A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 47 meters from the center and stops 109 meters from the center?
-a) 4.14E+03 A
-b) 4.54E+03 A
+c) 4.98E+03 A
-d) 5.46E+03 A
-e) 5.99E+03 A
=====*_Rendition_* 5-16=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 2219 turns and is 134 meters long. The wire carrys a current of 7.6A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 44 meters from the center and stops 86 meters from the center?
-a) 2.41E+03 A
-b) 2.64E+03 A
+c) 2.89E+03 A
-d) 3.17E+03 A
-e) 3.48E+03 A
=====*_Rendition_* 5-17=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 2682 turns and is 146 meters long. The wire carrys a current of 9.5A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 44 meters from the center and stops 86 meters from the center?
-a) 3.84E+03 A
-b) 4.21E+03 A
-c) 4.62E+03 A
+d) 5.06E+03 A

-e) 5.55E+03 A
=====*_Rendition_* 5-18=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 1259 turns and is 156 meters long. The wire carrys a current of 8.9A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 35 meters from the center and stops 90 meters from the center?
-a) 2.82E+03 A
+b) 3.09E+03 A
-c) 3.39E+03 A
-d) 3.71E+03 A
-e) 4.07E+03 A
=====*_Rendition_* 5-19=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 2763 turns and is 134 meters long. The wire carrys a current of 7.7A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 34 meters from the center and stops 86 meters from the center?
-a) 3.97E+03 A
-b) 4.36E+03 A
-c) 4.78E+03 A
+d) 5.24E+03 A
-e) 5.74E+03 A
=====*_Rendition_* 5-20=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 2774 turns and is 154 meters long. The wire carrys a current of 9.1A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 38 meters from the center and stops 94 meters from the center?
-a) 4.42E+03 A
-b) 4.85E+03 A
-c) 5.32E+03 A
-d) 5.83E+03 A
+e) 6.39E+03 A
=====*_Rendition_* 5-21=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 1397 turns and is 154 meters long. The wire carrys a current of 9A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 31 meters from the center and stops 93 meters from the center?
+a) 3.76E+03 A
-b) 4.12E+03 A
-c) 4.52E+03 A
-d) 4.95E+03 A
-e) 5.43E+03 A
=====*_Rendition_* 5-22=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 2006 turns and is 118 meters long. The wire carrys a current of 9.7A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 30 meters from the center and stops 78 meters from the center?
+a) 4.78E+03 A

-b) 5.24E+03 A
-c) 5.75E+03 A
-d) 6.30E+03 A
-e) 6.91E+03 A
=====*_Rendition_* 5-23=====
<!--c22Magnetism_ampereLaw_5-->A very long and thin solenoid has 1295 turns and is 138 meters long. The wire carrys a current of 8.1A. If this solenoid is sufficiently thin, what is the line integral of$\int \vec H\cdot\vec{d\ell}$ along an on-axis path that starts 22 meters from the center and stops 90 meters from the center?
-a) 2.97E+03 A
-b) 3.26E+03 A
+c) 3.57E+03 A
-d) 3.92E+03 A
-e) 4.30E+03 A
====*_Question_* 6====
=====*_Rendition_* 6-2=====
<!--dummy_1-->What is the sum of 5.2 apples plus 76 apples?
-a) 7.41E+01 apples
+b) 8.12E+01 apples
-c) 8.90E+01 apples
-d) 9.76E+01 apples
-e) 1.07E+02 apples
=====*_Rendition_* 6-3=====
<!--dummy_1-->What is the sum of 3.4 apples plus 62 apples?
-a) 4.96E+01 apples
-b) 5.44E+01 apples
-c) 5.96E+01 apples
+d) 6.54E+01 apples
-e) 7.17E+01 apples
=====*_Rendition_* 6-4=====
<!--dummy_1-->[[File:KaisekiGairon-371-3.svg|right|240px|KaisekiGairon-371-3]]A torus is centered around the x-y plane, with major radius, a = 3.24 m, and minor radius, r = 1.35m. A wire carrying 4.9A is uniformly wrapped with 731 turns. If B=μ₀H is the magnetic field, what is H inside the torus, at a point on the xy plane that is 0.81m from the outermost edge of the torus?
+a) 1.11E+02 amps per meter
-b) 1.20E+02 amps per meter
-c) 1.30E+02 amps per meter
-d) 1.40E+02 amps per meter
-e) 1.51E+02 amps per meter
=====*_Rendition_* 6-5=====
<!--dummy_1-->What is the sum of 6.6 apples plus 33 apples?
-a) 3.61E+01 apples
+b) 3.96E+01 apples
-c) 4.34E+01 apples
-d) 4.76E+01 apples
-e) 5.22E+01 apples
=====*_Rendition_* 6-6=====
<!--dummy_1-->What is the sum of 0.2 apples plus 57 apples?
+a) 5.72E+01 apples

-b) 6.27E+01 apples
-c) 6.88E+01 apples
-d) 7.54E+01 apples
-e) 8.27E+01 apples
=====*_Rendition_* 6-7=====
<!--dummy_1-->[[File:KaisekiGairon-371-3.svg|right|240px|KaisekiGairon-371-3]]A torus is centered around the x-y plane, with major radius, a = 6.48 m, and minor radius, r = 2.16m. A wire carrying 5A is uniformly wrapped with 930 turns. If B=μ₀H is the magnetic field, what is H inside the torus, at a point on the xy plane that is 0.54m from the outermost edge of the torus?
-a) 5.31E+01 amps per meter
-b) 5.73E+01 amps per meter
-c) 6.19E+01 amps per meter
-d) 6.68E+01 amps per meter
+e) 7.21E+01 amps per meter
=====*_Rendition_* 6-8=====
<!--dummy_1-->What is the sum of 0.8 apples plus 18 apples?
-a) 1.56E+01 apples
-b) 1.71E+01 apples
+c) 1.88E+01 apples
-d) 2.06E+01 apples
-e) 2.26E+01 apples
=====*_Rendition_* 6-9=====
<!--dummy_1-->What is the sum of 7.2 apples plus 9 apples?
+a) 1.62E+01 apples
-b) 1.78E+01 apples
-c) 1.95E+01 apples
-d) 2.14E+01 apples
-e) 2.34E+01 apples
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====*_Instructions_*====
Instructions are forthcoming

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{<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by, B=μ₀H, where B is magnetic field. A current of 48A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,6.7){{nowrap end}} to the point {{nowrap begin}}(6.7,0){{nowrap end}}.}
-a) 9.10E+00 amps
-b) 9.98E+00 amps
-c) 1.09E+01 amps
+d) 1.20E+01 amps
-e) 1.32E+01 amps

{<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by, B=μ₀H, where B is magnetic field. A current of 67A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(<big>-</big>6.1, 6.1){{nowrap end}} to the point {{nowrap begin}}(6.1, 6.1){{nowrap end}}.}
-a) 1.27E+01 amps
-b) 1.39E+01 amps
-c) 1.53E+01 amps
+d) 1.68E+01 amps
-e) 1.84E+01 amps

{<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by, B=μ₀H, where B is magnetic field. A current of 84A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,9.3){{nowrap end}} to the point {{nowrap begin}}(9.3,9.3){{nowrap end}}.}
+a) 1.05E+01 amps
-b) 1.15E+01 amps
-c) 1.26E+01 amps
-d) 1.38E+01 amps
-e) 1.52E+01 amps

{<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by, B=μ₀H, where B is magnetic field. A current of 81A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from {{nowrap begin}}(<big>-∞</big>,6.4){{nowrap end}} to {{nowrap begin}}(+<big>∞</big>,6.4){{nowrap end}}.}
-a) 3.37E+01 amps
-b) 3.69E+01 amps

+c) 4.05E+01 amps
-d) 4.44E+01 amps
-e) 4.87E+01 amps

</quiz>

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Other renditions
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====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by, B=μ₀H, where B is magnetic field. A current of 52A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,7.5){{nowrap end}} to the point {{nowrap begin}}(7.5,0){{nowrap end}}.
-a) 1.19E+01 amps
+b) 1.30E+01 amps
-c) 1.43E+01 amps
-d) 1.56E+01 amps
-e) 1.71E+01 amps
=====*_Rendition_* 1-3=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by, B=μ₀H, where B is magnetic field. A current of 78A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,4.6){{nowrap end}} to the point {{nowrap begin}}(4.6,0){{nowrap end}}.
-a) 1.62E+01 amps
-b) 1.78E+01 amps
+c) 1.95E+01 amps
-d) 2.14E+01 amps
-e) 2.34E+01 amps
=====*_Rendition_* 1-4=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by, B=μ₀H, where B is magnetic field. A current of 83A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,7.4){{nowrap end}} to the point {{nowrap begin}}(7.4,0){{nowrap end}}.
-a) 1.89E+01 amps
+b) 2.08E+01 amps
-c) 2.28E+01 amps
-d) 2.49E+01 amps
-e) 2.74E+01 amps
=====*_Rendition_* 1-5=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by, B=μ₀H, where B is magnetic field. A current of 37A

passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,8.4){{nowrap end}} to the point {{nowrap begin}}(8.4,0){{nowrap end}}.
-a) 8.44E+00 amps
+b) 9.25E+00 amps
-c) 1.01E+01 amps
-d) 1.11E+01 amps
-e) 1.22E+01 amps
=====*_Rendition_* 1-6=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by, B=μ₀H, where B is magnetic field. A current of 92A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,6.4){{nowrap end}} to the point {{nowrap begin}}(6.4,0){{nowrap end}}.
-a) 2.10E+01 amps
+b) 2.30E+01 amps
-c) 2.52E+01 amps
-d) 2.77E+01 amps
-e) 3.03E+01 amps
=====*_Rendition_* 1-7=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by, B=μ₀H, where B is magnetic field. A current of 87A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,9.3){{nowrap end}} to the point {{nowrap begin}}(9.3,0){{nowrap end}}.
+a) 2.18E+01 amps
-b) 2.38E+01 amps
-c) 2.61E+01 amps
-d) 2.87E+01 amps
-e) 3.14E+01 amps
=====*_Rendition_* 1-8=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by, B=μ₀H, where B is magnetic field. A current of 47A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,9){{nowrap end}} to the point {{nowrap begin}}(9,0){{nowrap end}}.
-a) 8.91E+00 amps
-b) 9.77E+00 amps
-c) 1.07E+01 amps
+d) 1.18E+01 amps
-e) 1.29E+01 amps
=====*_Rendition_* 1-9=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by, B=μ₀H, where B is magnetic field. A current of 55A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,8.7){{nowrap end}} to the point {{nowrap begin}}(8.7,0){{nowrap end}}.

+a) 1.38E+01 amps
-b) 1.51E+01 amps
-c) 1.65E+01 amps
-d) 1.81E+01 amps
-e) 1.99E+01 amps
=====*_Rendition_* 1-10=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by, B=μ₀H, where B is magnetic field. A current of 92A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,7.1){{nowrap end}} to the point {{nowrap begin}}(7.1,0){{nowrap end}}.
+a) 2.30E+01 amps
-b) 2.52E+01 amps
-c) 2.77E+01 amps
-d) 3.03E+01 amps
-e) 3.32E+01 amps
=====*_Rendition_* 1-11=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by, B=μ₀H, where B is magnetic field. A current of 40A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,6.7){{nowrap end}} to the point {{nowrap begin}}(6.7,0){{nowrap end}}.
-a) 8.32E+00 amps
-b) 9.12E+00 amps
+c) 1.00E+01 amps
-d) 1.10E+01 amps
-e) 1.20E+01 amps
=====*_Rendition_* 1-12=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by, B=μ₀H, where B is magnetic field. A current of 54A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,5.4){{nowrap end}} to the point {{nowrap begin}}(5.4,0){{nowrap end}}.
-a) 9.34E+00 amps
-b) 1.02E+01 amps
-c) 1.12E+01 amps
-d) 1.23E+01 amps
+e) 1.35E+01 amps
=====*_Rendition_* 1-13=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by, B=μ₀H, where B is magnetic field. A current of 48A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,9.3){{nowrap end}} to the point {{nowrap begin}}(9.3,0){{nowrap end}}.
-a) 9.98E+00 amps
-b) 1.09E+01 amps
+c) 1.20E+01 amps
-d) 1.32E+01 amps

-e) 1.44E+01 amps
=====*_Rendition_* 1-14=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 74A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap
begin}}(0,4.1){{nowrap end}} to the point {{nowrap
begin}}(4.1,0){{nowrap end}}.
-a) 1.28E+01 amps
-b) 1.40E+01 amps
-c) 1.54E+01 amps
-d) 1.69E+01 amps
+e) 1.85E+01 amps
=====*_Rendition_* 1-15=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 91A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap
begin}}(0,7.3){{nowrap end}} to the point {{nowrap
begin}}(7.3,0){{nowrap end}}.
+a) 2.28E+01 amps
-b) 2.49E+01 amps
-c) 2.74E+01 amps
-d) 3.00E+01 amps
-e) 3.29E+01 amps
=====*_Rendition_* 1-16=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 94A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap
begin}}(0,8.4){{nowrap end}} to the point {{nowrap
begin}}(8.4,0){{nowrap end}}.
-a) 1.63E+01 amps
-b) 1.78E+01 amps
-c) 1.95E+01 amps
-d) 2.14E+01 amps
+e) 2.35E+01 amps
=====*_Rendition_* 1-17=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 63A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap
begin}}(0,4.6){{nowrap end}} to the point {{nowrap
begin}}(4.6,0){{nowrap end}}.
-a) 1.31E+01 amps
-b) 1.44E+01 amps
+c) 1.58E+01 amps
-d) 1.73E+01 amps
-e) 1.89E+01 amps
=====*_Rendition_* 1-18=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 43A

passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap
begin}}(0,7.1){{nowrap end}} to the point {{nowrap
begin}}(7.1,0){{nowrap end}}.
-a) 8.15E+00 amps
-b) 8.94E+00 amps
-c) 9.80E+00 amps
+d) 1.08E+01 amps
-e) 1.18E+01 amps
=====*_Rendition_* 1-19=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 99A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap
begin}}(0,6.2){{nowrap end}} to the point {{nowrap
begin}}(6.2,0){{nowrap end}}.
+a) 2.48E+01 amps
-b) 2.71E+01 amps
-c) 2.98E+01 amps
-d) 3.26E+01 amps
-e) 3.58E+01 amps
=====*_Rendition_* 1-20=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 85A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap
begin}}(0,9.8){{nowrap end}} to the point {{nowrap
begin}}(9.8,0){{nowrap end}}.
-a) 1.77E+01 amps
-b) 1.94E+01 amps
+c) 2.13E+01 amps
-d) 2.33E+01 amps
-e) 2.55E+01 amps
=====*_Rendition_* 1-21=====
<!--c22Magnetism_ampereLawSymmetry_1-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 40A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap
begin}}(0,6.6){{nowrap end}} to the point {{nowrap
begin}}(6.6,0){{nowrap end}}.
+a) 1.00E+01 amps
-b) 1.10E+01 amps
-c) 1.20E+01 amps
-d) 1.32E+01 amps
-e) 1.45E+01 amps
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 96A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap
begin}}(<big>-</big>6.6, 6.6){{nowrap end}} to the point {{nowrap

begin}}(6.6, 6.6){{nowrap end}}.
-a) 1.82E+01 amps
-b) 2.00E+01 amps
-c) 2.19E+01 amps
+d) 2.40E+01 amps
-e) 2.63E+01 amps
=====*_Rendition_* 2-3=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 91A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap
begin}}(<big>-</big>9.6, 9.6){{nowrap end}} to the point {{nowrap
begin}}(9.6, 9.6){{nowrap end}}.
-a) 1.73E+01 amps
-b) 1.89E+01 amps
-c) 2.07E+01 amps
+d) 2.28E+01 amps
-e) 2.49E+01 amps
=====*_Rendition_* 2-4=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 74A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap
begin}}(<big>-</big>5.7, 5.7){{nowrap end}} to the point {{nowrap
begin}}(5.7, 5.7){{nowrap end}}.
-a) 1.54E+01 amps
-b) 1.69E+01 amps
+c) 1.85E+01 amps
-d) 2.03E+01 amps
-e) 2.22E+01 amps
=====*_Rendition_* 2-5=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 33A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap
begin}}(<big>-</big>6.6, 6.6){{nowrap end}} to the point {{nowrap
begin}}(6.6, 6.6){{nowrap end}}.
-a) 5.71E+00 amps
-b) 6.26E+00 amps
-c) 6.86E+00 amps
-d) 7.52E+00 amps
+e) 8.25E+00 amps
=====*_Rendition_* 2-6=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 74A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap
begin}}(<big>-</big>7.4, 7.4){{nowrap end}} to the point {{nowrap
begin}}(7.4, 7.4){{nowrap end}}.
-a) 1.69E+01 amps
+b) 1.85E+01 amps
-c) 2.03E+01 amps

-d) 2.22E+01 amps
-e) 2.44E+01 amps
=====*_Rendition_* 2-7=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 96A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap
begin}}(<big>-</big>6.4, 6.4){{nowrap end}} to the point {{nowrap
begin}}(6.4, 6.4){{nowrap end}}.
-a) 2.00E+01 amps
-b) 2.19E+01 amps
+c) 2.40E+01 amps
-d) 2.63E+01 amps
-e) 2.89E+01 amps
=====*_Rendition_* 2-8=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 65A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap
begin}}(<big>-</big>4.9, 4.9){{nowrap end}} to the point {{nowrap
begin}}(4.9, 4.9){{nowrap end}}.
-a) 1.23E+01 amps
-b) 1.35E+01 amps
-c) 1.48E+01 amps
+d) 1.63E+01 amps
-e) 1.78E+01 amps
=====*_Rendition_* 2-9=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 40A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap
begin}}(<big>-</big>9.4, 9.4){{nowrap end}} to the point {{nowrap
begin}}(9.4, 9.4){{nowrap end}}.
-a) 7.59E+00 amps
-b) 8.32E+00 amps
-c) 9.12E+00 amps
+d) 1.00E+01 amps
-e) 1.10E+01 amps
=====*_Rendition_* 2-10=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 77A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap
begin}}(<big>-</big>9.8, 9.8){{nowrap end}} to the point {{nowrap
begin}}(9.8, 9.8){{nowrap end}}.
-a) 1.60E+01 amps
-b) 1.76E+01 amps
+c) 1.93E+01 amps
-d) 2.11E+01 amps
-e) 2.31E+01 amps
=====*_Rendition_* 2-11=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by,

B=μ₀H, where B is magnetic field. A current of 70A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap
begin}}(<big>-</big>8.7, 8.7){{nowrap end}} to the point {{nowrap
begin}}(8.7, 8.7){{nowrap end}}.
-a) 1.21E+01 amps
-b) 1.33E+01 amps
-c) 1.46E+01 amps
-d) 1.60E+01 amps
+e) 1.75E+01 amps
=====*_Rendition_* 2-12=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 87A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap
begin}}(<big>-</big>6.1, 6.1){{nowrap end}} to the point {{nowrap
begin}}(6.1, 6.1){{nowrap end}}.
-a) 1.50E+01 amps
-b) 1.65E+01 amps
-c) 1.81E+01 amps
-d) 1.98E+01 amps
+e) 2.18E+01 amps
=====*_Rendition_* 2-13=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 94A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap
begin}}(<big>-</big>5.8, 5.8){{nowrap end}} to the point {{nowrap
begin}}(5.8, 5.8){{nowrap end}}.
-a) 1.78E+01 amps
-b) 1.95E+01 amps
-c) 2.14E+01 amps
+d) 2.35E+01 amps
-e) 2.58E+01 amps
=====*_Rendition_* 2-14=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 63A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap
begin}}(<big>-</big>9.3, 9.3){{nowrap end}} to the point {{nowrap
begin}}(9.3, 9.3){{nowrap end}}.
-a) 1.19E+01 amps
-b) 1.31E+01 amps
-c) 1.44E+01 amps
+d) 1.58E+01 amps
-e) 1.73E+01 amps
=====*_Rendition_* 2-15=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 82A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap
begin}}(<big>-</big>9.3, 9.3){{nowrap end}} to the point {{nowrap

begin}}(9.3, 9.3){{nowrap end}}.
+a) 2.05E+01 amps
-b) 2.25E+01 amps
-c) 2.46E+01 amps
-d) 2.70E+01 amps
-e) 2.96E+01 amps
=====*_Rendition_* 2-16=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by, B=μ₀H, where B is magnetic field. A current of 51A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(<big>-</big>7, 7){{nowrap end}} to the point {{nowrap begin}}(7, 7){{nowrap end}}.
-a) 9.67E+00 amps
-b) 1.06E+01 amps
-c) 1.16E+01 amps
+d) 1.28E+01 amps
-e) 1.40E+01 amps
=====*_Rendition_* 2-17=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by, B=μ₀H, where B is magnetic field. A current of 88A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(<big>-</big>8.1, 8.1){{nowrap end}} to the point {{nowrap begin}}(8.1, 8.1){{nowrap end}}.
-a) 2.01E+01 amps
+b) 2.20E+01 amps
-c) 2.41E+01 amps
-d) 2.64E+01 amps
-e) 2.90E+01 amps
=====*_Rendition_* 2-18=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by, B=μ₀H, where B is magnetic field. A current of 51A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(<big>-</big>6.8, 6.8){{nowrap end}} to the point {{nowrap begin}}(6.8, 6.8){{nowrap end}}.
-a) 1.06E+01 amps
-b) 1.16E+01 amps
+c) 1.28E+01 amps
-d) 1.40E+01 amps
-e) 1.53E+01 amps
=====*_Rendition_* 2-19=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by, B=μ₀H, where B is magnetic field. A current of 74A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(<big>-</big>6.4, 6.4){{nowrap end}} to the point {{nowrap begin}}(6.4, 6.4){{nowrap end}}.
-a) 1.28E+01 amps
-b) 1.40E+01 amps
-c) 1.54E+01 amps

-d) 1.69E+01 amps
+e) 1.85E+01 amps
=====*_Rendition_* 2-20=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by, B=μ₀H, where B is magnetic field. A current of 71A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(<big>-</big>8.6, 8.6){{nowrap end}} to the point {{nowrap begin}}(8.6, 8.6){{nowrap end}}.
-a) 1.62E+01 amps
+b) 1.78E+01 amps
-c) 1.95E+01 amps
-d) 2.13E+01 amps
-e) 2.34E+01 amps
=====*_Rendition_* 2-21=====
<!--c22Magnetism_ampereLawSymmetry_2-->H is defined by, B=μ₀H, where B is magnetic field. A current of 68A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(<big>-</big>6.4, 6.4){{nowrap end}} to the point {{nowrap begin}}(6.4, 6.4){{nowrap end}}.
-a) 1.55E+01 amps
+b) 1.70E+01 amps
-c) 1.86E+01 amps
-d) 2.04E+01 amps
-e) 2.24E+01 amps
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by, B=μ₀H, where B is magnetic field. A current of 33A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,9.5){{nowrap end}} to the point {{nowrap begin}}(9.5,9.5){{nowrap end}}.
-a) 3.43E+00 amps
-b) 3.76E+00 amps
+c) 4.13E+00 amps
-d) 4.52E+00 amps
-e) 4.96E+00 amps
=====*_Rendition_* 3-3=====
<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by, B=μ₀H, where B is magnetic field. A current of 37A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,9){{nowrap end}} to the point {{nowrap begin}}(9,9){{nowrap end}}.
-a) 4.22E+00 amps
+b) 4.63E+00 amps
-c) 5.07E+00 amps
-d) 5.56E+00 amps
-e) 6.10E+00 amps
=====*_Rendition_* 3-4=====

<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by, B=μ₀H, where B is magnetic field. A current of 88A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,6.6){{nowrap end}} to the point {{nowrap begin}}(6.6,6.6){{nowrap end}}.
-a) 9.15E+00 amps
-b) 1.00E+01 amps
+c) 1.10E+01 amps
-d) 1.21E+01 amps
-e) 1.32E+01 amps
=====*_Rendition_* 3-5=====
<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by, B=μ₀H, where B is magnetic field. A current of 33A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,9.8){{nowrap end}} to the point {{nowrap begin}}(9.8,9.8){{nowrap end}}.
-a) 3.76E+00 amps
+b) 4.13E+00 amps
-c) 4.52E+00 amps
-d) 4.96E+00 amps
-e) 5.44E+00 amps
=====*_Rendition_* 3-6=====
<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by, B=μ₀H, where B is magnetic field. A current of 92A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,5.3){{nowrap end}} to the point {{nowrap begin}}(5.3,5.3){{nowrap end}}.
-a) 8.72E+00 amps
-b) 9.57E+00 amps
-c) 1.05E+01 amps
+d) 1.15E+01 amps
-e) 1.26E+01 amps
=====*_Rendition_* 3-7=====
<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by, B=μ₀H, where B is magnetic field. A current of 86A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,5){{nowrap end}} to the point {{nowrap begin}}(5,5){{nowrap end}}.
-a) 7.44E+00 amps
-b) 8.15E+00 amps
-c) 8.94E+00 amps
-d) 9.80E+00 amps
+e) 1.08E+01 amps
=====*_Rendition_* 3-8=====
<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by, B=μ₀H, where B is magnetic field. A current of 46A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap

begin}}(0,7.9){{nowrap end}} to the point {{nowrap begin}}(7.9,7.9){{nowrap end}}.
-a) 5.24E+00 amps
+b) 5.75E+00 amps
-c) 6.30E+00 amps
-d) 6.91E+00 amps
-e) 7.58E+00 amps
=====*_Rendition_* 3-9=====
<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by, B=μ₀H, where B is magnetic field. A current of 50A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,7){{nowrap end}} to the point {{nowrap begin}}(7,7){{nowrap end}}.
+a) 6.25E+00 amps
-b) 6.85E+00 amps
-c) 7.51E+00 amps
-d) 8.24E+00 amps
-e) 9.03E+00 amps
=====*_Rendition_* 3-10=====
<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by, B=μ₀H, where B is magnetic field. A current of 39A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,8.5){{nowrap end}} to the point {{nowrap begin}}(8.5,8.5){{nowrap end}}.
+a) 4.88E+00 amps
-b) 5.35E+00 amps
-c) 5.86E+00 amps
-d) 6.43E+00 amps
-e) 7.05E+00 amps
=====*_Rendition_* 3-11=====
<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by, B=μ₀H, where B is magnetic field. A current of 59A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,7.2){{nowrap end}} to the point {{nowrap begin}}(7.2,7.2){{nowrap end}}.
+a) 7.38E+00 amps
-b) 8.09E+00 amps
-c) 8.87E+00 amps
-d) 9.72E+00 amps
-e) 1.07E+01 amps
=====*_Rendition_* 3-12=====
<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by, B=μ₀H, where B is magnetic field. A current of 42A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,4.2){{nowrap end}} to the point {{nowrap begin}}(4.2,4.2){{nowrap end}}.
-a) 3.98E+00 amps
-b) 4.37E+00 amps

-c) 4.79E+00 amps
+d) 5.25E+00 amps
-e) 5.76E+00 amps
=====*_Rendition_* 3-13=====
<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 36A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap
begin}}(0,8.6){{nowrap end}} to the point {{nowrap
begin}}(8.6,8.6){{nowrap end}}.
+a) 4.50E+00 amps
-b) 4.93E+00 amps
-c) 5.41E+00 amps
-d) 5.93E+00 amps
-e) 6.50E+00 amps
=====*_Rendition_* 3-14=====
<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 38A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap
begin}}(0,6.7){{nowrap end}} to the point {{nowrap
begin}}(6.7,6.7){{nowrap end}}.
-a) 4.33E+00 amps
+b) 4.75E+00 amps
-c) 5.21E+00 amps
-d) 5.71E+00 amps
-e) 6.26E+00 amps
=====*_Rendition_* 3-15=====
<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 89A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap
begin}}(0,4.8){{nowrap end}} to the point {{nowrap
begin}}(4.8,4.8){{nowrap end}}.
-a) 9.25E+00 amps
-b) 1.01E+01 amps
+c) 1.11E+01 amps
-d) 1.22E+01 amps
-e) 1.34E+01 amps
=====*_Rendition_* 3-16=====
<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 48A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap
begin}}(0,8.4){{nowrap end}} to the point {{nowrap
begin}}(8.4,8.4){{nowrap end}}.
-a) 5.47E+00 amps
+b) 6.00E+00 amps
-c) 6.58E+00 amps
-d) 7.21E+00 amps
-e) 7.91E+00 amps
=====*_Rendition_* 3-17=====

<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by, B=μ₀H, where B is magnetic field. A current of 49A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,9.8){{nowrap end}} to the point {{nowrap begin}}(9.8,9.8){{nowrap end}}.
+a) 6.13E+00 amps
-b) 6.72E+00 amps
-c) 7.36E+00 amps
-d) 8.07E+00 amps
-e) 8.85E+00 amps
=====*_Rendition_* 3-18=====
<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by, B=μ₀H, where B is magnetic field. A current of 94A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,5.3){{nowrap end}} to the point {{nowrap begin}}(5.3,5.3){{nowrap end}}.
-a) 9.77E+00 amps
-b) 1.07E+01 amps
+c) 1.18E+01 amps
-d) 1.29E+01 amps
-e) 1.41E+01 amps
=====*_Rendition_* 3-19=====
<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by, B=μ₀H, where B is magnetic field. A current of 31A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,7.3){{nowrap end}} to the point {{nowrap begin}}(7.3,7.3){{nowrap end}}.
+a) 3.88E+00 amps
-b) 4.25E+00 amps
-c) 4.66E+00 amps
-d) 5.11E+00 amps
-e) 5.60E+00 amps
=====*_Rendition_* 3-20=====
<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by, B=μ₀H, where B is magnetic field. A current of 81A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap begin}}(0,7.9){{nowrap end}} to the point {{nowrap begin}}(7.9,7.9){{nowrap end}}.
-a) 7.68E+00 amps
-b) 8.42E+00 amps
-c) 9.23E+00 amps
+d) 1.01E+01 amps
-e) 1.11E+01 amps
=====*_Rendition_* 3-21=====
<!--c22Magnetism_ampereLawSymmetry_3-->H is defined by, B=μ₀H, where B is magnetic field. A current of 58A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from the point {{nowrap

begin}}(0,8.5){{nowrap end}} to the point {{nowrap begin}}(8.5,8.5){{nowrap end}}.
-a) 6.03E+00 amps
-b) 6.61E+00 amps
+c) 7.25E+00 amps
-d) 7.95E+00 amps
-e) 8.72E+00 amps
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by, B=μ₀H, where B is magnetic field. A current of 94A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from {{nowrap begin}}(<big>-∞</big>,6.2){{nowrap end}} to {{nowrap begin}}(+<big>∞</big>,6.2){{nowrap end}}.
-a) 3.91E+01 amps
-b) 4.29E+01 amps
+c) 4.70E+01 amps
-d) 5.15E+01 amps
-e) 5.65E+01 amps
=====*_Rendition_* 4-3=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by, B=μ₀H, where B is magnetic field. A current of 93A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from {{nowrap begin}}(<big>-∞</big>,4.1){{nowrap end}} to {{nowrap begin}}(+<big>∞</big>,4.1){{nowrap end}}.
-a) 3.53E+01 amps
-b) 3.87E+01 amps
-c) 4.24E+01 amps
+d) 4.65E+01 amps
-e) 5.10E+01 amps
=====*_Rendition_* 4-4=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by, B=μ₀H, where B is magnetic field. A current of 74A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from {{nowrap begin}}(<big>-∞</big>,9){{nowrap end}} to {{nowrap begin}}(+<big>∞</big>,9){{nowrap end}}.
-a) 3.08E+01 amps
-b) 3.37E+01 amps
+c) 3.70E+01 amps
-d) 4.06E+01 amps
-e) 4.45E+01 amps
=====*_Rendition_* 4-5=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by, B=μ₀H, where B is magnetic field. A current of 67A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from {{nowrap begin}}(<big>-∞</big>,9.4){{nowrap end}} to {{nowrap begin}}(+<big>∞</big>,9.4){{nowrap end}}.
-a) 2.32E+01 amps

-b) 2.54E+01 amps
-c) 2.79E+01 amps
-d) 3.06E+01 amps
+e) 3.35E+01 amps
=====*_Rendition_* 4-6=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 31A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from {{nowrap
begin}}(<big>-∞</big>,9.2){{nowrap end}} to {{nowrap
begin}}(+<big>∞</big>,9.2){{nowrap end}}.
-a) 1.41E+01 amps
+b) 1.55E+01 amps
-c) 1.70E+01 amps
-d) 1.86E+01 amps
-e) 2.04E+01 amps
=====*_Rendition_* 4-7=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 74A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from {{nowrap
begin}}(<big>-∞</big>,8.2){{nowrap end}} to {{nowrap
begin}}(+<big>∞</big>,8.2){{nowrap end}}.
-a) 3.37E+01 amps
+b) 3.70E+01 amps
-c) 4.06E+01 amps
-d) 4.45E+01 amps
-e) 4.88E+01 amps
=====*_Rendition_* 4-8=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 69A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from {{nowrap
begin}}(<big>-∞</big>,5.8){{nowrap end}} to {{nowrap
begin}}(+<big>∞</big>,5.8){{nowrap end}}.
-a) 2.87E+01 amps
-b) 3.15E+01 amps
+c) 3.45E+01 amps
-d) 3.78E+01 amps
-e) 4.15E+01 amps
=====*_Rendition_* 4-9=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 85A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from {{nowrap
begin}}(<big>-∞</big>,8){{nowrap end}} to {{nowrap
begin}}(+<big>∞</big>,8){{nowrap end}}.
-a) 2.94E+01 amps
-b) 3.22E+01 amps
-c) 3.53E+01 amps
-d) 3.88E+01 amps
+e) 4.25E+01 amps

=====*_Rendition_* 4-10=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by, B=μ₀H, where B is magnetic field. A current of 88A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from {{nowrap begin}}(<big>-∞</big>,8.7){{nowrap end}} to {{nowrap begin}}(+<big>∞</big>,8.7){{nowrap end}}.
-a) 4.01E+01 amps
+b) 4.40E+01 amps
-c) 4.82E+01 amps
-d) 5.29E+01 amps
-e) 5.80E+01 amps
=====*_Rendition_* 4-11=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by, B=μ₀H, where B is magnetic field. A current of 94A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from {{nowrap begin}}(<big>-∞</big>,9.4){{nowrap end}} to {{nowrap begin}}(+<big>∞</big>,9.4){{nowrap end}}.
-a) 3.25E+01 amps
-b) 3.57E+01 amps
-c) 3.91E+01 amps
-d) 4.29E+01 amps
+e) 4.70E+01 amps
=====*_Rendition_* 4-12=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by, B=μ₀H, where B is magnetic field. A current of 96A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from {{nowrap begin}}(<big>-∞</big>,8.1){{nowrap end}} to {{nowrap begin}}(+<big>∞</big>,8.1){{nowrap end}}.
-a) 3.32E+01 amps
-b) 3.64E+01 amps
-c) 3.99E+01 amps
-d) 4.38E+01 amps
+e) 4.80E+01 amps
=====*_Rendition_* 4-13=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by, B=μ₀H, where B is magnetic field. A current of 36A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from {{nowrap begin}}(<big>-∞</big>,8.3){{nowrap end}} to {{nowrap begin}}(+<big>∞</big>,8.3){{nowrap end}}.
-a) 1.50E+01 amps
-b) 1.64E+01 amps
+c) 1.80E+01 amps
-d) 1.97E+01 amps
-e) 2.16E+01 amps
=====*_Rendition_* 4-14=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by, B=μ₀H, where B is magnetic field. A current of 76A passes along the z-axis. Use symmetry to find the integral,

$\int \vec H\cdot\vec{d\ell}$, from {{nowrap begin}}(<big>-∞</big>,5.8){{nowrap end}} to {{nowrap begin}}(+<big>∞</big>,5.8){{nowrap end}}.
-a) 3.16E+01 amps
-b) 3.47E+01 amps
+c) 3.80E+01 amps
-d) 4.17E+01 amps
-e) 4.57E+01 amps
=====*_Rendition_* 4-15=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by, B=μ₀H, where B is magnetic field. A current of 44A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from {{nowrap begin}}(<big>-∞</big>,5){{nowrap end}} to {{nowrap begin}}(+<big>∞</big>,5){{nowrap end}}.
-a) 1.67E+01 amps
-b) 1.83E+01 amps
-c) 2.01E+01 amps
+d) 2.20E+01 amps
-e) 2.41E+01 amps
=====*_Rendition_* 4-16=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by, B=μ₀H, where B is magnetic field. A current of 39A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from {{nowrap begin}}(<big>-∞</big>,8.5){{nowrap end}} to {{nowrap begin}}(+<big>∞</big>,8.5){{nowrap end}}.
-a) 1.62E+01 amps
-b) 1.78E+01 amps
+c) 1.95E+01 amps
-d) 2.14E+01 amps
-e) 2.34E+01 amps
=====*_Rendition_* 4-17=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by, B=μ₀H, where B is magnetic field. A current of 43A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from {{nowrap begin}}(<big>-∞</big>,5.8){{nowrap end}} to {{nowrap begin}}(+<big>∞</big>,5.8){{nowrap end}}.
-a) 1.63E+01 amps
-b) 1.79E+01 amps
-c) 1.96E+01 amps
+d) 2.15E+01 amps
-e) 2.36E+01 amps
=====*_Rendition_* 4-18=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by, B=μ₀H, where B is magnetic field. A current of 31A passes along the z-axis. Use symmetry to find the integral, $\int \vec H\cdot\vec{d\ell}$, from {{nowrap begin}}(<big>-∞</big>,9.4){{nowrap end}} to {{nowrap begin}}(+<big>∞</big>,9.4){{nowrap end}}.
+a) 1.55E+01 amps

-b) 1.70E+01 amps
-c) 1.86E+01 amps
-d) 2.04E+01 amps
-e) 2.24E+01 amps
=====*_Rendition_* 4-19=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 66A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from {{nowrap
begin}}(<big>-∞</big>,5.5){{nowrap end}} to {{nowrap
begin}}(+<big>∞</big>,5.5){{nowrap end}}.
-a) 3.01E+01 amps
+b) 3.30E+01 amps
-c) 3.62E+01 amps
-d) 3.97E+01 amps
-e) 4.35E+01 amps
=====*_Rendition_* 4-20=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 76A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from {{nowrap
begin}}(<big>-∞</big>,9.6){{nowrap end}} to {{nowrap
begin}}(+<big>∞</big>,9.6){{nowrap end}}.
-a) 3.16E+01 amps
-b) 3.47E+01 amps
+c) 3.80E+01 amps
-d) 4.17E+01 amps
-e) 4.57E+01 amps
=====*_Rendition_* 4-21=====
<!--c22Magnetism_ampereLawSymmetry_4-->H is defined by,
B=μ₀H, where B is magnetic field. A current of 67A
passes along the z-axis. Use symmetry to find the integral,
$\int \vec H\cdot\vec{d\ell}$, from {{nowrap
begin}}(<big>-∞</big>,6.9){{nowrap end}} to {{nowrap
begin}}(+<big>∞</big>,6.9){{nowrap end}}.
-a) 2.54E+01 amps
-b) 2.79E+01 amps
-c) 3.06E+01 amps
+d) 3.35E+01 amps
-e) 3.67E+01 amps
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====*_Instructions_*====
Instructions are forthcoming

Transclusion from [[Quizbank/Instructions_0]]:
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Information (click to expand)
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===*_Quiz_*===
<quiz display=simple>
{<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 4.2 m has a gap of 8 mm, and a charge of 45 μC. What is the electric field between the plates?}
-a) 5.16E+04 N/C (or V/m)
-b) 6.25E+04 N/C (or V/m)
-c) 7.57E+04 N/C (or V/m)
+d) 9.17E+04 N/C (or V/m)
-e) 1.11E+05 N/C (or V/m)

{<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 3.2 m has a gap of 13 mm, and a charge of 49 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.}
-a) 3.46E-11 Vs²m⁻¹
-b) 4.20E-11 Vs²m⁻¹
-c) 5.08E-11 Vs²m⁻¹
+d) 6.16E-11 Vs²m⁻¹
-e) 7.46E-11 Vs²m⁻¹

{<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 4.9 m has a gap of 17 mm, and a charge of 54 μC. The capacitor is discharged through a 9 kΩ resistor. What is the decay time? }
-a) 2.92E-04 s
+b) 3.54E-04 s
-c) 4.28E-04 s
-d) 5.19E-04 s
-e) 6.29E-04 s

{<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 3.3 m has a gap of 12 mm, and a charge of 93 μC. The capacitor is discharged through a 9 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)}

-a) 9.88E-09 Tesla
-b) 1.24E-08 Tesla
-c) 1.57E-08 Tesla
-d) 1.97E-08 Tesla
+e) 2.48E-08 Tesla

</quiz>

<div class="toccolours mw-collapsible mw-collapsed" style="width:100%">

Other renditions
<div class="mw-collapsible-content">
====*_Question_* 1====
=====*_Rendition_* 1-2=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 3.3 m has a gap of 16 mm, and a charge of 68 μC. What is the electric field between the plates?
-a) 1.26E+05 N/C (or V/m)
-b) 1.53E+05 N/C (or V/m)
-c) 1.85E+05 N/C (or V/m)
+d) 2.24E+05 N/C (or V/m)
-e) 2.72E+05 N/C (or V/m)
=====*_Rendition_* 1-3=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 4.9 m has a gap of 11 mm, and a charge of 85 μC. What is the electric field between the plates?
+a) 1.27E+05 N/C (or V/m)
-b) 1.54E+05 N/C (or V/m)
-c) 1.87E+05 N/C (or V/m)
-d) 2.26E+05 N/C (or V/m)
-e) 2.74E+05 N/C (or V/m)
=====*_Rendition_* 1-4=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 4.4 m has a gap of 18 mm, and a charge of 36 μC. What is the electric field between the plates?
-a) 4.55E+04 N/C (or V/m)
-b) 5.52E+04 N/C (or V/m)
+c) 6.68E+04 N/C (or V/m)
-d) 8.10E+04 N/C (or V/m)
-e) 9.81E+04 N/C (or V/m)
=====*_Rendition_* 1-5=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 3.4 m has a gap of 15 mm, and a charge of 63 μC. What is the electric field between the plates?
-a) 1.62E+05 N/C (or V/m)
+b) 1.96E+05 N/C (or V/m)
-c) 2.37E+05 N/C (or V/m)
-d) 2.88E+05 N/C (or V/m)
-e) 3.48E+05 N/C (or V/m)
=====*_Rendition_* 1-6=====

<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 3.7 m has a gap of 8 mm, and a charge of 89 μC. What is the electric field between the plates?
-a) 1.93E+05 N/C (or V/m)
+b) 2.34E+05 N/C (or V/m)
-c) 2.83E+05 N/C (or V/m)
-d) 3.43E+05 N/C (or V/m)
-e) 4.16E+05 N/C (or V/m)
=====*_Rendition_* 1-7=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 4.4 m has a gap of 18 mm, and a charge of 62 μC. What is the electric field between the plates?
-a) 9.50E+04 N/C (or V/m)
+b) 1.15E+05 N/C (or V/m)
-c) 1.39E+05 N/C (or V/m)
-d) 1.69E+05 N/C (or V/m)
-e) 2.05E+05 N/C (or V/m)
=====*_Rendition_* 1-8=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 3.6 m has a gap of 8 mm, and a charge of 53 μC. What is the electric field between the plates?
-a) 6.82E+04 N/C (or V/m)
-b) 8.27E+04 N/C (or V/m)
-c) 1.00E+05 N/C (or V/m)
-d) 1.21E+05 N/C (or V/m)
+e) 1.47E+05 N/C (or V/m)
=====*_Rendition_* 1-9=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 4.8 m has a gap of 14 mm, and a charge of 75 μC. What is the electric field between the plates?
-a) 5.43E+04 N/C (or V/m)
-b) 6.58E+04 N/C (or V/m)
-c) 7.97E+04 N/C (or V/m)
-d) 9.66E+04 N/C (or V/m)
+e) 1.17E+05 N/C (or V/m)
=====*_Rendition_* 1-10=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 4.3 m has a gap of 7 mm, and a charge of 47 μC. What is the electric field between the plates?
-a) 7.54E+04 N/C (or V/m)
+b) 9.14E+04 N/C (or V/m)
-c) 1.11E+05 N/C (or V/m)
-d) 1.34E+05 N/C (or V/m)
-e) 1.63E+05 N/C (or V/m)
=====*_Rendition_* 1-11=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 4.1 m has a gap of 14 mm, and a charge of 24 μC. What is the electric field between the plates?
-a) 4.24E+04 N/C (or V/m)
+b) 5.13E+04 N/C (or V/m)
-c) 6.22E+04 N/C (or V/m)
-d) 7.53E+04 N/C (or V/m)

-e) 9.13E+04 N/C (or V/m)
=====*_Rendition_* 1-12=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 4.6 m has a gap of 12 mm, and a charge of 55 μC. What is the electric field between the plates?
-a) 6.37E+04 N/C (or V/m)
-b) 7.71E+04 N/C (or V/m)
+c) 9.34E+04 N/C (or V/m)
-d) 1.13E+05 N/C (or V/m)
-e) 1.37E+05 N/C (or V/m)
=====*_Rendition_* 1-13=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 3.7 m has a gap of 10 mm, and a charge of 41 μC. What is the electric field between the plates?
+a) 1.08E+05 N/C (or V/m)
-b) 1.30E+05 N/C (or V/m)
-c) 1.58E+05 N/C (or V/m)
-d) 1.91E+05 N/C (or V/m)
-e) 2.32E+05 N/C (or V/m)
=====*_Rendition_* 1-14=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 3.7 m has a gap of 10 mm, and a charge of 12 μC. What is the electric field between the plates?
-a) 2.15E+04 N/C (or V/m)
-b) 2.60E+04 N/C (or V/m)
+c) 3.15E+04 N/C (or V/m)
-d) 3.82E+04 N/C (or V/m)
-e) 4.63E+04 N/C (or V/m)
=====*_Rendition_* 1-15=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 3.2 m has a gap of 12 mm, and a charge of 84 μC. What is the electric field between the plates?
-a) 1.37E+05 N/C (or V/m)
-b) 1.66E+05 N/C (or V/m)
-c) 2.01E+05 N/C (or V/m)
-d) 2.43E+05 N/C (or V/m)
+e) 2.95E+05 N/C (or V/m)
=====*_Rendition_* 1-16=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 3.9 m has a gap of 19 mm, and a charge of 66 μC. What is the electric field between the plates?
-a) 1.29E+05 N/C (or V/m)
+b) 1.56E+05 N/C (or V/m)
-c) 1.89E+05 N/C (or V/m)
-d) 2.29E+05 N/C (or V/m)
-e) 2.77E+05 N/C (or V/m)
=====*_Rendition_* 1-17=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 4.4 m has a gap of 12 mm, and a charge of 72 μC. What is the electric field between the plates?
-a) 6.21E+04 N/C (or V/m)
-b) 7.52E+04 N/C (or V/m)

-c) 9.11E+04 N/C (or V/m)
-d) 1.10E+05 N/C (or V/m)
+e) 1.34E+05 N/C (or V/m)
=====*_Rendition_* 1-18=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 3.5 m has a gap of 14 mm, and a charge of 21 μC. What is the electric field between the plates?
+a) 6.16E+04 N/C (or V/m)
-b) 7.47E+04 N/C (or V/m)
-c) 9.05E+04 N/C (or V/m)
-d) 1.10E+05 N/C (or V/m)
-e) 1.33E+05 N/C (or V/m)
=====*_Rendition_* 1-19=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 3.3 m has a gap of 14 mm, and a charge of 11 μC. What is the electric field between the plates?
-a) 2.04E+04 N/C (or V/m)
-b) 2.47E+04 N/C (or V/m)
-c) 3.00E+04 N/C (or V/m)
+d) 3.63E+04 N/C (or V/m)
-e) 4.40E+04 N/C (or V/m)
=====*_Rendition_* 1-20=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 4.2 m has a gap of 12 mm, and a charge of 94 μC. What is the electric field between the plates?
+a) 1.92E+05 N/C (or V/m)
-b) 2.32E+05 N/C (or V/m)
-c) 2.81E+05 N/C (or V/m)
-d) 3.41E+05 N/C (or V/m)
-e) 4.13E+05 N/C (or V/m)
=====*_Rendition_* 1-21=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 4.6 m has a gap of 12 mm, and a charge of 45 μC. What is the electric field between the plates?
-a) 6.31E+04 N/C (or V/m)
+b) 7.65E+04 N/C (or V/m)
-c) 9.26E+04 N/C (or V/m)
-d) 1.12E+05 N/C (or V/m)
-e) 1.36E+05 N/C (or V/m)
=====*_Rendition_* 1-22=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 3.1 m has a gap of 9 mm, and a charge of 11 μC. What is the electric field between the plates?
-a) 2.80E+04 N/C (or V/m)
-b) 3.40E+04 N/C (or V/m)
+c) 4.12E+04 N/C (or V/m)
-d) 4.99E+04 N/C (or V/m)
-e) 6.04E+04 N/C (or V/m)
=====*_Rendition_* 1-23=====
<!--c24ElectromagneticWaves_displacementCurrent_1-->A circlular capactitor of radius 3.4 m has a gap of 7 mm, and a charge of 95 μC. What is the electric field between the plates?

-a) 2.44E+05 N/C (or V/m)
+b) 2.95E+05 N/C (or V/m)
-c) 3.58E+05 N/C (or V/m)
-d) 4.34E+05 N/C (or V/m)
-e) 5.25E+05 N/C (or V/m)
====*_Question_* 2====
=====*_Rendition_* 2-2=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 4.6 m has a gap of 12 mm, and a charge of 77 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
-a) 6.59E-11 Vs²m⁻¹
-b) 7.99E-11 Vs²m⁻¹
+c) 9.68E-11 Vs²m⁻¹
-d) 1.17E-10 Vs²m⁻¹
-e) 1.42E-10 Vs²m⁻¹
=====*_Rendition_* 2-3=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 4.5 m has a gap of 19 mm, and a charge of 13 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
-a) 1.35E-11 Vs²m⁻¹
+b) 1.63E-11 Vs²m⁻¹
-c) 1.98E-11 Vs²m⁻¹
-d) 2.40E-11 Vs²m⁻¹
-e) 2.91E-11 Vs²m⁻¹
=====*_Rendition_* 2-4=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 4.4 m has a gap of 8 mm, and a charge of 85 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
-a) 4.96E-11 Vs²m⁻¹
-b) 6.01E-11 Vs²m⁻¹
-c) 7.28E-11 Vs²m⁻¹
-d) 8.82E-11 Vs²m⁻¹
+e) 1.07E-10 Vs²m⁻¹
=====*_Rendition_* 2-5=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 4.3 m has a gap of 11 mm, and a charge of 66 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
-a) 6.85E-11 Vs²m⁻¹
+b) 8.29E-11 Vs²m⁻¹
-c) 1.00E-10 Vs²m⁻¹
-d) 1.22E-10 Vs²m⁻¹
-e) 1.47E-10 Vs²m⁻¹
=====*_Rendition_* 2-6=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 3.2 m has a gap of 19 mm, and a charge of 46 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
+a) 5.78E-11 Vs²m⁻¹

-b) 7.00E-11 Vs²m⁻¹
-c) 8.48E-11 Vs²m⁻¹
-d) 1.03E-10 Vs²m⁻¹
-e) 1.25E-10 Vs²m⁻¹
=====*_Rendition_* 2-7=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 3.2 m has a gap of 18 mm, and a charge of 82 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
-a) 5.79E-11 Vs²m⁻¹
-b) 7.02E-11 Vs²m⁻¹
-c) 8.51E-11 Vs²m⁻¹
+d) 1.03E-10 Vs²m⁻¹
-e) 1.25E-10 Vs²m⁻¹
=====*_Rendition_* 2-8=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 3.7 m has a gap of 17 mm, and a charge of 80 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
-a) 4.67E-11 Vs²m⁻¹
-b) 5.65E-11 Vs²m⁻¹
-c) 6.85E-11 Vs²m⁻¹
-d) 8.30E-11 Vs²m⁻¹
+e) 1.01E-10 Vs²m⁻¹
=====*_Rendition_* 2-9=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 4.1 m has a gap of 7 mm, and a charge of 50 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
-a) 2.92E-11 Vs²m⁻¹
-b) 3.53E-11 Vs²m⁻¹
-c) 4.28E-11 Vs²m⁻¹
-d) 5.19E-11 Vs²m⁻¹
+e) 6.28E-11 Vs²m⁻¹
=====*_Rendition_* 2-10=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 4.3 m has a gap of 19 mm, and a charge of 83 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
-a) 5.87E-11 Vs²m⁻¹
-b) 7.11E-11 Vs²m⁻¹
-c) 8.61E-11 Vs²m⁻¹
+d) 1.04E-10 Vs²m⁻¹
-e) 1.26E-10 Vs²m⁻¹
=====*_Rendition_* 2-11=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 4.8 m has a gap of 12 mm, and a charge of 29 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
-a) 2.05E-11 Vs²m⁻¹
-b) 2.48E-11 Vs²m⁻¹
-c) 3.01E-11 Vs²m⁻¹

+d) 3.64E-11 Vs²m⁻¹
-e) 4.42E-11 Vs²m⁻¹
=====*_Rendition_* 2-12=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 4.4 m has a gap of 17 mm, and a charge of 65 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
-a) 5.56E-11 Vs²m⁻¹
-b) 6.74E-11 Vs²m⁻¹
+c) 8.17E-11 Vs²m⁻¹
-d) 9.90E-11 Vs²m⁻¹
-e) 1.20E-10 Vs²m⁻¹
=====*_Rendition_* 2-13=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 3.8 m has a gap of 14 mm, and a charge of 61 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
+a) 7.67E-11 Vs²m⁻¹
-b) 9.29E-11 Vs²m⁻¹
-c) 1.13E-10 Vs²m⁻¹
-d) 1.36E-10 Vs²m⁻¹
-e) 1.65E-10 Vs²m⁻¹
=====*_Rendition_* 2-14=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 4.1 m has a gap of 8 mm, and a charge of 24 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
-a) 2.05E-11 Vs²m⁻¹
-b) 2.49E-11 Vs²m⁻¹
+c) 3.02E-11 Vs²m⁻¹
-d) 3.65E-11 Vs²m⁻¹
-e) 4.43E-11 Vs²m⁻¹
=====*_Rendition_* 2-15=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 3.8 m has a gap of 14 mm, and a charge of 83 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
-a) 7.11E-11 Vs²m⁻¹
-b) 8.61E-11 Vs²m⁻¹
+c) 1.04E-10 Vs²m⁻¹
-d) 1.26E-10 Vs²m⁻¹
-e) 1.53E-10 Vs²m⁻¹
=====*_Rendition_* 2-16=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 4.4 m has a gap of 16 mm, and a charge of 41 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
-a) 3.51E-11 Vs²m⁻¹
-b) 4.25E-11 Vs²m⁻¹
+c) 5.15E-11 Vs²m⁻¹
-d) 6.24E-11 Vs²m⁻¹
-e) 7.56E-11 Vs²m⁻¹

=====*_Rendition_* 2-17=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 4.8 m has a gap of 17 mm, and a charge of 73 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
+a) 9.17E-11 Vs²m⁻¹
-b) 1.11E-10 Vs²m⁻¹
-c) 1.35E-10 Vs²m⁻¹
-d) 1.63E-10 Vs²m⁻¹
-e) 1.98E-10 Vs²m⁻¹
=====*_Rendition_* 2-18=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 4.3 m has a gap of 14 mm, and a charge of 15 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
-a) 8.75E-12 Vs²m⁻¹
-b) 1.06E-11 Vs²m⁻¹
-c) 1.28E-11 Vs²m⁻¹
-d) 1.56E-11 Vs²m⁻¹
+e) 1.88E-11 Vs²m⁻¹
=====*_Rendition_* 2-19=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 4.5 m has a gap of 18 mm, and a charge of 92 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
-a) 7.88E-11 Vs²m⁻¹
-b) 9.54E-11 Vs²m⁻¹
+c) 1.16E-10 Vs²m⁻¹
-d) 1.40E-10 Vs²m⁻¹
-e) 1.70E-10 Vs²m⁻¹
=====*_Rendition_* 2-20=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 4.3 m has a gap of 12 mm, and a charge of 85 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
-a) 7.28E-11 Vs²m⁻¹
-b) 8.82E-11 Vs²m⁻¹
+c) 1.07E-10 Vs²m⁻¹
-d) 1.29E-10 Vs²m⁻¹
-e) 1.57E-10 Vs²m⁻¹
=====*_Rendition_* 2-21=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 3.7 m has a gap of 8 mm, and a charge of 34 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
-a) 2.40E-11 Vs²m⁻¹
-b) 2.91E-11 Vs²m⁻¹
-c) 3.53E-11 Vs²m⁻¹
+d) 4.27E-11 Vs²m⁻¹
-e) 5.18E-11 Vs²m⁻¹
=====*_Rendition_* 2-22=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular

capactitor of radius 3.4 m has a gap of 8 mm, and a charge of 34 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
-a) 3.53E-11 Vs²m⁻¹
+b) 4.27E-11 Vs²m⁻¹
-c) 5.18E-11 Vs²m⁻¹
-d) 6.27E-11 Vs²m⁻¹
-e) 7.60E-11 Vs²m⁻¹
=====*_Rendition_* 2-23=====
<!--c24ElectromagneticWaves_displacementCurrent_2-->A circlular capactitor of radius 3.9 m has a gap of 19 mm, and a charge of 78 μC. Compute the surface integral $c^{-2}\oint\vec E\cdot d\vec A$ over an inner face of the capacitor.
-a) 4.55E-11 Vs²m⁻¹
-b) 5.51E-11 Vs²m⁻¹
-c) 6.68E-11 Vs²m⁻¹
-d) 8.09E-11 Vs²m⁻¹
+e) 9.80E-11 Vs²m⁻¹
====*_Question_* 3====
=====*_Rendition_* 3-2=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 4.6 m has a gap of 11 mm, and a charge of 60 μC. The capacitor is discharged through a 9 kΩ resistor. What is the decay time?
-a) 3.28E-04 s
-b) 3.97E-04 s
+c) 4.82E-04 s
-d) 5.83E-04 s
-e) 7.07E-04 s
=====*_Rendition_* 3-3=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 3.7 m has a gap of 15 mm, and a charge of 36 μC. The capacitor is discharged through a 6 kΩ resistor. What is the decay time?
-a) 1.04E-04 s
-b) 1.26E-04 s
+c) 1.52E-04 s
-d) 1.85E-04 s
-e) 2.24E-04 s
=====*_Rendition_* 3-4=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 3.3 m has a gap of 14 mm, and a charge of 43 μC. The capacitor is discharged through a 9 kΩ resistor. What is the decay time?
+a) 1.95E-04 s
-b) 2.36E-04 s
-c) 2.86E-04 s
-d) 3.46E-04 s
-e) 4.20E-04 s
=====*_Rendition_* 3-5=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 4.6 m has a gap of 7 mm, and a charge of 18

μC. The capacitor is discharged through a 9 kΩ resistor. What is the decay time?
-a) 6.25E-04 s
+b) 7.57E-04 s
-c) 9.17E-04 s
-d) 1.11E-03 s
-e) 1.35E-03 s
=====*_Rendition_* 3-6=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 3.1 m has a gap of 11 mm, and a charge of 76 μC. The capacitor is discharged through a 8 kΩ resistor. What is the decay time?
+a) 1.94E-04 s
-b) 2.36E-04 s
-c) 2.85E-04 s
-d) 3.46E-04 s
-e) 4.19E-04 s
=====*_Rendition_* 3-7=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 3.6 m has a gap of 14 mm, and a charge of 98 μC. The capacitor is discharged through a 8 kΩ resistor. What is the decay time?
-a) 1.40E-04 s
-b) 1.70E-04 s
+c) 2.06E-04 s
-d) 2.50E-04 s
-e) 3.02E-04 s
=====*_Rendition_* 3-8=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 4.3 m has a gap of 8 mm, and a charge of 12 μC. The capacitor is discharged through a 7 kΩ resistor. What is the decay time?
-a) 3.07E-04 s
-b) 3.71E-04 s
+c) 4.50E-04 s
-d) 5.45E-04 s
-e) 6.61E-04 s
=====*_Rendition_* 3-9=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 4.3 m has a gap of 13 mm, and a charge of 44 μC. The capacitor is discharged through a 9 kΩ resistor. What is the decay time?
-a) 2.00E-04 s
-b) 2.43E-04 s
-c) 2.94E-04 s
+d) 3.56E-04 s
-e) 4.31E-04 s
=====*_Rendition_* 3-10=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 4 m has a gap of 16 mm, and a charge of 48 μC. The capacitor is discharged through a 9 kΩ resistor. What is the decay time?

-a) 1.16E-04 s
-b) 1.41E-04 s
-c) 1.71E-04 s
-d) 2.07E-04 s
+e) 2.50E-04 s
=====*_Rendition_* 3-11=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 4.8 m has a gap of 16 mm, and a charge of 89 μC. The capacitor is discharged through a 6 kΩ resistor. What is the decay time?
-a) 1.98E-04 s
+b) 2.40E-04 s
-c) 2.91E-04 s
-d) 3.53E-04 s
-e) 4.27E-04 s
=====*_Rendition_* 3-12=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 4.1 m has a gap of 11 mm, and a charge of 51 μC. The capacitor is discharged through a 8 kΩ resistor. What is the decay time?
+a) 3.40E-04 s
-b) 4.12E-04 s
-c) 4.99E-04 s
-d) 6.05E-04 s
-e) 7.33E-04 s
=====*_Rendition_* 3-13=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 3.8 m has a gap of 12 mm, and a charge of 56 μC. The capacitor is discharged through a 8 kΩ resistor. What is the decay time?
+a) 2.68E-04 s
-b) 3.24E-04 s
-c) 3.93E-04 s
-d) 4.76E-04 s
-e) 5.77E-04 s
=====*_Rendition_* 3-14=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 4.2 m has a gap of 18 mm, and a charge of 97 μC. The capacitor is discharged through a 7 kΩ resistor. What is the decay time?
+a) 1.91E-04 s
-b) 2.31E-04 s
-c) 2.80E-04 s
-d) 3.39E-04 s
-e) 4.11E-04 s
=====*_Rendition_* 3-15=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 4.7 m has a gap of 19 mm, and a charge of 27 μC. The capacitor is discharged through a 6 kΩ resistor. What is the decay time?
-a) 1.60E-04 s
+b) 1.94E-04 s

-c) 2.35E-04 s
-d) 2.85E-04 s
-e) 3.45E-04 s
=====*_Rendition_* 3-16=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 4 m has a gap of 14 mm, and a charge of 24 μC. The capacitor is discharged through a 7 kΩ resistor. What is the decay time?
-a) 1.84E-04 s
+b) 2.23E-04 s
-c) 2.70E-04 s
-d) 3.27E-04 s
-e) 3.96E-04 s
=====*_Rendition_* 3-17=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 3.3 m has a gap of 12 mm, and a charge of 63 μC. The capacitor is discharged through a 7 kΩ resistor. What is the decay time?
-a) 9.94E-05 s
-b) 1.20E-04 s
-c) 1.46E-04 s
+d) 1.77E-04 s
-e) 2.14E-04 s
=====*_Rendition_* 3-18=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 3.2 m has a gap of 8 mm, and a charge of 12 μC. The capacitor is discharged through a 7 kΩ resistor. What is the decay time?
+a) 2.49E-04 s
-b) 3.02E-04 s
-c) 3.66E-04 s
-d) 4.43E-04 s
-e) 5.37E-04 s
=====*_Rendition_* 3-19=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 4.9 m has a gap of 13 mm, and a charge of 35 μC. The capacitor is discharged through a 5 kΩ resistor. What is the decay time?
+a) 2.57E-04 s
-b) 3.11E-04 s
-c) 3.77E-04 s
-d) 4.57E-04 s
-e) 5.53E-04 s
=====*_Rendition_* 3-20=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 4.1 m has a gap of 14 mm, and a charge of 71 μC. The capacitor is discharged through a 6 kΩ resistor. What is the decay time?
-a) 1.65E-04 s
+b) 2.00E-04 s
-c) 2.43E-04 s
-d) 2.94E-04 s

-e) 3.56E-04 s
=====*_Rendition_* 3-21=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 3.2 m has a gap of 12 mm, and a charge of 33 μC. The capacitor is discharged through a 6 kΩ resistor. What is the decay time?
+a) 1.42E-04 s
-b) 1.73E-04 s
-c) 2.09E-04 s
-d) 2.53E-04 s
-e) 3.07E-04 s
=====*_Rendition_* 3-22=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 3.4 m has a gap of 8 mm, and a charge of 64 μC. The capacitor is discharged through a 9 kΩ resistor. What is the decay time?
+a) 3.62E-04 s
-b) 4.38E-04 s
-c) 5.31E-04 s
-d) 6.43E-04 s
-e) 7.79E-04 s
=====*_Rendition_* 3-23=====
<!--c24ElectromagneticWaves_displacementCurrent_3-->A circlular capactitor of radius 3.1 m has a gap of 15 mm, and a charge of 73 μC. The capacitor is discharged through a 8 kΩ resistor. What is the decay time?
-a) 6.62E-05 s
-b) 8.02E-05 s
-c) 9.71E-05 s
-d) 1.18E-04 s
+e) 1.43E-04 s
====*_Question_* 4====
=====*_Rendition_* 4-2=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 4.1 m has a gap of 11 mm, and a charge of 66 μC. The capacitor is discharged through a 6 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
-a) 6.33E-09 Tesla
-b) 7.96E-09 Tesla
-c) 1.00E-08 Tesla
+d) 1.26E-08 Tesla
-e) 1.59E-08 Tesla
=====*_Rendition_* 4-3=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 4.4 m has a gap of 15 mm, and a charge of 63 μC. The capacitor is discharged through a 8 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
-a) 7.92E-09 Tesla
+b) 9.97E-09 Tesla
-c) 1.26E-08 Tesla

-d) 1.58E-08 Tesla
-e) 1.99E-08 Tesla
=====*_Rendition_* 4-4=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 4 m has a gap of 13 mm, and a charge of 89 μC. The capacitor is discharged through a 6 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
-a) 8.62E-09 Tesla
-b) 1.09E-08 Tesla
-c) 1.37E-08 Tesla
-d) 1.72E-08 Tesla
+e) 2.17E-08 Tesla
=====*_Rendition_* 4-5=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 4.3 m has a gap of 10 mm, and a charge of 46 μC. The capacitor is discharged through a 5 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
+a) 8.32E-09 Tesla
-b) 1.05E-08 Tesla
-c) 1.32E-08 Tesla
-d) 1.66E-08 Tesla
-e) 2.09E-08 Tesla
=====*_Rendition_* 4-6=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 4.1 m has a gap of 15 mm, and a charge of 90 μC. The capacitor is discharged through a 5 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
-a) 1.41E-08 Tesla
-b) 1.78E-08 Tesla
-c) 2.24E-08 Tesla
+d) 2.82E-08 Tesla
-e) 3.55E-08 Tesla
=====*_Rendition_* 4-7=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 4.6 m has a gap of 12 mm, and a charge of 52 μC. The capacitor is discharged through a 7 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
-a) 3.30E-09 Tesla
-b) 4.15E-09 Tesla
-c) 5.23E-09 Tesla
+d) 6.58E-09 Tesla
-e) 8.29E-09 Tesla
=====*_Rendition_* 4-8=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 3.6 m has a gap of 19 mm, and a charge of 98 μC. The capacitor is discharged through a 6 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)

-a) 1.90E-08 Tesla
-b) 2.40E-08 Tesla
-c) 3.02E-08 Tesla
-d) 3.80E-08 Tesla
+e) 4.78E-08 Tesla
=====*_Rendition_* 4-9=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 4.6 m has a gap of 18 mm, and a charge of 44 μC. The capacitor is discharged through a 7 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
-a) 6.64E-09 Tesla
+b) 8.36E-09 Tesla
-c) 1.05E-08 Tesla
-d) 1.32E-08 Tesla
-e) 1.67E-08 Tesla
=====*_Rendition_* 4-10=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 4.9 m has a gap of 18 mm, and a charge of 45 μC. The capacitor is discharged through a 7 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
-a) 2.82E-09 Tesla
-b) 3.54E-09 Tesla
-c) 4.46E-09 Tesla
-d) 5.62E-09 Tesla
+e) 7.07E-09 Tesla
=====*_Rendition_* 4-11=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 4.3 m has a gap of 15 mm, and a charge of 21 μC. The capacitor is discharged through a 7 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
-a) 1.62E-09 Tesla
-b) 2.04E-09 Tesla
-c) 2.57E-09 Tesla
-d) 3.23E-09 Tesla
+e) 4.07E-09 Tesla
=====*_Rendition_* 4-12=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 4.7 m has a gap of 16 mm, and a charge of 12 μC. The capacitor is discharged through a 8 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
-a) 6.62E-10 Tesla
-b) 8.33E-10 Tesla
-c) 1.05E-09 Tesla
-d) 1.32E-09 Tesla
+e) 1.66E-09 Tesla
=====*_Rendition_* 4-13=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 4.9 m has a gap of 16 mm, and a charge of 46

μC. The capacitor is discharged through a 9 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
+a) 5.00E-09 Tesla
-b) 6.29E-09 Tesla
-c) 7.92E-09 Tesla
-d) 9.97E-09 Tesla
-e) 1.26E-08 Tesla
=====*_Rendition_* 4-14=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 4.9 m has a gap of 14 mm, and a charge of 56 μC. The capacitor is discharged through a 6 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
-a) 3.18E-09 Tesla
-b) 4.00E-09 Tesla
-c) 5.04E-09 Tesla
-d) 6.34E-09 Tesla
+e) 7.99E-09 Tesla
=====*_Rendition_* 4-15=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 4.8 m has a gap of 14 mm, and a charge of 55 μC. The capacitor is discharged through a 8 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
-a) 3.95E-09 Tesla
-b) 4.97E-09 Tesla
+c) 6.26E-09 Tesla
-d) 7.88E-09 Tesla
-e) 9.92E-09 Tesla
=====*_Rendition_* 4-16=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 4.4 m has a gap of 12 mm, and a charge of 85 μC. The capacitor is discharged through a 8 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
-a) 5.39E-09 Tesla
-b) 6.79E-09 Tesla
-c) 8.55E-09 Tesla
+d) 1.08E-08 Tesla
-e) 1.35E-08 Tesla
=====*_Rendition_* 4-17=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 3.1 m has a gap of 9 mm, and a charge of 85 μC. The capacitor is discharged through a 5 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
-a) 2.33E-08 Tesla
-b) 2.93E-08 Tesla
+c) 3.69E-08 Tesla
-d) 4.65E-08 Tesla
-e) 5.85E-08 Tesla

=====*_Rendition_* 4-18=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 4.6 m has a gap of 15 mm, and a charge of 57 μC. The capacitor is discharged through a 9 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
-a) 4.43E-09 Tesla
-b) 5.57E-09 Tesla
+c) 7.02E-09 Tesla
-d) 8.83E-09 Tesla
-e) 1.11E-08 Tesla
=====*_Rendition_* 4-19=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 4 m has a gap of 14 mm, and a charge of 78 μC. The capacitor is discharged through a 5 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
-a) 9.77E-09 Tesla
-b) 1.23E-08 Tesla
-c) 1.55E-08 Tesla
-d) 1.95E-08 Tesla
+e) 2.45E-08 Tesla
=====*_Rendition_* 4-20=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 3.5 m has a gap of 14 mm, and a charge of 88 μC. The capacitor is discharged through a 7 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
-a) 1.86E-08 Tesla
-b) 2.34E-08 Tesla
+c) 2.95E-08 Tesla
-d) 3.72E-08 Tesla
-e) 4.68E-08 Tesla
=====*_Rendition_* 4-21=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 3.9 m has a gap of 8 mm, and a charge of 55 μC. The capacitor is discharged through a 8 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
-a) 5.30E-09 Tesla
+b) 6.67E-09 Tesla
-c) 8.39E-09 Tesla
-d) 1.06E-08 Tesla
-e) 1.33E-08 Tesla
=====*_Rendition_* 4-22=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 4.8 m has a gap of 9 mm, and a charge of 53 μC. The capacitor is discharged through a 6 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
-a) 3.26E-09 Tesla
-b) 4.11E-09 Tesla

+c) 5.17E-09 Tesla
-d) 6.51E-09 Tesla
-e) 8.19E-09 Tesla
=====*_Rendition_* 4-23=====
<!--c24ElectromagneticWaves_displacementCurrent_4-->A circlular capactitor of radius 4.1 m has a gap of 9 mm, and a charge of 79 μC. The capacitor is discharged through a 6 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
-a) 7.80E-09 Tesla
-b) 9.82E-09 Tesla
+c) 1.24E-08 Tesla
-d) 1.56E-08 Tesla
-e) 1.96E-08 Tesla
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====*_Instructions_*====
Instructions are forthcoming

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