

1. Pick a color to begin with and rotate the cube until that colored center is on top. We’ll call this the starting color.
2. Find one of the four edge (edge referring to a piece with only two colors on it) pieces with that color on it.
3. Using logical flipping, rotate each of those 4 edge pieces until the starting color on each edge of those pieces is adjacent to the center face with that color, and the other color on each edge piece is adjacent to the center on the cube with the same color. Your top face should end up looking like a cross of its color once this is obtained. It usually takes a while to be able to do this quickly but there are no tricks.
4. Search for a corner with the starting color on it. There will also only be 4 of these. With one found, look at the other two colors on that piece. If that corner is in the “Top” layer, or the layer created by your starting color, rotate the cube while still leaving that side facing up until that piece is on the “bottom right” corner of the top face, with that face facing you. Rotate the cube up so the top face is facing up and the front face is facing you. Use the following algorithm: Right down, Bottom left, Right up. This should move that piece to the bottom layer, where it can more easily be repositioned. Do this step only if the three colors on that corner do not already match the three colors of the corner that should be in its spot, (which is the case if the piece is right but the rotation is wrong – only do this if both are wrong).
5. If the corner in focus is in the bottom layer, twist the bottom to the left or right until the focus corner ends up “below”, on the front face, the location that corner should end up (or the corner formed by the three centers with the same three colors)
6. Once that piece is either located below or in the spot it needs to end up at, you can use the algorithm: Right down, Bottom left, Right up, Bottom right, repeatedly until the piece is in the right location and has the right rotation. Do this and the prior two steps until the whole top face is correct.
7. Flip the cube upside down, turning the top layer in to the bottom layer and vice versa. Recognize that there are 4 edge pieces that must be moved in to complete the middle layer (the layer between the top and bottom layers). Find an edge on the new top layer that has two colors, neither of which match the top color (the color of the center piece on the top layer).
8. Take note of the color on the side of the cube, on the edge piece that you have selected. Rotate the cube in your hands, leaving the top face still facing up, until the side of the cube with the same color as you just found on the edge piece faces you. Then rotate the top face clockwise or counterclockwise until the edge piece is on the opposite side of the cube from the side with the same color as the other color on the edge piece (the one on the top face).
9. Do this with each side piece (meaning after step 10 is performed, loop back and do it until all 4 are in the right place). If you find an edge that already has the right piece in it but it is flipped the wrong way, or you find there are no pieces that can follow that step – meaning none are on the top layer, follow the same algorithm but use a dummy piece in place of the piece you would want to move into place (the colors will be wrong, but pretend they’re the colors you want and put that piece in the proper setup position). This will move the dummy piece into the wrong spot on purpose, but bring a usable edge piece up to the top layer to be used the next time you perform this algorithm.
10. Once the cube is set up as step 8 instructs, this algorithm is performed. However, the algorithm is mirrored depending on which side, left or right, the edge that you plan to move starts on. So, if the edge piece, while looking down at the top face, is on the left, the algorithm is: (perform this algorithm with the front face facing you, not the top face) Right up, Top right, Right down, Top right, front ccw, top left, front cw. If that edge piece is instead on the right while looking down at the top face, the algorithm is the mirror: Left up, Top left, Left down, Top left, front cw, Top right, Front ccw.
11. This needs to be done to all 4 edge pieces until the middle layer is solved. Upon completing the middle layer, examine the top layer and search for a pattern in the edges and center. The pattern will look like an L, a plus, or a line through the middle made by the color of that face. Reorient the cube so that side is facing you, and if it is an L, reorient it further (reorient and orient will always mean rotate the full cube without twisting any sides) so that the L is in the top left corner. It will look like a backwards L at this point. If it is a line, orient the cube so the line is horizontal. If it is a plus, you may skip the following algorithm.
12. Perform this algorithm repeatedly until you have the plus (with the top face being the face you’re operating on, and facing you, the opposite color from the one you started with – Red and Orange are opposites, Green and Blue, and Yellow and white): Bottom right, Right up, Front cw, Right down, Front ccw, Bottom Left.
13. The plus will look correct from the top, but not necessarily from the sides. Usually the edge pieces that make up the 4 components of the plus will be in the wrong locations upon completing the prior step. In order to correct them, first check to see on the sides if any two adjacent-top-face-edge pieces are swapped. If two next to each other are swapped, rotate the cube with the top face facing you so those two pieces are on the left and the top locations of that face. Those pieces along with the center piece should form a backwards L. Or, if no two adjacent edge faces are swapped, try rotating the top face until you find a pair of swapped adjacent sides, or if that doesn’t work either, perform the next algorithm without making any changes first. The algorithm expects that the Front face is facing you rather than the top face, and is: Right up, Top 180 degrees (either direction obviously gets you to the same point but for speed’s sake, probably twist the face “right” twice to achieve a 180 degree flip), Right down, Top (90 degrees) right, Right up, Top right, Right down, Top right. Doing all top face turns to the right will aid in speed and make it simpler to memorize. You can also try to do the mirror of this algorithm with the two edge pieces starting on the bottom and left sides of the top face, which would work equally well, but this should work fine unless that feels more natural.
14. Once you have the correctly permutated plus, the goal is to reorganize the corners until they are in the correct locations – This step will not rotate the corner pieces themselves correctly, only move them into the corners they are meant to be in. To begin this algorithm, search for one corner that is already in the correct location, with all three colors on the piece matching the three colors surrounding it on the cube centers. If none are already in place that is fine, start the next algorithm. If one is in the correct location, reorient the cube so the correctly positioned corner, when looking at the top face, is on the bottom right, and so when you look at the front face, the corner that is in the correct location is on the top right of that face. Keep the front face facing you. Skip the next algorithm if all 4 are already in the correct locations.
15. Perform the algorithm: Top left, Right up, Top right, Left up, Top left, Right down, Top right, Left down. Perform it a second time/ until all 4 corners are in the correct positions (positions meaning the three colors on the corner match the colors of the sides that make that corner, but doesn’t necessarily mean the corner is rotated correctly – in most cased some of them won’t be. If they all are, the cube is already solved.), but never reorient the cube in your hands once you’ve started with a certain corner on the top right. In the case that the first time you performed the algorithm there was no correctly located corner, performing this algorithm once should always move only one corner into the correct location (again, it may not be rotated correctly).
16. Nothing in step 15 should be performed or attempted until the order is explained in step 16. Once all 4 corners are in the correct locations, there are a few situations you can have: All corners can be rotated correctly, in which case the cube is solved. Two corners can be solved leaving two unsolved, either adjacent or on opposite corners (call this case 2). Three corners (obviously always adjacent) can be unsolved, needing only to be rotated into place (call this case 3). Before beginning it is important to note that performing the algorithm here 6 times forwards or 6 times backwards will return the cube to its original state. So, in say case 2 where you have two incorrectly rotated corners, you know fundamentally that one corner will need 4 of the algorithm to be correct and the other will need 2, with 4 + 2 adding to 6. This also means you can do 2 of the algorithm forward for one corner, and another 2 of the algorithm backward, which also lands you back where you started – but with the corners properly located. As long as it is a multiple of 6, 0 included, you end up not messing with any pieces other than the corner(s) you’re trying to rotate, leaving the rest of the cube untouched. The algorithm is the same as one used at the beginning and is normally referred to by the moves within it, since it is short – It can be called “down left up right”. More specifically, “Right down, Bottom left, Right up, Bottom right”. This of course means that performing the algorithm backwards will look like “Bottom left, Right down, Bottom right, Right up”. Down left up right, and its opposite, left down right up. Two down left up rights on one corner and two left down right ups on another corner, for case 2, will solve the cube. For case 3, two things can happen- they can all 3 be rotated in a position requiring 4 down left up rights each, or 2 down left up rights each. 2 each would yield 6, but 4 each yields 12, which takes a long time and is annoying – so you can always avoid doing 12 by using the opposite algorithm. Using 2 left down right ups where you could use 4 down left up rights will save you time, once again reducing the amount of times performing the algorithm to 6.
17. Starting with case 2, say you have the situation with opposite corners incorrect. Orient the cube with that side with both corners facing up (the “top” side). In only this case, you can pick either corner and then orient the cube so that corner is on the top right of the front face. Before you can perform the algorithm, look at that corner piece’s 3 colors’ locations: the focus color is the color that matches the top face, the final face you are solving. If that color on the corner is on the right face, not facing you, performing two down left up rights will solve it (thus making it clear that the other corner will require 4 down left up rights or 2 left down right ups). If that color is facing you, or on the front face, performing 2 left down right ups or 4 down left up rights will solve that corner (forcing the other to be solved with 2 down left up rights or 4 left down right ups). Once you have performed that set of 2 or 4 of either algorithm, rotate only the top face (clockwise or counterclockwise for this case) until the next corner you wish to solve is positioned on the top right of the front face. You can then perform the remaining down left up rights or left down right ups (if you wish to only do 2 of each, this one will use the opposite algorithm of the one you used on the first corner).
18. In the other version of case two, the two corners are adjacent. Start by orienting the cube (orientation is more important this time, for efficiency’s sake) so that when the time comes to rotate the top face after the first corner is solved, you can rotate it in the direction that it is easiest to turn it in. This becomes more important when you have 3 corners to solve like in case 3. Like in step 16, determine which algorithm you need to perform and how many by reading which face the focus color is on – front or right. If it’s front, two left down right ups will solve that corner, and if it’s right, two down left up rights. In case 2, the corners will always need the opposite algorithm to solve in only 4 of that algorithm – 2 forward and 2 backward, to add to 0, or 2 forward and 4 forward to add to 6. The difference between this and case 3 is that in case 3, all 3 will require the same algorithm. Either 3 times 2 down left up rights, 2 for each adding to 6, or the same but with left down right ups. Or you can choose to use 3 of 4 down left up rights or 4 left down right ups to achieve the same thing, but it’s much slower. After each corner is solved you must remember to not move or turn the cube, but rotate only the top face each time to move the new focus corner into place at the top right of the front face.
19. Case 4 is similar to case 2, except there are two sets on the cube of 2 incorrect corners. Essentially you only need to know that doing any combination of the necessary amount of algorithm for each corner will solve the cube. Start with any arbitrary corner, check which face the color is on, and do the algorithm of your choosing however many times it takes to get that corner rotated correctly (2 or 4), then rotate to the next one and repeat until all 4 corners are correctly rotated. It will always end up being a multiple of 6, or 0 (counting using one algorithm as a negative of the other since it’s literally a reversal), of either algorithm.
20. Once all 4 corners are in the correct locations and have the correct rotations, you can quite intuitively rotate the top face until the colors on each side of that face match up with the 4 colors on each side face of the cube. At this point the cube should be solved.