d_cp2.6

The LaTex code that creates this quiz is released to the Public Domain
Attribution for each question is documented in the Appendix

Friday 26th October, 2018

Latex markup at
https://en.wikiversity.org/wiki/special:permalink/1894335

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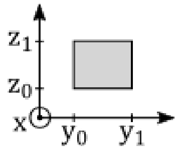
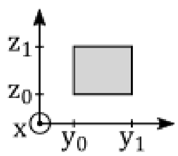
Contents

1 Quiz

1. 

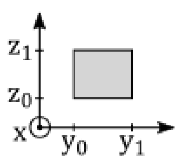
Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=3$ m. The other four surfaces are rectangles in $y=y_0=1$ m, $y=y_1=5$ m, $z=z_0=1$ m, and $z=z_1=3$ m. The surfaces in the yz plane each have area 8m^2. Those in the xy plane have area 12m^2 ,and those in the zx plane have area 6m^2. An electric field of magnitude 10 N/C has components in the y and z directions and is directed at 30° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?[1]

    A. 3.549E+01 N· m^2/C
    B. 3.904E+01 N· m^2/C
    C. 4.294E+01 N· m^2/C
    D. 4.724E+01 N· m^2/C
    E. 5.196E+01 N· m^2/C

2. 

Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=3$ m. The other four surfaces are rectangles in $y=y_0=1$ m, $y=y_1=5$ m, $z=z_0=1$ m, and $z=z_1=3$ m. The surfaces in the yz plane each have area 8m^2. Those in the xy plane have area 12m^2 ,and those in the zx plane have area 6m^2. An electric field of magnitude 10 N/C has components in the y and z directions and is directed at 60° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?[2]

    A. 4.724E+01 N· m^2/C
    B. 5.196E+01 N· m^2/C
    C. 5.716E+01 N· m^2/C
    D. 6.287E+01 N· m^2/C
    E. 6.916E+01 N· m^2/C

3. 

Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=3$ m. The other four surfaces are rectangles in $y=y_0=1$ m, $y=y_1=5$ m, $z=z_0=1$ m, and $z=z_1=3$ m. The surfaces in the yz plane each have area 8m^2. Those in the xy plane have area 12m^2 ,and those in the zx plane have area 6m^2. An electric field has the xyz components $(0, 8.7, 5.0)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?[3]

    A. 4.745E+01 N· m^2/C
    B. 5.220E+01 N· m^2/C
    C. 5.742E+01 N· m^2/C
    D. 6.316E+01 N· m^2/C
    E. 6.948E+01 N· m^2/C

4. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=3, y=0), (x=0, y=2), and (x=3, y=2), where x and y are measured in meters. The electric field is, $\vec{E} = 1y^1\hat{\imath} + 2x^3\hat{\jmath} + 3y^2\hat{k}$. [4]

   A. 1.983E+01 V· m

   B. 2.182E+01 V· m

   C. 2.400E+01 V· m

   D. 2.640E+01 V· m

   E. 2.904E+01 V· m

5. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 5 nano-Coulombs. What is the magnitude of the electric field at a distance of 3.5 m from the center of the shells?[5]

   A. 1.102E+01 N/C

   B. 1.212E+01 N/C

   C. 1.333E+01 N/C

   D. 1.467E+01 N/C

   E. 1.613E+01 N/C

6. A non-conducting sphere of radius R=2 m has a non-uniform charge density that varies with the distnce from its center as given by ρ(r)=ar^2 (rxR) where a=1 nC· m^{-1}. What is the magnitude of the electric field at a distance of 1 m from the center? [6]

   A. 1.867E+01 N/C

   B. 2.053E+01 N/C

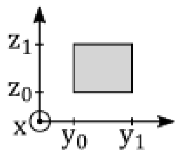
   C. 2.259E+01 N/C

   D. 2.485E+01 N/C

   E. 2.733E+01 N/C

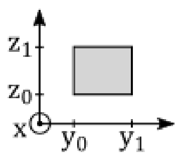
2 Renditions

2.1

1. 

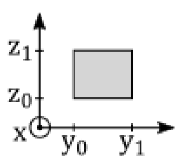
Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and x=x_1=2.8 m. The other four surfaces are rectangles in y=y_0=1.2 m, y=y_1=4.4 m, z=z_0=1.2 m, and z=z_1=4.6 m. The surfaces in the yz plane each have area 11.0m^2. Those in the xy plane have area 9.0m^2 ,and those in the zx plane have area 9.5m^2. An electric field of magnitude 11 N/C has components in the y and z directions and is directed at 35° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

   A. 6.445E+01 N· m^2/C
   B. 7.089E+01 N· m^2/C
   C. 7.798E+01 N· m^2/C
   D. 8.578E+01 N· m^2/C
   E. 9.436E+01 N· m^2/C

2. 

Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and x=x_1=1.4 m. The other four surfaces are rectangles in y=y_0=1.6 m, y=y_1=4.2 m, z=z_0=1.1 m, and z=z_1=5.9 m. The surfaces in the yz plane each have area 12.0m^2. Those in the xy plane have area 3.6m^2 ,and those in the zx plane have area 6.7m^2. An electric field of magnitude 16 N/C has components in the y and z directions and is directed at 53° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

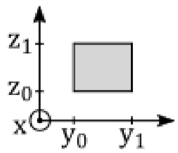
   A. 4.420E+01 N· m^2/C
   B. 4.862E+01 N· m^2/C
   C. 5.348E+01 N· m^2/C
   D. 5.882E+01 N· m^2/C
   E. 6.471E+01 N· m^2/C

3. 

Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and x=x_1=1.1 m. The other four surfaces are rectangles in y=y_0=1.5 m, y=y_1=5.0 m, z=z_0=1.8 m, and z=z_1=5.7 m. The surfaces in the yz plane each have area 14.0m^2. Those in the xy plane have area 3.9m^2 ,and those in the zx plane have area 4.3m^2. An electric field of magnitude 18 N/C has components in the y and z directions and is directed at 31° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

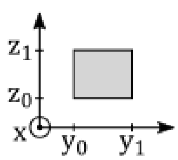
   A. 4.521E+01 N· m^2/C
   B. 4.973E+01 N· m^2/C

C. 5.470E+01 N· m^2/C
D. 6.017E+01 N· m^2/C
E. 6.619E+01 N· m^2/C



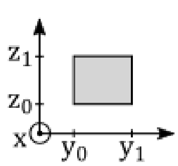
4. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=1.9$ m. The other four surfaces are rectangles in $y=y_0=1.6$ m, $y=y_1=5.1$ m, $z=z_0=1.3$ m, and $z=z_1=4.7$ m. The surfaces in the yz plane each have area $12.0m^2$. Those in the xy plane have area $6.6m^2$,and those in the zx plane have area $6.5m^2$. An electric field of magnitude 12 N/C has components in the y and z directions and is directed at 46° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 5.385E+01 N· m^2/C
B. 5.923E+01 N· m^2/C
C. 6.516E+01 N· m^2/C
D. 7.167E+01 N· m^2/C
E. 7.884E+01 N· m^2/C



5. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=1.3$ m. The other four surfaces are rectangles in $y=y_0=1.6$ m, $y=y_1=5.2$ m, $z=z_0=1.6$ m, and $z=z_1=4.7$ m. The surfaces in the yz plane each have area $11.0m^2$. Those in the xy plane have area $4.7m^2$,and those in the zx plane have area $4.0m^2$. An electric field of magnitude 11 N/C has components in the y and z directions and is directed at 43° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

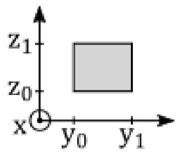
A. 2.214E+01 N· m^2/C
B. 2.436E+01 N· m^2/C
C. 2.679E+01 N· m^2/C
D. 2.947E+01 N· m^2/C
E. 3.242E+01 N· m^2/C



6. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.1$ m. The other four surfaces are rectangles in $y=y_0=1.7$ m, $y=y_1=5.6$ m, $z=z_0=1.8$ m, and $z=z_1=4.2$ m. The surfaces in the yz plane each have area $9.4m^2$. Those in the xy plane have area $8.2m^2$,and those in the zx plane have area $5.0m^2$. An electric field of magnitude 6 N/C has components in the y and z directions and is directed at 29° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

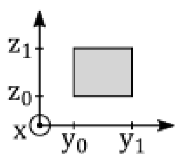
A. 2.186E+01 N· m^2/C
B. 2.404E+01 N· m^2/C

C. 2.645E+01 N· m^2/C
D. 2.909E+01 N· m^2/C
E. 3.200E+01 N· m^2/C

7. 

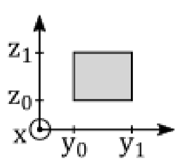
Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1$=2.6 m. The other four surfaces are rectangles in $y=y_0$=1.2 m, $y=y_1$=5.6 m, $z=z_0$=1.2 m, and $z=z_1$=4.4 m. The surfaces in the yz plane each have area 14.0m^2. Those in the xy plane have area 11.0m^2 ,and those in the zx plane have area 8.3m^2. An electric field of magnitude 9 N/C has components in the y and z directions and is directed at 39° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 4.809E+01 N· m^2/C
B. 5.290E+01 N· m^2/C
C. 5.819E+01 N· m^2/C
D. 6.401E+01 N· m^2/C
E. 7.041E+01 N· m^2/C

8. 

Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1$=2.1 m. The other four surfaces are rectangles in $y=y_0$=1.1 m, $y=y_1$=5.3 m, $z=z_0$=1.1 m, and $z=z_1$=4.3 m. The surfaces in the yz plane each have area 13.0m^2. Those in the xy plane have area 8.8m^2 ,and those in the zx plane have area 6.7m^2. An electric field of magnitude 10 N/C has components in the y and z directions and is directed at 39° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 3.924E+01 N· m^2/C
B. 4.316E+01 N· m^2/C
C. 4.748E+01 N· m^2/C
D. 5.222E+01 N· m^2/C
E. 5.745E+01 N· m^2/C

9. 

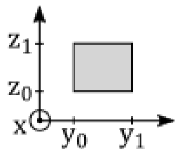
Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1$=2.4 m. The other four surfaces are rectangles in $y=y_0$=1.2 m, $y=y_1$=4.2 m, $z=z_0$=1.2 m, and $z=z_1$=4.1 m. The surfaces in the yz plane each have area 8.7m^2. Those in the xy plane have area 7.2m^2 ,and those in the zx plane have area 7.0m^2. An electric field of magnitude 12 N/C has components in the y and z directions and is directed at 58° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 4.024E+01 N· m^2/C
B. 4.426E+01 N· m^2/C

C. 4.868E+01 N· m^2/C

D. 5.355E+01 N· m^2/C

E. 5.891E+01 N· m^2/C



10. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.4$ m. The other four surfaces are rectangles in $y=y_0=1.7$ m, $y=y_1=5.8$ m, $z=z_0=1.3$ m, and $z=z_1=4.4$ m. The surfaces in the yz plane each have area $13.0m^2$. Those in the xy plane have area $9.8m^2$,and those in the zx plane have area $7.4m^2$. An electric field of magnitude 18 N/C has components in the y and z directions and is directed at 46° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

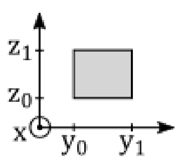
A. 8.457E+01 N· m^2/C

B. 9.303E+01 N· m^2/C

C. 1.023E+02 N· m^2/C

D. 1.126E+02 N· m^2/C

E. 1.238E+02 N· m^2/C



11. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=1.7$ m. The other four surfaces are rectangles in $y=y_0=1.5$ m, $y=y_1=5.7$ m, $z=z_0=1.4$ m, and $z=z_1=4.8$ m. The surfaces in the yz plane each have area $14.0m^2$. Those in the xy plane have area $7.1m^2$,and those in the zx plane have area $5.8m^2$. An electric field of magnitude 19 N/C has components in the y and z directions and is directed at 33° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

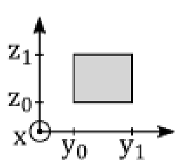
A. 6.920E+01 N· m^2/C

B. 7.612E+01 N· m^2/C

C. 8.373E+01 N· m^2/C

D. 9.210E+01 N· m^2/C

E. 1.013E+02 N· m^2/C



12. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=1.7$ m. The other four surfaces are rectangles in $y=y_0=1.9$ m, $y=y_1=4.3$ m, $z=z_0=1.7$ m, and $z=z_1=5.7$ m. The surfaces in the yz plane each have area $9.6m^2$. Those in the xy plane have area $4.1m^2$,and those in the zx plane have area $6.8m^2$. An electric field of magnitude 13 N/C has components in the y and z directions and is directed at 27° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

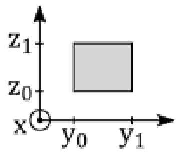
A. 7.876E+01 N· m^2/C

B. 8.664E+01 N· m^2/C

C. 9.531E+01 N· m^2/C

D. 1.048E+02 N· m^2/C

E. 1.153E+02 N· m^2/C

13. 

Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=1.5$ m. The other four surfaces are rectangles in $y=y_0=1.4$ m, $y=y_1=4.9$ m, $z=z_0=1.1$ m, and $z=z_1=4.4$ m. The surfaces in the yz plane each have area 12.0m^2. Those in the xy plane have area 5.3m^2 ,and those in the zx plane have area 5.0m^2. An electric field of magnitude 18 N/C has components in the y and z directions and is directed at 29° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

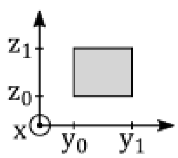
A. 7.793E+01 N· m^2/C

B. 8.572E+01 N· m^2/C

C. 9.429E+01 N· m^2/C

D. 1.037E+02 N· m^2/C

E. 1.141E+02 N· m^2/C

14. 

Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.8$ m. The other four surfaces are rectangles in $y=y_0=1.5$ m, $y=y_1=5.8$ m, $z=z_0=1.1$ m, and $z=z_1=5.2$ m. The surfaces in the yz plane each have area 18.0m^2. Those in the xy plane have area 12.0m^2 ,and those in the zx plane have area 11.0m^2. An electric field of magnitude 13 N/C has components in the y and z directions and is directed at 60° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

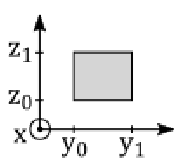
A. 5.606E+01 N· m^2/C

B. 6.167E+01 N· m^2/C

C. 6.784E+01 N· m^2/C

D. 7.462E+01 N· m^2/C

E. 8.208E+01 N· m^2/C

15. 

Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=1.4$ m. The other four surfaces are rectangles in $y=y_0=1.2$ m, $y=y_1=5.8$ m, $z=z_0=1.2$ m, and $z=z_1=5.0$ m. The surfaces in the yz plane each have area 17.0m^2. Those in the xy plane have area 6.4m^2 ,and those in the zx plane have area 5.3m^2. An electric field of magnitude 5 N/C has components in the y and z directions and is directed at 25° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

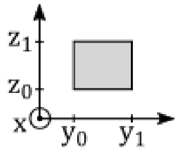
A. 1.992E+01 N· m^2/C

B. 2.192E+01 N· m^2/C

C. 2.411E+01 N· m^2/C

D. 2.652E+01 N· m^2/C

E. 2.917E+01 N· m^2/C



16. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.3$ m. The other four surfaces are rectangles in $y=y_0=1.2$ m, $y=y_1=5.5$ m, $z=z_0=1.7$ m, and $z=z_1=5.1$ m. The surfaces in the yz plane each have area $15.0m^2$. Those in the xy plane have area $9.9m^2$,and those in the zx plane have area $7.8m^2$. An electric field of magnitude 6 N/C has components in the y and z directions and is directed at 58° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

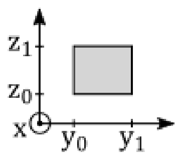
A. 1.698E+01 N· m^2/C

B. 1.868E+01 N· m^2/C

C. 2.055E+01 N· m^2/C

D. 2.260E+01 N· m^2/C

E. 2.486E+01 N· m^2/C



17. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=1.3$ m. The other four surfaces are rectangles in $y=y_0=1.5$ m, $y=y_1=5.8$ m, $z=z_0=1.7$ m, and $z=z_1=5.8$ m. The surfaces in the yz plane each have area $18.0m^2$. Those in the xy plane have area $5.6m^2$,and those in the zx plane have area $5.3m^2$. An electric field of magnitude 11 N/C has components in the y and z directions and is directed at 40° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

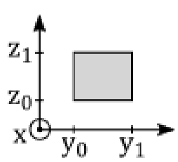
A. 3.712E+01 N· m^2/C

B. 4.083E+01 N· m^2/C

C. 4.491E+01 N· m^2/C

D. 4.940E+01 N· m^2/C

E. 5.434E+01 N· m^2/C



18. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.0$ m. The other four surfaces are rectangles in $y=y_0=1.3$ m, $y=y_1=4.4$ m, $z=z_0=1.3$ m, and $z=z_1=4.2$ m. The surfaces in the yz plane each have area $9.0m^2$. Those in the xy plane have area $6.2m^2$,and those in the zx plane have area $5.8m^2$. An electric field of magnitude 11 N/C has components in the y and z directions and is directed at 32° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

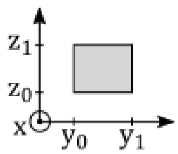
A. 3.695E+01 N· m^2/C

B. 4.065E+01 N· m^2/C

C. 4.472E+01 N· m^2/C

D. 4.919E+01 N· m^2/C

E. 5.411E+01 N· m^2/C

19. 

Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=1.8$ m. The other four surfaces are rectangles in $y=y_0=1.1$ m, $y=y_1=4.9$ m, $z=z_0=1.3$ m, and $z=z_1=5.6$ m. The surfaces in the yz plane each have area $16.0m^2$. Those in the xy plane have area $6.8m^2$,and those in the zx plane have area $7.7m^2$. An electric field of magnitude 18 N/C has components in the y and z directions and is directed at 57° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 6.898E+01 N· m^2/C

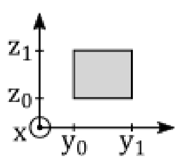
B. 7.588E+01 N· m^2/C

C. 8.347E+01 N· m^2/C

D. 9.181E+01 N· m^2/C

E. 1.010E+02 N· m^2/C

2.2

1. 

Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=1.2$ m. The other four surfaces are rectangles in $y=y_0=1.8$ m, $y=y_1=4.8$ m, $z=z_0=1.8$ m, and $z=z_1=4.3$ m. The surfaces in the yz plane each have area $7.5m^2$. Those in the xy plane have area $3.6m^2$,and those in the zx plane have area $3.0m^2$. An electric field of magnitude 11 N/C has components in the y and z directions and is directed at 49° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

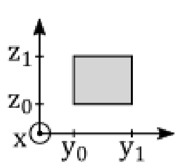
A. 2.058E+01 N· m^2/C

B. 2.264E+01 N· m^2/C

C. 2.491E+01 N· m^2/C

D. 2.740E+01 N· m^2/C

E. 3.014E+01 N· m^2/C

2. 

Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.9$ m. The other four surfaces are rectangles in $y=y_0=1.7$ m, $y=y_1=5.9$ m, $z=z_0=1.3$ m, and $z=z_1=5.3$ m. The surfaces in the yz plane each have area $17.0m^2$. Those in the xy plane have area $12.0m^2$,and those in the zx plane have area $12.0m^2$. An electric field of magnitude 5 N/C has components in the y and z directions and is directed at 26° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

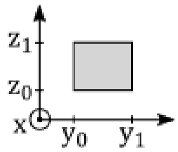
A. 1.737E+01 N· m^2/C

B. 1.910E+01 N· m^2/C

C. 2.101E+01 N· m^2/C

D. 2.311E+01 N· m^2/C

E. 2.543E+01 N· m^2/C



3. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.6$ m. The other four surfaces are rectangles in $y=y_0=1.7$ m, $y=y_1=5.4$ m, $z=z_0=1.4$ m, and $z=z_1=5.6$ m. The surfaces in the yz plane each have area $16.0m^2$. Those in the xy plane have area $9.6m^2$,and those in the zx plane have area $11.0m^2$. An electric field of magnitude 15 N/C has components in the y and z directions and is directed at 33° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

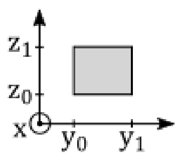
A. 8.921E+01 N· m^2/C

B. 9.813E+01 N· m^2/C

C. 1.079E+02 N· m^2/C

D. 1.187E+02 N· m^2/C

E. 1.306E+02 N· m^2/C



4. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.3$ m. The other four surfaces are rectangles in $y=y_0=1.5$ m, $y=y_1=4.6$ m, $z=z_0=1.6$ m, and $z=z_1=5.8$ m. The surfaces in the yz plane each have area $13.0m^2$. Those in the xy plane have area $7.1m^2$,and those in the zx plane have area $9.7m^2$. An electric field of magnitude 17 N/C has components in the y and z directions and is directed at 43° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

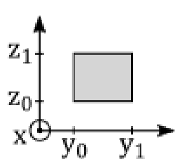
A. 8.415E+01 N· m^2/C

B. 9.256E+01 N· m^2/C

C. 1.018E+02 N· m^2/C

D. 1.120E+02 N· m^2/C

E. 1.232E+02 N· m^2/C



5. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.0$ m. The other four surfaces are rectangles in $y=y_0=1.8$ m, $y=y_1=5.8$ m, $z=z_0=1.9$ m, and $z=z_1=5.9$ m. The surfaces in the yz plane each have area $16.0m^2$. Those in the xy plane have area $8.0m^2$,and those in the zx plane have area $8.0m^2$. An electric field of magnitude 8 N/C has components in the y and z directions and is directed at 39° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

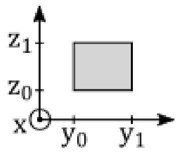
A. 3.662E+01 N· m^2/C

B. 4.028E+01 N· m^2/C

C. 4.430E+01 N· m^2/C

D. 4.873E+01 N· m^2/C

E. 5.361E+01 N· m^2/C



6. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.7$ m. The other four surfaces are rectangles in $y=y_0=1.6$ m, $y=y_1=4.4$ m, $z=z_0=1.2$ m, and $z=z_1=5.9$ m. The surfaces in the yz plane each have area 13.0m^2. Those in the xy plane have area 7.6m^2 ,and those in the zx plane have area 13.0m^2. An electric field of magnitude 8 N/C has components in the y and z directions and is directed at 46° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

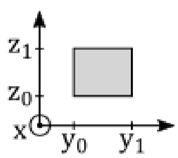
A. 4.988E+01 N· m^2/C

B. 5.487E+01 N· m^2/C

C. 6.035E+01 N· m^2/C

D. 6.639E+01 N· m^2/C

E. 7.303E+01 N· m^2/C



7. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.8$ m. The other four surfaces are rectangles in $y=y_0=1.4$ m, $y=y_1=4.7$ m, $z=z_0=1.8$ m, and $z=z_1=4.7$ m. The surfaces in the yz plane each have area 9.6m^2. Those in the xy plane have area 9.2m^2 ,and those in the zx plane have area 8.1m^2. An electric field of magnitude 6 N/C has components in the y and z directions and is directed at 32° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

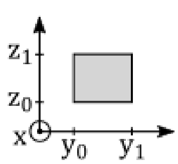
A. 2.134E+01 N· m^2/C

B. 2.347E+01 N· m^2/C

C. 2.582E+01 N· m^2/C

D. 2.840E+01 N· m^2/C

E. 3.124E+01 N· m^2/C



8. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.2$ m. The other four surfaces are rectangles in $y=y_0=1.7$ m, $y=y_1=4.3$ m, $z=z_0=1.5$ m, and $z=z_1=4.7$ m. The surfaces in the yz plane each have area 8.3m^2. Those in the xy plane have area 5.7m^2 ,and those in the zx plane have area 7.0m^2. An electric field of magnitude 18 N/C has components in the y and z directions and is directed at 28° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

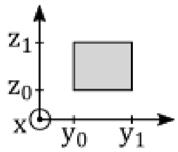
A. 5.408E+01 N· m^2/C

B. 5.949E+01 N· m^2/C

C. 6.544E+01 N· m^2/C

D. 7.198E+01 N· m^2/C

E. 7.918E+01 N· m^2/C

9. 

Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and x=x_1=1.6 m. The other four surfaces are rectangles in y=y_0=1.5 m, y=y_1=4.4 m, z=z_0=1.5 m, and z=z_1=5.5 m. The surfaces in the yz plane each have area 12.0m^2. Those in the xy plane have area 4.6m^2 ,and those in the zx plane have area 6.4m^2. An electric field of magnitude 8 N/C has components in the y and z directions and is directed at 39° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

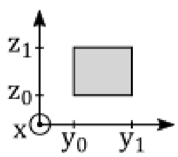
A. 3.222E+01 N· m^2/C

B. 3.544E+01 N· m^2/C

C. 3.899E+01 N· m^2/C

D. 4.289E+01 N· m^2/C

E. 4.718E+01 N· m^2/C

10. 

Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and x=x_1=2.2 m. The other four surfaces are rectangles in y=y_0=1.8 m, y=y_1=5.3 m, z=z_0=1.2 m, and z=z_1=5.5 m. The surfaces in the yz plane each have area 15.0m^2. Those in the xy plane have area 7.7m^2 ,and those in the zx plane have area 9.5m^2. An electric field of magnitude 11 N/C has components in the y and z directions and is directed at 50° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

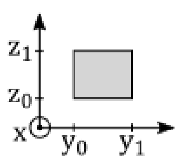
A. 5.989E+01 N· m^2/C

B. 6.588E+01 N· m^2/C

C. 7.247E+01 N· m^2/C

D. 7.971E+01 N· m^2/C

E. 8.769E+01 N· m^2/C

11. 

Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and x=x_1=1.5 m. The other four surfaces are rectangles in y=y_0=1.4 m, y=y_1=4.3 m, z=z_0=1.2 m, and z=z_1=4.6 m. The surfaces in the yz plane each have area 9.9m^2. Those in the xy plane have area 4.3m^2 ,and those in the zx plane have area 5.1m^2. An electric field of magnitude 19 N/C has components in the y and z directions and is directed at 31° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

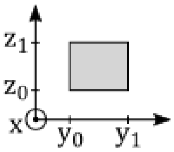
A. 3.750E+01 N· m^2/C

B. 4.125E+01 N· m^2/C

C. 4.537E+01 N· m^2/C

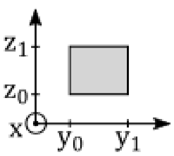
D. 4.991E+01 N· m^2/C

E. 5.490E+01 N· m^2/C

12. 

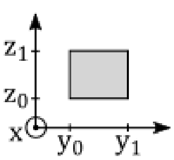
Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.5$ m. The other four surfaces are rectangles in $y=y_0=1.4$ m, $y=y_1=4.8$ m, $z=z_0=1.7$ m, and $z=z_1=4.6$ m. The surfaces in the yz plane each have area $9.9m^2$. Those in the xy plane have area $8.5m^2$,and those in the zx plane have area $7.2m^2$. An electric field of magnitude 14 N/C has components in the y and z directions and is directed at 55° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 8.314E+01 N· m^2/C
B. 9.146E+01 N· m^2/C
C. 1.006E+02 N· m^2/C
D. 1.107E+02 N· m^2/C
E. 1.217E+02 N· m^2/C

13. 

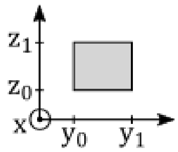
Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=1.3$ m. The other four surfaces are rectangles in $y=y_0=1.1$ m, $y=y_1=5.7$ m, $z=z_0=1.8$ m, and $z=z_1=4.5$ m. The surfaces in the yz plane each have area $12.0m^2$. Those in the xy plane have area $6.0m^2$,and those in the zx plane have area $3.5m^2$. An electric field of magnitude 5 N/C has components in the y and z directions and is directed at 38° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 9.823E+00 N· m^2/C
B. 1.080E+01 N· m^2/C
C. 1.189E+01 N· m^2/C
D. 1.307E+01 N· m^2/C
E. 1.438E+01 N· m^2/C

14. 

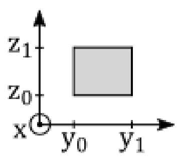
Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.5$ m. The other four surfaces are rectangles in $y=y_0=1.4$ m, $y=y_1=4.9$ m, $z=z_0=1.1$ m, and $z=z_1=5.3$ m. The surfaces in the yz plane each have area $15.0m^2$. Those in the xy plane have area $8.8m^2$,and those in the zx plane have area $10.0m^2$. An electric field of magnitude 9 N/C has components in the y and z directions and is directed at 50° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 5.439E+01 N· m^2/C
B. 5.983E+01 N· m^2/C
C. 6.581E+01 N· m^2/C
D. 7.239E+01 N· m^2/C
E. 7.963E+01 N· m^2/C

15. 

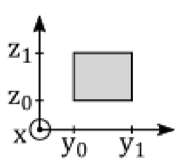
Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=1.6$ m. The other four surfaces are rectangles in $y=y_0=1.3$ m, $y=y_1=4.4$ m, $z=z_0=1.4$ m, and $z=z_1=5.5$ m. The surfaces in the yz plane each have area 13.0m^2. Those in the xy plane have area 5.0m^2 ,and those in the zx plane have area 6.6m^2. An electric field of magnitude 11 N/C has components in the y and z directions and is directed at 34° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 2.756E+01 N· m^2/C
B. 3.032E+01 N· m^2/C
C. 3.335E+01 N· m^2/C
D. 3.668E+01 N· m^2/C
E. 4.035E+01 N· m^2/C

16. 

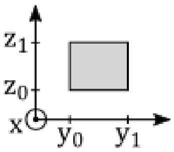
Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.4$ m. The other four surfaces are rectangles in $y=y_0=1.9$ m, $y=y_1=5.3$ m, $z=z_0=1.4$ m, and $z=z_1=5.5$ m. The surfaces in the yz plane each have area 14.0m^2. Those in the xy plane have area 8.2m^2 ,and those in the zx plane have area 9.8m^2. An electric field of magnitude 11 N/C has components in the y and z directions and is directed at 58° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 6.270E+01 N· m^2/C
B. 6.897E+01 N· m^2/C
C. 7.586E+01 N· m^2/C
D. 8.345E+01 N· m^2/C
E. 9.179E+01 N· m^2/C

17. 

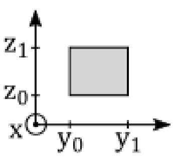
Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.2$ m. The other four surfaces are rectangles in $y=y_0=1.7$ m, $y=y_1=4.6$ m, $z=z_0=1.4$ m, and $z=z_1=4.5$ m. The surfaces in the yz plane each have area 9.0m^2. Those in the xy plane have area 6.4m^2 ,and those in the zx plane have area 6.8m^2. An electric field of magnitude 15 N/C has components in the y and z directions and is directed at 31° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 3.959E+01 N· m^2/C
B. 4.354E+01 N· m^2/C
C. 4.790E+01 N· m^2/C
D. 5.269E+01 N· m^2/C
E. 5.796E+01 N· m^2/C

18. 

Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=1.8$ m. The other four surfaces are rectangles in $y=y_0=1.2$ m, $y=y_1=5.9$ m, $z=z_0=1.3$ m, and $z=z_1=5.2$ m. The surfaces in the yz plane each have area 18.0m^2. Those in the xy plane have area 8.5m^2 ,and those in the zx plane have area 7.0m^2. An electric field of magnitude 12 N/C has components in the y and z directions and is directed at 49° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

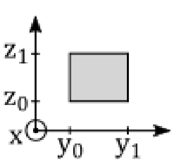
A. 4.777E+01 N· m^2/C
B. 5.254E+01 N· m^2/C
C. 5.780E+01 N· m^2/C
D. 6.358E+01 N· $\mathbf{m^2}$/C
E. 6.993E+01 N· m^2/C

19. 

Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.4$ m. The other four surfaces are rectangles in $y=y_0=1.3$ m, $y=y_1=5.7$ m, $z=z_0=1.9$ m, and $z=z_1=5.4$ m. The surfaces in the yz plane each have area 15.0m^2. Those in the xy plane have area 11.0m^2 ,and those in the zx plane have area 8.4m^2. An electric field of magnitude 8 N/C has components in the y and z directions and is directed at 26° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

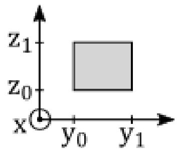
A. 2.012E+01 N· m^2/C
B. 2.213E+01 N· m^2/C
C. 2.435E+01 N· m^2/C
D. 2.678E+01 N· m^2/C
E. 2.946E+01 N· $\mathbf{m^2}$/C

2.3

1. 

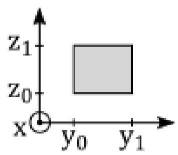
Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=1.3$ m. The other four surfaces are rectangles in $y=y_0=1.5$ m, $y=y_1=5.0$ m, $z=z_0=1.6$ m, and $z=z_1=4.8$ m. The surfaces in the yz plane each have area 11.0m^2. Those in the xy plane have area 4.5m^2 ,and those in the zx plane have area 4.2m^2. An electric field has the xyz components $(0, 6.4, 6.8)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 2.662E+01 N· $\mathbf{m^2}$/C
B. 2.929E+01 N· m^2/C
C. 3.222E+01 N· m^2/C
D. 3.544E+01 N· m^2/C
E. 3.898E+01 N· m^2/C



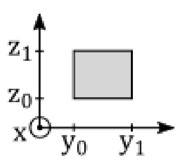
2. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.7$ m. The other four surfaces are rectangles in $y=y_0=1.7$ m, $y=y_1=4.3$ m, $z=z_0=1.8$ m, and $z=z_1=4.9$ m. The surfaces in the yz plane each have area 8.1m^2. Those in the xy plane have area 7.0m^2 ,and those in the zx plane have area 8.4m^2. An electric field has the xyz components $(0, 9.2, 7.1)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 6.364E+01 N· m^2/C
B. 7.000E+01 N· m^2/C
C. 7.700E+01 N· m^2/C
D. 8.470E+01 N· m^2/C
E. 9.317E+01 N· m^2/C



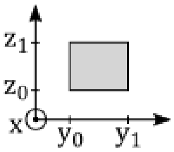
3. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.6$ m. The other four surfaces are rectangles in $y=y_0=1.2$ m, $y=y_1=5.9$ m, $z=z_0=1.9$ m, and $z=z_1=5.0$ m. The surfaces in the yz plane each have area 15.0m^2. Those in the xy plane have area 12.0m^2 ,and those in the zx plane have area 8.1m^2. An electric field has the xyz components $(0, 8.1, 6.8)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 6.529E+01 N· m^2/C
B. 7.181E+01 N· m^2/C
C. 7.900E+01 N· m^2/C
D. 8.690E+01 N· m^2/C
E. 9.559E+01 N· m^2/C



4. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=1.3$ m. The other four surfaces are rectangles in $y=y_0=1.6$ m, $y=y_1=5.3$ m, $z=z_0=1.3$ m, and $z=z_1=5.6$ m. The surfaces in the yz plane each have area 16.0m^2. Those in the xy plane have area 4.8m^2 ,and those in the zx plane have area 5.6m^2. An electric field has the xyz components $(0, 5.5, 9.1)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 3.074E+01 N· m^2/C
B. 3.382E+01 N· m^2/C
C. 3.720E+01 N· m^2/C
D. 4.092E+01 N· m^2/C
E. 4.501E+01 N· m^2/C



5. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.3$ m. The other four surfaces are rectangles in $y=y_0=1.5$ m, $y=y_1=5.2$ m, $z=z_0=1.8$ m, and $z=z_1=4.4$ m. The surfaces in the yz plane each have area 9.6m^2. Those in the xy plane have area 8.5m^2 ,and those in the zx plane have area 6.0m^2. An electric field has the xyz components $(0, 8.7, 8.4)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

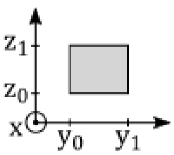
A. 4.730E+01 N$\cdot$ m^2/C

B. 5.203E+01 N$\cdot$ m^2/C

C. 5.723E+01 N$\cdot$ m^2/C

D. 6.295E+01 N$\cdot$ m^2/C

E. 6.925E+01 N$\cdot$ m^2/C



6. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.8$ m. The other four surfaces are rectangles in $y=y_0=1.3$ m, $y=y_1=4.2$ m, $z=z_0=1.9$ m, and $z=z_1=5.5$ m. The surfaces in the yz plane each have area 10.0m^2. Those in the xy plane have area 8.1m^2 ,and those in the zx plane have area 10.0m^2. An electric field has the xyz components $(0, 8.5, 6.4)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

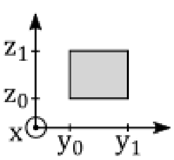
A. 7.081E+01 N$\cdot$ m^2/C

B. 7.789E+01 N$\cdot$ m^2/C

C. 8.568E+01 N$\cdot$ m^2/C

D. 9.425E+01 N$\cdot$ m^2/C

E. 1.037E+02 N$\cdot$ m^2/C



7. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=1.8$ m. The other four surfaces are rectangles in $y=y_0=1.4$ m, $y=y_1=5.0$ m, $z=z_0=1.6$ m, and $z=z_1=5.9$ m. The surfaces in the yz plane each have area 15.0m^2. Those in the xy plane have area 6.5m^2 ,and those in the zx plane have area 7.7m^2. An electric field has the xyz components $(0, 8.0, 9.4)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

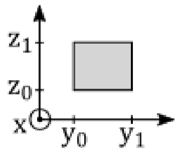
A. 6.192E+01 N$\cdot$ m^2/C

B. 6.811E+01 N$\cdot$ m^2/C

C. 7.492E+01 N$\cdot$ m^2/C

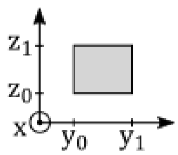
D. 8.242E+01 N$\cdot$ m^2/C

E. 9.066E+01 N$\cdot$ m^2/C



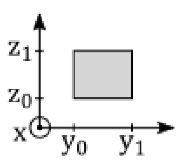
8. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=1.2$ m. The other four surfaces are rectangles in $y=y_0=1.7$ m, $y=y_1=5.0$ m, $z=z_0=1.9$ m, and $z=z_1=4.3$ m. The surfaces in the yz plane each have area 7.9m^2. Those in the xy plane have area 4.0m^2 ,and those in the zx plane have area 2.9m^2. An electric field has the xyz components $(0, 5.3, 9.1)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 1.388E+01 N· m^2/C
B. 1.526E+01 N· m^2/C
C. 1.679E+01 N· m^2/C
D. 1.847E+01 N· m^2/C
E. 2.032E+01 N· m^2/C



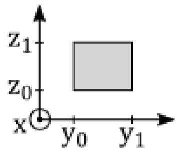
9. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=1.4$ m. The other four surfaces are rectangles in $y=y_0=1.3$ m, $y=y_1=5.6$ m, $z=z_0=1.7$ m, and $z=z_1=4.5$ m. The surfaces in the yz plane each have area 12.0m^2. Those in the xy plane have area 6.0m^2 ,and those in the zx plane have area 3.9m^2. An electric field has the xyz components $(0, 6.5, 9.8)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 1.740E+01 N· m^2/C
B. 1.914E+01 N· m^2/C
C. 2.106E+01 N· m^2/C
D. 2.316E+01 N· m^2/C
E. 2.548E+01 N· m^2/C



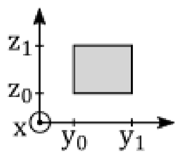
10. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.0$ m. The other four surfaces are rectangles in $y=y_0=1.4$ m, $y=y_1=4.7$ m, $z=z_0=1.2$ m, and $z=z_1=4.1$ m. The surfaces in the yz plane each have area 9.6m^2. Those in the xy plane have area 6.6m^2 ,and those in the zx plane have area 5.8m^2. An electric field has the xyz components $(0, 8.4, 5.8)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 3.328E+01 N· m^2/C
B. 3.660E+01 N· m^2/C
C. 4.026E+01 N· m^2/C
D. 4.429E+01 N· m^2/C
E. 4.872E+01 N· m^2/C

11. 

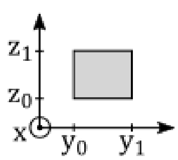
Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.0$ m. The other four surfaces are rectangles in $y=y_0=1.8$ m, $y=y_1=4.2$ m, $z=z_0=1.3$ m, and $z=z_1=5.8$ m. The surfaces in the yz plane each have area 11.0m^2. Those in the xy plane have area 4.8m^2 ,and those in the zx plane have area 9.0m^2. An electric field has the xyz components $(0, 6.1, 5.6)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 4.125E+01 N· m^2/C
B. 4.537E+01 N· m^2/C
C. 4.991E+01 N· m^2/C
D. 5.490E+01 N· m^2/C
E. 6.039E+01 N· m^2/C

12. 

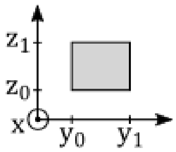
Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.4$ m. The other four surfaces are rectangles in $y=y_0=1.1$ m, $y=y_1=4.8$ m, $z=z_0=1.8$ m, and $z=z_1=4.8$ m. The surfaces in the yz plane each have area 11.0m^2. Those in the xy plane have area 8.9m^2 ,and those in the zx plane have area 7.2m^2. An electric field has the xyz components $(0, 5.9, 8.9)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 2.901E+01 N· m^2/C
B. 3.192E+01 N· m^2/C
C. 3.511E+01 N· m^2/C
D. 3.862E+01 N· m^2/C
E. 4.248E+01 N· m^2/C

13. 

Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=1.6$ m. The other four surfaces are rectangles in $y=y_0=1.6$ m, $y=y_1=5.6$ m, $z=z_0=1.8$ m, and $z=z_1=4.4$ m. The surfaces in the yz plane each have area 10.0m^2. Those in the xy plane have area 6.4m^2 ,and those in the zx plane have area 4.2m^2. An electric field has the xyz components $(0, 5.5, 7.3)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 1.891E+01 N· m^2/C
B. 2.080E+01 N· m^2/C
C. 2.288E+01 N· m^2/C
D. 2.517E+01 N· m^2/C
E. 2.768E+01 N· m^2/C

14. 

Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=1.1$ m. The other four surfaces are rectangles in $y=y_0=1.7$ m, $y=y_1=4.2$ m, $z=z_0=1.1$ m, and $z=z_1=4.5$ m. The surfaces in the yz plane each have area 8.5m^2. Those in the xy plane have area 2.8m^2 ,and those in the zx plane have area 3.7m^2. An electric field has the xyz components $(0, 7.4, 8.9)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

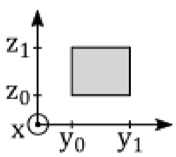
A. 2.079E+01 N· m^2/C

B. 2.287E+01 N· m^2/C

C. 2.516E+01 N· m^2/C

D. 2.768E+01 N· m^2/C

E. 3.044E+01 N· m^2/C

15. 

Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.5$ m. The other four surfaces are rectangles in $y=y_0=1.3$ m, $y=y_1=5.3$ m, $z=z_0=1.3$ m, and $z=z_1=4.3$ m. The surfaces in the yz plane each have area 12.0m^2. Those in the xy plane have area 10.0m^2 ,and those in the zx plane have area 7.5m^2. An electric field has the xyz components $(0, 9.7, 9.3)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

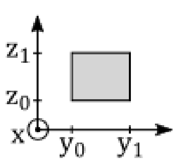
A. 6.614E+01 N· m^2/C

B. 7.275E+01 N· m^2/C

C. 8.003E+01 N· m^2/C

D. 8.803E+01 N· m^2/C

E. 9.683E+01 N· m^2/C

16. 

Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.8$ m. The other four surfaces are rectangles in $y=y_0=1.1$ m, $y=y_1=5.6$ m, $z=z_0=1.8$ m, and $z=z_1=5.5$ m. The surfaces in the yz plane each have area 17.0m^2. Those in the xy plane have area 13.0m^2 ,and those in the zx plane have area 10.0m^2. An electric field has the xyz components $(0, 7.0, 5.7)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

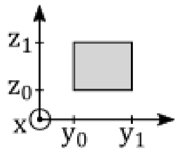
A. 4.953E+01 N· m^2/C

B. 5.449E+01 N· m^2/C

C. 5.993E+01 N· m^2/C

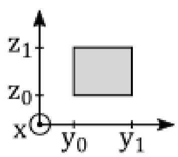
D. 6.593E+01 N· m^2/C

E. 7.252E+01 N· m^2/C

17. 

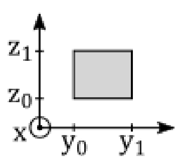
Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.7$ m. The other four surfaces are rectangles in $y=y_0=1.5$ m, $y=y_1=5.6$ m, $z=z_0=1.3$ m, and $z=z_1=4.2$ m. The surfaces in the yz plane each have area 12.0m^2. Those in the xy plane have area 11.0m^2 ,and those in the zx plane have area 7.8m^2. An electric field has the xyz components $(0, 8.5, 7.3)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 5.000E+01 N· m^2/C
B. 5.500E+01 N· m^2/C
C. 6.050E+01 N· m^2/C
D. 6.656E+01 N· m^2/C
E. 7.321E+01 N· m^2/C

18. 

Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=1.5$ m. The other four surfaces are rectangles in $y=y_0=1.6$ m, $y=y_1=4.3$ m, $z=z_0=1.3$ m, and $z=z_1=5.1$ m. The surfaces in the yz plane each have area 10.0m^2. Those in the xy plane have area 4.0m^2 ,and those in the zx plane have area 5.7m^2. An electric field has the xyz components $(0, 5.7, 7.5)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 3.249E+01 N· m^2/C
B. 3.574E+01 N· m^2/C
C. 3.931E+01 N· m^2/C
D. 4.324E+01 N· m^2/C
E. 4.757E+01 N· m^2/C

19. 

Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.8$ m. The other four surfaces are rectangles in $y=y_0=1.7$ m, $y=y_1=4.5$ m, $z=z_0=1.5$ m, and $z=z_1=5.0$ m. The surfaces in the yz plane each have area 9.8m^2. Those in the xy plane have area 7.8m^2 ,and those in the zx plane have area 9.8m^2. An electric field has the xyz components $(0, 6.1, 9.3)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 5.978E+01 N· m^2/C
B. 6.576E+01 N· m^2/C
C. 7.233E+01 N· m^2/C
D. 7.957E+01 N· m^2/C
E. 8.752E+01 N· m^2/C

2.4

1. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=4, y=0), (x=0, y=6), and (x=4, y=6), where x and y are measured in meters. The electric field is, $\vec{E} = 3y^{1.9}\hat{\imath} + 3x^{1.5}\hat{\jmath} + 3y^{1.6}\hat{k}$.

   A. 3.658E+02 V· m

   B. 4.024E+02 V· m

   C. 4.426E+02 V· m

   D. 4.869E+02 V· m

   E. 5.355E+02 V· m

2. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=4, y=0), (x=0, y=4), and (x=4, y=4), where x and y are measured in meters. The electric field is, $\vec{E} = 4y^{2.2}\hat{\imath} + 1x^{3.0}\hat{\jmath} + 2y^{1.7}\hat{k}$.

   A. 8.545E+01 V· m

   B. 9.400E+01 V· m

   C. 1.034E+02 V· m

   D. 1.137E+02 V· m

   E. 1.251E+02 V· m

3. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=7, y=0), (x=0, y=7), and (x=7, y=7), where x and y are measured in meters. The electric field is, $\vec{E} = 4y^{2.3}\hat{\imath} + 3x^{2.4}\hat{\jmath} + 2y^{1.8}\hat{k}$.

   A. 8.731E+02 V· m

   B. 9.604E+02 V· m

   C. 1.056E+03 V· m

   D. 1.162E+03 V· m

   E. 1.278E+03 V· m

4. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=5, y=0), (x=0, y=7), and (x=5, y=7), where x and y are measured in meters. The electric field is, $\vec{E} = 3y^{2.7}\hat{\imath} + 1x^{2.5}\hat{\jmath} + 3y^{3.3}\hat{k}$.

   A. 1.128E+04 V· m

   B. 1.241E+04 V· m

   C. 1.365E+04 V· m

   D. 1.502E+04 V· m

   E. 1.652E+04 V· m

5. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=5, y=0), (x=0, y=7), and (x=5, y=7), where x and y are measured in meters. The electric field is, $\vec{E} = 3y^{2.9}\hat{\imath} + 3x^{1.6}\hat{\jmath} + 4y^{2.5}\hat{k}$.

   A. 4.286E+03 V· m

   B. 4.714E+03 V· m

   C. 5.186E+03 V· m

   D. 5.704E+03 V· m

   E. 6.275E+03 V· m

6. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=8, y=0), (x=0, y=8), and (x=8, y=8), where x and y are measured in meters. The electric field is, $\vec{E} = 1y^{2.8}\hat{\imath} + 5x^{2.7}\hat{\jmath} + 5y^{1.6}\hat{k}$.

   A. 3.429E+03 V· m

   B. 3.771E+03 V· m

   C. 4.149E+03 V· m

   D. 4.564E+03 V· m

   E. 5.020E+03 V· m

7. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=7, y=0), (x=0, y=5), and (x=7, y=5), where x and y are measured in meters. The electric field is, $\vec{E} = 1y^{2.4}\hat{\imath} + 4x^{1.7}\hat{\jmath} + 4y^{2.1}\hat{k}$.

   A. 1.206E+03 V· m

   B. 1.326E+03 V· m

   C. 1.459E+03 V· m

   D. 1.605E+03 V· m

   E. 1.765E+03 V· m

8. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=7, y=0), (x=0, y=6), and (x=7, y=6), where x and y are measured in meters. The electric field is, $\vec{E} = 2y^{2.5}\hat{\imath} + 3x^{1.8}\hat{\jmath} + 2y^{2.8}\hat{k}$.

   A. 3.337E+03 V· m

   B. 3.670E+03 V· m

   C. 4.037E+03 V· m

   D. 4.441E+03 V· m

   E. 4.885E+03 V· m

9. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=9, y=0), (x=0, y=9), and (x=9, y=9), where x and y are measured in meters. The electric field is, $\vec{E} = 3y^{2.8}\hat{\imath} + 1x^{2.3}\hat{\jmath} + 2y^{2.9}\hat{k}$.

   A. 2.210E+04 V· m

   B. 2.431E+04 V· m

   C. 2.674E+04 V· m

   D. 2.941E+04 V· m

   E. 3.235E+04 V· m

10. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=7, y=0), (x=0, y=4), and (x=7, y=4), where x and y are measured in meters. The electric field is, $\vec{E} = 2y^{2.2}\hat{\imath} + 3x^{2.1}\hat{\jmath} + 5y^{3.3}\hat{k}$.

    A. 2.610E+03 V· m

    B. 2.871E+03 V· m

    C. 3.158E+03 V· m

    D. 3.474E+03 V· m

    E. 3.822E+03 V· m

11. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=5, y=0), (x=0, y=7), and (x=5, y=7), where x and y are measured in meters. The electric field is, $\vec{E} = 2y^{2.8}\hat{\imath} + 3x^{2.8}\hat{\jmath} + 2y^{2.4}\hat{k}$.

A. 1.997E+03 V· m

B. 2.197E+03 V· m

C. 2.417E+03 V· m

D. 2.659E+03 V· m

E. 2.924E+03 V· m

12. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=8, y=0), (x=0, y=6), and (x=8, y=6), where x and y are measured in meters. The electric field is, $\vec{E} = 4y^{1.4}\hat{\imath} + 2x^{2.3}\hat{\jmath} + 4y^{2.3}\hat{k}$.

A. 2.694E+03 V· m

B. 2.963E+03 V· m

C. 3.259E+03 V· m

D. 3.585E+03 V· m

E. 3.944E+03 V· m

13. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=6, y=0), (x=0, y=5), and (x=6, y=5), where x and y are measured in meters. The electric field is, $\vec{E} = 3y^{1.7}\hat{\imath} + 3x^{1.6}\hat{\jmath} + 4y^{2.7}\hat{k}$.

A. 2.067E+03 V· m

B. 2.274E+03 V· m

C. 2.501E+03 V· m

D. 2.752E+03 V· m

E. 3.027E+03 V· m

14. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=6, y=0), (x=0, y=6), and (x=6, y=6), where x and y are measured in meters. The electric field is, $\vec{E} = 2y^{1.8}\hat{\imath} + 3x^{1.9}\hat{\jmath} + 5y^{3.2}\hat{k}$.

A. 9.952E+03 V· m

B. 1.095E+04 V· m

C. 1.204E+04 V· m

D. 1.325E+04 V· m

E. 1.457E+04 V· m

15. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=6, y=0), (x=0, y=6), and (x=6, y=6), where x and y are measured in meters. The electric field is, $\vec{E} = 4y^{2.0}\hat{\imath} + 3x^{2.0}\hat{\jmath} + 3y^{3.0}\hat{k}$.

A. 4.820E+03 V· m

B. 5.302E+03 V· m

C. 5.832E+03 V· m

D. 6.415E+03 V· m

E. 7.057E+03 V· m

16. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=6, y=0), (x=0, y=3), and (x=6, y=3), where x and y are measured in meters. The electric field is, $\vec{E} = 1y^{1.6}\hat{\imath} + 3x^{2.6}\hat{\jmath} + 2y^{3.2}\hat{k}$.

   A. 1.969E+02 V· m
   B. 2.166E+02 V· m
   C. 2.383E+02 V· m
   D. 2.621E+02 V· m
   E. 2.883E+02 V· m

17. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=4, y=0), (x=0, y=3), and (x=4, y=3), where x and y are measured in meters. The electric field is, $\vec{E} = 2y^{2.7}\hat{\imath} + 2x^{2.9}\hat{\jmath} + 2y^{2.0}\hat{k}$.

   A. 7.200E+01 V· m
   B. 7.920E+01 V· m
   C. 8.712E+01 V· m
   D. 9.583E+01 V· m
   E. 1.054E+02 V· m

18. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=4, y=0), (x=0, y=9), and (x=4, y=9), where x and y are measured in meters. The electric field is, $\vec{E} = 1y^{2.2}\hat{\imath} + 1x^{3.3}\hat{\jmath} + 5y^{2.4}\hat{k}$.

   A. 7.054E+03 V· m
   B. 7.759E+03 V· m
   C. 8.535E+03 V· m
   D. 9.388E+03 V· m
   E. 1.033E+04 V· m

19. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=8, y=0), (x=0, y=8), and (x=8, y=8), where x and y are measured in meters. The electric field is, $\vec{E} = 2y^{2.0}\hat{\imath} + 2x^{2.1}\hat{\jmath} + 3y^{2.5}\hat{k}$.

   A. 9.027E+03 V· m
   B. 9.930E+03 V· m
   C. 1.092E+04 V· m
   D. 1.202E+04 V· m
   E. 1.322E+04 V· m

2.5

1. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 2.8 nano-Coulombs. What is the magnitude of the electric field at a distance of 3.5 m from the center of the shells?

   A. 6.171E+00 N/C
   B. 6.789E+00 N/C
   C. 7.467E+00 N/C
   D. 8.214E+00 N/C
   E. 9.036E+00 N/C

2. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 5.6 nano-Coulombs. What is the magnitude of the electric field at a distance of 3.6 m from the center of the shells?

   A. 9.642E+00 N/C
   B. 1.061E+01 N/C
   C. 1.167E+01 N/C
   D. 1.283E+01 N/C
   E. 1.412E+01 N/C

3. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 7.6 nano-Coulombs. What is the magnitude of the electric field at a distance of 5.8 m from the center of the shells?

   A. 1.017E+01 N/C
   B. 1.118E+01 N/C
   C. 1.230E+01 N/C
   D. 1.353E+01 N/C
   E. 1.488E+01 N/C

4. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 3.4 nano-Coulombs. What is the magnitude of the electric field at a distance of 2.8 m from the center of the shells?

   A. 5.865E+00 N/C
   B. 6.451E+00 N/C
   C. 7.096E+00 N/C
   D. 7.806E+00 N/C
   E. 8.587E+00 N/C

5. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 9.7 nano-Coulombs. What is the magnitude of the electric field at a distance of 4.4 m from the center of the shells?

   A. 1.491E+01 N/C
   B. 1.640E+01 N/C
   C. 1.804E+01 N/C
   D. 1.984E+01 N/C
   E. 2.182E+01 N/C

6. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 6.5 nano-Coulombs. What is the magnitude of the electric field at a distance of 1.3 m from the center of the shells?

   A. 2.601E+01 N/C
   B. 2.861E+01 N/C
   C. 3.147E+01 N/C
   D. 3.462E+01 N/C
   E. 3.808E+01 N/C

7. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 2.8 nano-Coulombs. What is the magnitude of the electric field at a distance of 4.8 m from the center of the shells?

   A. 2.988E+00 N/C
   B. 3.287E+00 N/C
   C. 3.616E+00 N/C
   D. 3.977E+00 N/C
   E. 4.375E+00 N/C

8. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 7.8 nano-Coulombs. What is the magnitude of the electric field at a distance of 1.3 m from the center of the shells?

   A. 2.837E+01 N/C
   B. 3.121E+01 N/C
   C. 3.433E+01 N/C
   D. 3.776E+01 N/C
   E. 4.154E+01 N/C

9. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 5.6 nano-Coulombs. What is the magnitude of the electric field at a distance of 5.6 m from the center of the shells?

   A. 6.641E+00 N/C
   B. 7.305E+00 N/C
   C. 8.036E+00 N/C
   D. 8.839E+00 N/C
   E. 9.723E+00 N/C

10. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 7.4 nano-Coulombs. What is the magnitude of the electric field at a distance of 5.4 m from the center of the shells?

   A. 8.580E+00 N/C
   B. 9.438E+00 N/C
   C. 1.038E+01 N/C
   D. 1.142E+01 N/C
   E. 1.256E+01 N/C

11. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 3.4 nano-Coulombs. What is the magnitude of the electric field at a distance of 5.5 m from the center of the shells?

   A. 5.058E+00 N/C
   B. 5.564E+00 N/C
   C. 6.120E+00 N/C
   D. 6.732E+00 N/C
   E. 7.405E+00 N/C

12. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 1.2 nano-Coulombs. What is the magnitude of the electric field at a distance of 5.8 m from the center of the shells?

    A. 1.096E+00 N/C
    B. 1.206E+00 N/C
    C. 1.327E+00 N/C
    D. 1.459E+00 N/C
    E. 1.605E+00 N/C

13. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 2.0 nano-Coulombs. What is the magnitude of the electric field at a distance of 3.7 m from the center of the shells?

    A. 2.964E+00 N/C
    B. 3.260E+00 N/C
    C. 3.586E+00 N/C
    D. 3.944E+00 N/C
    E. 4.339E+00 N/C

14. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 6.4 nano-Coulombs. What is the magnitude of the electric field at a distance of 1.1 m from the center of the shells?

    A. 3.251E+01 N/C
    B. 3.577E+01 N/C
    C. 3.934E+01 N/C
    D. 4.328E+01 N/C
    E. 4.760E+01 N/C

15. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 7.2 nano-Coulombs. What is the magnitude of the electric field at a distance of 4.6 m from the center of the shells?

    A. 1.114E+01 N/C
    B. 1.225E+01 N/C
    C. 1.347E+01 N/C
    D. 1.482E+01 N/C
    E. 1.630E+01 N/C

16. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 4.7 nano-Coulombs. What is the magnitude of the electric field at a distance of 4.2 m from the center of the shells?

    A. 9.592E+00 N/C
    B. 1.055E+01 N/C
    C. 1.161E+01 N/C
    D. 1.277E+01 N/C
    E. 1.404E+01 N/C

17. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 1.9 nano-Coulombs. What is the magnitude of the electric field at a distance of 2.1 m from the center of the shells?

    A. 5.297E+00 N/C
    B. 5.827E+00 N/C
    C. 6.409E+00 N/C
    D. 7.050E+00 N/C
    E. 7.755E+00 N/C

18. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 9.0 nano-Coulombs. What is the magnitude of the electric field at a distance of 5.5 m from the center of the shells?

    A. 9.144E+00 N/C
    B. 1.006E+01 N/C
    C. 1.106E+01 N/C
    D. 1.217E+01 N/C
    E. 1.339E+01 N/C

19. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 7.3 nano-Coulombs. What is the magnitude of the electric field at a distance of 1.5 m from the center of the shells?

    A. 1.994E+01 N/C
    B. 2.194E+01 N/C
    C. 2.413E+01 N/C
    D. 2.655E+01 N/C
    E. 2.920E+01 N/C

2.6

1. A non-conducting sphere of radius R=1.7 m has a non-uniform charge density that varies with the distnce from its center as given by $\rho(r)=ar^{1.6}$ (rxR) where a=3 nC· $m^{-1.4}$. What is the magnitude of the electric field at a distance of 1.4 m from the center?

    A. 1.327E+02 N/C
    B. 1.460E+02 N/C
    C. 1.606E+02 N/C
    D. 1.767E+02 N/C
    E. 1.943E+02 N/C

2. A non-conducting sphere of radius R=2.2 m has a non-uniform charge density that varies with the distnce from its center as given by $\rho(r)=ar^{1.4}$ (rxR) where a=3 nC· $m^{-1.6}$. What is the magnitude of the electric field at a distance of 0.86 m from the center?

    A. 4.874E+01 N/C
    B. 5.362E+01 N/C
    C. 5.898E+01 N/C
    D. 6.488E+01 N/C
    E. 7.137E+01 N/C

3. A non-conducting sphere of radius R=3.5 m has a non-uniform charge density that varies with the distnce from its center as given by ρ(r)=ar$^{1.5}$ (rxR) where a=2 nC$\cdot$ m$^{-1.5}$. What is the magnitude of the electric field at a distance of 2.2 m from the center?

   A. 3.604E+02 N/C

   B. 3.964E+02 N/C

   C. 4.360E+02 N/C

   D. 4.796E+02 N/C

   E. 5.276E+02 N/C

4. A non-conducting sphere of radius R=3.5 m has a non-uniform charge density that varies with the distnce from its center as given by ρ(r)=ar$^{1.2}$ (rxR) where a=2 nC$\cdot$ m$^{-1.8}$. What is the magnitude of the electric field at a distance of 2.3 m from the center?

   A. 2.777E+02 N/C

   B. 3.055E+02 N/C

   C. 3.361E+02 N/C

   D. 3.697E+02 N/C

   E. 4.066E+02 N/C

5. A non-conducting sphere of radius R=2.9 m has a non-uniform charge density that varies with the distnce from its center as given by ρ(r)=ar$^{1.5}$ (rxR) where a=2 nC$\cdot$ m$^{-1.5}$. What is the magnitude of the electric field at a distance of 1.5 m from the center?

   A. 1.383E+02 N/C

   B. 1.522E+02 N/C

   C. 1.674E+02 N/C

   D. 1.841E+02 N/C

   E. 2.025E+02 N/C

6. A non-conducting sphere of radius R=3.8 m has a non-uniform charge density that varies with the distnce from its center as given by ρ(r)=ar$^{1.5}$ (rxR) where a=2 nC$\cdot$ m$^{-1.5}$. What is the magnitude of the electric field at a distance of 3.0 m from the center?

   A. 7.825E+02 N/C

   B. 8.607E+02 N/C

   C. 9.468E+02 N/C

   D. 1.041E+03 N/C

   E. 1.146E+03 N/C

7. A non-conducting sphere of radius R=3.3 m has a non-uniform charge density that varies with the distnce from its center as given by ρ(r)=ar$^{1.4}$ (rxR) where a=2 nC$\cdot$ m$^{-1.6}$. What is the magnitude of the electric field at a distance of 1.5 m from the center?

   A. 1.123E+02 N/C

   B. 1.235E+02 N/C

   C. 1.358E+02 N/C

   D. 1.494E+02 N/C

   E. 1.644E+02 N/C

8. A non-conducting sphere of radius R=3.1 m has a non-uniform charge density that varies with the distnce from its center as given by ρ(r)=ar$^{1.2}$ (rxR) where a=2 nC$\cdot$ m$^{-1.8}$. What is the magnitude of the electric field at a distance of 2.7 m from the center?

    A. 4.782E+02 N/C

    B. 5.260E+02 N/C

    C. 5.787E+02 N/C

    D. 6.365E+02 N/C

    E. 7.002E+02 N/C

9. A non-conducting sphere of radius R=1.7 m has a non-uniform charge density that varies with the distnce from its center as given by ρ(r)=ar$^{1.2}$ (rxR) where a=3 nC$\cdot$ m$^{-1.8}$. What is the magnitude of the electric field at a distance of 0.71 m from the center?

    A. 3.797E+01 N/C

    B. 4.177E+01 N/C

    C. 4.595E+01 N/C

    D. 5.054E+01 N/C

    E. 5.560E+01 N/C

10. A non-conducting sphere of radius R=1.4 m has a non-uniform charge density that varies with the distnce from its center as given by ρ(r)=ar$^{1.6}$ (rxR) where a=3 nC$\cdot$ m$^{-1.4}$. What is the magnitude of the electric field at a distance of 1.3 m from the center?

    A. 1.457E+02 N/C

    B. 1.603E+02 N/C

    C. 1.763E+02 N/C

    D. 1.939E+02 N/C

    E. 2.133E+02 N/C

11. A non-conducting sphere of radius R=3.9 m has a non-uniform charge density that varies with the distnce from its center as given by ρ(r)=ar$^{1.4}$ (rxR) where a=2 nC$\cdot$ m$^{-1.6}$. What is the magnitude of the electric field at a distance of 2.6 m from the center?

    A. 3.821E+02 N/C

    B. 4.203E+02 N/C

    C. 4.624E+02 N/C

    D. 5.086E+02 N/C

    E. 5.594E+02 N/C

12. A non-conducting sphere of radius R=1.5 m has a non-uniform charge density that varies with the distnce from its center as given by ρ(r)=ar$^{1.5}$ (rxR) where a=2 nC$\cdot$ m$^{-1.5}$. What is the magnitude of the electric field at a distance of 0.73 m from the center?

    A. 2.285E+01 N/C

    B. 2.514E+01 N/C

    C. 2.765E+01 N/C

    D. 3.042E+01 N/C

    E. 3.346E+01 N/C

13. A non-conducting sphere of radius R=3.7 m has a non-uniform charge density that varies with the distnce from its center as given by ρ(r)=ar$^{1.4}$ (rxR) where a=2 nC· m$^{-1.6}$. What is the magnitude of the electric field at a distance of 3.1 m from the center?

   A. 6.411E+02 N/C
   B. 7.052E+02 N/C
   C. 7.757E+02 N/C
   D. 8.533E+02 N/C
   E. 9.386E+02 N/C

14. A non-conducting sphere of radius R=3.8 m has a non-uniform charge density that varies with the distnce from its center as given by ρ(r)=ar$^{1.7}$ (rxR) where a=3 nC· m$^{-1.3}$. What is the magnitude of the electric field at a distance of 3.1 m from the center?

   A. 1.390E+03 N/C
   B. 1.530E+03 N/C
   C. 1.682E+03 N/C
   D. 1.851E+03 N/C
   E. 2.036E+03 N/C

15. A non-conducting sphere of radius R=1.7 m has a non-uniform charge density that varies with the distnce from its center as given by ρ(r)=ar$^{1.5}$ (rxR) where a=3 nC· m$^{-1.5}$. What is the magnitude of the electric field at a distance of 0.64 m from the center?

   A. 2.039E+01 N/C
   B. 2.243E+01 N/C
   C. 2.467E+01 N/C
   D. 2.714E+01 N/C
   E. 2.985E+01 N/C

16. A non-conducting sphere of radius R=1.2 m has a non-uniform charge density that varies with the distnce from its center as given by ρ(r)=ar$^{1.6}$ (rxR) where a=2 nC· m$^{-1.4}$. What is the magnitude of the electric field at a distance of 0.76 m from the center?

   A. 2.406E+01 N/C
   B. 2.646E+01 N/C
   C. 2.911E+01 N/C
   D. 3.202E+01 N/C
   E. 3.522E+01 N/C

17. A non-conducting sphere of radius R=2.5 m has a non-uniform charge density that varies with the distnce from its center as given by ρ(r)=ar$^{1.8}$ (rxR) where a=2 nC· m$^{-1.2}$. What is the magnitude of the electric field at a distance of 1.7 m from the center?

   A. 2.079E+02 N/C
   B. 2.287E+02 N/C
   C. 2.516E+02 N/C
   D. 2.767E+02 N/C
   E. 3.044E+02 N/C

18. A non-conducting sphere of radius R=2.9 m has a non-uniform charge density that varies with the distnce from its center as given by $\rho(r)=ar^{1.5}$ (rxR) where a=3 nC· m$^{-1.5}$. What is the magnitude of the electric field at a distance of 1.7 m from the center?

A. 2.579E+02 N/C

B. 2.837E+02 N/C

C. 3.121E+02 N/C

D. 3.433E+02 N/C

E. 3.776E+02 N/C

19. A non-conducting sphere of radius R=3.0 m has a non-uniform charge density that varies with the distnce from its center as given by $\rho(r)=ar^{1.2}$ (rxR) where a=2 nC· m$^{-1.8}$. What is the magnitude of the electric field at a distance of 2.1 m from the center?

A. 2.274E+02 N/C

B. 2.501E+02 N/C

C. 2.751E+02 N/C

D. 3.026E+02 N/C

E. 3.329E+02 N/C

3 Attribution

Notes

[1]Example 6.3 from OpenStax University Physics2: https://cnx.org/contents/eg-XcBxE@9.8:7Rx6Svvy@4/61-Electric-Flux_1 placed in Public Domain by Guy Vandegrift: https://en.wikiversity.org/wiki/special:permalink/1894335

[2]Example 6.3a from OpenStax University Physics2: https://cnx.org/contents/eg-XcBxE@9.8:7Rx6Svvy@4/61-Electric-Flux_1 placed in Public Domain by Guy Vandegrift: https://en.wikiversity.org/wiki/special:permalink/1894335

[3]Example 6.3b from OpenStax University Physics2: https://cnx.org/contents/eg-XcBxE@9.8:7Rx6Svvy@4/61-Electric-Flux_1 placed in Public Domain by Guy Vandegrift: https://en.wikiversity.org/wiki/special:permalink/1894335

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