

Solve The Cube in 30 Minutes



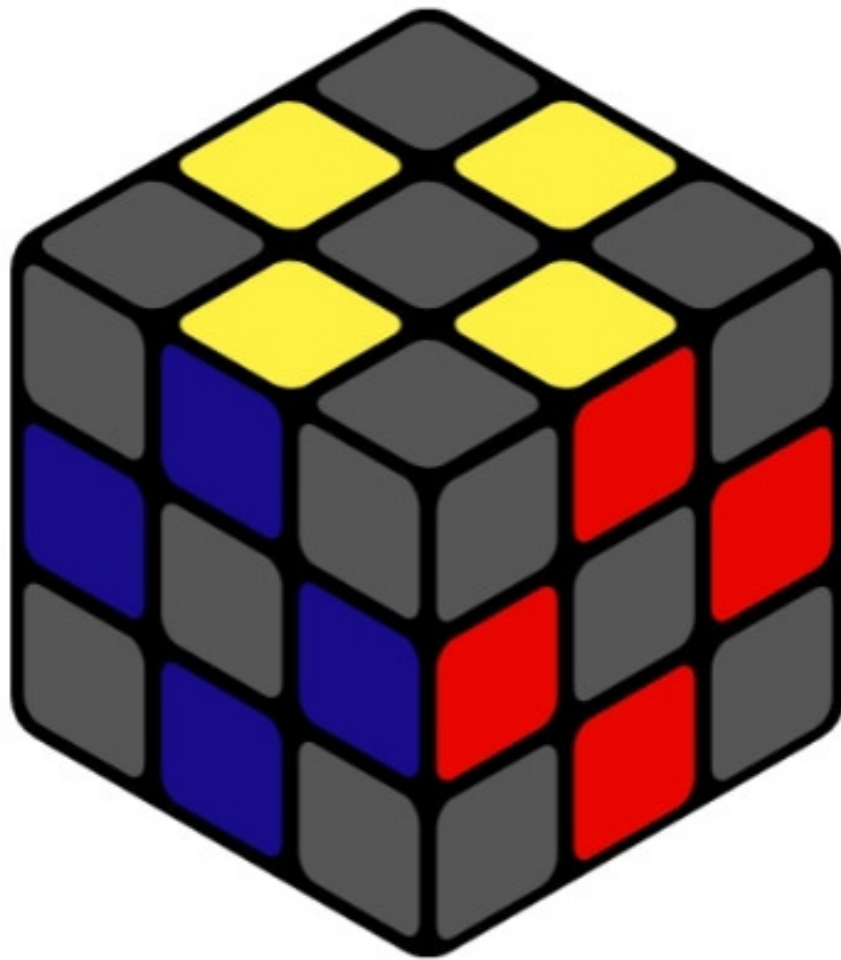
R.Anand(Author)

CUBE DESIGN



Center pieces (6 pcs.)

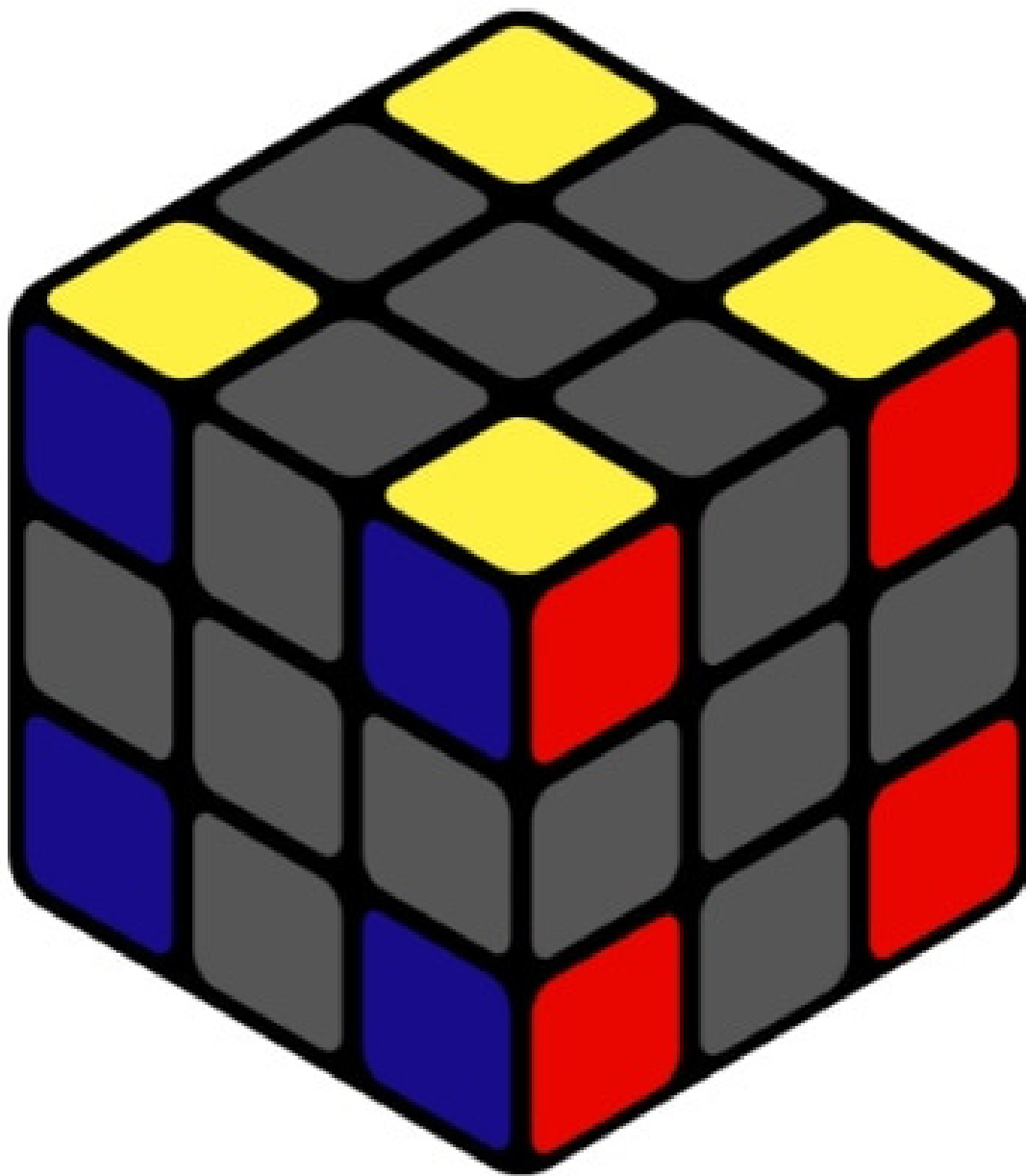
Centers never change their position in relation to each other and always stay in the same place. Therefore, the following pattern can be observed: the center piece colors are always opposite each other - white is opposite yellow, blue is opposite green, and orange is opposite red. Hence, the color of the center determines the color of the face (blue center means that the face has to be blue, etc.).



Edge pieces (12 pcs.)The edges have two stickers of different colors and form a kind of cross when they are in the right place. These two stickers cannot be separated.

(2)

CORNER PIECES



Corner pieces (8 pcs.) The corner pieces have 3 stickers of different colors. They cannot be split as well.

SIDES OF CUBE

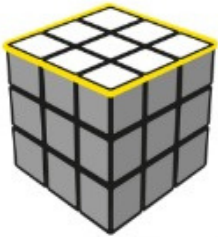
Sides of the Rubik's Cube are 9 elements that can be rotated simultaneously.

Algorithms will help us to solve the Cube. A letter followed by an apostrophe, or "prime" as it is called by the speedcubers, indicates a counterclockwise turn. To avoid confusion, imagine that you are looking at the rotating side.

GET TO KNOW YOUR RUBIK'S CUBE

FACE KEY ALGORITHM

U = UP FACE



U



U'



D = DOWN FACE



D



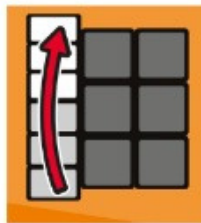
D'



L = LEFT FACE

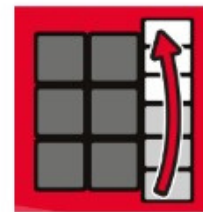


L

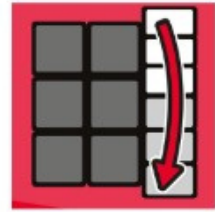


L'

R = RIGHT FACE

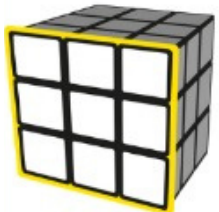


R



R'

F = FRONT FACE

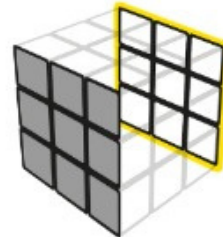


F'



F

B = BACK FACE



B



B'

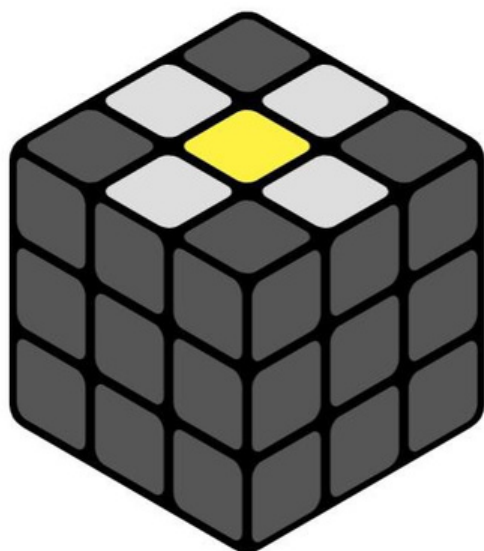
Each move is a 1/4 TURN.



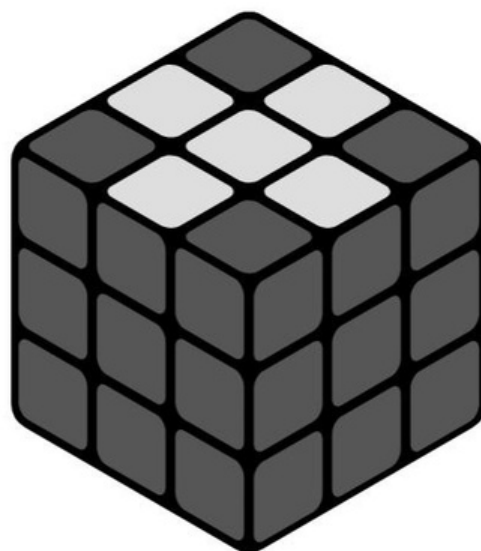
An ALGORITHM is a sequence of moves that you need to do in a specific order.

When following the algorithms in this guide, it is important to maintain the FRONT face of your Rubik's Cube so it stays the FRONT through all of the turns.

Stage 1. The proper cross



Flower



Cross

We will divide solving the proper cross into two steps: the first one is to make a flower pattern, which we will then turn into a cross in the second stage. Our goal is to create a flower with a yellow center and white petals (img. 1). Hold the cube so that the yellow center piece is on top of the cube. When the flower is ready, we will replace its yellow center with the white one to transform it into a cross. (img. 2)

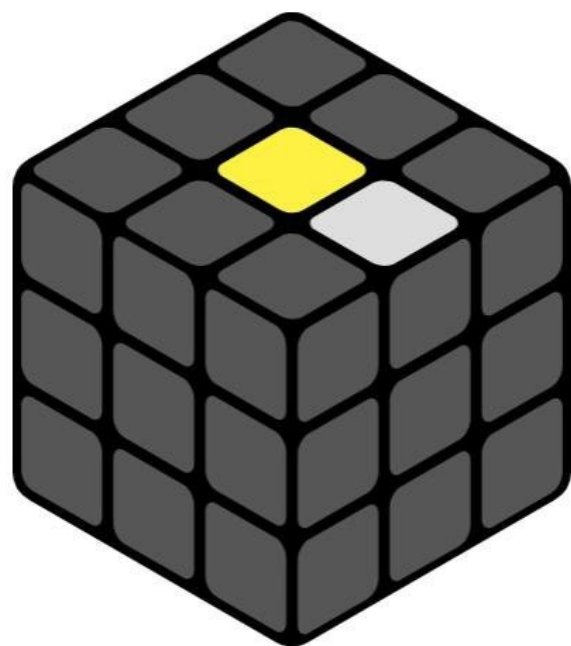
FLOWER

To make a flower, we need to find all 4 white edge pieces and surround the yellow center with them. It is an easy thing to. You can do it intuitively and move to the next step.

1. If there are white pieces on the middle layer, simply move them up using the R algorithm. Repeat this step with all the edge pieces of the middle layer.

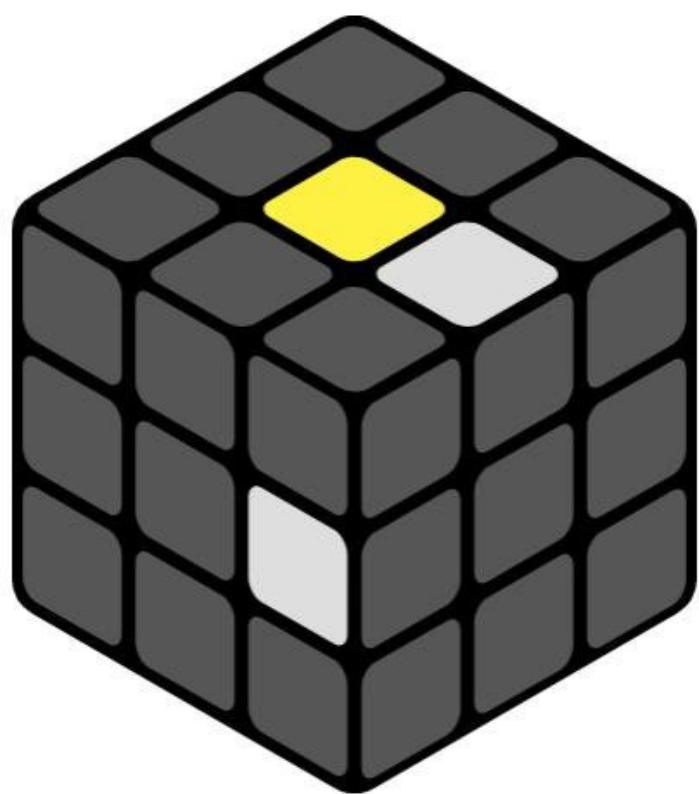


1. Do R

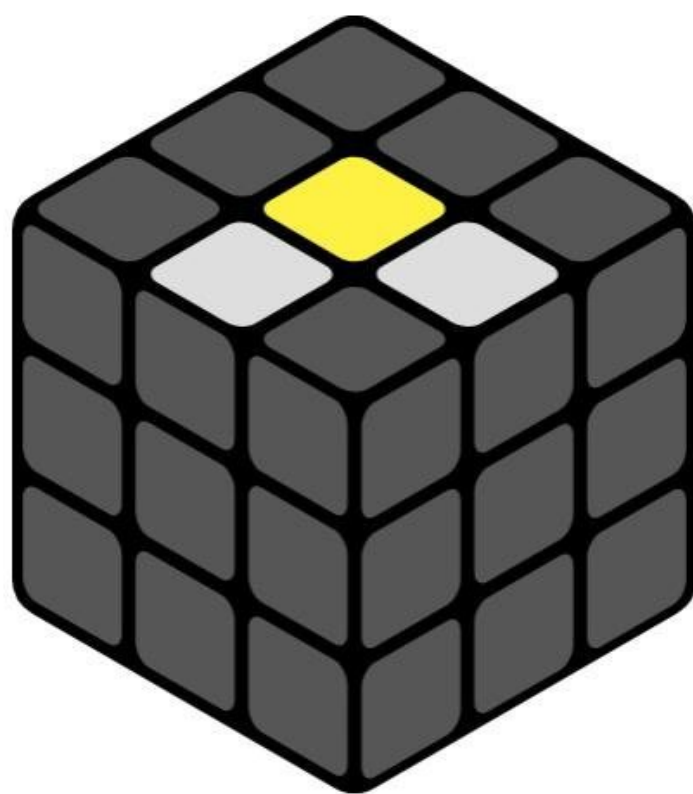


Result

2. If there is an edge piece on the middle layer, but another piece does not let you place it in the correct position, move this part using the U move and then use the R move to put the edge piece in the right spot.



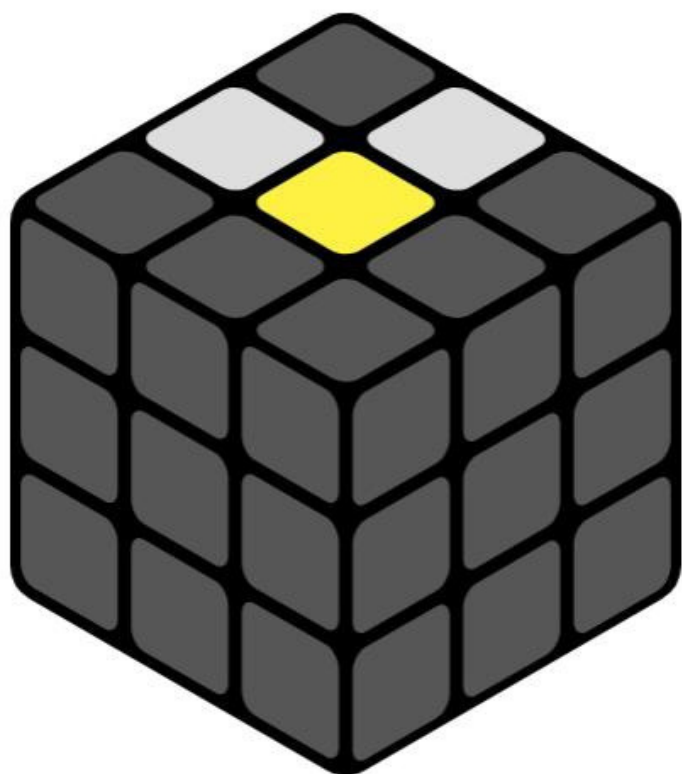
2. Do **U R**



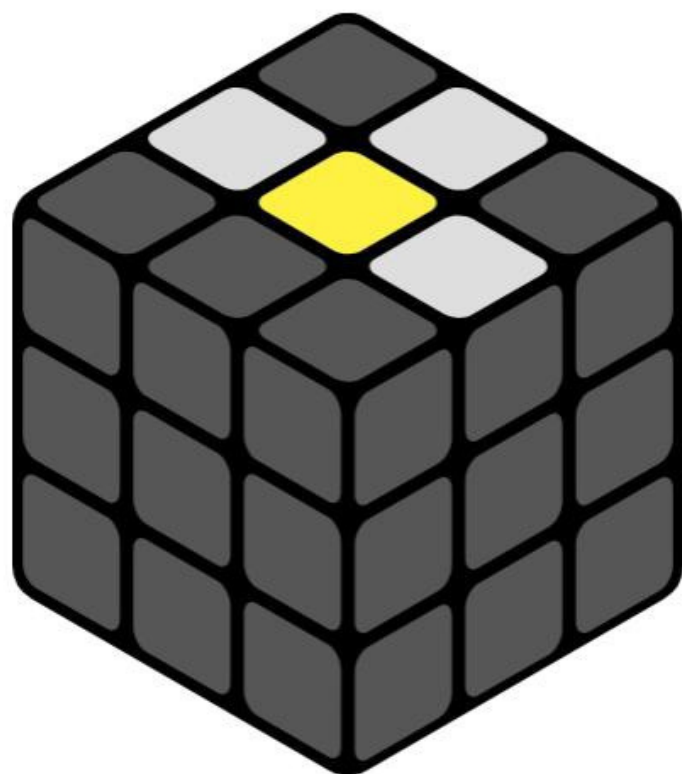
Result

We are done with the middle layer. Let's proceed with the bottom one.

3. If the white sticker on piece that we need faces down, simply move it up using two R moves, which are referred to as R2 in the formulas.

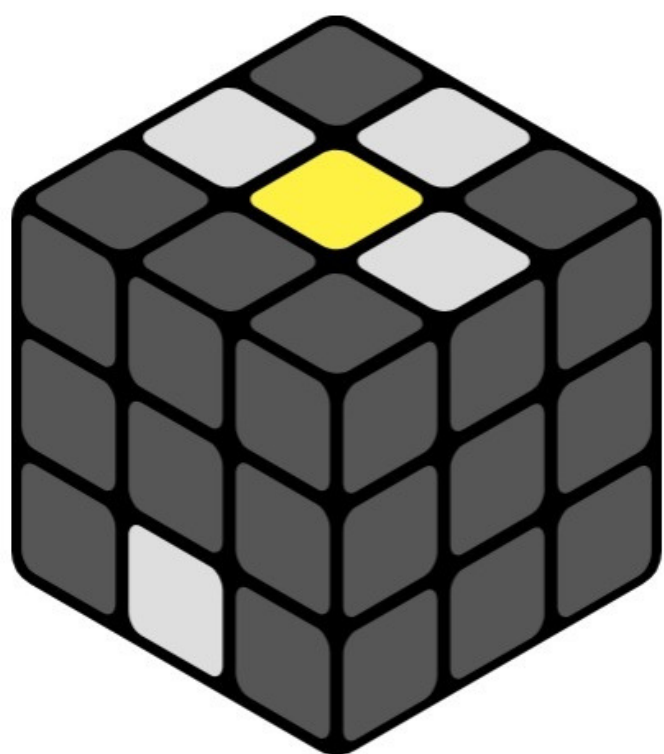


3. Do R2

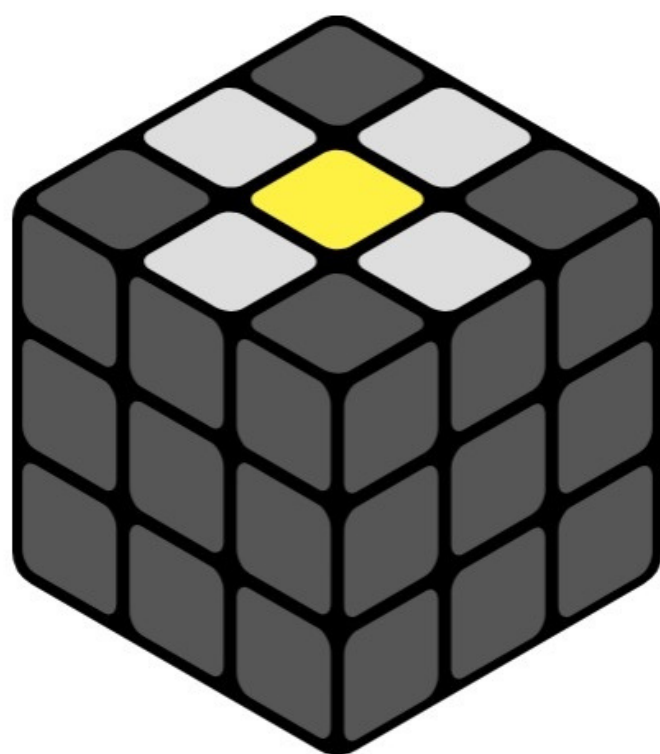


Result

4. If the piece that you want to relocate on the top or the bottom layer and its white sticker faces you (Pic. 4 or 5), then first you should move it to the middle layer using the F move, and then you can put it in the correct position (if there is another piece there, do U or U' to remove it).



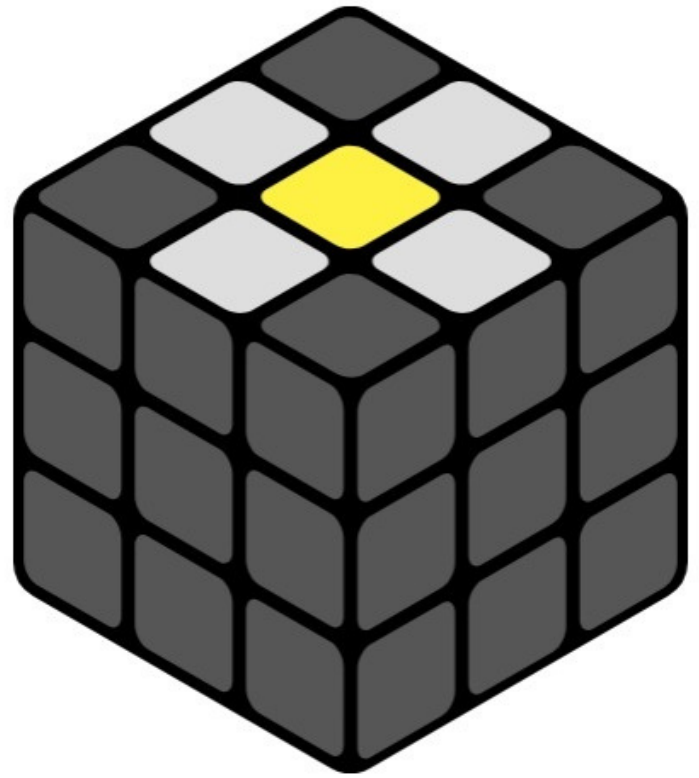
4. F U L'



Result



5. F U' R



Result

Congratulations!

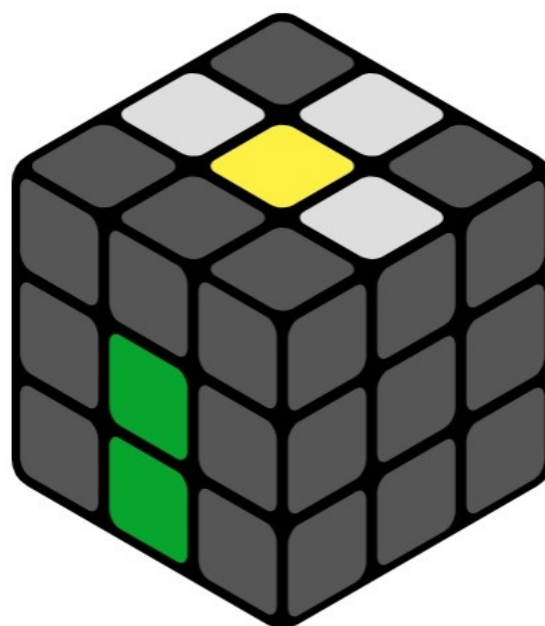
If you have managed to solve the flower pattern, you will not find the following steps difficult. The flower is the hardest stage to understand for Beginners.

White Cross

It is very simple, and it takes just a few movements to turn the flower into the proper cross.



F2

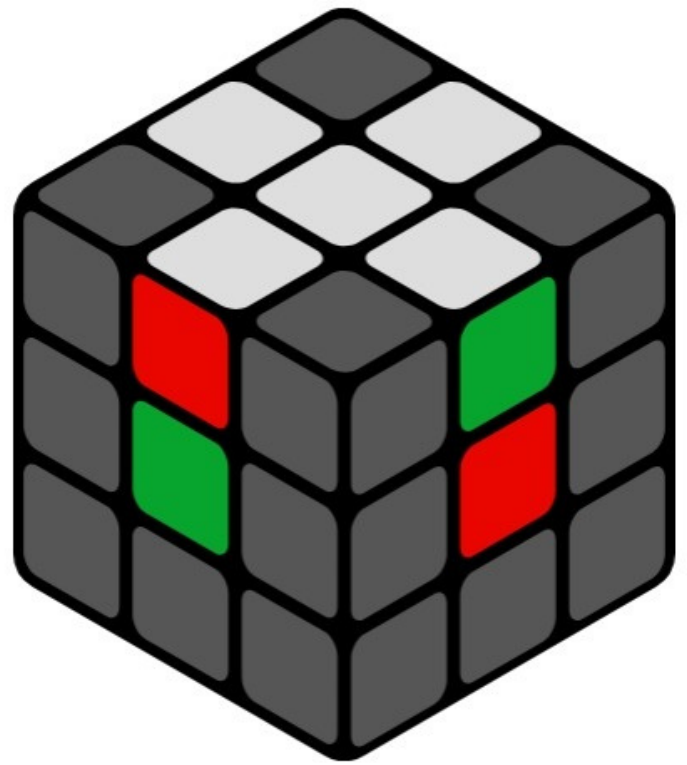


Result

Look at the flower and pay attention to the color of the edges. Choose any of them, match it to the center piece of the same color and move it down using the F2 algorithm. Repeat this step with all the edge pieces.



Proper cross



Wrong crosss

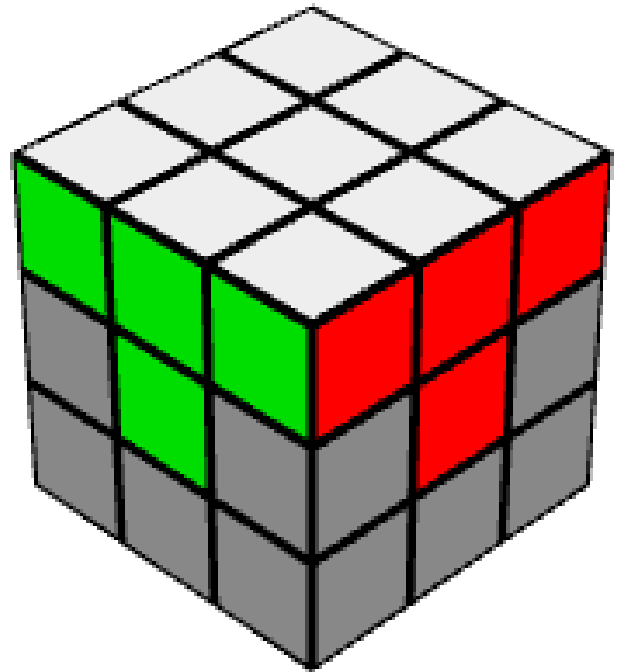
When you are done with the edges, turn the entire cube over and you will see that the white cross is ready. Please, note that the colors of the edges in the cross should match those of the centers. If suddenly you got the wrong cross, please try once again!

Stage 2. The First layer

Corners



without corners



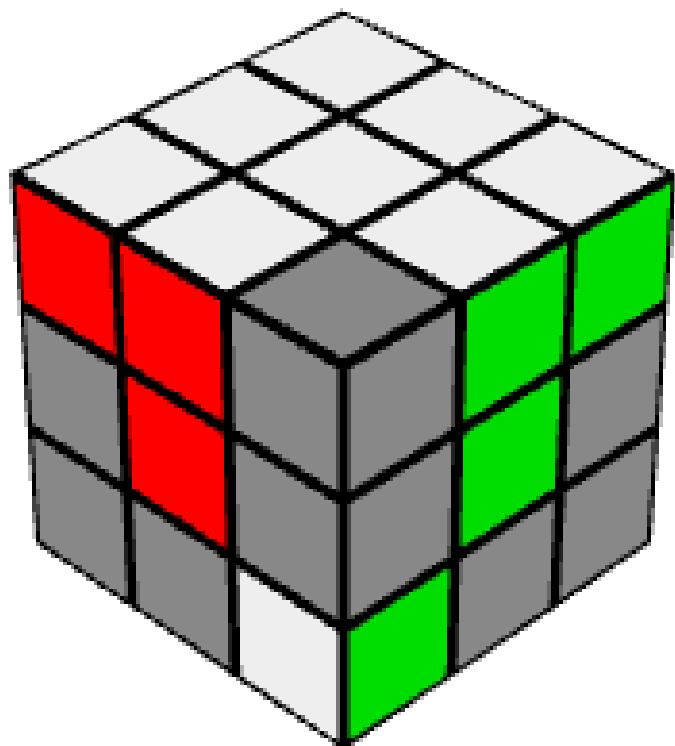
with corners

our next step is to solve the corners (the 3-colored pieces).As a result, our first layer should be completed.

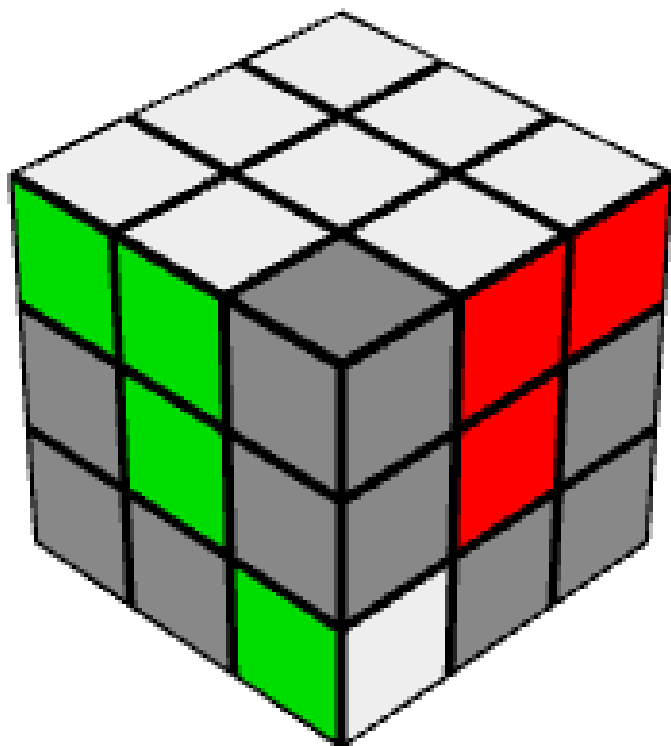
But first, let's learn a very simple but effective formula call PIF-PAF includes a sequence of 4 moves: R' D' R D.

Every time keep the corners on your front facing.

Use the face key moves in pg.5

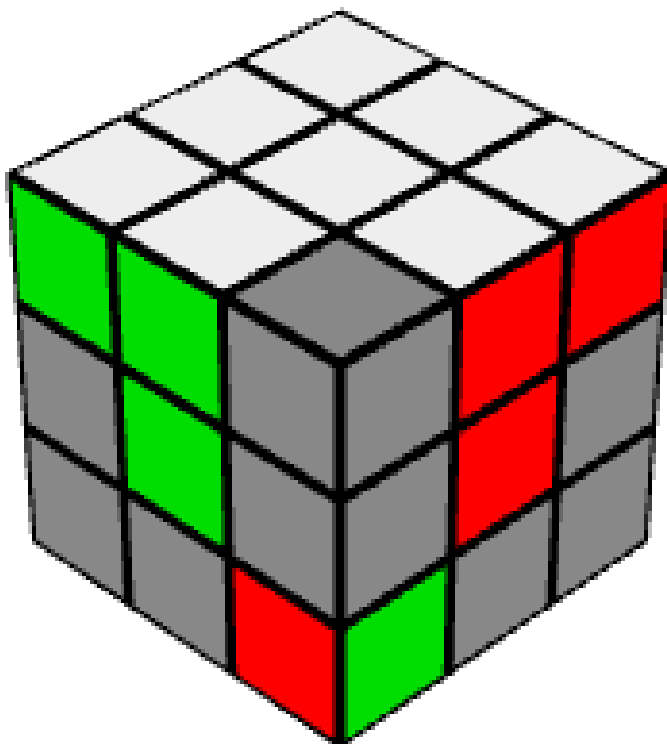


F D F'



R' D' R

White corner pointing down



R2 D' R2 D R2

(15)

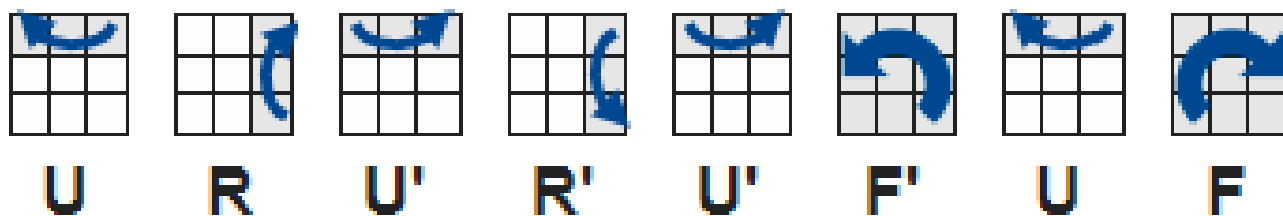
Stage 3. The middle layer

In this stage when we're solving the second layer (first two layers - F2L) of the Cube people usually get stuck because there are too many moves to foresee in order to complete this step.

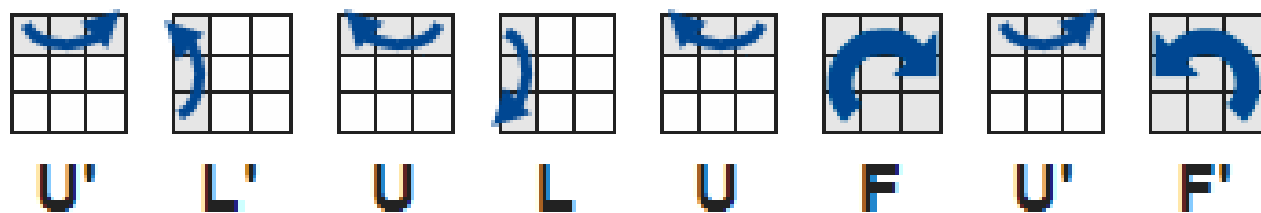
You'll have to learn two algorithms which bring the edge piece from the yellow layer to the second layer without messing up the white face already solved. Until this point we held the cube with the white center facing up, now turn it upside down to let you review the puzzle better.



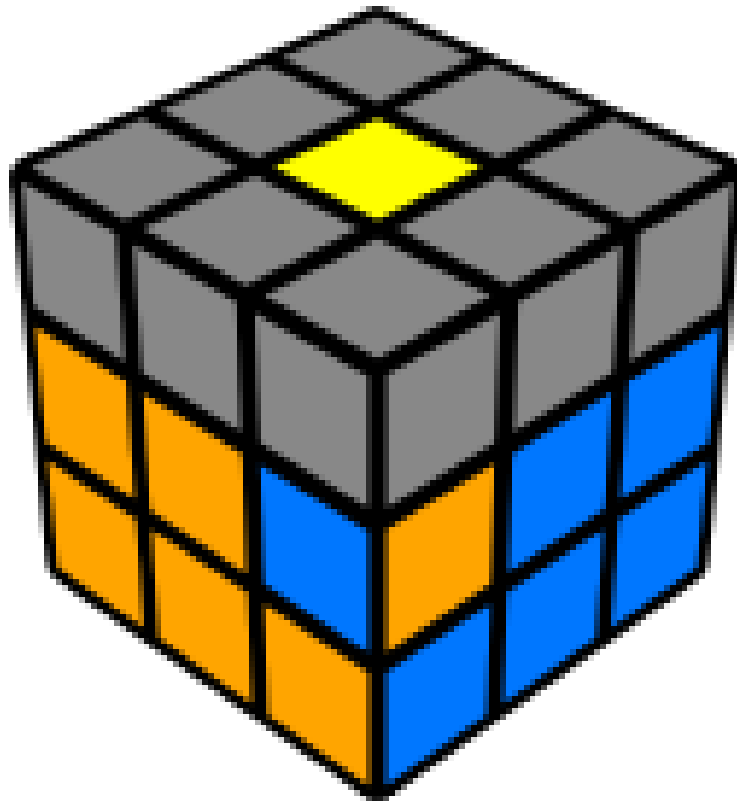
Right:



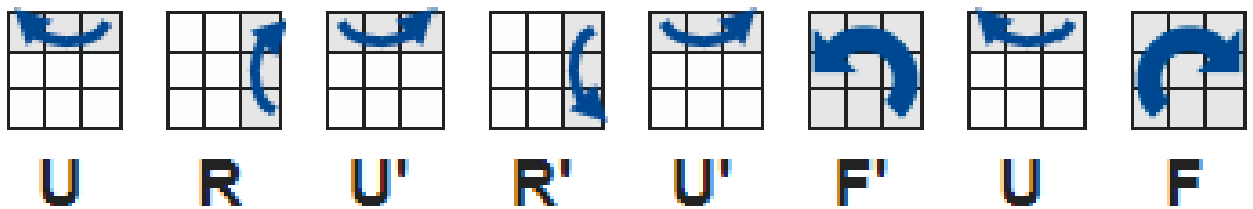
Left:



Wrong orientation



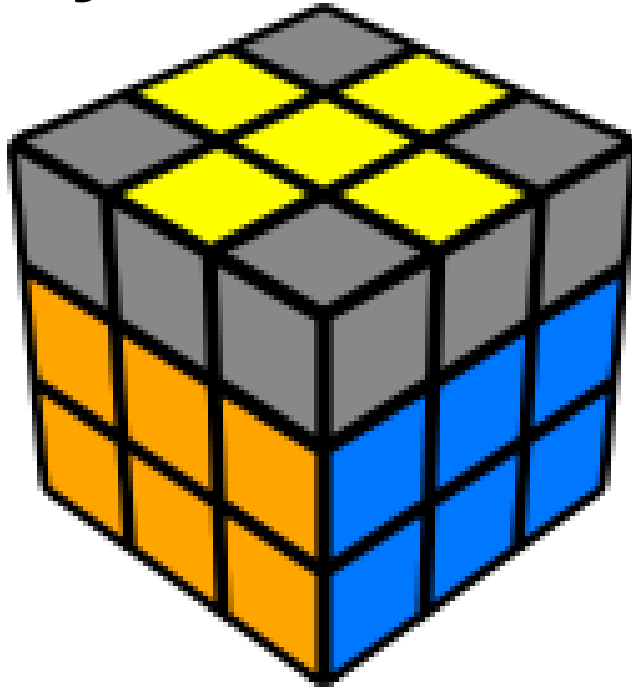
Right:



**Wrong orientation:
Use the right algorithm to bring
the piece to the top layer**

Stage 4. Edges of the last layer

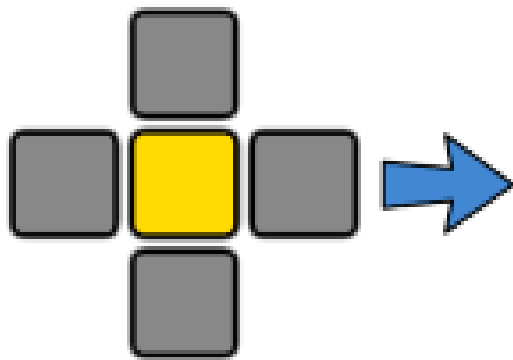
yellow Cross



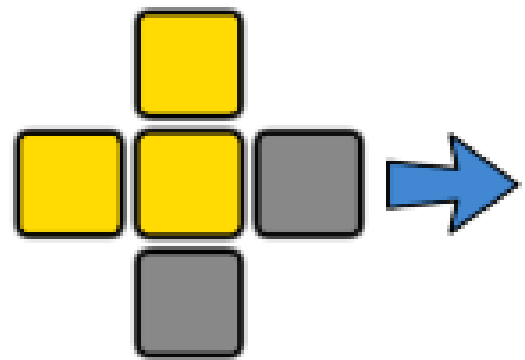
So far we have solved two bottom layers and only the yellow face is left. In this fourth stage of our cube we want to form a yellow cross on the top of the cube. At this point it doesn't matter if the edge pieces don't match the color of the side center pieces. We will switch them in the fifth step.

There's a short algorithm we have to use: $F R U R' U' F'$.

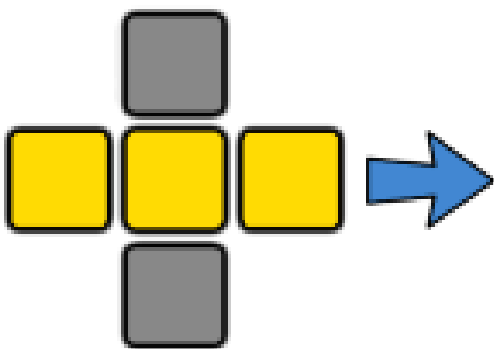
Make sure your cube is orientated is shown in the image.



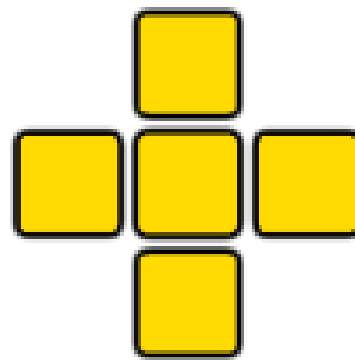
Dot



Half cross(L shape)



Cross



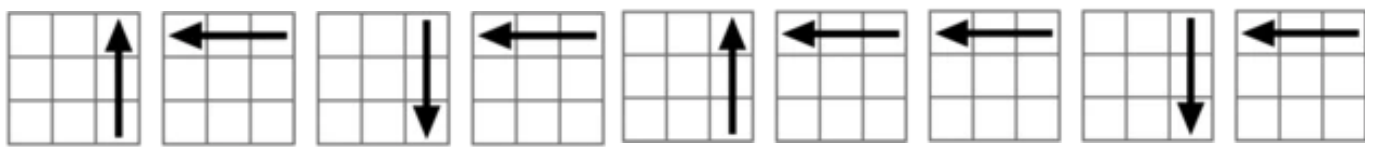
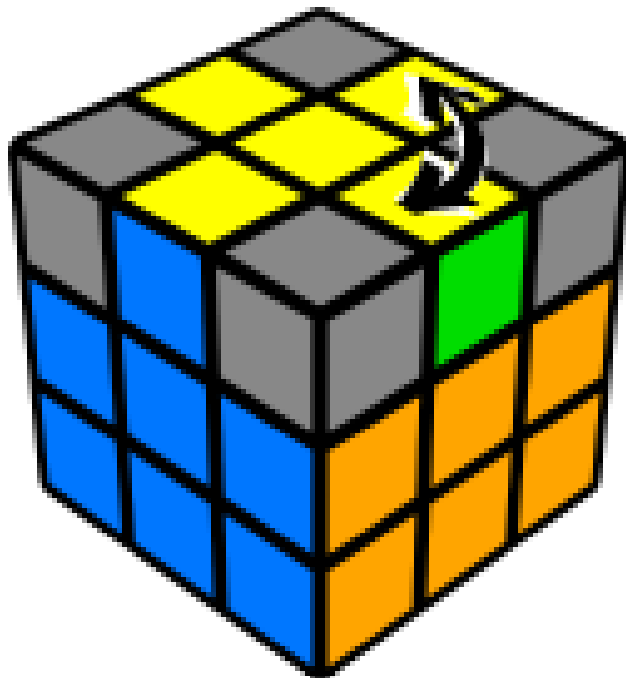
Cross

Repeat this algorithm till you get the yellow cross

Stage 5. Swap yellow edges in the top layer

You will now have 4 or 2 edge pieces in the correct place. Matching with the center colors. Ensure the correct edge pieces are at the back and right face.

Use the 4 edges Perform the steps below once and then turn the cube like the one shown above and perform the steps again.



R U R' U R U U R' U

(21)

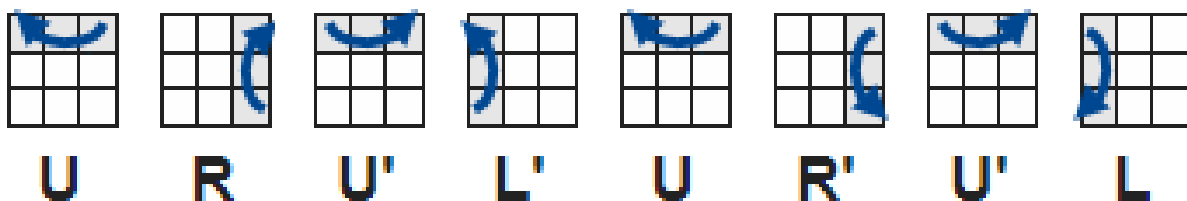
Stage 6: Position yellow corners

First we will put the corners in the correct position (A).

You will now have either 0, 1 or ALL the corners pieces will be in their correct positions, either the right way up or reversed.

If one corner piece is in the correct corner turn the cube to that this correct corner is in the front top right position. The piece is in the correct position, BUT may not be turned the correct way around.

(A)

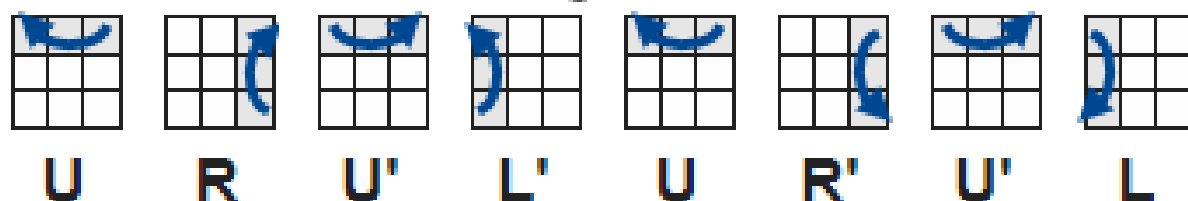


Repeat the sequence until all the corners are in the correct position.

In none of the corners is in the correct position.

Perform the steps in (A) once with ANY side facing you (YELLOW at the top). Now one corner will be in the correct position. Proceed with (A) below.

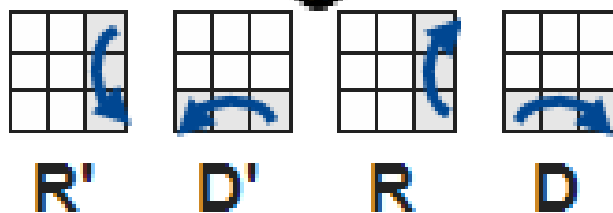
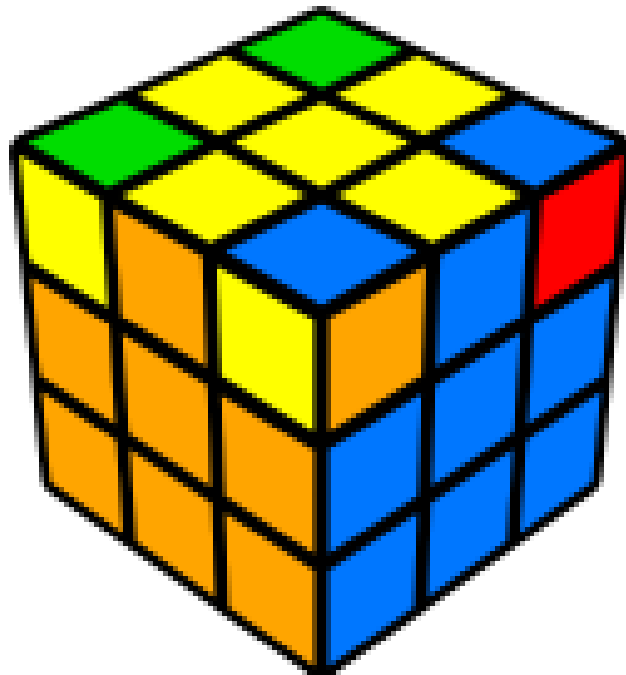
(A)



Stage 7: Orient last layer corners **on your Cube**

The next steps will turn the corners (one by one) the correct way and ultimately solve the cube.

NOTE: THIS ROUTINE MAY APPEAR TO UPSET THE REST OF THE CUBE. DO NOT DESPAIR AND KEEP THE SAME SIDE FACING YOU IT WILL ONLY BE SOLVED ONCE THE LAST CORNER IS ORIENTATED.



Repeat the moves until the YELLOW side of the corner piece is on top. You may have to do it 2-3 times.

Important!

Many people mess up their cube in this final step because they skip the last D turn as soon as they see the yellow sticker facing up at the top. Make sure you complete the whole R' D' R D algorithm.

Don't rotate the whole cube while doing the steps! Face rotations only and follow the steps carefully.

