

About the Rubik's Cube Solution Nomenclature

Side or Face Designation

T is Top Side or Top Face

F is Front Side or Front Face

L is Left Side or Left Face

R is Right Side or Right Face

B is Bottom Side or Bottom Face

Rotation Notation

+ means turn Side or Face one quarter turn clockwise ↻

– means turn Side or Face one quarter turn counterclockwise ↺

2 means turn Side or Face **one-half turn** clockwise ↻ (or counterclockwise ↺)

Notes

All sequences of moves are performed with the first solved layer on top.

(L+ R–) means rotate Left side clockwise ↻ and Right side counterclockwise ↺ or move in the same direction.

(L– R+) means rotate Left side counterclockwise ↺ and Right side clockwise ↻ or move in the same direction.

Definitions

Position or Positioned – correctly placed

Orient or Oriented – correctly placed with all side colors matching the corresponding center cube's color

Cube or Cubes – used most often to refer to an individual piece and not the entire cube puzzle

GOOD LUCK!

PRINTING: Print in color and on Both Sides, Flip on long edge

Solving the Rubik's Cube

Step 1 Correctly solve, or arrange, 8 cubes surrounding a chosen center color, preferably the white, forming the top-layer. This means each of the top-layer's corner and edge cubes match each corresponding side's center color. Some of the more common moves to aid in completing the first layer.

- (1) To move a right corner cube from the bottom layer directly into the top layer, as shown below, perform the sequence: **B- R- B+ R+**



Correct placement.

- (2) To move a left corner cube from the bottom layer directly into the top layer, as shown below, perform the sequence: **B+ L+ B- L-**



Correct placement.

Step 1 (continued)

- (3) To move a middle edge cube from the bottom layer directly into the top layer, as shown below, perform the sequence: **B- L- R+ F+ L+ R-**



Correct placement.

- (4) To move an edge cube which is not correctly oriented from the bottom layer directly into the top layer, as shown below, perform the sequence:

L- R+ F2 L+ R-

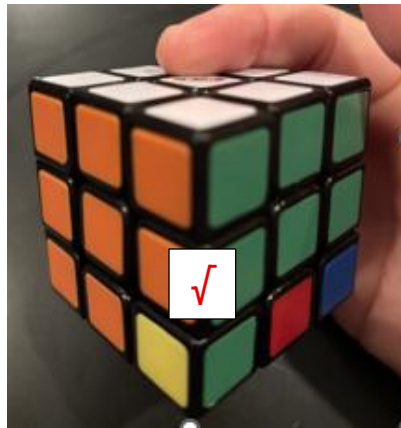


Correct placement.

Step 2 Correctly arrange and orient the 4 edge cubes, forming the second layer. This means after completing **Step 2** that each of the second layer's edge cubes will match the two corresponding center's color.

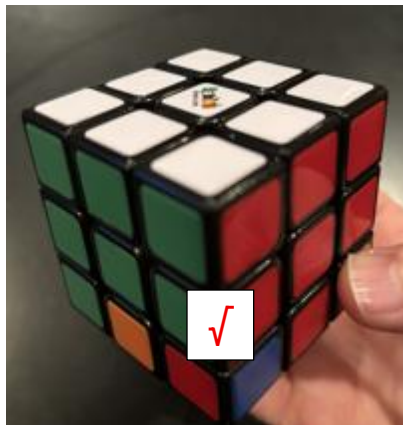
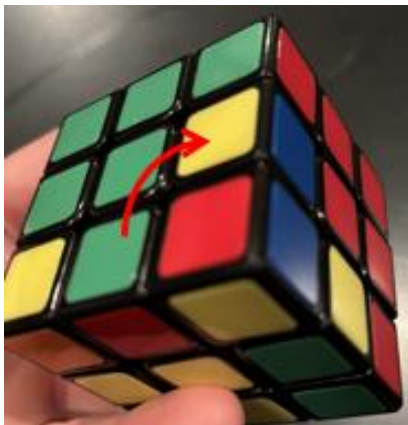
With the solved layer on top, rotate the cube and/or its bottom-layer until you find a side with its colors making a T, meaning the front-bottom cube's color matches the side's center color. Decide on which side this edge cube is to go:

(1) to the left-middle row side: **B+ L+ B- L- B- F- B+ F+**



Correct placement.

(2) to the right-middle row side: **B- R- B+ R+ B+ F+ B- F-**



Correct placement.

*If there are **no** edge cubes to move into the middle layer, which can happen if all the edge cubes just so happen to already be in the middle layer, but not oriented in their correct position, then randomly move an edge cube down into the bottom layer with the following sequence: **R- B+ R+ B+ F+ B- F-***

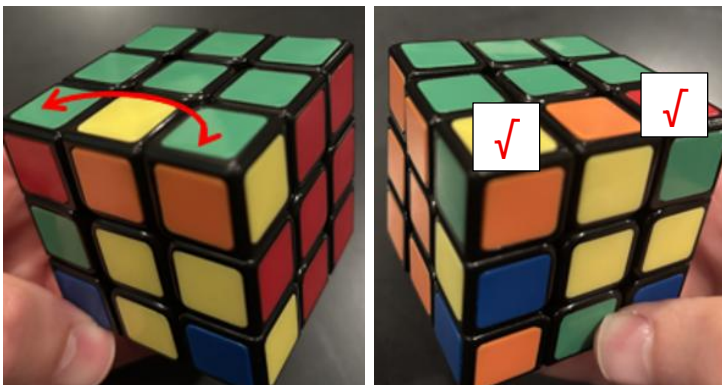
Now go back to the beginning of **Step 2**.

Step 3 With the second layer solved, now correctly arrange or position the four bottom corner cubes according to the center colors. This means each of the bottom layers' corner cubes match the three corresponding center's color.

Note: **Step 3** will only correctly position (not correctly orient) the four bottom layer corner cubes. **Step 4** will correctly orient the bottom layer corner cubes.

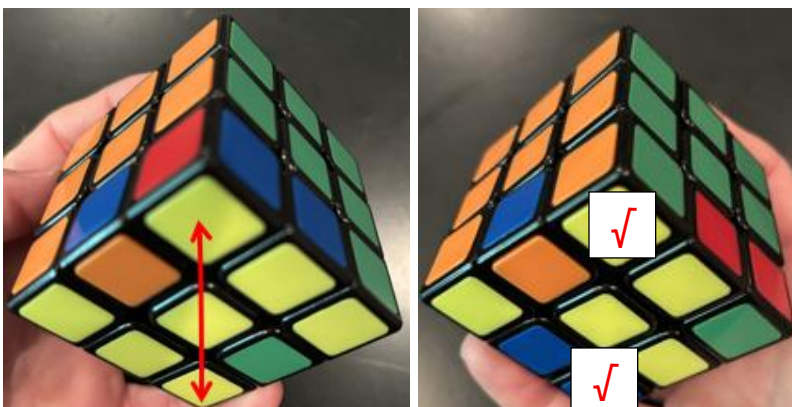
Rotate the bottom-layer until the most correctly positioned (not correctly oriented) corner cubes are in position. If all four of the bottom layer's corner cubes are in their correct position, proceed to **Step 4**. Otherwise, determine how the incorrectly positioned corner cubes need to be switched below.

- (1) To switch bottom layer corner cubes on the same side, hold the cube with the side with the corners to be switched facing you, with the top layer up. Now perform the sequence: **R- B- R+ F+ B+ F- R- B+ R+ B2**



Correct placement.

- (2) To switch bottom layer corner cubes on the diagonal, hold the cube with a corner cube to be switched on the left side and facing you, with the top layer up. Now perform the sequence: **R- B- R+ F+ B2 F- R- B+ R+ B+**



Correct placement.

Step 3 (continued)

If all four of the bottom layer's corner cubes are now in their correct position, proceed to **Step 4** to correctly orient them. Otherwise, go back to the beginning of **Step 3**.

Step 4 With the second layer solved and the four bottom layer corner cubes now in their correct position, **Step 4** will correctly orient these corner cubes.

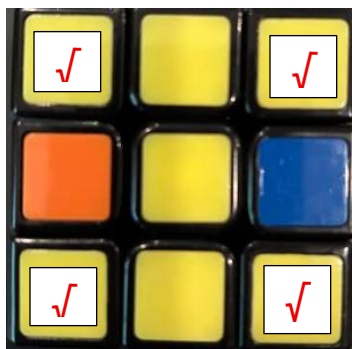
Note: If all four of the bottom layer's corner cubes are in their correct position and are also correctly oriented, proceed to **Step 5**.

Otherwise, determine the closest match from the pictures of the bottom layer below and orient the cube to match the picture accordingly. Do not concern yourself with the position or orientation of the bottom layer edge cubes.



After determining the closest match to a picture above, rotate the cube so the top layer is facing up again. Perform the sequence: **R- B- R+ B- R- B2 R+ B2**

If all four of the bottom layer's corner cubes are in their correct position and are correctly orientated, proceed to **Step 5**. If all four of the bottom layer's edge cubes are in their correct position and are also correctly oriented, then "Congratulations for Solving the Cube!" Otherwise, repeat **Step 4**.



Correct orientation of bottom corner cubes.

Step 5 With the four bottom layer corner cubes now in their correct position and correctly oriented, **Step 5A** will correctly position the bottom layer edge cubes and **Step 5B** will correctly orient the bottom layer edge cubes.

Note: If all four of the bottom layer's edge cubes are in their correct position and are also correctly oriented, then "Congratulations for Solving the Cube!"

Warning: **Step 5** can be discouraging and frustrating because while there were only ten moves to get the bottom layer corner cubes placed and another eight moves to correctly orient them, it could take as many as twenty-eight moves to get the bottom layer edge cubes correctly positioned and oriented.

And, unfortunately, anywhere in these sequences of moves a wrong turn will result in a scrambled cube. This will happen and when it does, just know it will allow for more repetitions in solving the first and second layers. Now, persevere and get this cube solved!

Step 5A will correctly position the bottom layer edge cubes. Determine the number of bottom layer edge cubes in their correct position.

If zero, or if one – hold this side towards you and the top layer facing up.

Perform the sequence: (L– R+) F+ (L+ R–) B2 (L– R+) F+ (L+ R–)

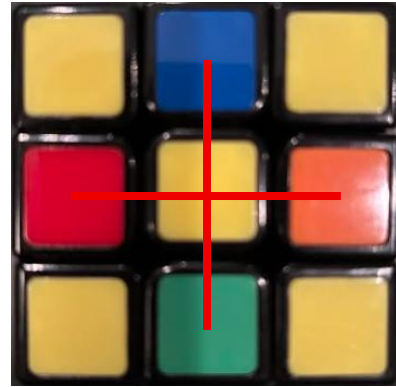


One bottom edge cube correctly positioned.

If two or four of the bottom layer's edge cubes are now in their correct position, proceed to **Step 5B to correctly orient**. Otherwise, repeat **Step 5A**.

Note: If all four of the bottom layer's edge cubes are in their correct position and are also correctly oriented, then "Congratulations for Solving the Cube!"

Step 5B will correctly orient the bottom layer edge cubes. Determine the closest match from the three pictures of the bottom layer below and orient the cube to match the picture accordingly, then rotate the cube so the top layer is facing up again. Perform the sequence underneath the picture.



(L- R+) F+ (L+ R-) B+
 (L- R+) F+ (L+ R-) B+
 (L- R+) F2 (L+ R-) B+
 (L- R+) F+ (L+ R-) B+
 (L- R+) F+ (L+ R-) B2

(L- R+) F+ (L+ R-) B-
 (L- R+) F- (L+ R-) B-
 (L- R+) F2 (L+ R-)

Repeat Step 5A above
 until the cube is solved.

(L- R+) F2 (L+ R-) B2
 (L- R+) F+ (L+ R-) B2
 (L- R+) F2 (L+ R-) B-

Congratulations!

Congratulations!

“You did it! Congratulations for Solving the Cube!”