

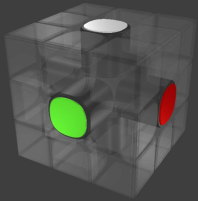
Beginner

The Beginner's Method.

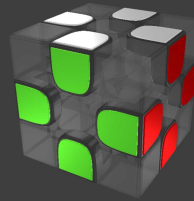
Terminology

Before starting, it's helpful to know a few terms used when describing the pieces of the cube.

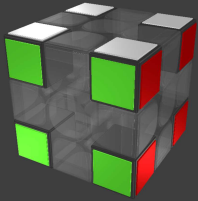
Center Pieces - There are six of these and they never move. Every other piece moves relative to the center pieces.



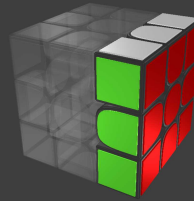
Edge Pieces - There are twelve of these and each one has two colors. Each edge piece belongs between the center pieces with the same two colors.



Corner Pieces - There are eight of these and each one has three colors. Each corner piece belongs on the corner between the three center pieces with the same three colors.



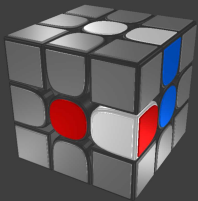
The cube is divided into layers, and the pieces are moved around by doing sequences of layer rotations.



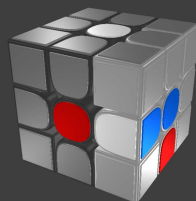
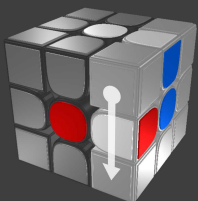
Step 1 - Make the White Cross

The first step is to make a complete cross on the top of the cube.

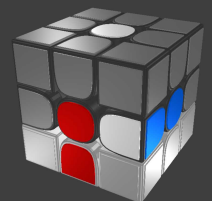
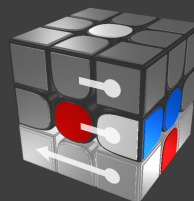
1. Holding the cube so the white center is on the top, find an edge piece that belongs on the top layer (any edge piece that has a white face) that is not already in the right position. In the example below, the Red /White Edge is the piece we want to move, and it belongs between the red and white centers.



2. Turn the layer containing the edge piece to move it to the bottom layer. The CuSHan for each move is also shown with the Red center facing you.



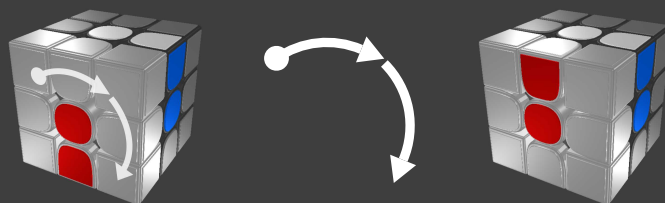
3. Turn the bottom layer so the edge piece is below the center piece with the same color.



4. If the layer you turned first already contained a completed edge piece, turn it back into position.

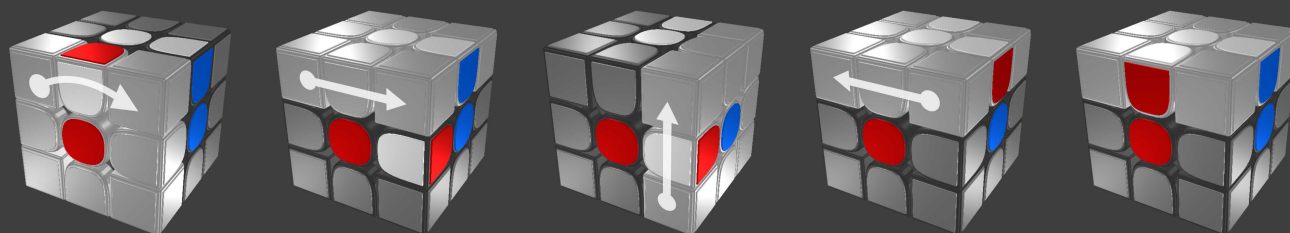


5. Turn the layer containing the edge piece 180 degrees to move it into the right position.



Repeat this until all four edges are in the correct locations.

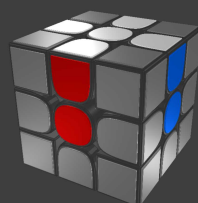
If an edge is in the correct position but the wrong way around, you can use the sequence of moves below to turn it around.



In CuSHan, sequences of moves - or algorithms - like this are combined into continuous sections starting at the dot and following the arrows. This algorithm would be written:



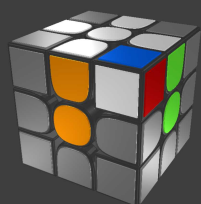
Once this has been done for each edge, you should have a complete cross.



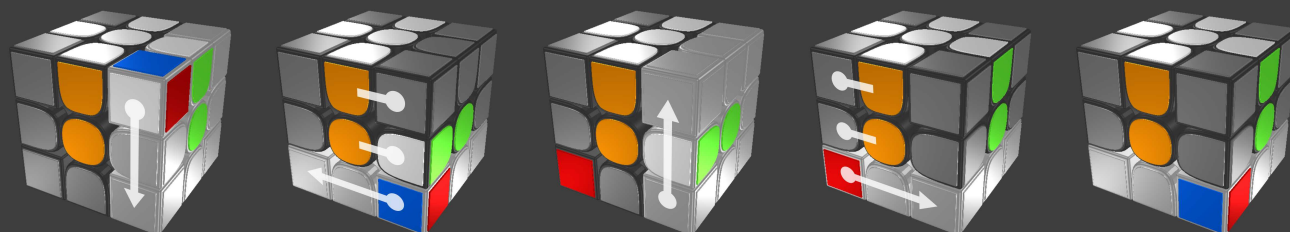
Step 2 - Complete the Corners

The next step is to get all the white corners in the right positions and oriented correctly. To do this, one algorithm is used which if used once will switch a corner piece from the top to the bottom layer, or vice versa. If used twice, it will reorient the corner piece.

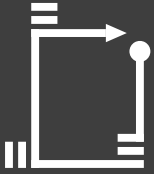
In this example, we have the red, blue and white corner in the orange, green and white corner position. We want to move it to the bottom layer so we can reposition it without affecting the edge pieces already in place.



Use the following algorithm to move the corner piece to the bottom layer and restore the edge piece moved in the process. The CuSHan is shown with the orange centre facing you.



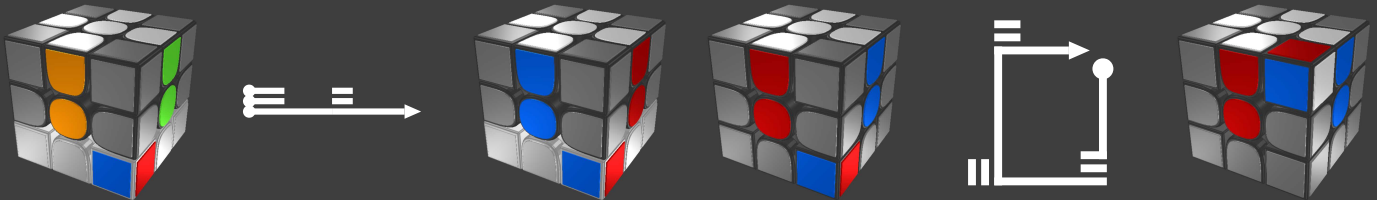
In CuSHan, the whole algorithm would be written:



The corner piece is now on the bottom layer, which can be moved without affecting the cross. Now we move it beneath the position we want it to end up in, and use the algorithm to move it into position.

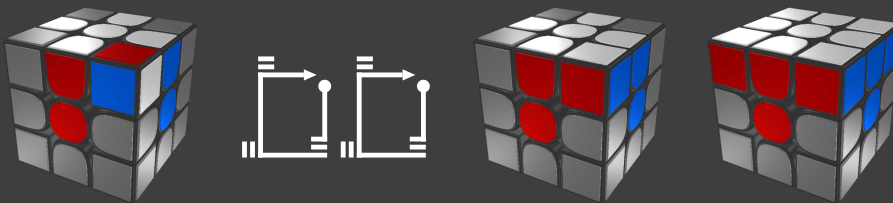
5. Turning the bottom layer twice will move the corner underneath the correct position.

6. Using the same algorithm will move it to the correct location, but oriented incorrectly.



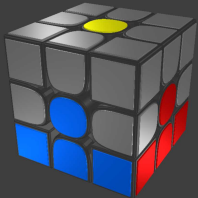
7. We can use the same algorithm twice more to reorient the piece correctly.

8. Repeat this process until all white corners are in place.



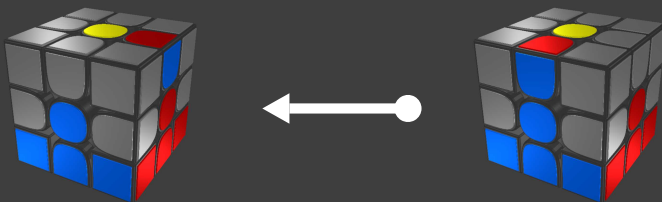
Step 3 - The Middle Layer

The next step is position the four edge pieces of the middle layer. Start by turning the cube upside down so that the yellow center is facing up.



Find an edge piece in the top layer that does not belong there (any edge piece with no yellow face). See further down if there isn't one.

In this example the red blue edge is positioned above the red centre. The first step is to turn the top layer so that the colors facing outwards match. In this case, the red is facing up and the blue is facing out, so we turn the top layer to put the piece above the blue centre.

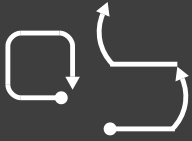


Holding the cube so the edge piece to be moved is facing us, we use one of two algorithms to move the edge piece from the top layer to the side layer, depending on whether it is to be swapped with the left side or right side.

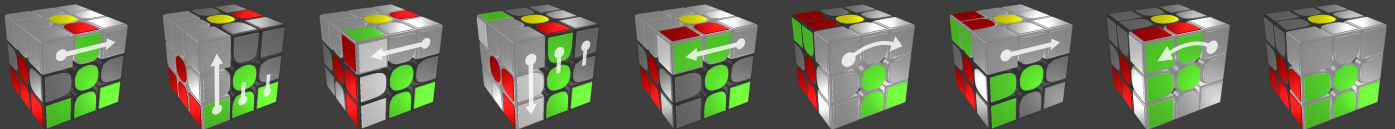
In this case, we want to move the edge piece to the right side, as that's the position between the red and blue centers, so we use the following algorithm.



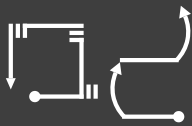
In CuSHan, the whole algorithm would be written:



To move the edge piece to the left side the following algorithm is used.



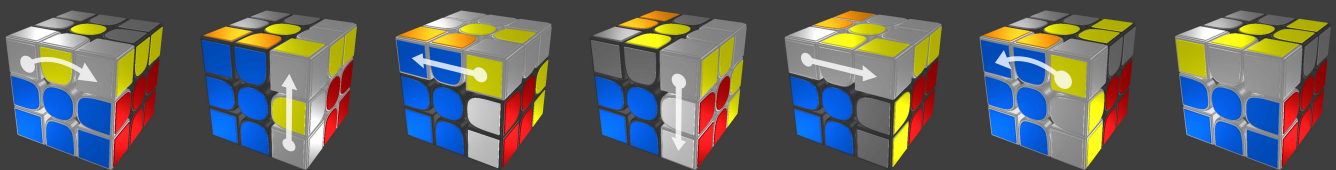
In CuSHan, the whole algorithm would be written:



You use the same algorithms to take edge pieces out of the side layers as you do to put them in. So if you have no pieces in the top layer initially, or you have a piece in the correct position but oriented incorrectly, do the algorithm once to take the piece out of the slot, then go through the process of turning the top layer until it sits above the center piece with the same color, then use the right or left algorithm to move it into place.

Step 4 - Make the Yellow Cross

The next step is to make the yellow cross. You use a single algorithm for this step, which you perform either once, twice or three times depending on which case you have. The algorithm is shown below.



In CuSHan, the whole algorithm would be written:



Match your case to the cases below, and use the algorithm to progress to the cross. The corner pieces don't matter at this stage, so only compare the edge pieces. Also, make sure the L is positioned in the back left corner when performing the algorithm for that case.

Dot to L



L to Line



Line to Cross

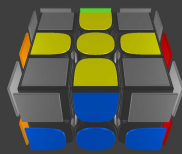
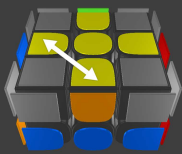


Step 5 - Orient Yellow Edges

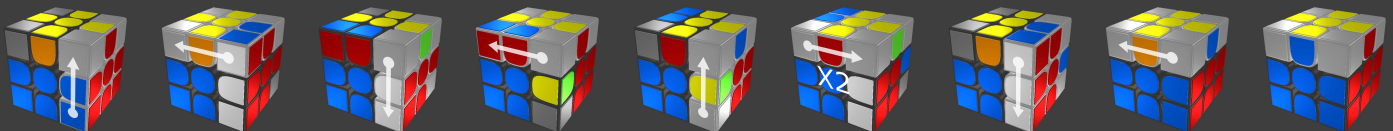
The next step is to orient the yellow edge pieces so they match the color of the center piece they are above. This is done by swapping two edge pieces at a time, until they are all correct. First turn the top layer until at least one edge piece is above the correct centre piece. You will then be able to decide which other edge pieces need to be swapped.

To swap two pieces you use the following algorithm. You perform the algorithm holding the cube so the edge piece facing you, and the one to the left are the two to be swapped.

Edge Swap



If you need help with this algorithm, the following sequence goes through it step by step.



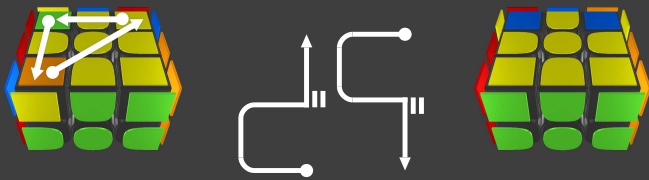
Step 6 - Position Yellow Corners

The next step is to position the yellow corner pieces so that they are in the right location - i.e. the corner piece with a blue face and red face is located on the corner between the blue and red centers. At this stage it doesn't matter if it is oriented incorrectly, just that it is in the right place.

This step is done by performing an algorithm that cycles three of the corners in a loop. The loop cycles the front-left corner with the back-right corner, the back-right corner with the back-left corner, and the back-left corner with the front-left corner.

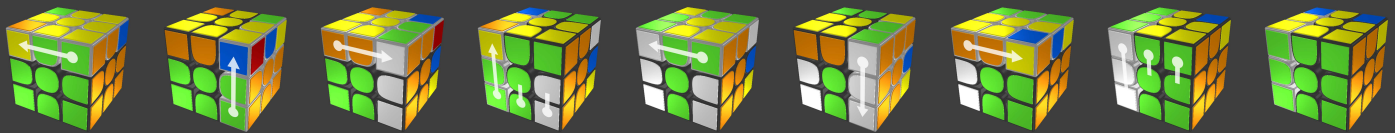
In the example below, the front-right corner is correct, and the three other corners need to be cycled once to put them in the correct positions.

Corner cycle



Now the corners are in the correct positions. If when you get to this stage there are no corners in the correct positions, run the algorithm once or twice until a corner is correctly positioned, then hold the cube so the correct corner is in the front right and run the algorithm again until all corners are correctly positioned.

If you need help with this algorithm, the following sequence goes through it step by step.



Step 7 - Orient Yellow Corners

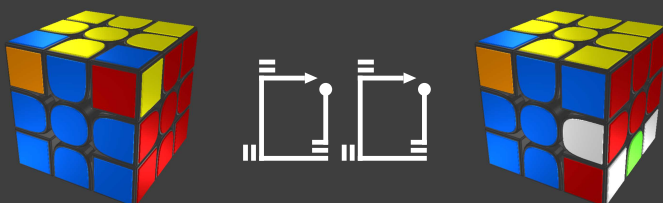
The final step to complete the solve is to orient the yellow corner pieces.

This is done by holding the cube so that a corner that needs to be oriented is in the front-right position. Then the same algorithm as used to orient the white corners is done either twice or four times to correctly orient that corner (see Step 2 for algorithm sequence). After this, ONLY THE TOP LAYER is turned so that another corner that needs to be oriented is positioned in the front-right. Then the algorithm is done again until that corner is correctly oriented. This process is continued until all four corners are correctly oriented and the cube is solved.

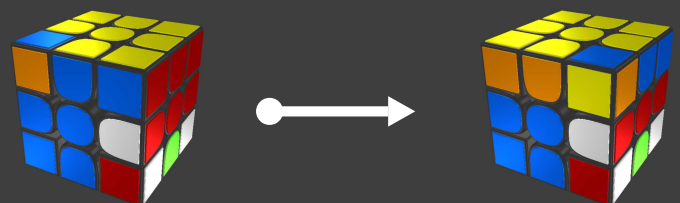
Don't worry if the cube looks scrambled during this step. If the process has been followed correctly it will be solved once all corners are correctly oriented. Also, it may be necessary to turn the top layer to complete the cube once all corners are correctly oriented.

In the following example there are two corners that need to be oriented.

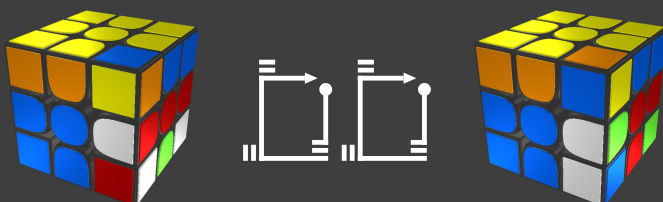
1. Orient first corner by running algorithm twice



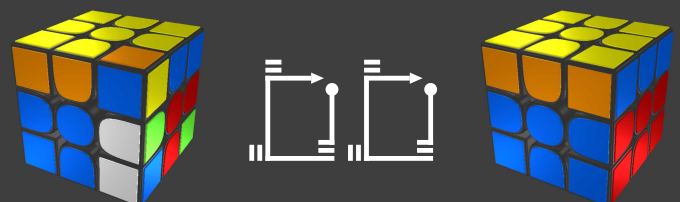
2. Turn top layer to move the second corner to front-right



3. Run algorithm twice to see if correct



4. Not correct - run twice more



5. Corners correct. Turn top layer to finish

