# Rubik's Cube Solution for Beginners

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Introduction

Ever wonder how to solve a Rubik's Cube? Well, this guide will teach you with a simple solution that anyone can understand! Here are some things you should know before you begin.

Pieces

There are three different kinds of pieces.
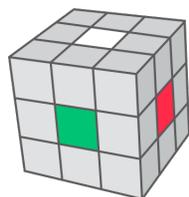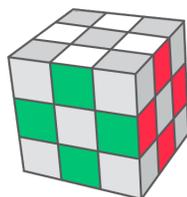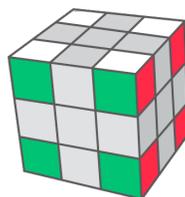
**Centers**   **Edges**   **Corners**

In this guide, unimportant parts of the cube are grayed out, and important parts are marked with X's.

Many people make the mistake to think that the Rubik's cube has 54 "stickers" that need to be solved. In fact, it only has 20 "pieces" (8 corners and 12 edges).

Notation

You will need to learn move notation in order to use this solution.

	right	left	up	down	front	back
The six cube faces will be represented by	R	L	U	D	F	B
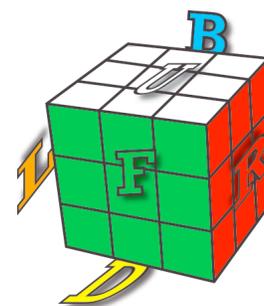
R L U D F B
Turns that face clockwise

R' L' U' D' F' B'
Turns that face counterclockwise

*R2 L2 U2 D2 F2 B2*
Turn that face 180 degrees

Method

This guide teaches the layer-by-layer (LBL) method. The first layer is the most intuitive and the last layer requires the most memorization. There are a total of 11 algorithms in this solution that must be learned in order to solve the Rubik's cube.

The First Layer

Solving the first layer is a two-step process: solve the edges to make a cross and then solve the corners. Remember that edges and corners have multiple stickers and belong in a specific position!
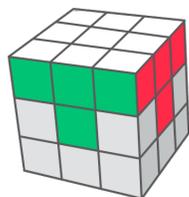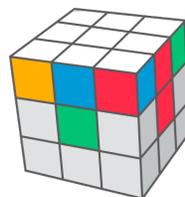
Correct   **Incorrect**

Solving the cross

This step is the most intuitive step, and it takes the most words to describe completely. Skip this section if you are able to solve it on your own!

The very first thing you need to do is find an edge you want to solve. This would be any edge with a white sticker on it.

### If the edge is in the second layer
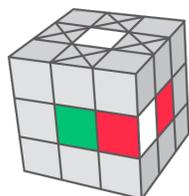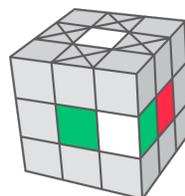
Case 1   **Case 2**

1. Figure out where the edge belongs by checking the non-white sticker on the edge. For case 1, the other sticker is red, so the edge must belong in the right *X* above the red center. For case 2, the other sticker is green so it belongs in the front *X*. Whichever *X* the edge belongs in is the **goal**.

2. Figure out how to bring the white sticker to the top. For case 1, an *F'* move would bring it to the front *X*, while for case 2, an *R* move

would bring it to the right *X*. Whichever *X* the white sticker ends up in is the **target**.

3. Move the **goal** into the **target** with either a *U*, *U'*, or *U2* move. Then, move the edge to the **target** the way you figured out in step 2. Finally, return the **target** to the **goal** by undoing the *U*, *U'*, or *U2* move you made before. For case 1, the set of moves would be *U F' U'*. For case 2, the set of moves would be *U' R U*.

If the edge is in the first or last layer
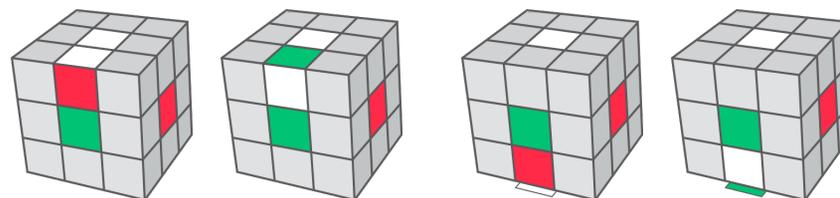
Use an *F* or *F'* move to bring the edge into the second layer and use the method above to solve.

Solving the corners

For the remainder of this solution, you will hold the cross on the bottom. This makes the remaining pieces easier to find.
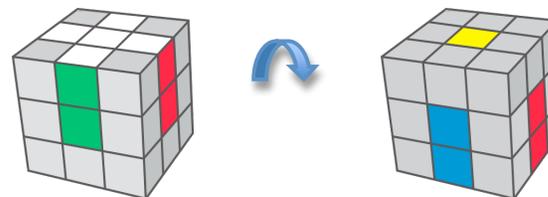
Again, the first thing you need to do is find a corner you want to solve. This would be any corner with a white sticker on it.

If the corner is in the last layer

1. Figure out where the corner belongs by checking the two non-white stickers on the corner. Wherever the corner belongs in is the **goal**.

2. Bring the corner above the **goal** by using either a *U*, *U'*, or *U2* move.

3. Apply one of the following algorithms.
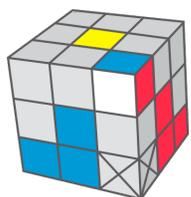
Algorithm

*U R U' R'*
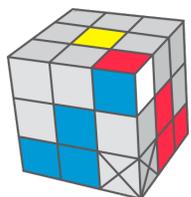
Algorithm

U' F' U F
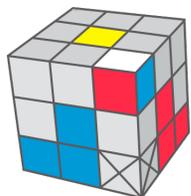
Algorithm

1. *R U' R' U2* to get the white sticker on the side

2. Use one of the algorithms above to solve.

If the corner is in the first layer
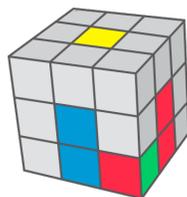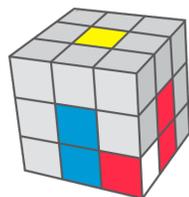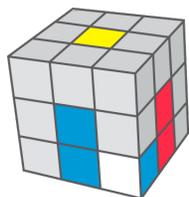
Algorithm

1. *R U R' U'* to get the corner to the last layer.

2. Use the method above to solve.

The Second Layer

The second layer only has four edges that need to be solved. The centers never move, so they are already solved! First, find an edge to solve: this would be any remaining edge that does not have a yellow sticker on it.

If the edge is in the last layer

1. Figure out where the edge belongs by checking the two stickers on the edge. Wherever the edge belongs in is the **goal**.

2. Bring the edge next to the **goal** so that the front stickers match by using either a *U*, *U'*, or *U2* move.

3. Apply one of the following algorithms.
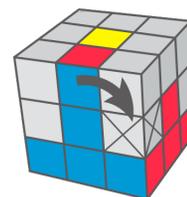
Algorithm

U R U' R' U' F' U F
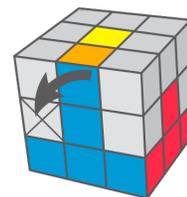
Algorithm

U' L' U L U F U' F'

If the edge is in the second layer
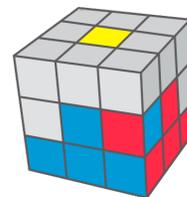
Algorithm

1. *R U' R' U' F' U F* to get the edge to the last layer.

2. Use the method above to solve.

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The Last Layer

In this beginner solution, the last layer is broken down into four steps and requires learning four algorithms. For more advanced solutions, it can be broken down into two steps, but would require learning 78 algorithms.

Orienting the edges

The goal for this step is to make a yellow cross. There are three possible situations, and this 6-move algorithm will cycle through these in order.
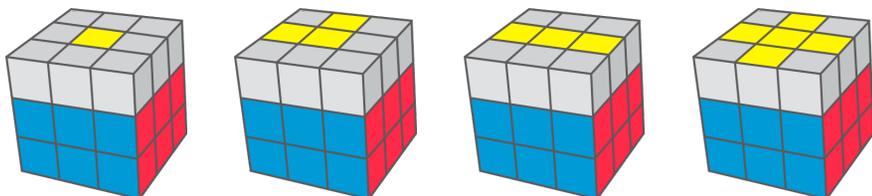
Algorithm   *F R U R' U' F'*

Orienting the corners

The goal for this step is to make all the corners yellow. There are seven possible situations, and this 7-move algorithm will cycle through these. The following diagrams are drawn as top-down views, so you must hold the yellow face on top for these algorithms.
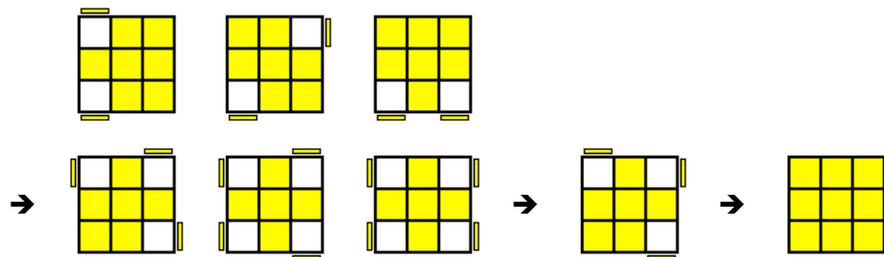
Algorithm   *R U R' U R U2 R'*

Positioning the corners

The goal for this step is to move the corners into the right places. The following 11-move algorithm, executed with yellow on top, will swap two corners as shown. Use this repeatedly until all the corners are in the right place.
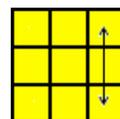
Algorithm
R U2 R' U' R U2 L' U R' U' L

Positioning the edges

This is the final step in solving the cube. There are four possible situations, and this 9-move algorithm will cycle through these.
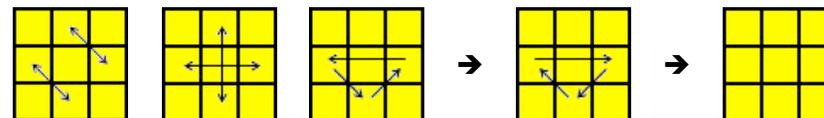
Algorithm   *F2 U R' L F2 L' R U F2*

Congratulations! Now you can solve the cube!

Acknowledgements

Thanks to Tyson Mao for the idea of writing down a beginner's solution and to Francisco J. Calzado for his cube images.