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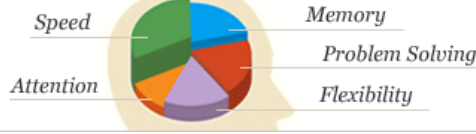
Rubik's Cube Solution

This Rubik's Cube solution is very easy to learn. Anyone can do it! In about 30 minutes with this guide, you'll have a cube that looks like this:
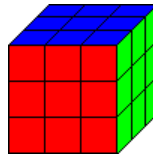
Throughout this guide, I'll be using some terminology that you may not be familiar with, this first page will familarize you with this terminology.

So lets Get Started .

If you've already solved the cube, make some Patterns or learn to take it apart.

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Terms You Need to Know

Here you can see that each side of the cube has a different name:
Front (F), Back (B), Right (R), Left (L), Up (U), Down (D).
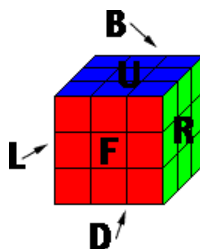
These sides are named because of their orientation to you, not because of their color. If you turn the cube upside down, the UP becomes DOWN, and the DOWN becomes UP, so the sides don't retain their names. DOWN is whatever side is pointing to your feet, and UP is always pointing up.

There are only 3 types of turns that are useful: clockwise(), counterclockwise('), and half turns("). The symbols in parenthesis will be what I use to differentiate between different types of turns.

For example:

R would mean to make a CLOCKWISE quarter turn of the RIGHT face:
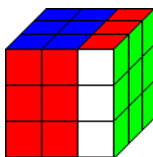
F' would mean to make a COUNTERCLOCKWISE quarter turn of the FRONT face:
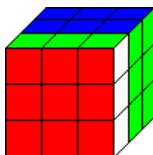
U" would mean to make a HALF TURN of the upper face:
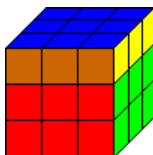
The color grey in my diagrams will represent sides that you do NOT need to worry about for this step. The color purple will represent the position where the current move will place the current piece. The other colors are just normal.

Onward to Step 1

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Step 1

The first step is to get the cube looking like this:
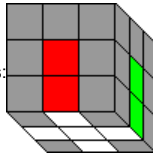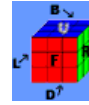
First pick a color to be on the DOWN face. This will remain down for the entire process. In my diagrams, I have chosen the color white, but you are welcome to pick a different color. What you need to do is get the 4 bottom edge pieces matched up with the center of the DOWN face, as well as with the other center pieces like in the above picture. In other words get the cube looking like the picture above, not like this:
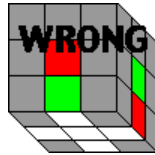
WRONG

If you are lucky, one of the edge pieces is already in the correct place. All you have to do is turn the DOWN face (**D**) until the colors on the edge piece match the center piece on the bottom and the center piece on the side.

Now, there are 4 possible wrong places where an edge can be. It can be in the top layer in two positions, in the middle layer, or in the bottom layer. If its in the top, rotate the UP face a few times until the side colors match like in the figure. Remember white is the bottom color.
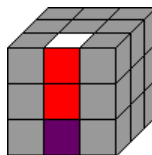
If it is like the left diagram, then you will need to do this move: **F"** (That means turn the front face a half turn). If you dont understand this terminology, make sure you read my Terms to know page.

If it is like the right picture then you need to do this move: **U'R'FR** (Turn the UP face counterclockwise, then the RIGHT face counterclockwise, then the FRONT face clockwise, and then the RIGHT face clockwise)
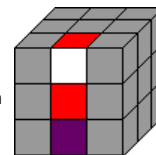
Notice that the piece in the top layer moved into the purple spot.

Now, lets say that the edge piece is in the middle layer:
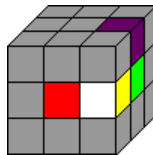
All you have to do is **F'U'F** to get the piece in the UP layer. Now, its in the UP layer and you just learned how to do that.
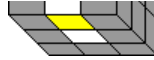
What if the edge piece is in the bottom layer but in the wrong place:

Legend

R = Clockwise turn of right face

R' = Counterclockwise turn of right face
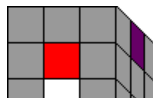
R" = Half turn of right face

Here, do the turns **F"U'F"** and then it is in the UP layer and you can do that already.

That wasn't so hard was it?

[Onward to Step 2](#) →

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Step 2

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Step 2

The second step is to get the cube looking like this:
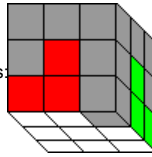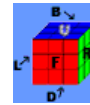
You are going to now be solving the DOWN corners. When doing this, there are only four different places for the corner to be. It can be in the top layer in 3 different rotations, or it can be in the bottom layer. If the corner is in the top layer, find the DOWN color, and notice which side of the cube it is on. You might have to turn the UP face a few times to get the 3 colors on the corner to match with the 3 colors on the DOWN, FRONT, and RIGHT faces. If this is confusing, look at the figures (Remember that white is the down color). So, go ahead and decide which picture applys, and use the sequence of turns in the caption.

F'U'F   RUR'   RU'R'U''RUR'
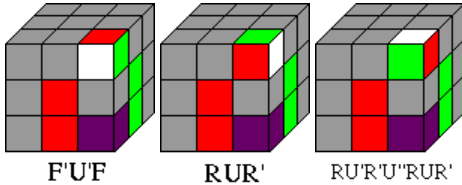
Now, you are probably wondering what to do if the piece you want is in the bottom layer, but twisted the wrong way, or in the wrong place. Well, all you have to do is pick a wrong piece in the UP layer, and use one of the sequences above to place the wrong piece where the piece you want is currently located. Now the piece you want is in the top layer and you already know how to do that.

Only solve three of the corners. You can solve the fourth if you want, but the next step will mess it up, so don't waste your time. We will call this unsolved corner the "working corner," and donate it by the letters "WC."

Getting the hang of it?

Onward to Step 3

Legend

R = Clockwise turn of right face

R' = Counterclockwise turn of right face

R'' = Half turn of right face

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Step 3

The third step is to get the cube looking like this:
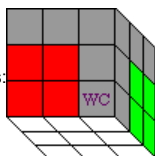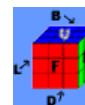
Legend

R = Clockwise turn of right face

R' = Counterclockwise turn of right face

R'' = Half turn of right face

For this step it is important that you know what the "working corner" is. If you don't know, then go back to the previous step

Now, what you want to do is solve the middle edges. You will probably be lucky and have one that is already solved, but don't worry if you don't because there are only 3 ways for it to be in the wrong place. Two of the ways are if it is in the UP layer.

First find an edge piece in the UP layer that belongs in the middle layer. Now, find where it should go in the middle layer, and rotate the whole cube so that this middle layer spot is on your front right. Now, rotate the DOWN face until the working corner is exactly under the middle edge piece which we are going to fix. Now rotate the UP layer until the piece that belongs in the middle layer matches the color of a middle center piece. Confused? Try rotating the top, middle and bottom layers of the cube until it looks like one of these pictures. Now do the appropriate moves.

U'F'UF   URU'R'
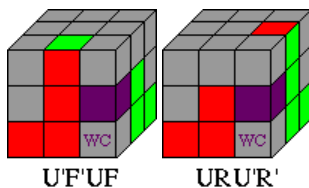
What happens if there are no pieces in the UP layer that need to go in the middle layer you ask? Well, this means that all of the middle pieces are in the middle, but in the wrong places or twisted the wrong way:

So, just like we did in step 2 with the corners, you need to put the wrong piece in one of these places in order to get this piece in the top. Once the correct piece has been moved to the UP layer we can solve it with one of the above sequences of moves. Remember to place the working corner directly below the middle edge where you are moving the pieces.

Remember only to solve three of the edges The unsolved edge will be called the "working edge" and will be donated by "WE". The next step will fix the working edge and corner.

Still getting the hang of it?

Onward to Step 4

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Step 4

Legend

R = Clockwise turn of right face

R' = Counterclockwise turn of right face
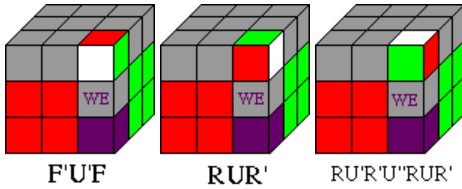
R'' = Half turn of right face

The fourth step is to get the cube looking like this:
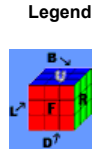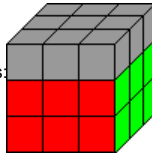
Now you have the bottom 2 layers solved except for the working corner, and the working edge. Rotate the cube until the working corner is on the bottom right facing you as in the diagrams below. You want to fix the working corner. This move is exactly like the move we did in Step 2. Here are the three posible moves.

F'U'F   RUR'   RU'R'U''RUR'

Just like in Step 2, if the corner piece is in the right place, but twisted the wrong way, simply place an incorrect piece in its spot using one of the sequences above, and then use another one of the sequences again to solve the corner. This technique of placing an incorrect piece in a spot in order move the correct piece to a better position should be familiar by now.

Now your cube looks like this:
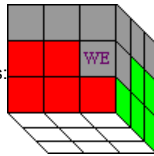
To solve the working edge there are only a few things to do. Rotate the UP layer until it looks like one of these pictures and then do the move.

URU'R'U'F'UF   U'F'UFURU'R'
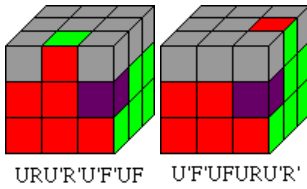
Almost done!

Onward to Step 5

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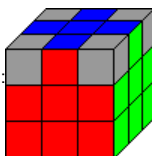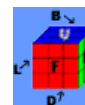
Step 5

The fifth step is to get the cube looking like this:

Legend

R = Clockwise turn of right face

R' = Counterclockwise turn of right face

R'' = Half turn of right face

Now you have the entire cube solved except for the top layer. Good work! That was the easy part. Here comes the hard stuff. The last 4 edges are going to be in the upper layer but probably not twisted the right way, and probably not in the right place. The first thing that you want to do is get all the edges twisted the right way. In other words, you want it to look like this:
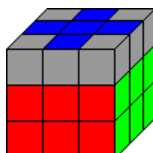
Luckily, there are only 3 orientations you need to worry about. Either none of the edges are flipped the right way, or there are two flipped the right way. In the later case, the correct edges could be adjacent or opposite each other. Find out which it is, position the cube correctly, and then do the proper moves.
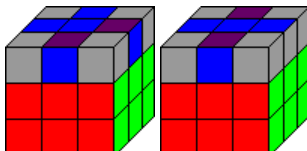
FURUR'F'   FRUR'U'F'

For the case when all 4 edges are flipped the wrong way, just pick one of the above pictures and do it. That gets it half way there. Now twist the top and apply that move again to finish it up.
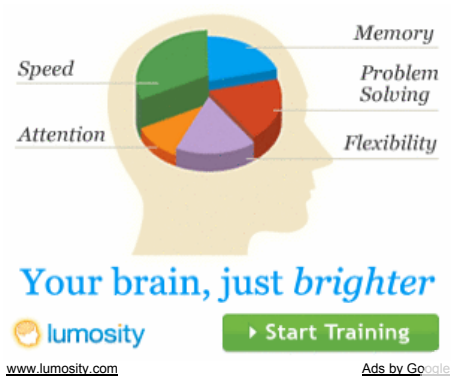
Now, the last 4 edges will be turned the right way, but they will be in the wrong places. You will now have to preform a few swaps. There are 4 different swapping moves, so you will have to figure out which one you need to use. Here are the pictures and moves that you might need to make.
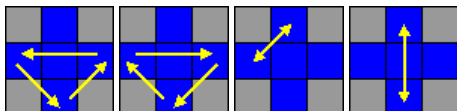
R'U''RUR'UR   R'U'R'U'R'UR   UR'U''RUR   R'U''RUR'UR U'
                                                    R'U''RUR'UR

Two more steps!

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Step 6

The sixth step is to get the 4 last corners in the right place, but not necessarily rotated correctly. For example:
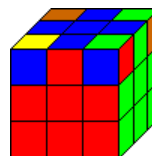
Legend
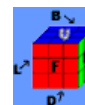
R = Clockwise turn of right face

R' = Counterclockwise turn of right face

R" = Half turn of right face

Notice that the corners are not twisted the right way, just in the right spot. Twisting is the next step. There are 4 different swaping moves. You are going to have to figure out which ones to do. You will probably have to use several of these moves. But if you choose the right ones 2 sequences will probably do it.

ULU'RUL'U'R   R'ULU'RUL'U'   FRUR'U'RU   R'L'DR'L'U"
                                R'U'RUR'U'F   R'L'DR'L'U"

One more step, and your done!

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Step 7

The last step is to get the cube looking like this:
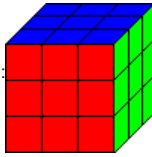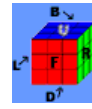
This is probably the most complicated step. It will look like you are totally screwing up the cube, but it will work out right in the end. There are only 2 sequences for this step. One to rotate a corner clockwise and one to rotate it counterclockwise.

This becomes a little tricky, because you need to do these following moves in pairs. First you rotate some corner piece; then rotate another corner in the OPPOSITE direction. Don't be scared if the cube looks messed up after one of the sequences. If you perform the other sequence without moving the cube then it will undo itself. Between sequences, just turn the UP face until a corner which needs rotation in the other direction is in the upper right hand corner.
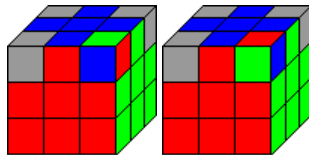
FD"F'R'D"R   R'D"RFD"F'

For example, here is how to solve a cube from this particular position: (parentheses are used for clarification only):
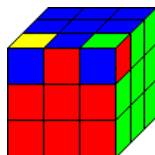
(FD"F'R'D"R) U'
(R'D"RFD"F') U

If it doesn't look like there is a corner that needs to be twisted the other way, just twist anything. Eventually you'll get it.

Thats it. You are done!

If you have a cube with writing on the middle pieces, then check out Step 8 to untwist them.

Legend

R = Clockwise turn of right face

R' = Counterclockwise turn of right face

R" = Half turn of right face

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Step 8

Ok, so you have one of those wierd cubes with designs or words on the center pieces, and you want them all facing the right way. You wern't satisfied with solving just the colors; you want to be perfect. Ok!

Note: On most cubes the orientation of the center pieces dont matter because you can't tell. You can, however, solve the cube and then draw arrows on all the middles pointing in the same direction. Now, the object is to solve the cube AND get the arrows pointing the same direction again. Here is how to untwist the middle pieces.

By now you probably know how to do moves from my diagrams, so here they are. If you need to do a move that isn't in these pictures then just do one of the first two moves and then see what your cube looks like.
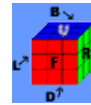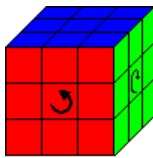
These two moves rotates two center pieces a quarter turn in opposite directions.

F B'U D'R L F'
R L U D F B R
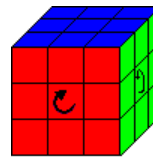
R B'F D'U L R
F L R D U B F'

This move rotates one center piece half a turn:
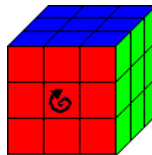
R L F R L F"
R L F R L F"

There, now your really done!

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