

# **THE RUBIK'S CUBE COOKBOOK**

**by Daniel Vimont**

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# INTRODUCTION: GETTING READY

It is VERY IMPORTANT for you to read and understand this INTRODUCTION, because you can only use the rest of this booklet to SOLVE THE CUBE if you know the answer to TWO BASIC questions:

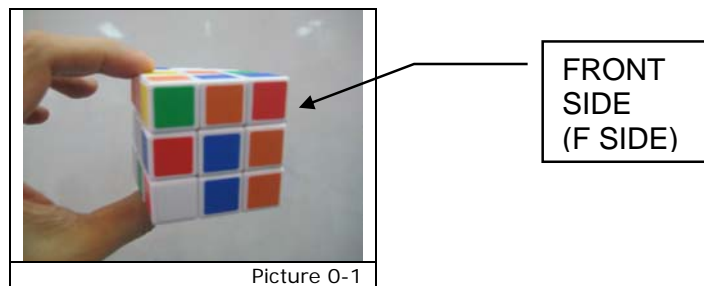
- ***What are the parts of a Rubik's cube?***
- ***What are patterns\*, and how do they work?***

## I. What are the parts of a Rubik's Cube?

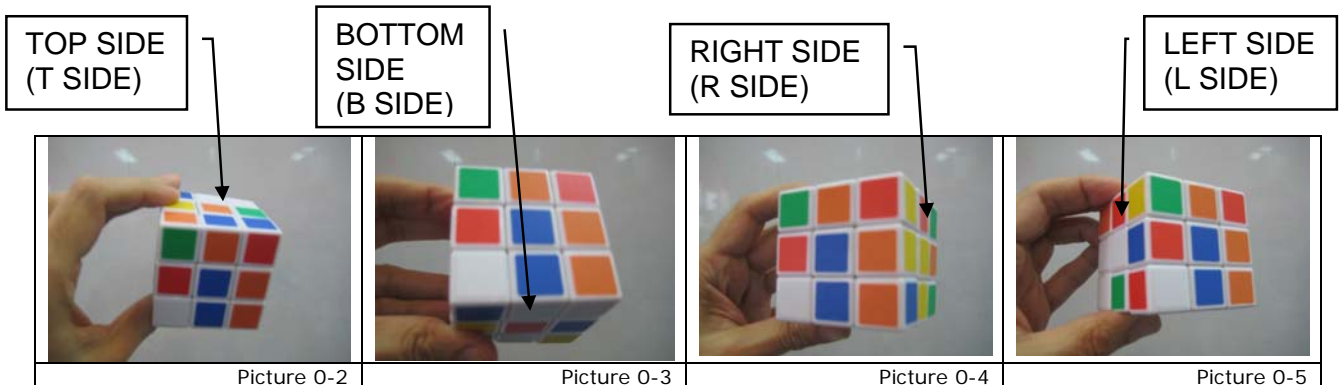
### THE SIDES

A Rubik's Cube is, indeed, a CUBE. Being a cube, it has 6 sides.

As you hold a Rubik's Cube in front of you, you should have one side facing you. We call this side the **FRONT SIDE**. Sometimes we simply call it the F SIDE, for short.



We can also see 4 other sides, the **TOP SIDE** (T SIDE), **BOTTOM SIDE** (B SIDE), **RIGHT SIDE** (R SIDE) and **LEFT SIDE** (L SIDE).



Of course, we cannot see the BACK SIDE, because it is facing away from us. We do not have a short name for the Back Side, because we almost never talk about it.

\* Many Rubik's Cube players use the fancy word "algorithm" instead of "pattern", but both words mean almost the same thing. In this booklet, we will use the word "pattern".

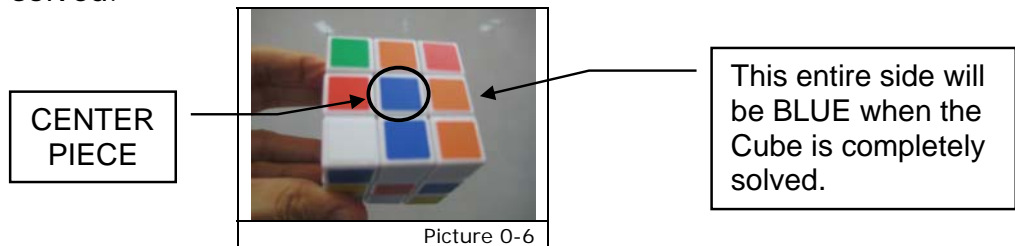
## THE PIECES

The Rubik's Cube is made up of 26 **pieces**. All pieces have between 1 and 3 colored **tiles** on them. On most Rubik's Cubes, these tiles are green, blue, red, white, orange and yellow.

The 3 types of pieces are as follows:

**Center piece**: a piece in the center of a side.

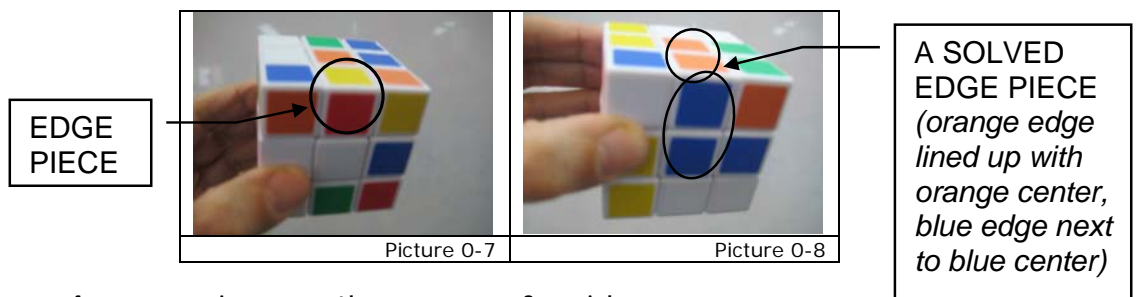
*Center pieces* have one tile (for example, a blue tile). They do **NOT** move. (Try out your Cube to see this for yourself.) Because it does not move, a *center piece* tells us the color that the entire side will be when the Rubik's Cube is solved.



**Edge piece**: a piece in the middle of the edge of a side.

*Edge pieces* have 2 tiles. Turn the sides of your Cube to see how the edge pieces move.

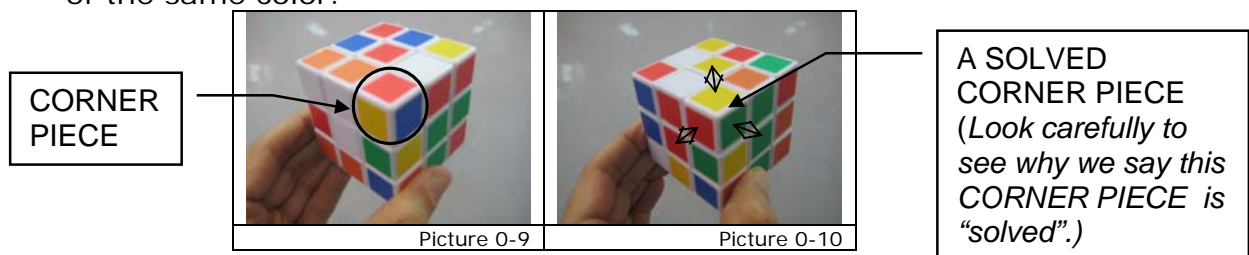
Solving an Edge Piece: An Edge Piece is "solved" when it is placed on the Cube so that each of its tiles is directly next to the Center Piece of the same color.



**Corner piece**: a piece on the corner of a side.

*Corner pieces* have 3 tiles. Turn the sides of your Cube to see how the corner pieces move.

Solving a Corner Piece: A Corner Piece is "solved" when it is placed on the Cube so that each of its three tiles is touching the corner of the Center Piece of the same color.



### **Test your understanding!!**

Holding your Cube in front of you...

... touch the corner piece in the top right corner of the FRONT SIDE (the F SIDE);

... touch the center piece on the RIGHT SIDE (the R SIDE);

... touch the center piece on the BOTTOM SIDE (the B SIDE); and

... touch the top edge piece on the LEFT SIDE (the L SIDE)!!

## II. **What are PATTERNS, and how do they work?**

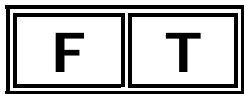
A **pattern** is a series of **moves** that you make to solve a part of the cube **without messing up the parts that you have already solved**.

The winners of Rubik's Cube contests know these patterns extremely well, and they know how to use them in the right way to solve the cube very, **very** quickly.

A good pattern lets you solve part of the Cube without messing up another part of the Cube that you have already solved!!!

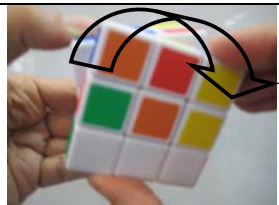
### **Pattern example 1: Clockwise moves**

In this booklet, a pattern will be shown like this example:



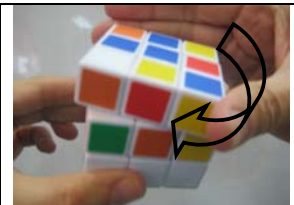
Each box above shows a move that you should make, so this pattern has 2 **moves**.

The **F** tells you to move the FRONT SIDE in a **clockwise direction**.



Picture 0-11

The **T** tells you to move the TOP SIDE in a **clockwise direction**.



Picture 0-12

### ***Now you try it!!***

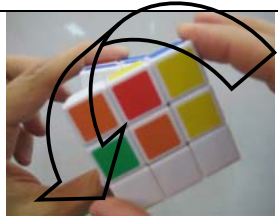
Hold your Cube in front of you, and do the 2 moves (F and T) in the pattern shown above. Ask for help if you need it!

## Pattern example 2: Counter-clockwise moves

The following 2-move pattern is different from the first one, because it has a “prime” symbol after each letter. When we see F’, we say “F prime”. When we see T’, we say “T prime”. The “prime” symbol tells you to move the side in a *counter-clockwise* direction.

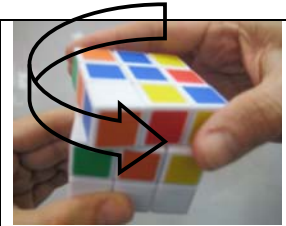
**F’** **T’**

**F’** (F prime) tells you to move the FRONT SIDE in a counter-clockwise direction.



Picture 0-13

**T’** (T prime) tells you to move the TOP SIDE in a counter-clockwise direction.



Picture 0-14

### ***Now you try it!!***

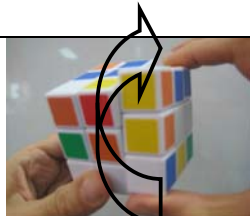
Hold your Cube in front of you, and do the 2 moves (**F’**, **T’**) in the pattern shown above. Again, please ask for help if you need it!

## Pattern example 3: Right and Left moves

Look at the following 4-move pattern:

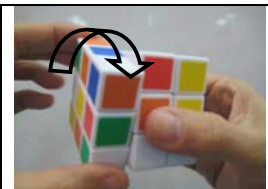
**R** **L** **R’** **L’**

**R** tells you to move the RIGHT SIDE in a clockwise direction. *Hold your Cube so that your RIGHT SIDE is slightly facing you, and turn it clockwise.*



Picture 0-15

**L** tells you to move the LEFT SIDE in a clockwise direction. *Hold your Cube so that your LEFT SIDE is slightly facing you, and turn it clockwise.*



Picture 0-16

**R’** (R prime) tells you to move the RIGHT SIDE in a counter-clockwise direction. *Hold your Cube so that your RIGHT SIDE is slightly facing you, and turn it counter-clockwise.*



Picture 0-17

**L’** (L prime) tells you to move the LEFT SIDE in a counter-clockwise direction. *Hold your Cube so that your LEFT SIDE is slightly facing you, and turn it counter-clockwise.*



Picture 0-18

***Practice some more!!***

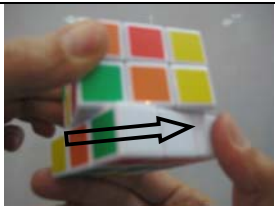
Hold your Cube in front of you, and do the above 4-move pattern (**R, L, R', L'**) a few times to make sure you are moving the sides correctly and easily. Again, please ask for help if you need it!

**Pattern example 4: Bottom moves**

Look at the following 2-move pattern:



**B** tells you to move the **BOTTOM SIDE** in a **clockwise direction**. Hold your Cube up a little, so that you can see the **BOTTOM SIDE**, and turn it clockwise.



Picture 0-19

**B'** (B prime) tells you to move the **BOTTOM SIDE** in a **counter-clockwise direction**. Hold your Cube up a little, so that you can see the **BOTTOM SIDE**, and turn it counter-clockwise.



Picture 0-20

***Practice, practice, practice!!***

Hold your Cube in front of you, and do the above 2-move pattern (**B, B'**) a few times to make sure you are moving the side correctly and easily. Again, please ask for help if you need it!

**Pattern example 5: A REAL PATTERN!!**

If you have studied the other examples carefully, you are ready to try a REAL PATTERN that is used to solve part of the Rubik's Cube!!

Look at the following 4-move pattern:



Q: What does **F'** (F prime) mean?

A: Turn the \_\_\_\_\_ side in a \_\_\_\_\_ direction.

Q: What does **T** mean?

A: Turn the \_\_\_\_\_ side in a \_\_\_\_\_ direction.

Q: What does **L'** (L prime) mean?

A: Turn the \_\_\_\_\_ side in a \_\_\_\_\_ direction.

Q: What does **T'** (T prime) mean?

A: Turn the \_\_\_\_\_ side in a \_\_\_\_\_ direction.

***Now try doing the pattern!!***

Hold your Cube in front of you, and do the 4 moves (**F', T, L', T'**) in the pattern shown above.

Practice a few times until you are sure you can do the moves correctly.

Again, please ask for help if you need it!

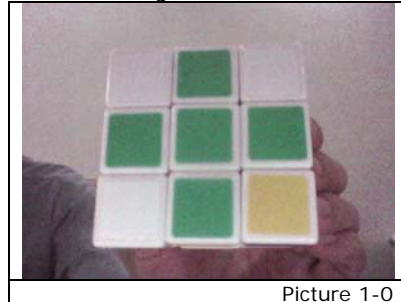
***When you can do the REAL PATTERN above, you are ready to use to the rest of this booklet to SOLVE THE RUBIK'S CUBE!!***



# CHAPTER 1

## SOLVE THE GREEN CROSS

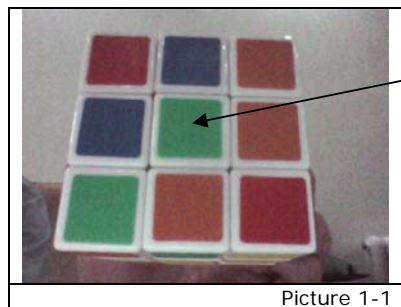
The first step in solving your Rubik's Cube is to get a cross (like a big plus sign) on the green side of your Cube.



Picture 1-0

### STEP 1: FIND THE GREEN SIDE

Looking at all sides on your Cube, find the CENTER PIECE that is GREEN. Remember that center pieces cannot move, so when you have found the GREEN CENTER PIECE you have found the side that will be GREEN when we have solved the entire Cube!

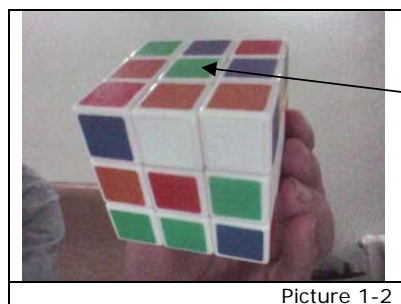


Picture 1-1

GREEN CENTER  
PIECE tells us  
which side is the  
Green Side!

### STEP 2: MAKE THE GREEN SIDE YOUR TOP (T) SIDE

Hold your Cube so that the GREEN CENTER PIECE (i.e., the GREEN SIDE) is on TOP (T), like in the picture below.

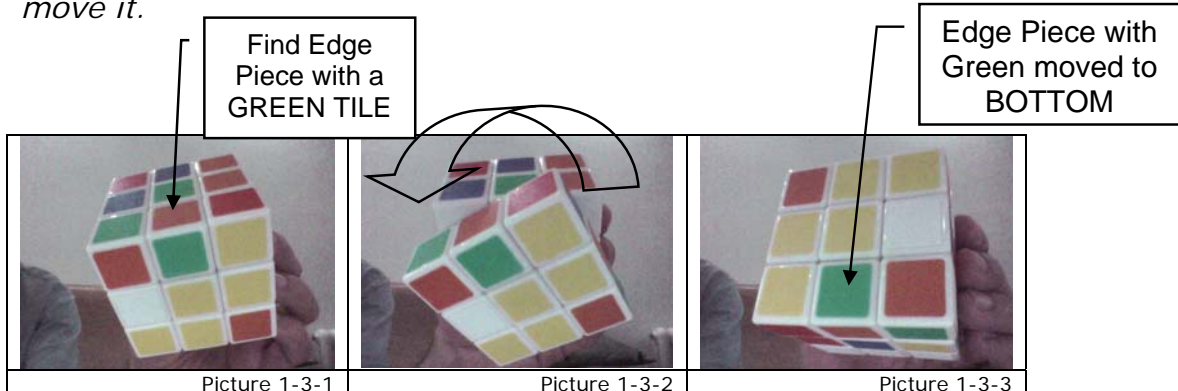


Picture 1-2

GREEN  
SIDE ON  
TOP (T)

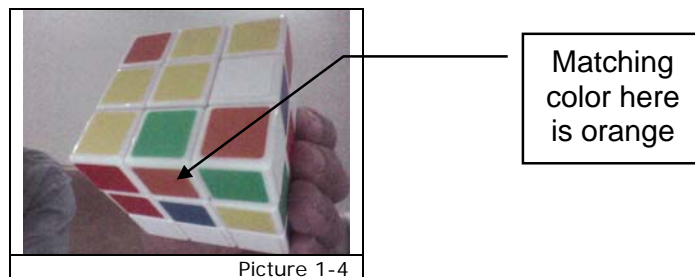
**STEP 3: MOVE A GREEN EDGE PIECE TO THE BOTTOM (B)**

Find an EDGE PIECE with a GREEN TILE (as in picture 1-3-1 below), and move it to the BOTTOM (B) side (as in pictures 1-3-2 and 1-3-3 below). If the EDGE PIECE is already on the BOTTOM (B) side, you do not need to move it.



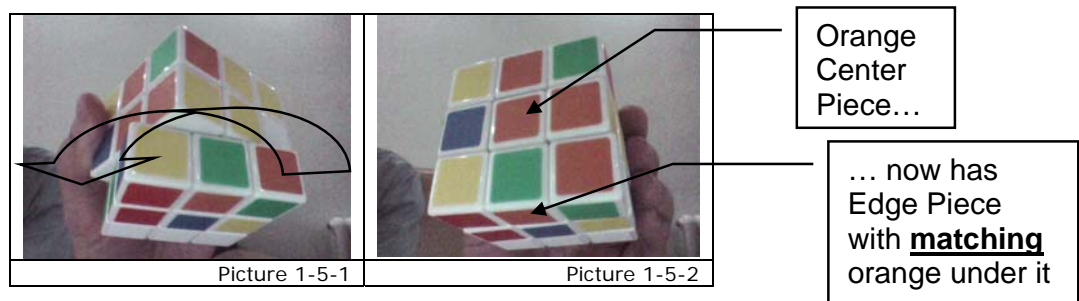
**STEP 4: SEE WHAT COLOR THE EDGE PIECE'S OTHER TILE IS.**

Look at your chosen EDGE PIECE to see what the color is of the other (not green) tile. This is your **matching color** for the next step.



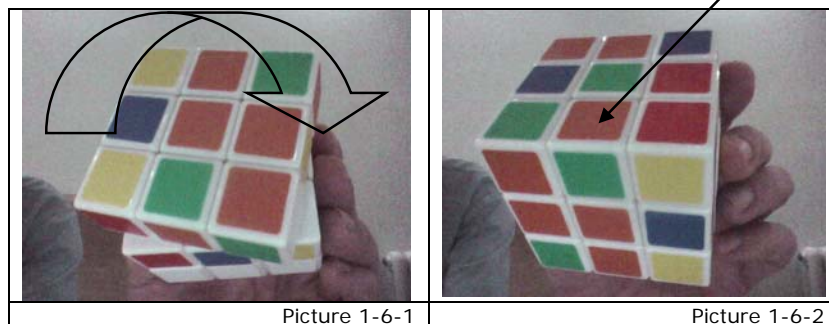
**STEP 5: MOVE YOUR EDGE PIECE UNDER THE MATCHING COLOR**

Turn the BOTTOM (B) side until your chosen EDGE PIECE is under the CENTER PIECE that has your **matching color** from STEP 4.



**STEP 6: DO 2 "F" MOVES TO PUT YOUR EDGE PIECE ON TOP (T)**

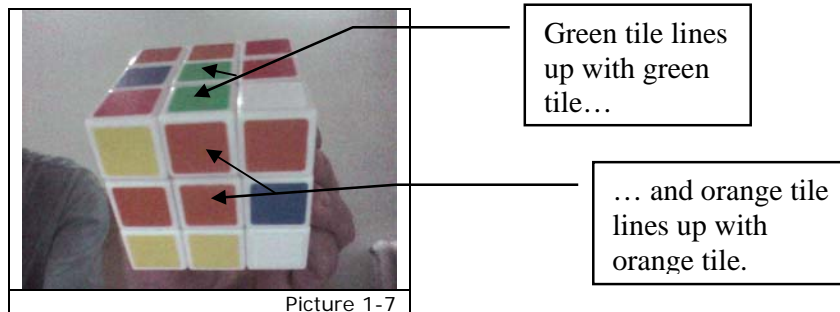
Keeping your GREEN SIDE in the TOP SIDE (T) position, and with your chosen EDGE PIECE in the FRONT (F) position, do the following pattern to put your chosen EDGE PIECE into the TOP SIDE (T):



Edge Piece now on TOP (T) side

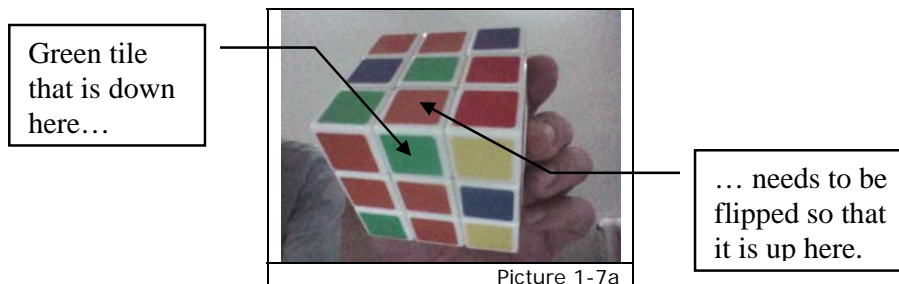
**STEP 7: SEE IF THE EDGE PIECE IS LINED UP CORRECTLY**

Is the GREEN TILE of your chosen EDGE PIECE lined up next to the GREEN CENTER PIECE on TOP (T) of the Cube (like in the picture below)? If so, we say that it is **LINED UP CORRECTLY**, and you may skip to STEP 8. Otherwise, go on to STEP 7a.

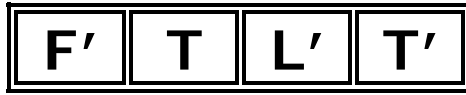


**STEP 7a: IF NEEDED, FLIP THE EDGE PIECE**

If the GREEN TILE of your chosen EDGE PIECE is down on the FRONT SIDE (see the picture below), then you need to do a pattern to flip it so that it is LINED UP CORRECTLY.



To flip your chosen EDGE PIECE, hold your Cube so that your chosen EDGE PIECE is at the top of the FRONT SIDE (F) and do the following pattern:



**STEP 8: REPEAT STEPS 3 THROUGH 7 FOR ALL GREEN EDGE PIECES**

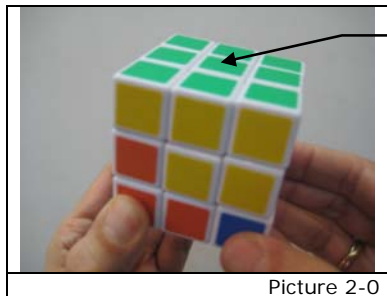
Repeat STEP 3 through STEP 7 for all GREEN EDGE PIECES. When doing STEP 3, take care not to mess up any GREEN EDGE PIECES that are already correctly placed on TOP (T). After you have repeated STEP 3 through STEP 7 for all GREEN EDGE PIECES, you should have a GREEN CROSS on top of your Cube, as in the picture at the beginning of this Chapter.

After you have finished this, go to the next Chapter to finish the entire GREEN SIDE!

## CHAPTER 2

# SOLVE THE GREEN CORNERS

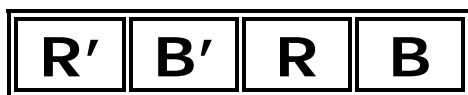
The next step in solving your Rubik's Cube is to complete the entire GREEN SIDE by solving the Green Corners.



Picture 2-0

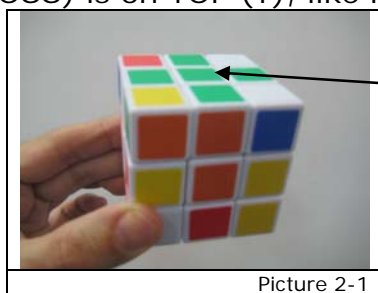
Now we will solve the entire GREEN SIDE to make it look like this!!

Here is the GREEN CORNER SOLUTION PATTERN that you will use in some of the steps below to solve the Green Corners:



### STEP 1: MAKE THE GREEN SIDE YOUR TOP (T) SIDE

Hold your Cube so that the GREEN SIDE (with your already-completed GREEN CROSS) is on TOP (T), like in picture 2-1.

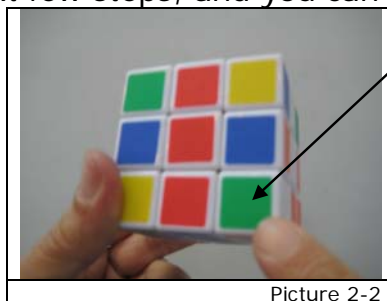


Picture 2-1

Green Cross on TOP (T)

### STEP 2: FIND A GREEN CORNER PIECE ON THE BOTTOM (B)

See if you can find a CORNER PIECE on the BOTTOM (B) of the Cube that has a GREEN TILE in it. If so, this becomes your CHOSEN CORNER PIECE for the next few steps, and you can skip STEP 2a and go on to STEP 3.



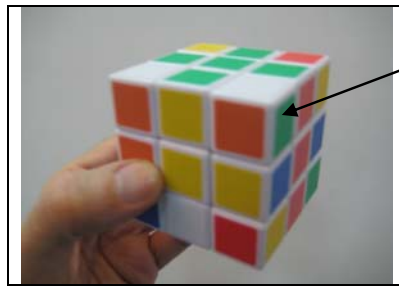
Picture 2-2

Green Corner piece on BOTTOM (B)

If you are NOT ABLE to find a CORNER PIECE on the BOTTOM (B) of the Cube that has a GREEN TILE in it, you need to go on to STEP 2a.

**STEP 2a: IF NEEDED, MOVE A GREEN CORNER PIECE TO THE BOTTOM (B)**

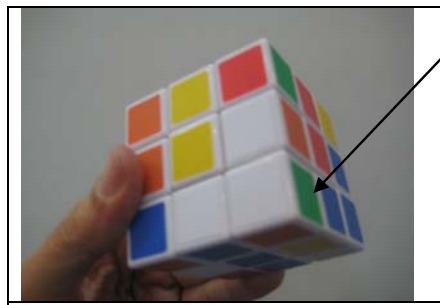
Find a CORNER PIECE on the TOP (T) of the Cube that has a GREEN TILE in it. Hold your Cube so that this CORNER PIECE is in the top right corner of the FRONT (F) side (as in the picture).



Picture 2-2a-1

CORNER PIECE  
with Green Tile  
on TOP

Then, do the GREEN CORNER SOLUTION PATTERN (**R', B', R, B**) to move the CORNER PIECE to the BOTTOM (B). This is now your CHOSEN CORNER PIECE for the next few steps.

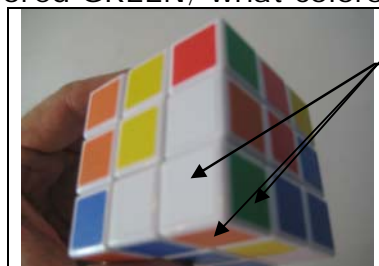


Picture 2-2a-2

Green Corner Piece  
has been moved to  
BOTTOM.

**STEP 3: SEE WHAT 3 COLORS ARE ON YOUR CHOSEN CORNER PIECE**

Look at you CHOSEN CORNER PIECE to see what colors its 3 TILES are. (One is colored GREEN; what colors are the other two?)



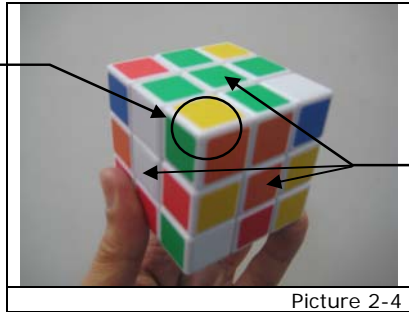
Picture 2-3

The 3 colors  
of this piece  
are WHITE,  
ORANGE  
and GREEN.

**STEP 4: FIND WHERE YOUR CHOSEN CORNER PIECE SHOULD GO (ON TOP)**

Look on the TOP (GREEN) side, and look at the Cube's center pieces to find where your CHOSEN CORNER PIECE should go, as in the picture.

The WHITE, ORANGE, and GREEN corner piece should go here. *Can you see why?*

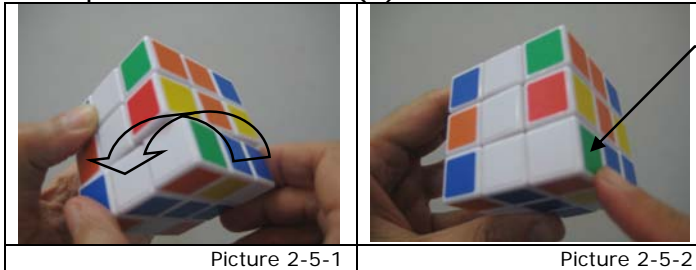


Picture 2-4

That corner piece goes here because the WHITE, ORANGE, and GREEN sides surround this corner.

**STEP 5: MOVE THE BOTTOM SIDE TO LINE UP YOUR CHOSEN CORNER PIECE UNDER THE PLACE WHERE IT BELONGS**

Turn the BOTTOM (B) side until your CHOSEN CORNER PIECE is directly under the place on the TOP (T) side where it belongs.



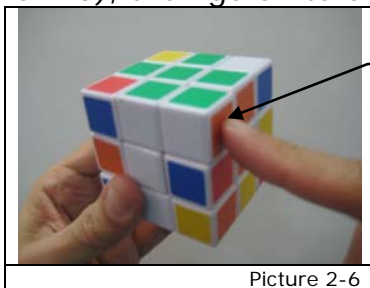
Picture 2-5-1

Picture 2-5-2

The WHITE, ORANGE, and GREEN piece is now lined up under the place that it should go.

**STEP 6: DO THE GREEN CORNER SOLUTION PATTERN**

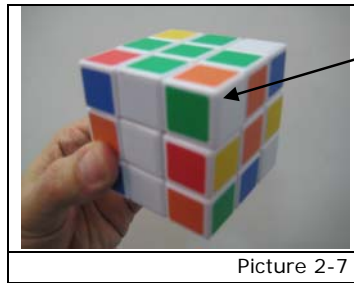
Hold the Cube so that the CHOSEN CORNER PIECE is in the bottom right corner of the FRONT (F) SIDE (as in Picture 2-5-2 above). Do the GREEN CORNER SOLUTION PATTERN (**R', B', R, B**) to place the CHOSEN CORNER PIECE into the place on the TOP (T) side where it belongs. When you are done with this, if the CHOSEN CORNER PIECE is lined up correctly (see picture 2-6), then go on to STEP 7.



Picture 2-6

The WHITE, ORANGE, and GREEN corner piece is lined up correctly in this picture.

If the CHOSEN CORNER PIECE is in the place where it belongs, but it is NOT lined up correctly (see picture 2-7), then go to STEP 6a to line it up correctly.



WHITE, ORANGE and GREEN corner piece is NOT lined up correctly in this picture.

Picture 2-7

### **STEP 6a: LINE UP THE CHOSEN CORNER PIECE CORRECTLY**

You only need to do this step if your chosen Corner Piece is NOT lined up correctly. Otherwise, go on to STEP 7.

If the CHOSEN CORNER PIECE is NOT lined up correctly (as in Picture 2-7 above), then hold the Cube so that the CHOSEN CORNER PIECE is on the top right of the FRONT (F) SIDE. Do the GREEN CORNER SOLUTION PATTERN (**R', B', R, B**) again and again until the CHOSEN CORNER PIECE is back where it belongs AND LINED UP CORRECTLY! ***You may need to repeat the pattern up to 6 times!!***

### **STEP 7: REPEAT STEPS 2 THROUGH 6 FOR ALL GREEN CORNER PIECES**

After you have repeated STEP 2 through STEP 6 for all GREEN CORNER PIECES, the entire GREEN SIDE should be SOLVED on top of your Cube, as in Picture 2-0 at the beginning of this Chapter.

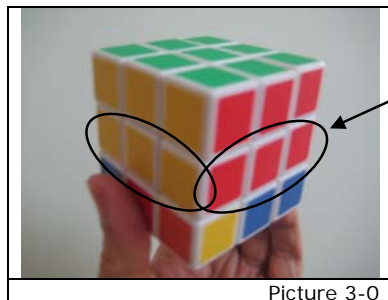
After you have finished this, go to the next Chapter to finish the MIDDLE LAYER!



## CHAPTER 3

# SOLVE THE MIDDLE LAYER

The next step in solving your Rubik's Cube is to complete the MIDDLE LAYER by solving its Edge Pieces.



CUBE  
WITH  
MIDDLE  
LAYER  
SOLVED

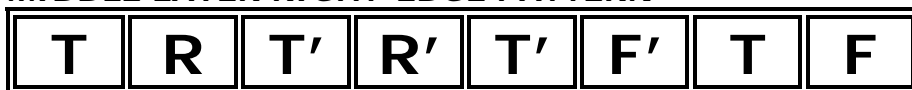
Picture 3-0

Here are the two patterns you will use in some of the steps below to solve the Middle Layer:

*The MIDDLE LAYER LEFT-EDGE PATTERN*

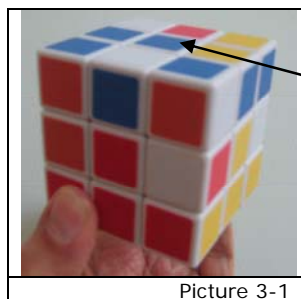


*The MIDDLE LAYER RIGHT-EDGE PATTERN*



### STEP 1: MAKE THE BLUE SIDE YOUR TOP (T) SIDE

Turn your entire Cube so that your solved GREEN SIDE is on the BOTTOM (B). This will make the BLUE SIDE (the side with a Blue Center Piece) be on TOP (T).

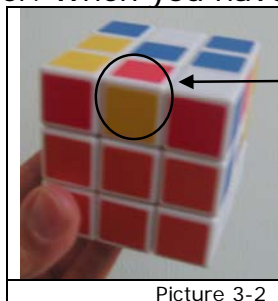


BLUE SIDE (Blue  
Center Piece) on  
TOP (T)

Picture 3-1

## **STEP 2: FIND A NON-BLUE EDGE PIECE ON TOP (T)**

Look on the TOP (T) side for a non-blue Edge Piece (an Edge Piece that does NOT have a Blue Tile). This non-blue Edge Piece needs to be moved to the Middle Layer. When you have found a non-blue Edge Piece, go on to STEP 3.



An Edge Piece on the TOP(T) side that does NOT have a Blue Tile

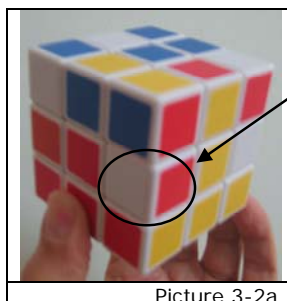
Picture 3-2

If you **cannot** find a non-blue Edge Piece on the TOP (T) side, you will need to do STEP 2a.

## **STEP 2a: MOVE A NON-BLUE EDGE PIECE TO THE TOP (T)**

You only need to do this step if you cannot find a non-blue Edge Piece on TOP(T). Otherwise, go on to STEP 3.

Find a non-blue Edge Piece (a piece that does NOT have a Blue Tile) that is in the Middle Layer (but not correctly placed), and hold your Cube so that this non-blue Edge Piece is on the right edge of the FRONT (F) side.



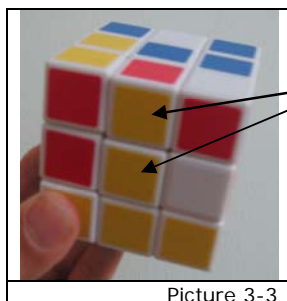
A non-blue Edge Piece in the Middle Layer

Picture 3-2a

Now do the MIDDLE-LAYER RIGHT EDGE PATTERN (**T, R, T', R', T', F', T, F**) to move this non-blue Edge Piece to the TOP (T) side.

## **STEP 3: LINE UP THE NON-BLUE EDGE PIECE WITH THE CENTER PIECE OF THE SAME COLOR**

Twist the TOP (T) side until the non-blue Edge Piece (from STEP 2 or 2a) is lined up with the Center Piece that has the same color, and hold your Cube so that the lined-up Pieces are on the FRONT (F) side (the side facing you).



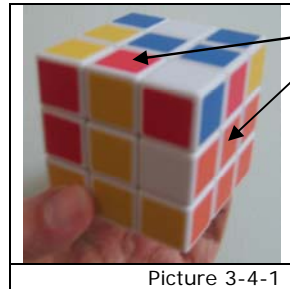
The Edge Piece is lined up with the Center Piece of the same color.

Picture 3-3

#### **STEP 4: LOOK TO SEE WHICH SIDE THE EDGE PIECE BELONGS TO**

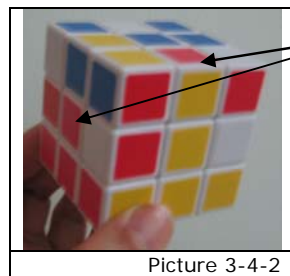
Look at your Cube's RIGHT side (R) and LEFT (L) side to see which side the Edge Piece belongs to.

In the example below, the yellow-and-red Edge Piece belongs to the LEFT (L) side, because the Center Piece on the LEFT (L) side is Red.



Picture 3-4-1

The yellow-and-red Edge Piece does NOT belong to the RIGHT (R) side, because the RIGHT side's Center Piece is ORANGE.



Picture 3-4-2

The yellow-and-red Edge Piece DOES belong to the LEFT (L) side, because the LEFT side's Center Piece is RED.

#### **STEP 5: DO THE CORRECT PATTERN TO PUT THE EDGE PIECE IN PLACE**

If the Edge Piece belongs to the LEFT (L) side, do the MIDDLE-LAYER LEFT EDGE PATTERN to put it in place (**T', L', T, L, T, F, T', F'**).

If the Edge Piece belongs to the RIGHT (R) side, do the MIDDLE-LAYER RIGHT EDGE PATTERN to put it in place (**T, R, T', R', T', F', T, F**).

#### **STEP 6: REPEAT STEPS 2 THROUGH 5 TO PUT ALL MIDDLE LAYER EDGE PIECES IN PLACE**

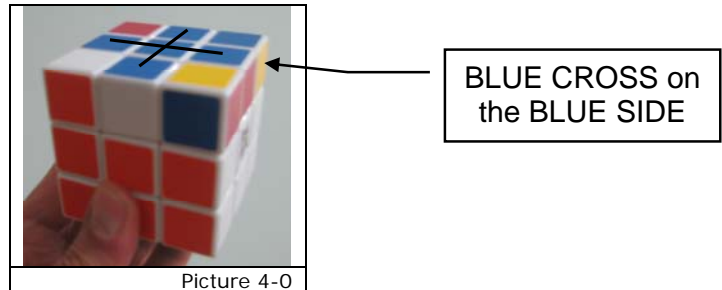
After you have repeated STEP 2 through STEP 5 for all non-blue Edge Pieces, the entire MIDDLE LAYER should be SOLVED, and two out of your Cube's three layers are now completed!!

After you have finished this, go to the next Chapter to begin solving the BLUE SIDE.

# CHAPTER 4

## MAKE A BLUE CROSS

The next step in solving your Rubik's Cube is to make a BLUE CROSS on the BLUE SIDE.



Here is the BLUE-CROSS PATTERN that you will use in some of the steps below to make a Blue Cross:

*The BLUE-CROSS PATTERN*



### STEP 1: MAKE THE BLUE SIDE YOUR TOP (T) SIDE

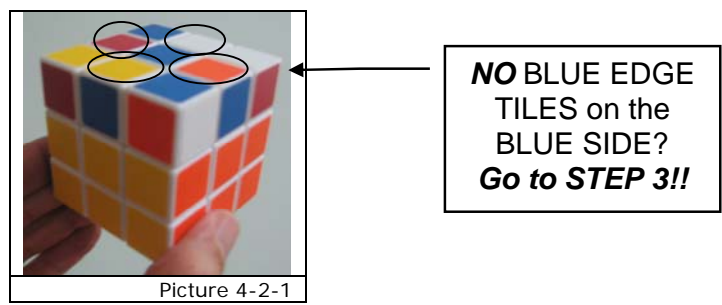
Just as we did in Chapter 3, turn your entire Cube so that your solved GREEN SIDE is on the BOTTOM (B). This will make the BLUE SIDE (the side with a Blue Center Piece) be on TOP (T).

### STEP 2: LOOK AT THE BLUE SIDE TO SEE WHICH NEXT STEP TO GO TO

Look on your BLUE SIDE to see which one of the following states it is in.

- Do you have NO Blue Edge Tiles showing on your BLUE SIDE (as in Picture 4-2-1 below)?

*If so, go to STEP 3.*



- Do you have 2 Blue Edge Tiles making an “L” pattern on your BLUE SIDE (as in Picture 4-2-2 below)?

***If so, go to STEP 4.***



Picture 4-2-2

BLUE EDGE  
TILES making an  
“L” pattern?  
**Go to STEP 4!!**

- Do you have a row of 3 Blue Tiles on your BLUE SIDE (the Blue Center and 2 Blue Edge Tiles, as in Picture 4-2-3)?

***If so, go to STEP 5.***

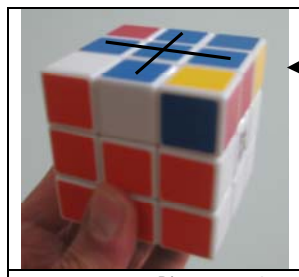


Picture 4-2-3

ROW OF 3 BLUE  
TILES?  
**Go to STEP 5!!**

- Do you already have a BLUE CROSS of Blue Tiles on your BLUE SIDE (as in Picture 4-2-4)?

***If so, you are VERY LUCKY! You are done with this chapter and can go on to Chapter 5!!***



Picture 4-2-4

BLUE CROSS?  
**Go on to  
CHAPTER 5!!**

**STEP 3: IF YOU HAVE NO BLUE EDGE TILES SHOWING ON YOUR BLUE SIDE**

If you have NO Blue Edge Tiles showing on your BLUE SIDE (as in Picture 4-2-1 above), then remember to hold your Cube with the BLUE SIDE on TOP (T), and do the BLUE-CROSS PATTERN (**F, R, T, R', T', F'**). This should lead to an "L" shape of 2 Blue Tiles on your Blue Side (as in Picture 4-2-2 above).

**STEP 4: IF YOU HAVE AN "L" SHAPE OF 2 BLUE EDGE TILES WITH THE BLUE CENTER**

If you have an "L" shape of 2 Blue Edge Tiles with the Blue Center Piece (as in Picture 4-2-2 above), hold your Cube so that the blue "L" is in the back left corner of the TOP (T) of your Cube; then do the BLUE-CROSS PATTERN (**F, R, T, R', T', F'**). This should lead to a row of 3 Blue Tiles (1 Blue Edge Tile on each side of the Blue Center Piece, as in Picture 4-2-3 above).

**STEP 5: IF YOU HAVE A ROW OF 3 BLUE TILES ON YOUR BLUE SIDE**

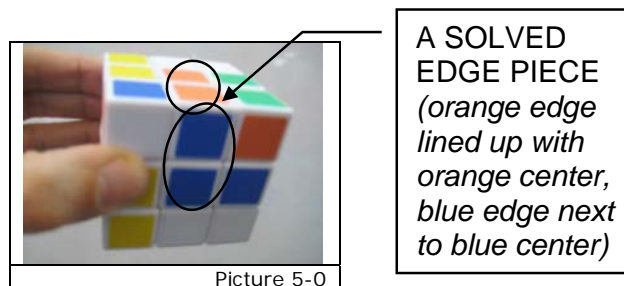
If you have a row of 3 Blue Tiles (1 Blue Edge Tile on each side of the Blue Center Piece), then hold your Cube so the blue row of tiles is going ACROSS the TOP (T) side (as in Picture 4-2-3 above), and do the BLUE-CROSS PATTERN (**F, R, T, R', T', F'**). This should give you a BLUE CROSS of Tiles on your BLUE SIDE (as in Picture 4-2-4 above), and you may go on to the next Chapter to completely solve the BLUE CROSS EDGES.

## CHAPTER 5

# SOLVING THE BLUE CROSS EDGES

The next step in solving your Rubik's Cube is to completely solve the BLUE CROSS EDGES.

Remember that an EDGE Piece is "solved" when it is placed on the Cube so that each of its tiles is directly next to the Center Piece of the same color, as in picture 5-0 below.



Here is the BLUE EDGE SOLUTION pattern that you will use in this chapter to completely solve the BLUE CROSS EDGES:

*The **BLUE-EDGE SOLUTION PATTERN***



### STEP 1: MAKE THE BLUE SIDE YOUR TOP (T) SIDE

Just as we did in Chapters 3 and 4, turn your entire Cube so that your solved GREEN SIDE is on the BOTTOM (B). This will make the BLUE SIDE (the side with a Blue Center Piece and the BLUE CROSS) be on TOP (T).

### STEP 2: LOOK AT THE BLUE SIDE TO SEE IF YOU HAVE SOLVED EDGES

Look on your BLUE SIDE to see if your BLUE CROSS has any completely solved EDGES. (Look above at Picture 5-0 above to see what a completely solved EDGE looks like.)

- If all four EDGES of your BLUE CROSS are **already** solved, you are **very lucky**, and you may proceed on to the next Chapter to put the Blue Corners in the right places!!
- If you find that two Blue Edge pieces of your BLUE CROSS are completely solved, then go on to STEP 3.
- If you find that NO Blue Edge pieces of your BLUE CROSS are completely solved, then twist the top face (T) once and see if 2 of

your Blue Edge pieces are now completely solved. If you need to, repeat twisting the top face (T) once to see if 2 of your Blue Edge pieces are now completely solved. If you can get to this state (2 Blue Edge pieces solved), go on to STEP 3.

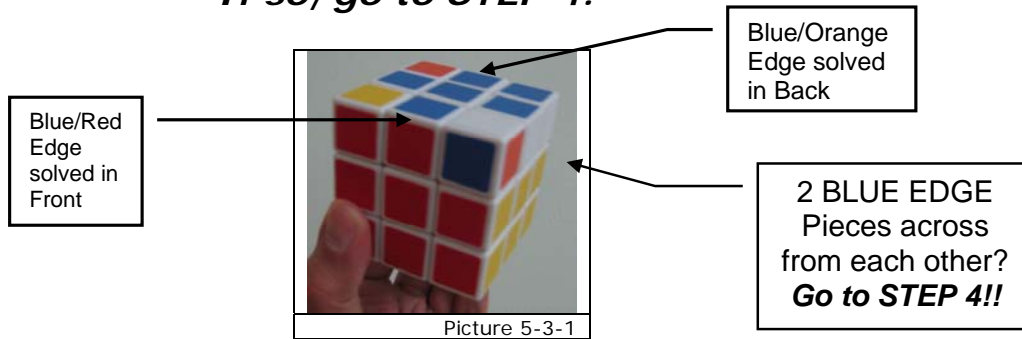
If you have repeated twisting the top face (T) 3 times, but still cannot get 2 Blue Edge pieces solved, then hold your cube with the Blue Side on top (T) and do the BLUE EDGE SOLUTION PATTERN ( $R, T, R', T, R, T, T, R'$ ). This should give you 2 completely solved Blue Edge pieces, and you may go on to STEP 3.

**STEP 3: LOOK AT THE BLUE SIDE TO SEE WHICH NEXT STEP TO GO TO**

Look on your BLUE SIDE to see which one of the following states it is in.

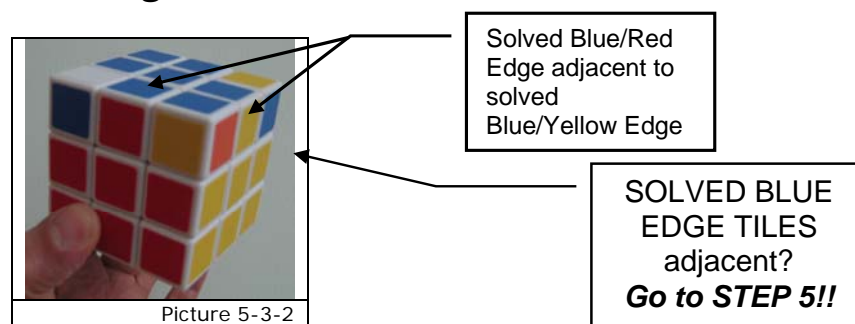
- Do you have 2 Blue Edge Pieces completely solved that are across from each other in the BLUE CROSS (as in Picture 5-3-1 below)?

***If so, go to STEP 4.***



- Do you have 2 Blue Edge Pieces completely solved that are adjacent to each other in the BLUE CROSS (as in Picture 5-3-2 below)?

***If so, go to STEP 5.***



**STEP 4: IF YOU HAVE 2 COMPLETELY SOLVED BLUE EDGES ACROSS FROM EACH OTHER**

If you have 2 Blue Edge Pieces completely solved that are across from each other in the BLUE CROSS (as in Picture 5-3-1 above), then hold your cube so that one of the solved Edge Pieces is in the top center of the Front face



(the face facing you). Perform the BLUE EDGE SOLUTION PATTERN (**R, T, R', T, R, T, T, R'**).

This puts 2 correctly positioned Blue Edge Pieces adjacent to each other, and you are ready to proceed to STEP 5.

**STEP 5: IF YOU HAVE 2 COMPLETELY SOLVED BLUE EDGES ADJACENT TO EACH OTHER**

If you have 2 Blue Edge Pieces completely solved that are adjacent to each other in the BLUE CROSS (as in Picture 5-3-2 above), then hold your cube so that one of the solved Edge Pieces is in the top center of the Right Face, and the other solved Edge Piece is facing *away from you* (on the Back Face). Perform the BLUE EDGE SOLUTION PATTERN (**R, T, R', T, R, T, T, R'**).

Now, turn the Top (T) face once in a clockwise direction (**T**). ALL FOUR BLUE EDGES SHOULD NOW BE COMPLETELY SOLVED!! You may go to the next Chapter to put the Blue Corners in the right places.

# CHAPTER 6

## PUT THE BLUE CORNERS IN THE RIGHT PLACES

The next step in solving your Rubik's Cube is to put the BLUE CORNERS in the right places.

Here is the BLUE CORNER PLACEMENT pattern that you will use in this chapter to put the BLUE CORNERS in the right places:

*The BLUE CORNER PLACEMENT PATTERN*



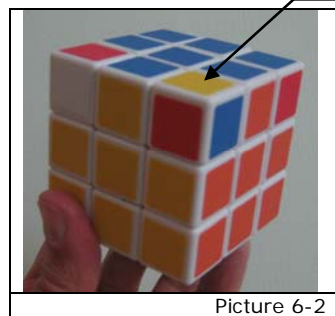
### STEP 1: MAKE THE BLUE SIDE YOUR TOP (T) SIDE

Just as we did in Chapters 3, 4, and 5, turn your entire Cube so that your solved GREEN SIDE is on the BOTTOM (B). This will make the BLUE SIDE (the side with a Blue Center Piece and the BLUE CROSS) be on TOP (T).

### STEP 2: LOOK AT THE BLUE SIDE TO SEE IF YOU HAVE BLUE CORNERS IN THE RIGHT PLACES

Look on your BLUE SIDE to see if you have BLUE CORNERS in the right places. We do not need them to be completely solved at this point, just in the right places.

You will have either 0, 1, or all 4 of your BLUE CORNERS in the right places. See Picture 6-2 below to see an example of a BLUE CORNER in the right place.



Picture 6-2

This BLUE CORNER is in the **right place** (between the Blue, Orange, and Yellow sides), even though it is not completely solved (not aligned correctly).

- Do you have no BLUE CORNERS in the right place?

***If so, go to STEP 3.***

- Do you have 1 BLUE CORNER in the right place?

*If so, go to STEP 4.*

- Do you have 4 BLUE CORNERS in the right place?

*If so, YOU ARE LUCKY! Go on to the next Chapter to completely solve the BLUE CORNERS and complete the solution of the entire cube!!*

### **STEP 3: IF YOU HAVE NO BLUE CORNERS IN THE RIGHT PLACE**

If you have no BLUE CORNERS in the right place, then perform the BLUE CORNER PLACEMENT PATTERN (**T, R, T', L', T, R', T', L**). This will put 1 of the four BLUE CORNERS in the right place. You may go on to STEP 4.

### **STEP 4: IF YOU HAVE 1 BLUE CORNER IN THE RIGHT PLACE**

If you have 1 BLUE CORNERS in the right place, then hold the Cube so that the Piece that is in the right place is in the upper right of the Front (F) face. Then perform the BLUE CORNER PLACEMENT PATTERN (**T, R, T', L', T, R', T', L**).

This will either put all 4 BLUE CORNERS in the right place, or leave just 1 BLUE CORNER in the right place.

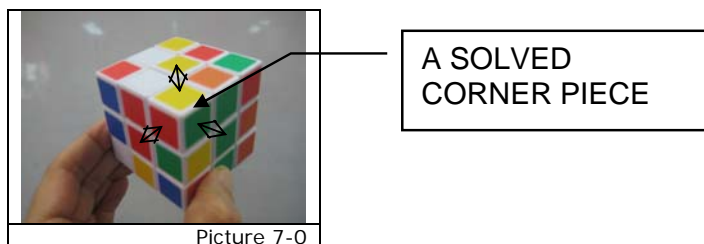
- If all 4 BLUE CORNERS are in the right place, then go on to the next Chapter to completely solve the BLUE CORNERS.
- If there is still only 1 BLUE CORNER in the right place, then again perform the BLUE CORNER PLACEMENT PATTERN (**T, R, T', L', T, R', T', L**). This will put all 4 BLUE CORNERS in the right place, and you may go on to the next Chapter to completely solve the BLUE CORNERS.

## CHAPTER 7

# SOLVE THE BLUE CORNERS

The next and last step in solving your Rubik's Cube is to completely solve the BLUE CORNERS.

Remember that a CORNER Piece is "solved" when it is placed on the Cube so that each of its three tiles is touching the corner of the Center Piece of the same color, as in the picture below.



At this point, all of your BLUE CORNERS should be in the right place, but some or all of them may need to be flipped so that they are complete solved.

Here is the BLUE CORNER SOLUTION pattern that you will use in this chapter to completely solve the BLUE CORNERS:

*The BLUE CORNER SOLUTION PATTERN*



### STEP 1: MAKE THE BLUE SIDE YOUR TOP (T) SIDE

Just as we did in Chapters 3, 4, 5, and 6, turn your entire Cube so that your solved GREEN SIDE is on the BOTTOM (B). This will make the BLUE SIDE be on TOP (T).

### STEP 2: SOLVE THE BLUE CORNERS

Look on your BLUE SIDE to find a BLUE CORNER that is not completely solved. Hold your Cube so that the unsolved BLUE CORNER is in the upper right corner of the Front (F) side.

Perform the BLUE CORNER SOLUTION PATTERN *twice* (**R', B', R, B**).

If the BLUE CORNER piece is not yet completely solved, then perform the BLUE CORNER SOLUTION PATTERN twice more (**R', B', R, B**).

Now, *very carefully* turn the Top (T) face in a counter-clockwise direction, until another unsolved BLUE CORNER pieces is in place in the upper right corner of the Front (F) side. Once again, perform the BLUE CORNER

SOLUTION PATTERN *twice* (**R', B', R, B**) repeatedly until the BLUE CORNER is completely solved.

Continue to turn the Top (T) face in a counter-clockwise direction (**T'**). For every BLUE CORNER that is not completely solve, perform the BLUE CORNER SOLUTION PATTERN *twice* (**R', B', R, B**) repeatedly until the BLUE CORNER is aligned correctly (with the Blue Tile on top).

It is important to know that as you are performing the BLUE CORNER SOLUTION PATTERN, you may think that your are undoing all of the work that you have done to this point. However, if you are performing the patterns carefully, then in the end, it will all work out!

When all of your BLUE CORNER pieces are aligned correctly (with the Blue Tile on top), all you need to do is to turn the Top (T) face once in a counter-clockwise direction (**T'**) and you will have a COMPLETELY SOLVED RUBIK'S CUBE!!!

# PATTERN LIST

GREEN EDGE SOLUTION PATTERN

F'	T	L'	T'
----	---	----	----

GREEN CORNER SOLUTION PATTERN

R'	B'	R	B
----	----	---	---

MIDDLE LAYER LEFT-EDGE PATTERN

T'	L'	T	L	T	F	T'	F'
----	----	---	---	---	---	----	----

MIDDLE LAYER RIGHT-EDGE PATTERN

T	R	T'	R'	T'	F'	T	F
---	---	----	----	----	----	---	---

BLUE-CROSS PATTERN

F	R	T	R'	T'	F'
---	---	---	----	----	----

BLUE-EDGE SOLUTION PATTERN

R	T	R'	T	R	T	T	R
---	---	----	---	---	---	---	---

BLUE CORNER PLACEMENT PATTERN

T	R	T'	L'	T	R'	T'	L
---	---	----	----	---	----	----	---

BLUE CORNER SOLUTION PATTERN

R'	B'	R	B
----	----	---	---

## References

Brown, D. (2009). *How to Solve a Rubik's Cube!* Retrieved on March 13, 2010 from <http://www.youtube.com/watch?v=tOgN7d1D-3s>

Yates, J. (2010). *The Rubik's Cube Solution*. Retrieved on March 11, 2010 from <http://www.chessandpoker.com/rubiks-cube-solution.html>