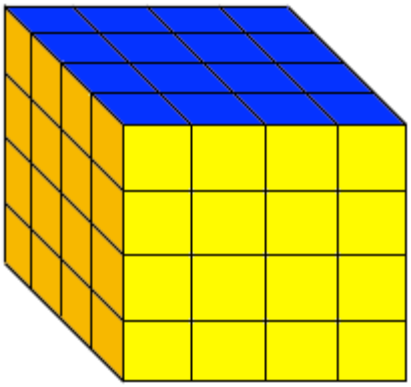
Rubik's Revenge

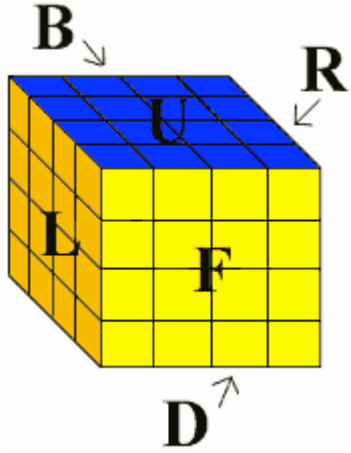


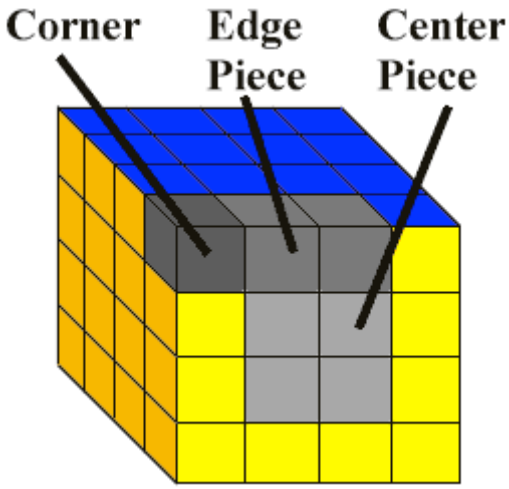
The Rubik's Revenge was a puzzle introduced in the early 80's after the big Rubik's Cube craze. Instead of the usual 3x3x3 design the Revenge has 4 cubes on every side. This adds some interesting qualities to the cube. On the Revenge you can switch two centers and leave the rest of the cube solved. However on the Rubik's Cube you can't switch just two centers, the minimum that you can switch on the Rubik's Cube is four. You also have to not only solve the centers on a Rubik's Revenge but you have to put them in the right spots. My method for solving the Revenge is complete and has no holes in it so you will be able to solve your Rubik's Revenge every time from **any** legal scrambled position.

In this method I will assume that you can already solve the Rubik's Cube (3x3x3). If you cannot solve the original Rubik's Cube then you will only be able to half solve your Rubik's Revenge. If you need to learn how to solve the Rubik's Cube then click here to go back to my Rubik's Cube page.

Basics

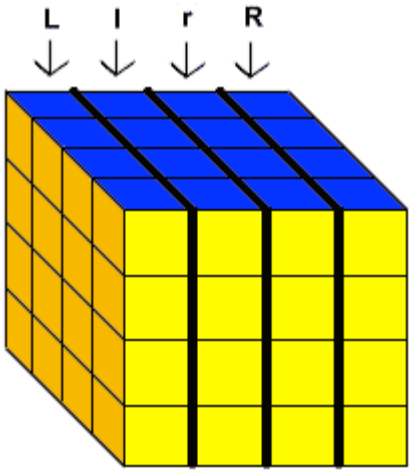
First lets get to know what the different parts of the cube are called. One side of the cube is called a face. There are six faces on the cube, front, back, down, up, left, and right. The whole section that is attached to each face that you can turn is called a slice. The Individual pieces are corners, edge pieces, and center pieces.

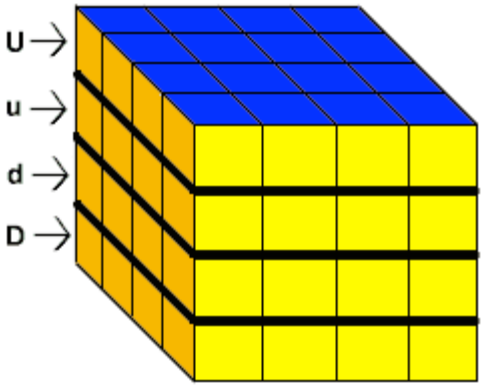


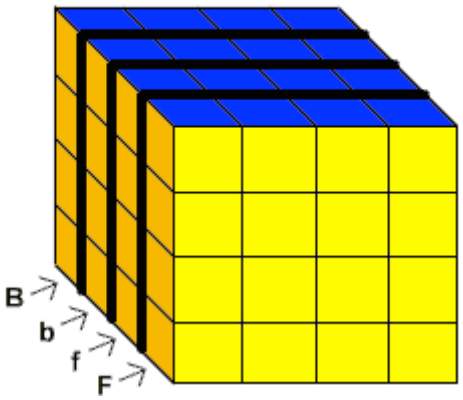


Notation

In order for me to be able to tell you specific moves to do on your cube you'll need to be able to read what I'm saying. The notation I will be using looks like this, F f B b L l R r U u D d. Capital letters stand for the outer faces such as the front face, back face, down face, etc. Lower case letters stand for the faces just behind the outer ones, such as the inner front face, inner back face, inner down face, etc. Here are a few diagrams to show were each face is and how each can turn. The faces turn on the dark lines.



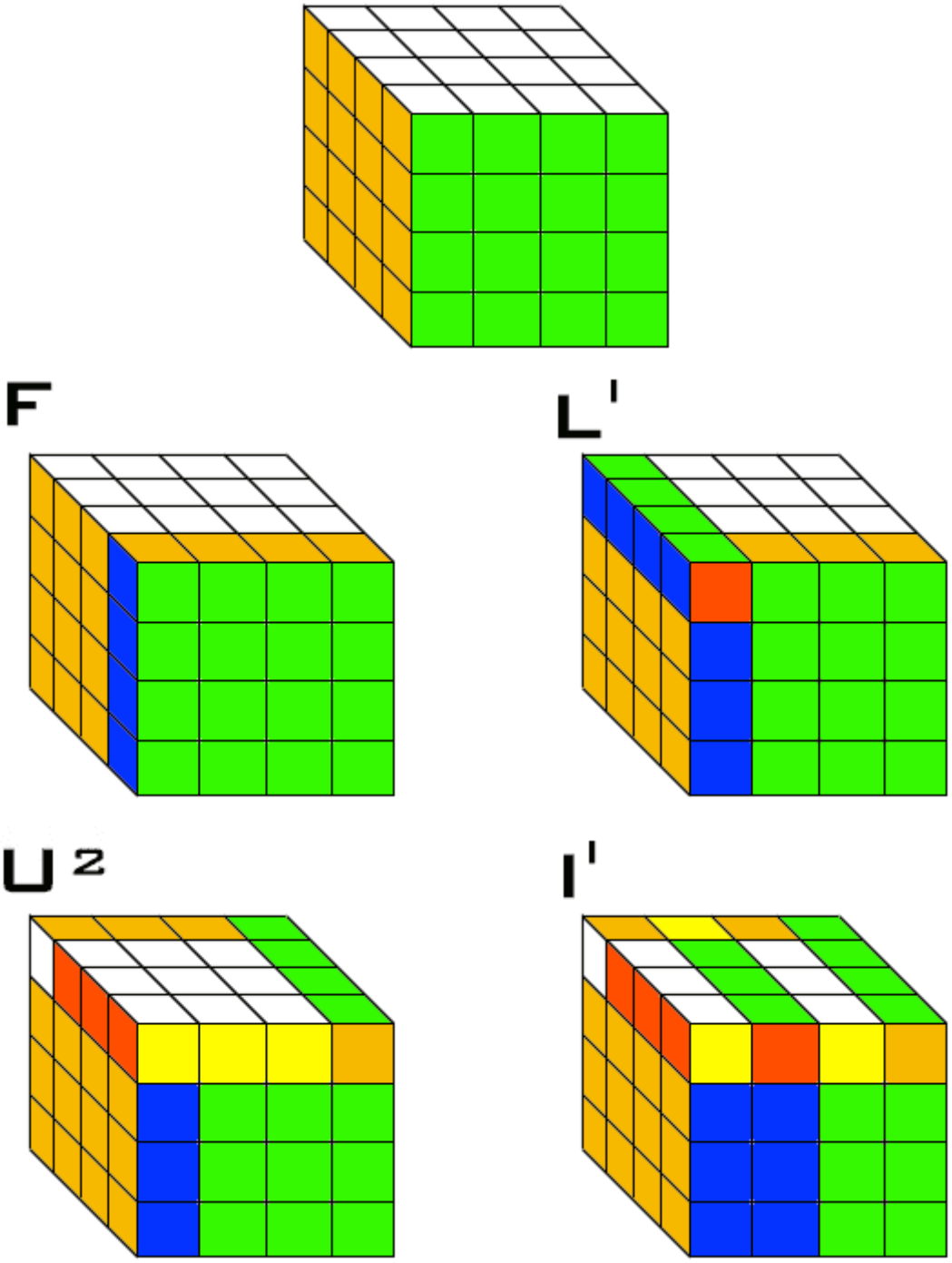




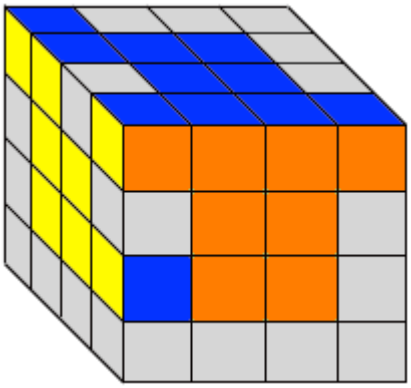
When doing the moves a letter by itself means a clockwise move. **R** would mean to turn the right face clockwise. **f** would mean to turn the inner front face clockwise. **R '** would mean to turn the right face counter clockwise. An appostraphy next to the letter denotes a counterclockwise turn. **R ²** means to turn the right face twice, either two clockwise turns or two counterclockwise turns, however you want to look at it. Whenever making a move do the move as if you were looking directly at that face. For example the move **B '** would be done as if you were looking directly at the back face. The move **d '** would be done as if you were looking directly at the down face. Here is an example of an algorithm that I might give you.

F L ' U ² l '

Here is what you would do to your cube,



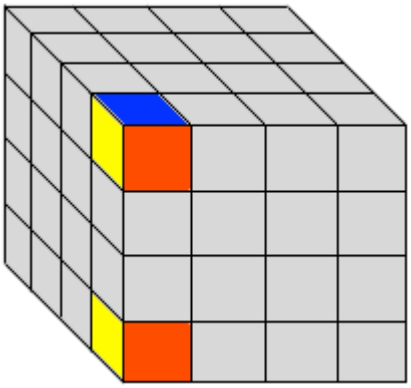
While going through my solution some of the diagrams may have gray areas on them, here is an example,

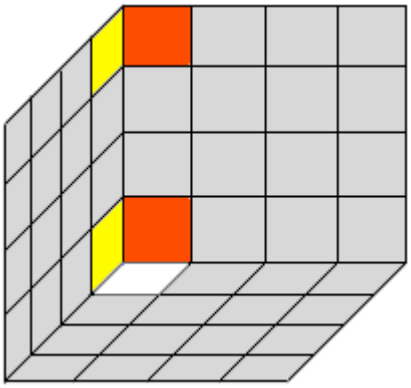


These gray areas show colors that you should not be worried about in that particular step. In this example this is a picture of how to put the blue yellow edge piece in next to the other blue yellow edge piece in the top face. All the gray colors are parts of the cube that don't involve moving the blue yellow piece next to the other blue yellow piece so they should be ignored for this step.

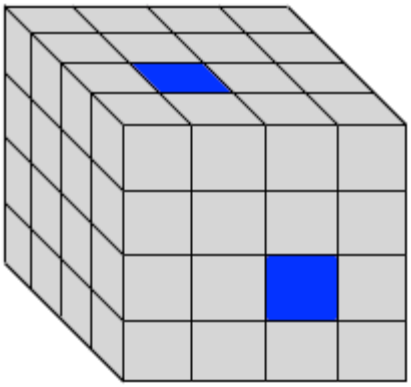
Part 1: The first step in solving your cube is you have to solve the centers so you can have a point of reference for solving the rest of the cube. The trick to this is that you have to get all the centers in the right spot (if the centers don't correctly line up with each other then the edges and corners won't line up either and it makes a real big mess). The first thing you need to do is solve two opposite centers. If you know of two colors that are opposite on your cube it makes things a little easier. The colors that are opposite on my cube are this, in case yours are the same, blue-white, green-yellow, red-orange. If you're not sure of two opposite colors on your cube then here is a way to double check to make sure you get two opposite colors. Take two corners, each with say red and yellow in their color schemes. You can pick any two corners but make sure each corner cublet has two colors that are the same. You don't have to move them just look at them. Now that you have these two cublets if you **were** to solve them then they would be on the same edge, only opposite sides of that edge (i.e. one corner would touch the top face and the other would touch the bottom face). Now just look at the other two colors on each of those pieces and you have two opposite colors. Here is an example to clear this up. Let's say I pick two corner pieces, red-yellow-blue, and red-yellow-white. Now if I were to solve these two corners then the red-yellow part would be on the same edge of the cube. This would put them on opposite sides of that edge so that each touched a different face (either bottom or top). Now I know that blue and white are opposites on that particular cube because they are on opposite sides of the cube when the corners are solved.

Top View Bottom View

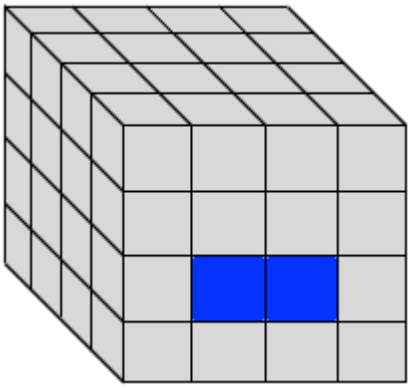




Part 2: Now that you know two opposite colors you have to solve those two centers. Lets stick with the two opposite colors blue and white for this example (these colors may not be opposite on your cube so if they're aren't just use two colors that are). The first step is to make two rows of each color. Get two pieces into this position first,



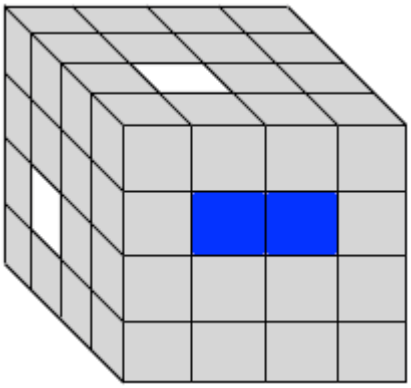
In this position do the move l to get the blue piece from the top lined up to the one on the front face.



Now to remeber where blue needs to go do the move **F ²** to get it into the **u** slice. When you have a solid row in the **u** slice think of that as being **set** as the center color for that face. This helps to remeber where to postion the centers in relation to each other.

Now you have to solve a white row. There are three things that can happen from here. Either you already have a row of white centers solved, in that case get it onto the opposite face as blue and set it (put it in the **u** slice) If your cube already had a white row solved then after you set it click here, or you will have 2 white centers not on the back or front faces, or you will have 3 whites on the back face, and one white not on the back or front face.

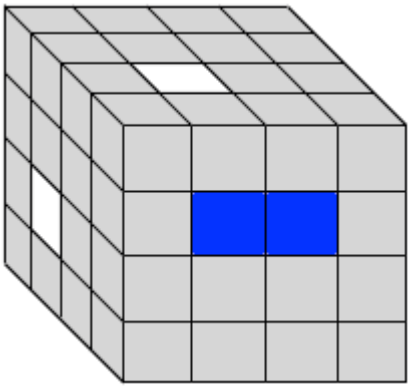
1. If you have two white centers not in the back or front face get your cube to look like this,



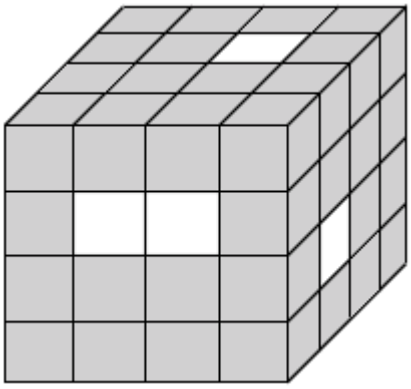
From here do the move **f '** to solve the white row and then **d ' B ²** to put it into the back face and set it.

Now you should have 2 white centers in what I call the **middle section**. The middle section is all the faces except the ones where you're solving the centers, in this case the up face, down face, left face, and right face. If any centers are in the front or the back face then turn the **d** slice to get them into the middle section. Be careful when doing this to not turn the other white center back into the front or back face at the same time. If it looks like that's going to happen then move one of the whites to a face that hasn't been set with another color, the left or right face, and do the move N ² (N being whatever slice the piece is on) Then turn the other white into the middle section. Now that those two centers are in the "middle section" between the front and back faces get them into this position,

Front View



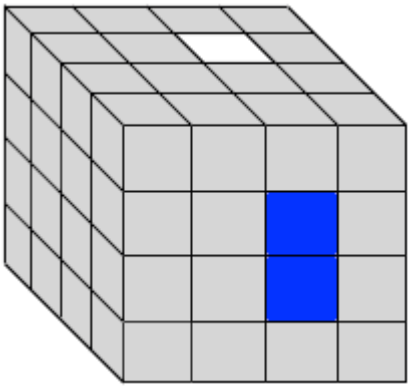
Back View



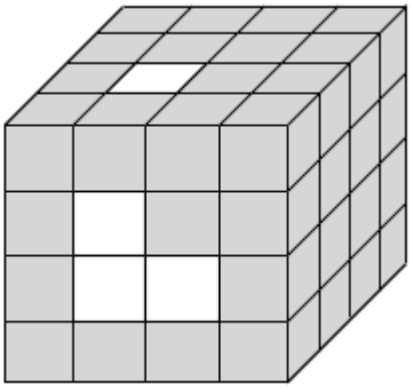
From here do the moves **f ' d '**. This will completely solve the white center. Go on to #3.

2. Now if you only had one white center in the middle section and 3 white centers on the back face here is what you do. First of all do the move **F**. This gets the blue row out of the way for a turn on the **l** slice. Now get the one white piece in the middle section and get it into the position in the diagrams. Now turn the back face to get the 3 whites into the position on the diagram. Now do the move **l**. This solves the white row. Now do the moves **U ' l '** This will completely solve the white center.

Front View



Back View



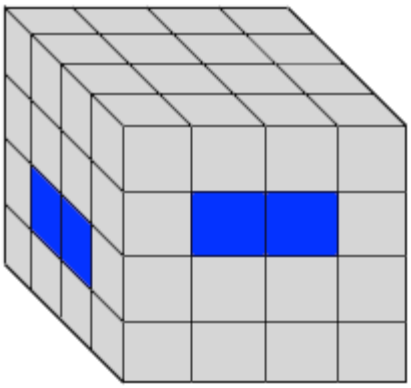
3. Now your cube should have the white center solved and a blue row on the opposite face. If it doesn't then start over. From here you need to solve the last blue row. There are three things that can happen from here. You will either have the last blue row solved but in the middle section, or you will have 2 blue center pieces in the middle section, or you will have one blue center piece in the middle section and one in the front face.

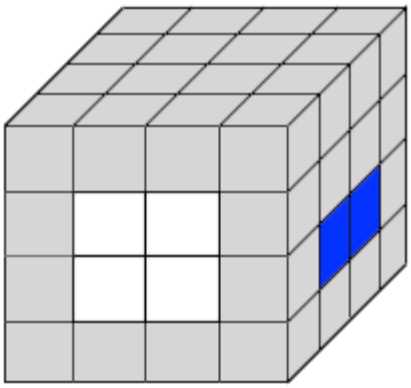
I. If your cube has a blue row already solved but it is in the middle section then you have to do one of two moves.

If your cube looks like this then do this move **L ² d ' L ² d**. This move will put the blue row in the **u** face then move a white row to the opposite face of the cube, restore the blue row to the **d** face then solve the centers.

Front View

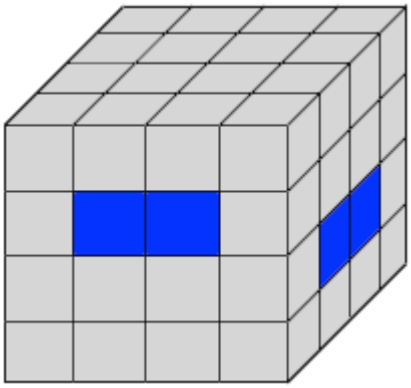
Back View



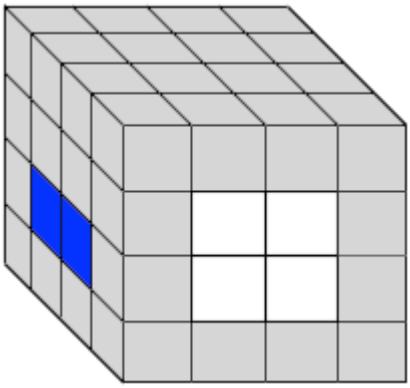


If your cube looks like this then do this move **R ² d R ² d '**. This move will put the blue row in the **u** face then move a white row to the opposite face of the cube, restore the blue row to the **d** face then solve the centers.

Front View

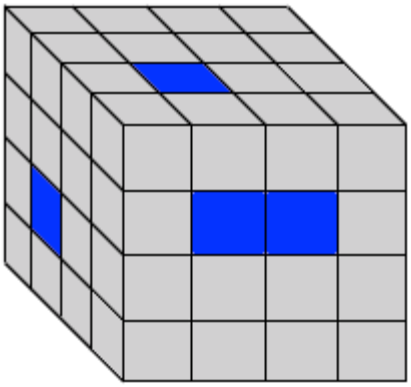


Back View

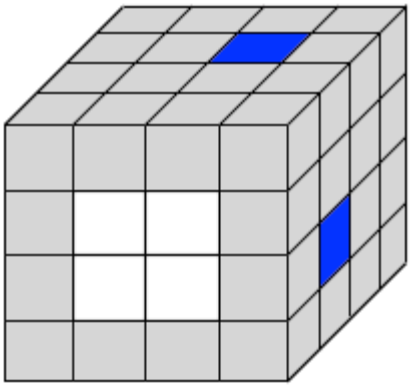


II. If your cube has the last two blue center pieces in the middle section then get your cube to look like this,

Front View



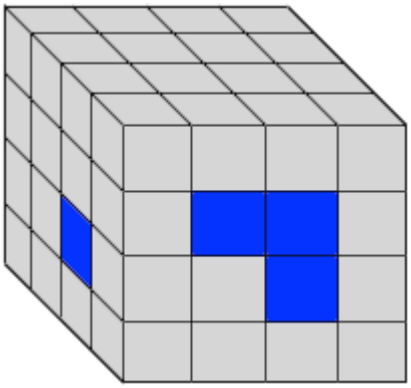
Back View



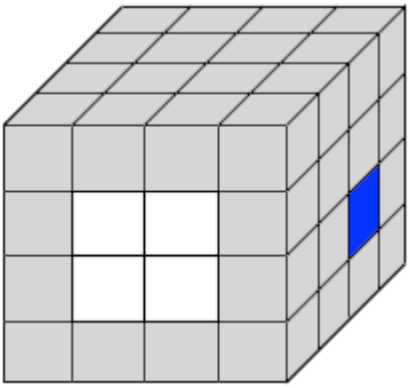
From here do the move **f ' L ² d ' L ² d**. This will solve the blue row then move it to the **u** face, move the white row to the opposite side of the cube, move the blue row back onto the **d** slice, then move them back in place of their centers.

III. If your cube has one blue center piece in the front face and one in the middle section then get your cube to look like this,

Front View



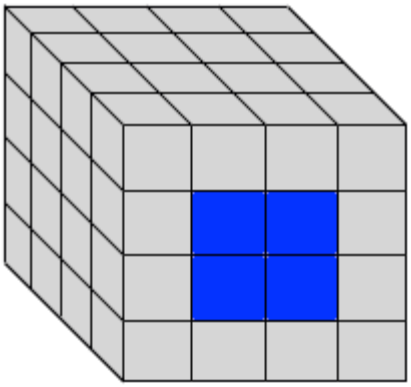
Back View



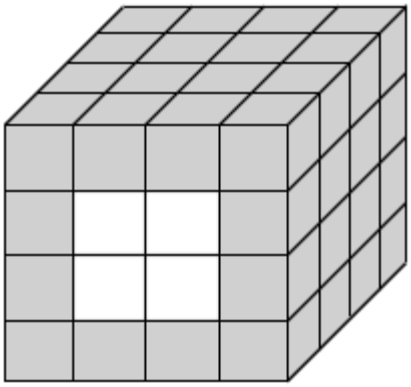
From here do the move **F d F ' d '**. This move will solve the last blue row and then the last move restores the two centers.

Your cube should now look like this,

Front View



Back View

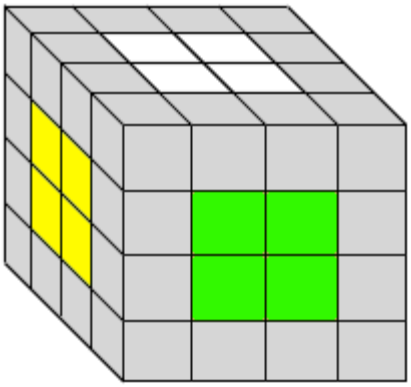


4. Now that you have the first two centers solved you have to do the other four. For the next step blue and white become the top and bottom faces. For these examples I'll use white as the top face and blue as the bottom face. Now you have to solve the front and back centers. Do the same thing you did with two corners that you did in the beginning to find two more

opposite centers on your cube. For this step you don't need to worry about using the corners to position the centers right it will still work out. Now that you have two more opposite colors on your cube they become the front and back centers. For this example I'll use green and yellow as the next opposite centers to solve.

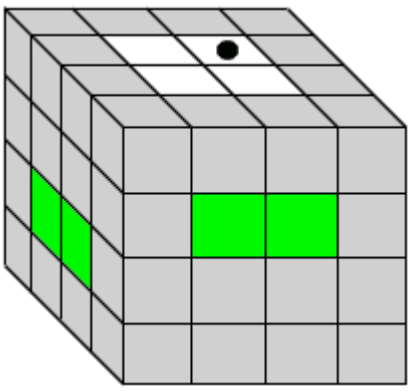
There are 4 things that can happen at this point. Either both of these centers will be solved and in the right spot (go to #5), they will be solved and in the wrong spots, you will have solid rows of each color but the centers not solved, the pieces for the centers will be scrambled everywhere with few or no solid rows.

I. If your cube has the centers solved but not in the right spots (not on opposite sides of the cube) then hold your cube as in the diagram below and do the move **d ' B ² d ² L ² d '**. The colors on your cube can be switched from this diagram. Instead of having green in the front face and yellow in the left face you can have yellow in the front face and green in the left face. In that case do the same move it will still work.

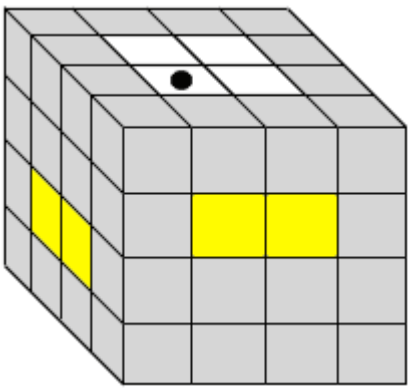


II. If your cube has 2 rows of each color solved then get your cube to look like this

Front View



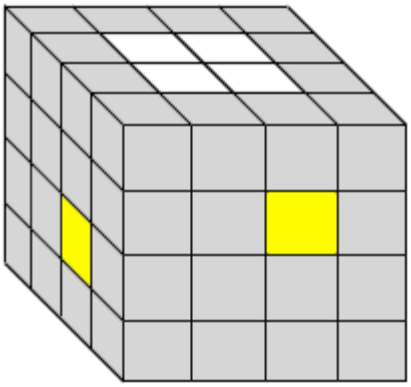
Back View



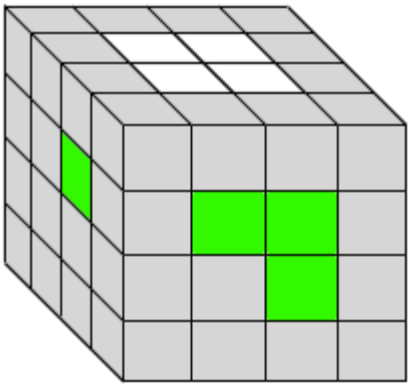
The black dot on the **U** face in both diagrams is in the same spot on both diagrams it is just used to help show how the cube is oriented

From here do the move **d** to solve the green and yellow centers.

III. If your cube has few or no solid rows of green or yellow then here is what you do. First you have to set any rows that you do have. If you have one green row and one yellow row make sure to set them on opposite sides of the cube. Now you have to solve the remaining pieces. You do this basically the same way you solved the blue and white rows in the beginning, only now you do it without using the top or bottom faces. Here is an example,

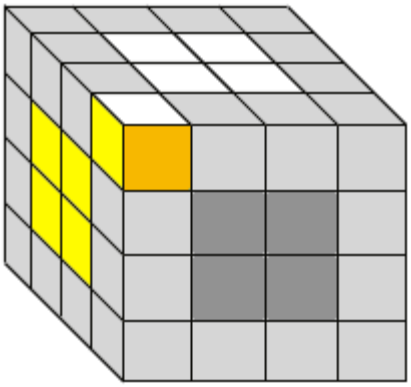


In this example you would do the move **d F ' d '**. This will solve the yellow row then set it in the front face. Once you have 4 rows do the same thing as in II. to solve the centers. Here is an example for if you already have a row set



Here you would do the move **d ' L d**. This will solve the green row on the **L** face then move it into the front face to solve the center. Just mess around with these moves to solve the centers. Maybe you'll even come up with a few new moves. A hint on if you have one center solved and only one row or no rows solved of the other color. Hold that center so that it is on the front face and blue and white are on the bottom and top faces then do the move **d ' L ²** This will set one of the rows in the **L** face. This helps you to use the **d** face to help you solve the other center. Once you have two rows of each color then refer to II. to finish the two centers. Basically you have to think in rows. Once you do have a row completed remember to put it in the **u** face. That way you have room to use the **d** face to do all your moves. I hardly every use the **u** face to do the work in any of these steps. You can adjust this to your liking but I prefer to do everything on the lower half of the cube.

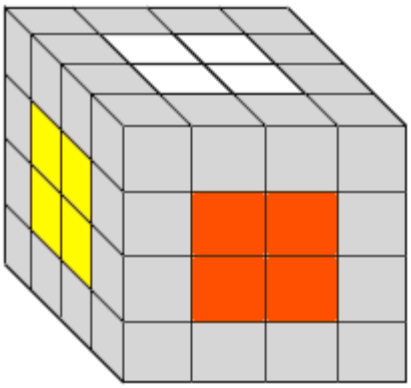
5. Now you should have 4 centers solved. Using the corners double check to make sure both pairs of solved centers are opposite colors. Now you have two centers left to solve and they should be on opposite sides of the cube. If you do not have this on your cube then go back to whichever step best resembles your cube and try again. Now the two unsolved faces become the front and back faces. For these examples I'm going to use orange as the front face and red as the back face. Before you start solving these centers you have to make sure you're solving them into the correct face. To do this you have to solve one of the corners that touches two of the solved centers. From here you know the color of the face with the unsolved center. Here is an example,

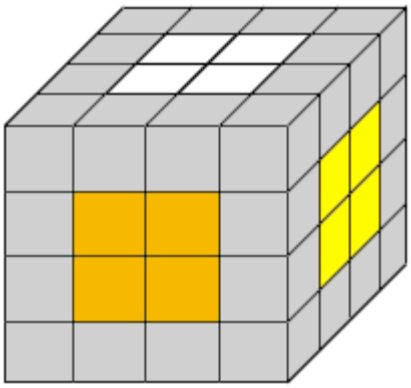


Now you would know that the dark gray area is orange and the opposite face (the back face) is red. There are 6 positions your cube can be in now. Either all the centers are now solved and in the right places (Go on to step 2), all the centers are solved but the red and orange ones are switched, you have two solid rows of each color but they are not all on the right face, you have a checkered pattern on both faces, you have 3 of each color on one face and one of the other color on the same face, or you have a checkered pattern on one face and two rows on the other.

I. If all of your centers are solved but the red and orange ones are switched then hold your cube so that the centers that need to be switched are on the front and back faces like in the diagram

Front View Back View

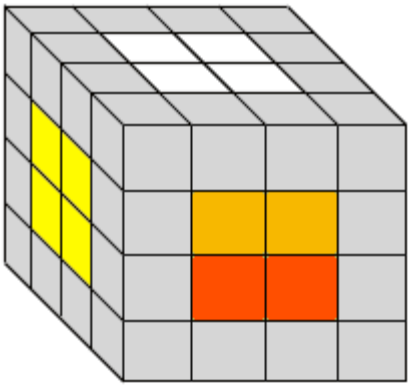




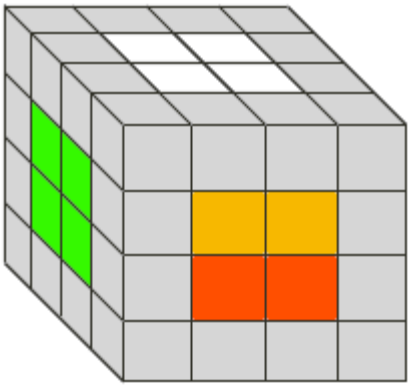
From here do the move **d ² F ² B ² d ²**. This will switch the centers by rows.

II. If your cube has a solid row of each color on both the front and back faces then get it to look like this

Front View



Back View

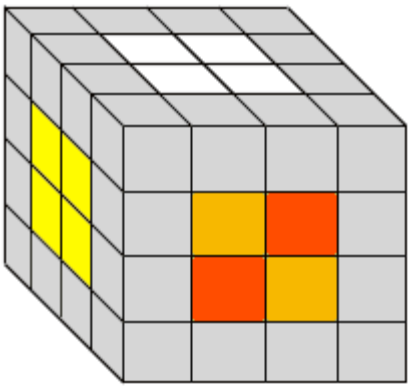


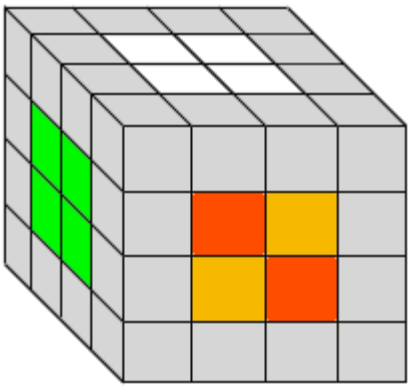
From here do the move **d ² B ² d ²** This will solve the red and orange centers.

III. You may also have a checkered pattern of both faces like this, ***NOTE*** Before doing this move check to make sure that your cube looks like these diagrams. If it does not then turn **only** the back and/or front faces to get it into this position.

Front View

Back View



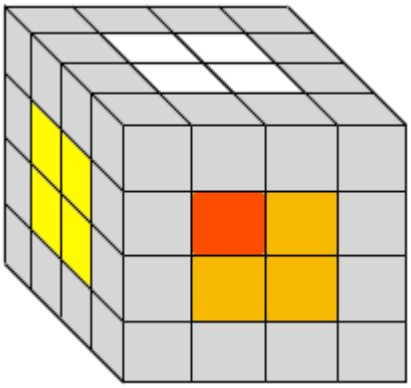


Now do the move **d ² F B d ²**. This will solve both the orange and red centers and get them in the right place. Once again note that this move only works when your cube is in the position of the diagrams. If the move did not work then make sure that the centers look **exactly** like they do in the diagram.

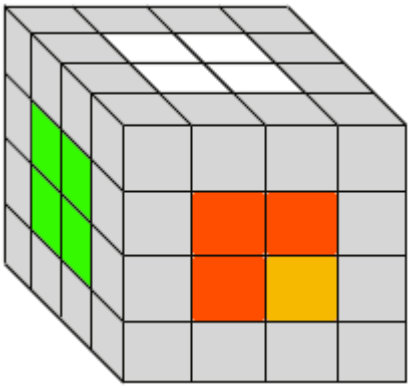
IV. If your cube has three of one color and one of the opposite color on both the front and the back faces then there are two things that can happen from here. You will either have three orange and one red on the front face or three red and one orange on the front face. Basically in this step you either have most of the front face colors on the front face or most of the back face colors on the front face. Solve a corner that connects the front face, left face, and right face in relation to how you're holding the cube now. Now you know the color of the front face.

If the three center pieces on the front are supposed to be on the front (orange in my example) then get your cube to look like this

Front View



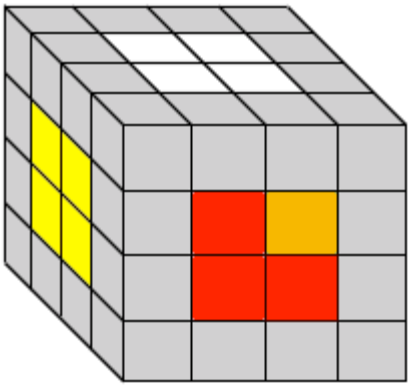
Back View



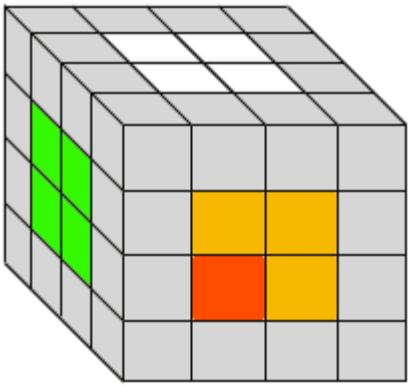
From here do the move **d ² F ' d ²**. This will make the last two rows for the centers then solve them. This will solve the red and orange centers.

If you're cube has three center pieces from the back face on the front (red in my example) then get your cube to look like this

Front View



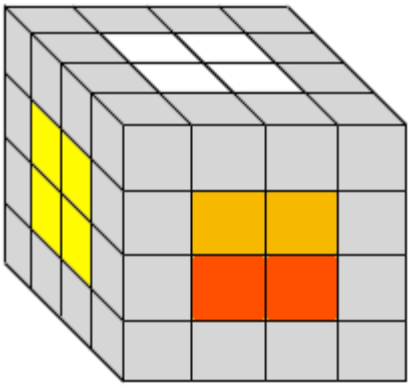
Back View



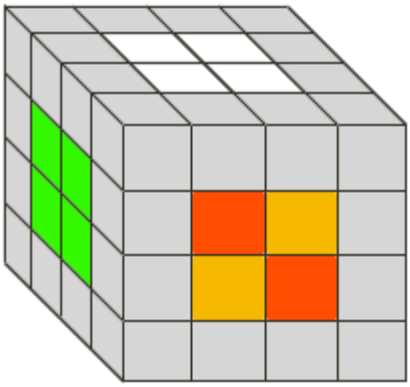
From here do the move **d ² F ' B ² d ²**. This will get all the pieces into solid rows of their color then solve the centers.

V. Your cube may have a checkered pattern on one face and solid rows on the other face. If it does turn the **F** and/or **B** faces to get your cube like the diagrams, (***NOTE*** Before doing this move check to make sure that your cube looks exactly like these diagrams. If it does not then turn **only** the back and/or front faces to get it into this position).

Front View



Back View

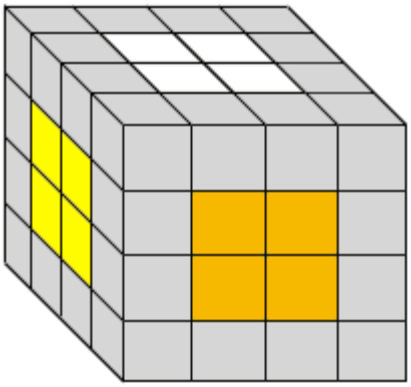


Now do the move **d ² B' d ² B d ² B ² d ²**. This will get the pieces into the position from number IV and then solve them the same way. If the move did not work then you might not have had the pieces in the exact same spot as the diagram. Try to find the step that most closely resembles your cube and try again.

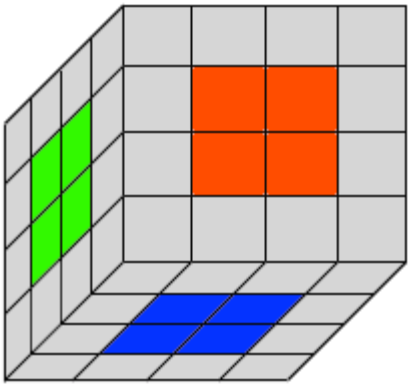
Overview

Now your cube should look like this,

Front-Top View

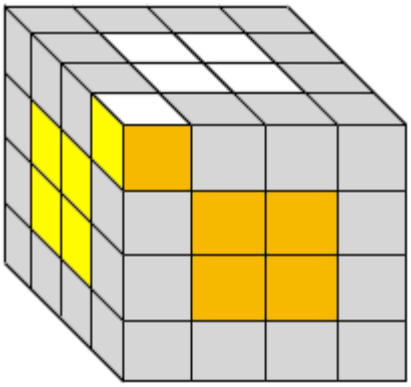


Back-Bottom View



Now you have solved your cube 1/3 of the way! Only 2 more steps to go! Before going on to the next step solve one corner with it's three centers and double check to make sure those three are on the right spot. Then, if you know your opposite colors, you can look at the opposite face of each of those front faces to make sure the centers are solved. If your centers are not lined up then you're going to have a very hard time in step 3.

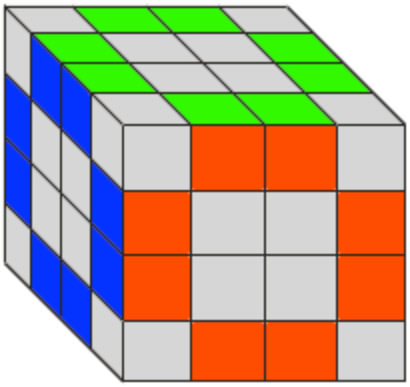
Don't forget to double check!



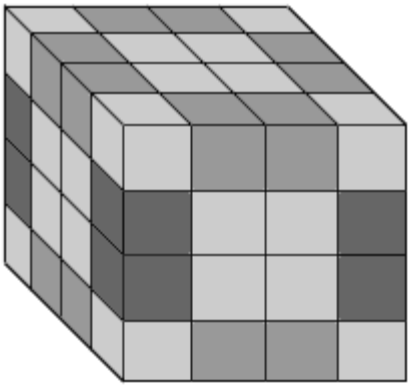
Part 1: In this step you're going to finish making your scrambled 4x4x4 cube into a scrambled 3x3x3 cube. In this step you're going put all the edge pieces next to their corresponding edge pieces and make one solid edge group for each pair. Once you've solved all the edge groups you'll be able to solve your cube as if it were a normal rubik's cube (3x3x3), except for a few situations which I will tell you how to fix in step 3. This step will not take long to explain as it is basically the same idea done repeatedly. First you have to know what parts of the cube are going to do what.

Edge Groups

This diagram shows where all the edge groups are on your cube once it is solved



Although it may seem like this step is going to complicated it actually the easiest one in my opinion. First of all here is how you should "view" the cube when you look at it.

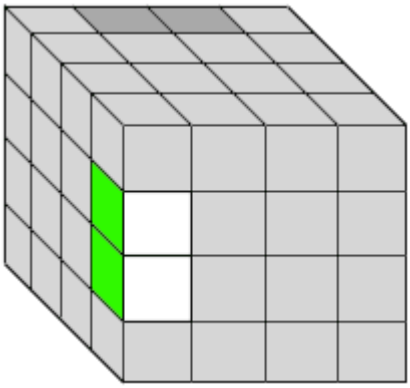


Any edge groups in the **U** or **D** faces you should think of as **stored**. In the first step when you **set** a center piece row in the **u** slice this is the same type thing for this step. Once you solve an edge group put it into the **U** or **D** face. Once an edge is in either the **U** or **D** face then make sure not to use it again. Once they are stored you can just leave them alone. The stored edges are represented by the medium dark gray in the diagram. All the dark gray edge groups are the working edges. These are the ones that you are going to do the actual work with. It is in this "middle section" of the **d** and **u** slices where you will solve the edge groups. Now on to the moves for solving the edges.

Part 2: Before we even start you need to store any solved edge groups that you have (put them in either the **D** or **U** faces). Now you need to solve all the other edge groups. Basically what you need to do is get two pieces, that are seperated, from the same edge group and put one in the **u** slice and one in the **d** slice and then solve them from there. The basic strategy for this step is to solve an edge group and store it in either the **U** or **D** face. Then just pick two more edge pieces, which belong in the same edge group, and solve them. Each time you solve an edge group and store it then just move on to another edge group. Once you've solved all the edges except for the four working edges you'll need to use another set of moves to solve the last four and then you'll be ready to move on to step 3.

1. To put a solved edge group into the **D** or **U** face there are two moves you need to know.

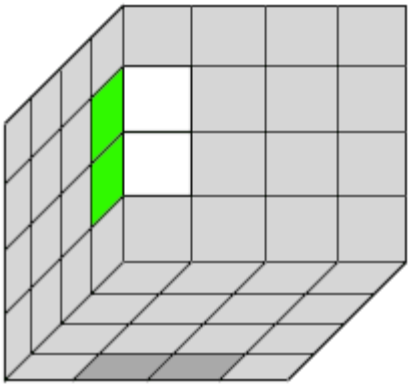
I. To put a solved edge into the **U** face hold your cube like this,



The darker gray edge pieces in this diagram and in the following diagrams represents an **unsolved** edge group

Make sure when doing this move that you have an **unsolved** edge group in the same position as the dark gray edge pieces in the diagram. Now from here do the move **L ' U ' L**. This will move the solved edge group to the **U** face and then replace it with an unsolved edge group.

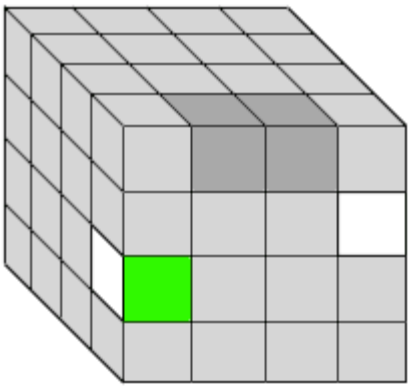
II. To move a solved edge group to the **D** face hold your cube like this,

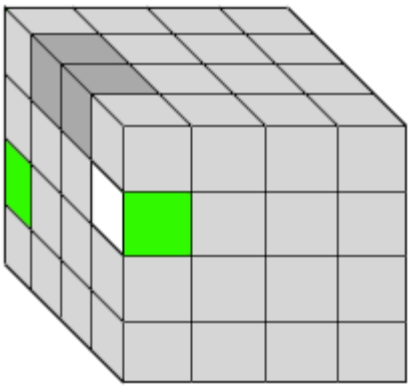


Make sure when doing this move that you have an **unsolved** edge group in the same position as the dark gray edge pieces in the diagram. Now from here do the move **L D L '**. This will move the solved edge group to the **D** face and then replace it with an unsolved edge group. The **d** slice is moved a lot during this step and at times your cube will not have the centers solved but in rows. Once you've solved all but the working edges will you solve the centers again. Just make sure to do the moves carefully or the rows will be split into their original pieces and then you have to solve the centers again.

2. Your cube may have two adjacent edges in the position in the diagrams. If they are switched (The edge piece on the **d** slice is on the right and the piece in the **u** slice is on the left) then just turn the **d** slice until your cube looks like the diagrams.

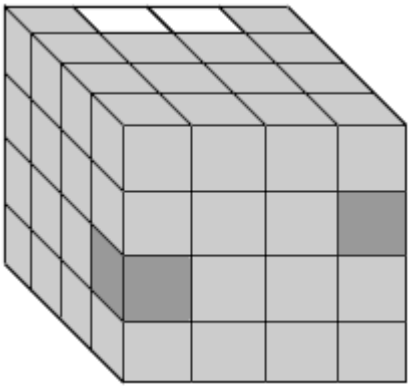
Front View Right Face View



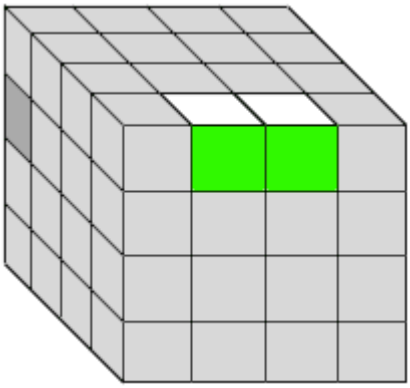


From here hold the cube as in the front view diagram. Now do the move **d R U ' R ' d '**. What this move does is to solve the edge group, then move it to the **U** face and replace it with an unsolved edge group. Finally the last moves restores the centers. Your cube should now look like this,

Front View



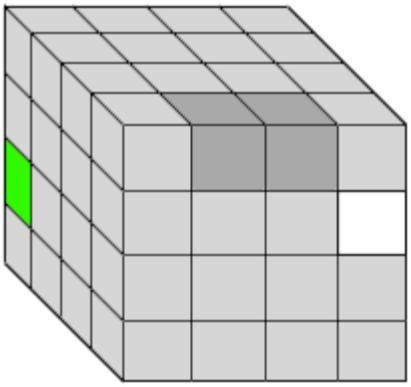
Back View



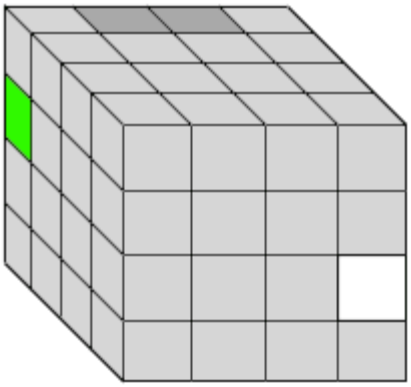
Now you're done with this edge group so don't even pay attention to it anymore and move on to the next group that needs to be solved.

3. If your cube has two edge pieces spread on the diagonals of the cube then get your cube to look like the diagrams,

Front View

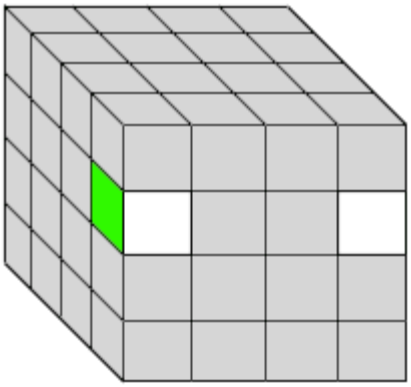


Back View

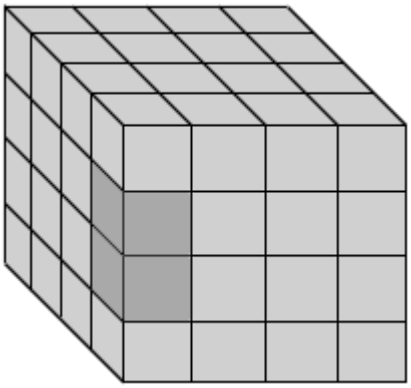


While holding the cube as in the front view diagram do the move **d ² R U ' R ' d ²**. This move does the same thing as the one above which is to first solve the edge group, then move it to the **U** face and replace it with an unsolved edge group. Then the last moves restores the centers.

4. Your cube may have two edge pieces in the same layer like this,



Your pieces may not look exactly like the diagram but if they are in the same layer, either the **d** or **u** face, then hold your cube so one of the edges is in the darker gray area on the diagram below (it will either be in the **u** or **d** face but make sure it is still in the position of the darker gray area),

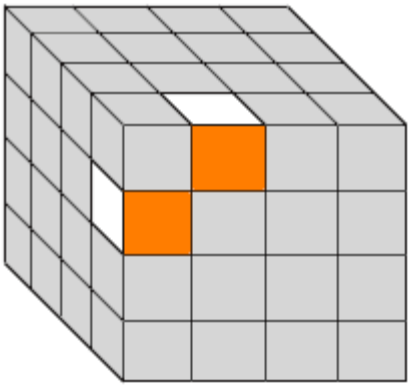


Now do the move **L ' F U ' L F '**. This move will flip the edge group so that now the edge piece should be in the other layer. If it was in the **d** slice it should now be in the **u** slice and vice versa. Now just do the move above that corresponds to your cube.

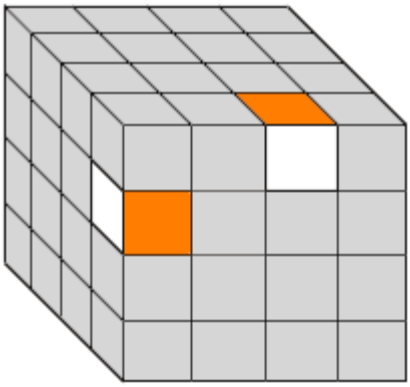
5. If one of the pieces you need is in the **U** or **D** face then you need to move it to the middle section so you can solve it. If your cube has an edge piece that you need but it is in the **D** face instead of the **U** face then turn your whole cube over so that it looks like one of the diagrams below. There are two positions your cube can be in right here,

I. In this diagram say you wanted to solve the red-white edge group. To get the red-white piece from the top to the working area do this move **R U ' R '**. This will get the edge piece out

of the **U** face and keep the two pieces seperated between the **u** and **d** slices. Now you can solve it normally.



II. In this diagram if I was solving the red-white piece and I did the move above it would end up putting the red-white piece from the **U** face in the **u** face. However the other red-white edge piece is already in the **u** face so you would have to flip one of the edges to be able to solve it. To save moves just do this move while holding the cube as in the diagram **F R ' F ' R**. This will put the piece in the way it needs to be to let you use the moves above to solve the edge group.



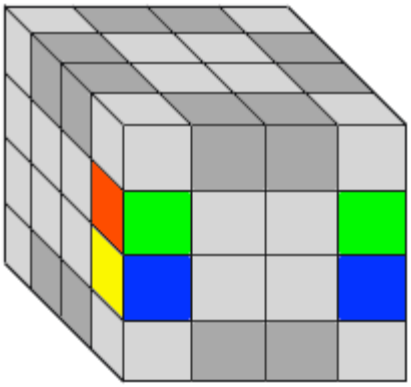
III. In the above two diagrams the edge piece that is **not** in the **U** face may be in the **d** face instead of the **u** face. If this should happen then use one of the two moves above to get the edge piece from the **U** face into the middle section. After a few times of doing these moves you'll learn which one works for which scenario. If for any reason when you move a piece from the top layer to the middle section and it is flipped from the way you need it to be then do the move from #4

6. Now you should have 8 edge groups solved and spread out in the **U** and **D** faces. These next moves will show you how to solve the working edges. The basic strategy is to solve two of the edges and then to use a certain move to solve the last two at the same time. Before you do any of these moves make sure that you've solved the centers back. Sometimes while solving the first 8 edge groups the centers will be split apart (but only in rows if you do it right). After you've solved the first 8 edge groups turn the **d** slice to fix them again. If for some reason the centers got mixed up and they aren't in rows anymore then you have to go back to step 1 and fix them all over again :-(

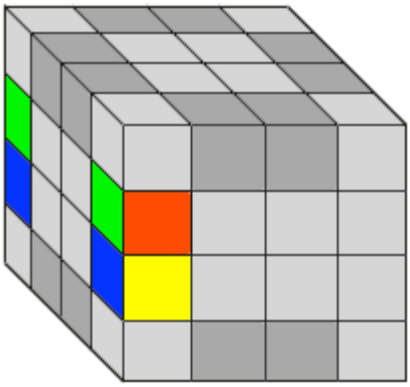
I. Your cube may have two edges in this position,

NOTE In the following diagrams the darker gray now symbolizes a **solved** edge group

Front View

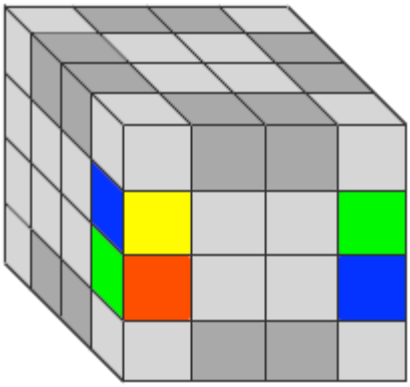


Right Face View



Now hold your cube as in the front view diagram and do the move **d R F ' U R ' F d '**. This move will move the blue-yellow piece from the edge group on the left over to the right, then the next few moves flips the edge group on the right, once it is flipped the last move will restore the centers and it will solve both edges at the same time. Now you only have the last two edge groups to solve so go to #7.

Your cube may be in the same position as above except one of the edges is flipped like this,

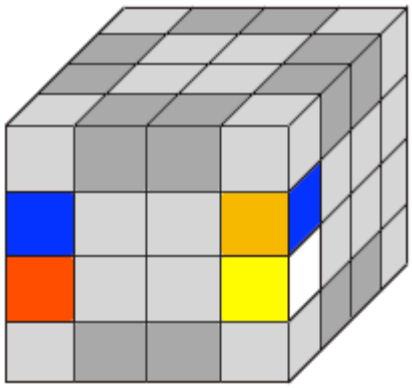


From here do the move from #4 to flip the edge on the left then solve it with the move above.

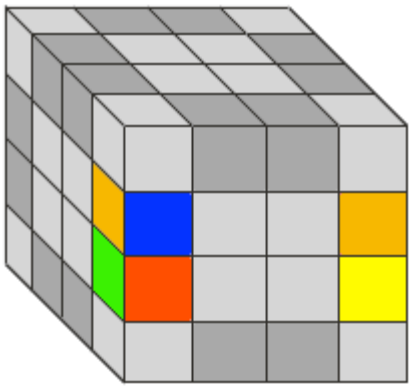
II. Your cube may already have one of the last four edge groups solved so that now you only have three scrambled edge groups. First you need to pick one of the edge groups, any one of them, and choose one of the pieces (for the move to solve the edge group both pieces need to be in the **u** face so it helps to choose a piece already in the **u** face so you don't have to flip it). In the diagram say I chose the orange-blue piece. Now you need to find the **other** edge of the same color and put it in the **u** slice as well (if it is in the **d** face just do the move from #4 to flip it). Once you've done that hold your cube as in the front/left view diagram and do the move
d ' L ' F U ' L F ' d. This will move the bottom piece from the right side edge group over to

the left and replace it with the other blue-orange piece. The last moves solves the edge groups and restores the centers.

Front/Right Face View

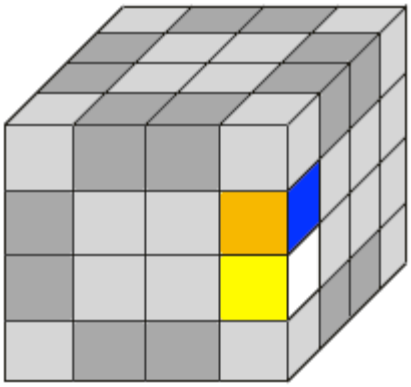


Front/Left Face View

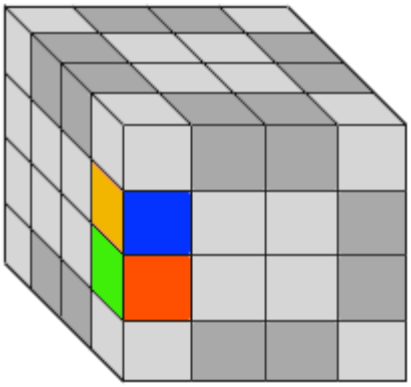


Your cube may have both pieces you chose on opposite diagonals of the cube like this,

Front View



Back View



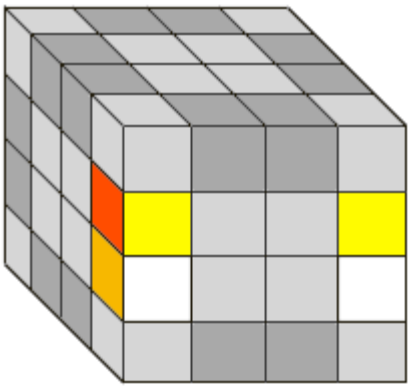
From here hold the cube as in the front view diagram and do the move **d ² R F ' U R ' F d ²**. Don't worry if you don't see the solved edge group it is on the other diagonal of the cube now. What this move does is put the piece on the front right edge group and move it next to the one on the diagonal edge of the cube to solve it. Now you're about finished, go to #7.

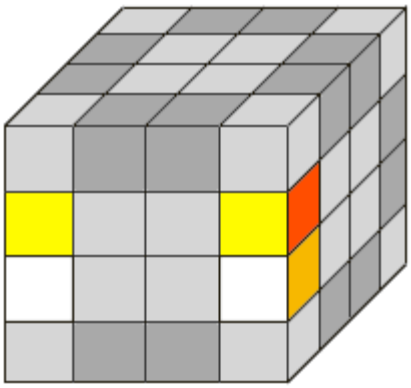
7. Now you only have one move left and you'll be done with step 2. Your cube will now look something like this with only two edge groups left to solve (*NOTE* the colors on your cube may be different as you may have solved different edge groups in the process of this step but the move will still work). Your last two edges will either be adjacent to each other or on opposite edges of the cube.

I. If your cube has the last two edge groups adjacent to each other then using the move from #4 get the last two edges to look like this

Front/Left View

Front/Right View

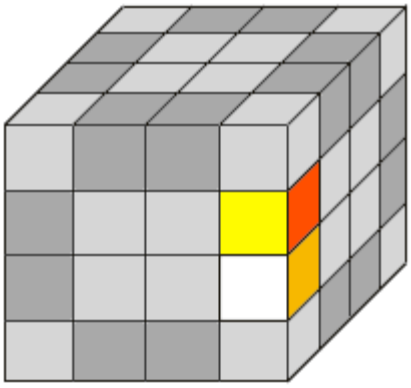




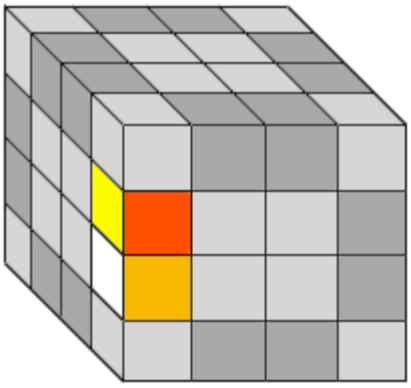
From here hold the cube as in the Front/Right View diagram and do the move **d R F ' U R ' F d '**. This will move the white orange piece to edge group on the right then flip that edge group. The last move restores the centers and solves the edge groups.

II. If your cube had the last two edges on the opposite diagonals of the cube then using the move from #4 get the last two edges to look like this

Front View



Back View



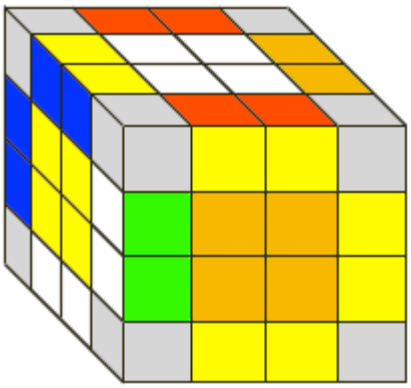
From here hold the cube as in the Front view diagram and do the move **d² R F ' U R ' F d²**. This will move the white orange piece to the other edge group, then flip that edge group, the last move restores the centers and solves the edge groups.

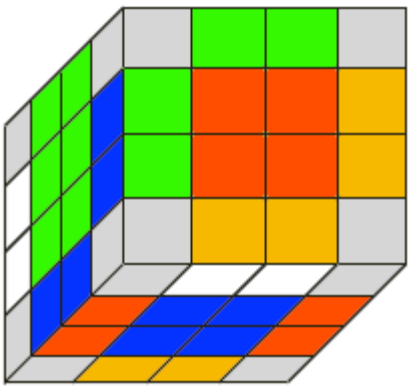
Overview

Your cube should now look something like this,

Front-Top View

Back-Bottom View

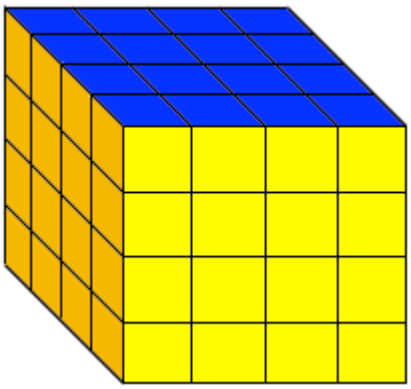




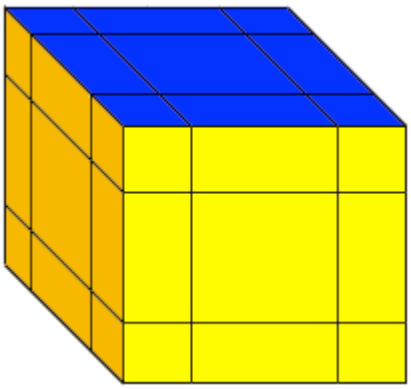
Your cube is now a scrambled 3x3x3 cube. There are a couple of positions that can't occur on a normal 3x3x3 that I will go over with in step 3. You've made it this far, only one more step to go!

Part 1: In this step you are finally going to solve your cube. What you're going to do is solve your cube as if it were a normal 3x3x3 Rubik's Cube. First of all if you still don't see how your cube is a 3x3x3 then think of it like this

Normal 4x4x4



4x4x4 as a 3x3x3 Cube

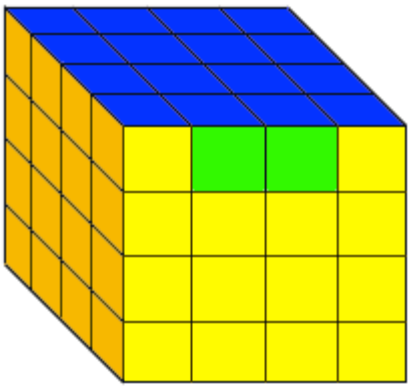


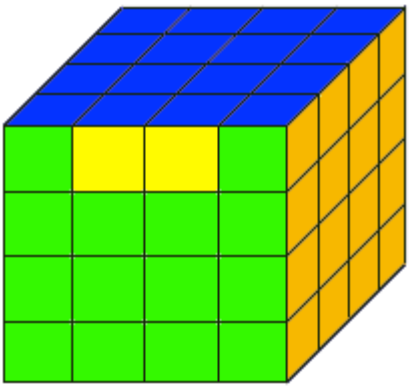
All you have to do is treat the center groups as one center piece and treat each edge piece group as one edge piece and you will be able to solve your cube the same way as a normal Rubik's Cube. There are two positions that can come up though that you will not be able to solve the same way. There are three things total that can happen in this step. Either your cube will solve exactly like a rubik's cube with no problems, two edges will be switched, or one edge will be flipped and the rest of the cube solved.

1. Your cube may be otherwise solved but have two edges switched. When that happens hold your cube like this,

Front View

Back View

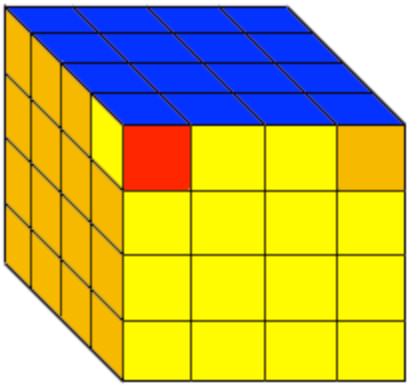


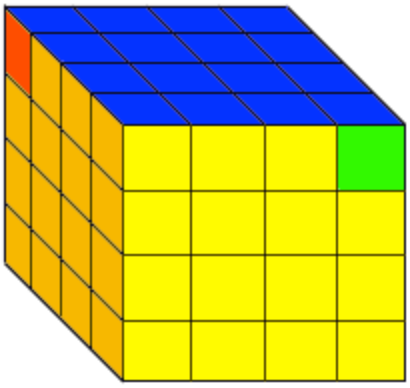


Hold the cube as in the front view diagram and do the move **r ² U ² r ² U ² u ² r ² u ²**. This move will solve these two edges in much the same way the move from Step 1 will solve two center rows that are switched.

I. There is another position that is exactly the same as the one above, where two edge pieces are switched only in this case the pieces are just arranged differently. Your cube may be otherwise solved except two corners are switched. Here are a few examples,

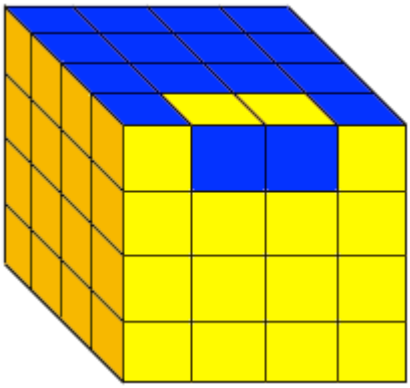
Adjacent corners switched Opposite diagonal corners switched





This is the same position as the one with two edges switched except now the edges are solved and that messes up the corners. Since the position is essentially the same you would fix it in the same way. Hold the cube so the corners that need to be switched are **both** in the **U** face and then do the same move as above which is, **r ² U ² r ² U ² u ² r ² u ²**. Now the top face will be semi-scrambled but it is solveable now. Just go back again and solve the cube the same way you would a 3x3x3.

2. If your cube still does not solve then another position it can be in is to have the whole cube solved except for one edge is flipped like this,



Now hold your cube as in the diagram and do the move
r ² B ² U ² l U ² r ' U ² r U ² F ² r F ² l ' B ² r ²

Remember that this move only corrects the orientation of the one incorrect edge group. The last layer of the cube may still be semi-scrambled, and you may still need to finish applying your 3x3x3 solution to solve the cube.

Disclaimer: I often receive e-mails saying that this algorithm is incorrect and that it leaves people's cubes scrambled. I can assure you the move is correctly written. If after applying this algorithm your cube is completely scrambled try to undo what you did. If you are unable to undo what you did, then go back to step 1 and start over. If this move leaves your cube scrambled please visit the notation page and make sure you are reading the notation correctly.

If you're interested in speed solving then you can use the following move which turns more faces but it's much easier to do quickly. This move will mess up both the orientation of some of the corner pieces in the **U** layer as well as the positions of some of the edge groups. Therefore if you plan on using the speed solve move I strongly recommend you use it at a point in your solution where it doesn't matter that the pieces will be scrambled around a little bit in the **U** layer. Your edge groups and centers will stay together, but the edge groups in the top layer will move around a little bit. For example I use this move right after I have finished solving the first two layers (I use a layers method as my solution to the 3x3x3) when there is an odd number of edges showing the correct color up. If you use this speed solve move, be aware that it messes up the **U** layer a little bit.

Ok, so here's the move. Each group of moves in parenthesis can be done at the same time.
(R ² r ²) B ² U ² (L l) U ² (R' r ') U ² (R r) U ² F ² (R r) F ² (L ' l ') B ² (R ² r ²).

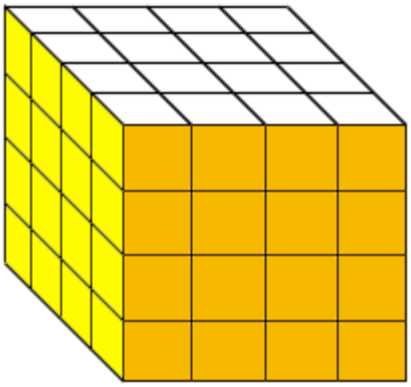
The first move listed in this section will flip only the two edge pieces in UF and leave the rest of your cube solved. The second one is for if you want to do the move quickly, but beware that it messes up the **U** layer a little bit.

3. These two extra cases occur at exactly a fifty-fifty chance for each one. Also don't be surprised if your cube has a combination of both of these extra cases, with two edges switched **and** one of them is flipped and the rest of the cube is normal.

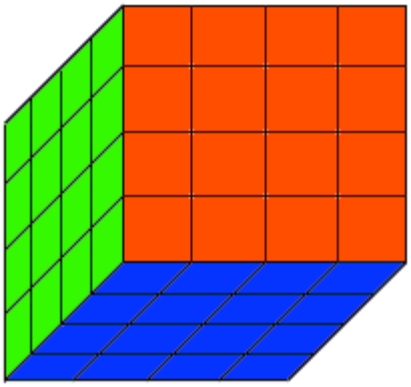
Overview

Now your cube should look like this,

Front-Top View



Back-Bottom View



Congratulations! You have now solved your Rubik's Revenge! After doing all the moves a few times you'll get to the point where they will all make sense and you will be able to solve the Revenge every time you pick it up. Now that you can solve the Revenge if you get into speed solving then you can submit your times on my Unofficial World Records Page.

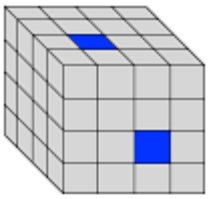
If you found any problems with my solution or any confusing explanations then please let me know so I can clear them up.

Step 1

Solving the Centers

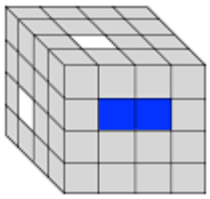
1.

Solve a row and set it in the **u** layer l F ²



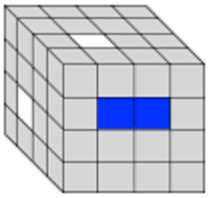
2.

Solve a white row and set it on the **B** face f ' d ' B ²

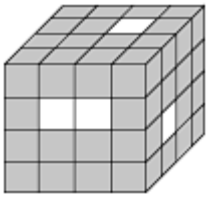


3.

Completely solve the white center (situation 1) f ' d '



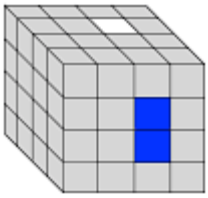
Front



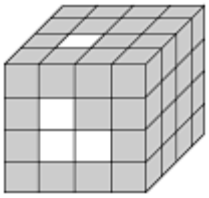
Back

4.

Completely solve the white center (situation 2) (F) l U ' l '



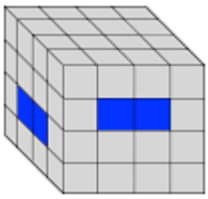
Front



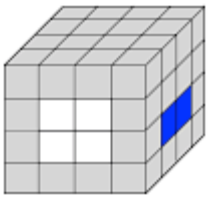
Back

5.

Finish the blue center (situation 1) L ² d ' L ² d



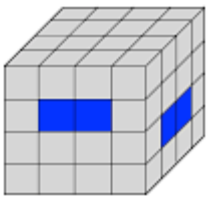
Front



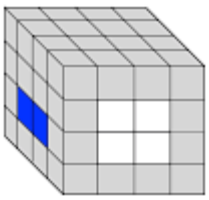
Back

6.

Finish the blue center (situation 1 reflected) R ² d R ² d '



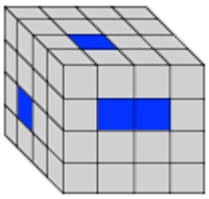
Front



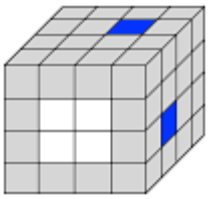
Back

7.

Finish the blue center (situation 2) f ' L ² d ' L ² d



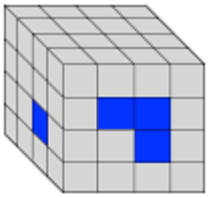
Front

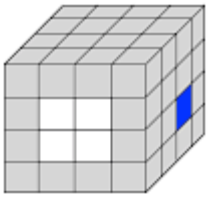


Back

8.

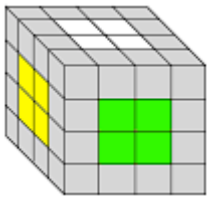
Finish the blue center (situation 3) F d F ' d '





Front Back

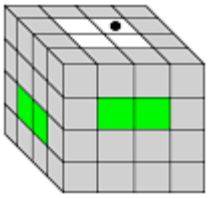
9.

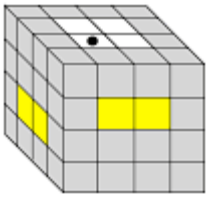


Fix two wrongly placed centers d ' B ² d ² L ² d '

10.

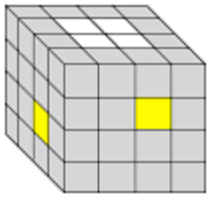
Solve 2nd pair of centers (4 rows) d





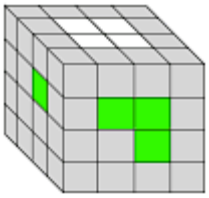
Front Back

11.



Solve 2nd pair of centers (move 1) d F ' d '

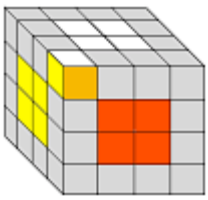
12.

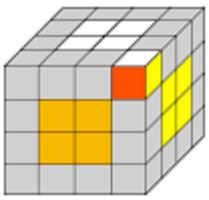


Solve 2nd pair of centers (move 2) d ' L d

13.

Switch the front and back face centers d ² r ² d ² r ² l ² d ² l ² d ²

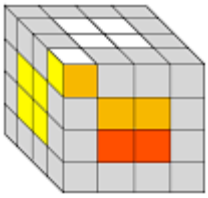


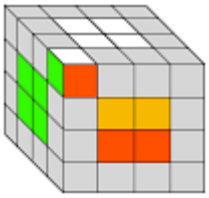


Front Back

14.

Solve the last two centers (4 rows) d ² B ² d ²

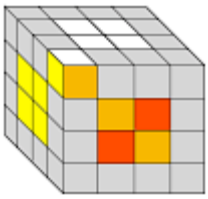


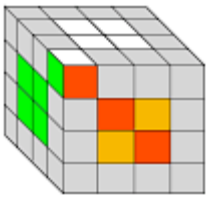


Front Back

15.

Solve the last 2 centers (checkerd both faces) d ² F B d ²

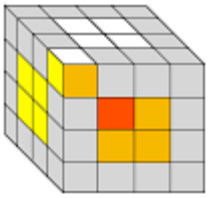


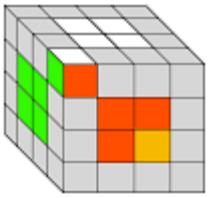


Front Back

16.

Solve last two centers: 3 pieces to 1 piece on each face (situation 1) d ² F ' d ²

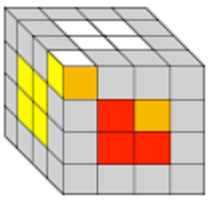


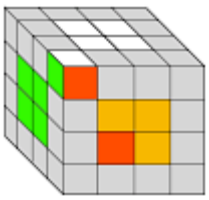


Front Back

17.

Solve last two centers: 3 pieces to 1 piece on each face (situation 2) d ² F ' B ² d ²

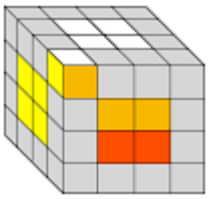


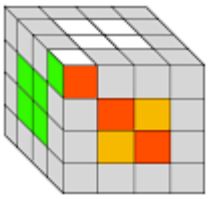


Front Back

18.

Solve last 2 centers (checkered and rows) d ² B d ² B F ' d ² B ' d ²

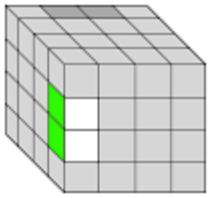




Step 2

Solving the Edges

1.



Move a solved edge into the **U** face L ' U ' L

Go to this move

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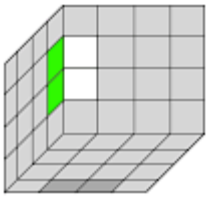
2.



Move a solved edge into the **D** face L D L '

Go to this move

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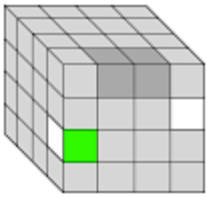
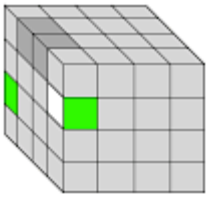
3.

Solve two edge pieces on adjacent edges d R U ' R ' d '



Front



Right

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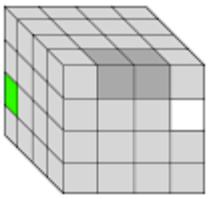
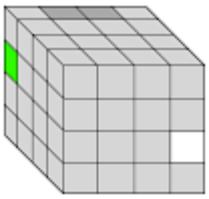
4.

Solve two edge pieces on diagonal edges d ² R U ' R ' d ²



Front



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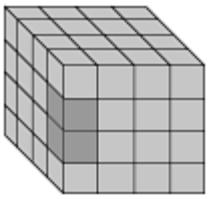
5.

Flip a working edge L ' F U ' L



F '

Go to this move

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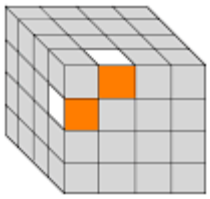
6.



Bring an edge piece into the working area (move 1) R U ' R '

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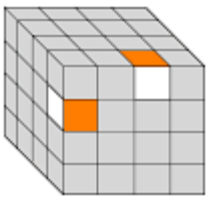
7.



Bring an edge piece into the working area (move 2) F R ' F ' R

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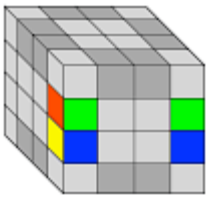
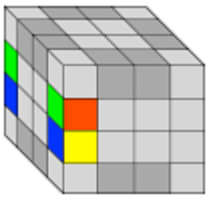
8.

Solve the first 2 of 4 unsolved working edges d R F ' U R ' F d '



Front



Right

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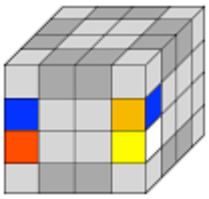
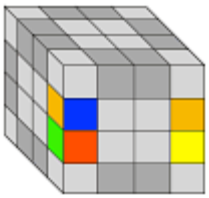
9.

Solve 1 of 3 unsolved working edges (move 1) d ' L ' F U ' L F ' d



Front/Right



Front/Left

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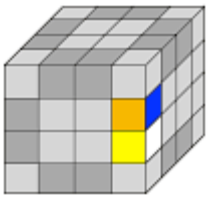
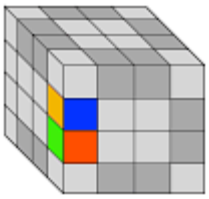
10.

Solve 1 of 3 unsolved working edges (move 2) d ² R F ' U R ' F d ²



Front



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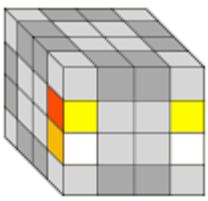
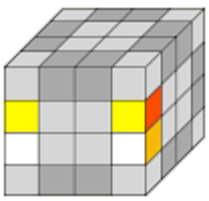
11.

Solve the last two working edges (move 1) d R F ' U R ' F d '





Front/Left Front/Right

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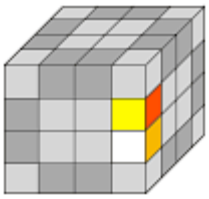
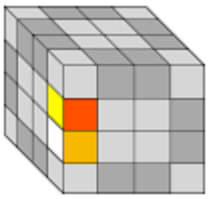
12.

Solve the last two working edges (move 2) d ² R F ' U R ' F d ²



Front



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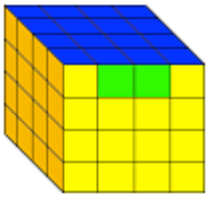
Step 3

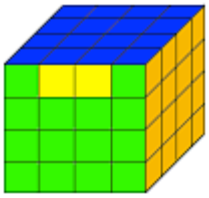
Finishing the cube

1.

Switch 2 edges r ² U ² r ² U ² u ² r ² u ²



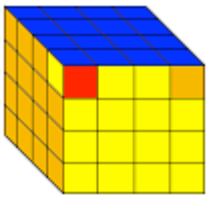
Front



Back

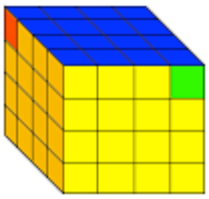
2.

2 corners switched (switch edges) r ² U ² r ² U ² u ² r ² u ²



Adjacent

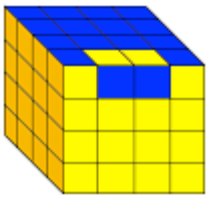
OR



Diagonal

3.

Flip 1 edge r ² B ² U ² l U ² r ' U ² r



U ² F ² r F ² l ' B ² r ²