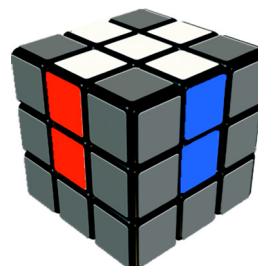




The WHITE Cross

Lesson 2



Lesson 1 Review

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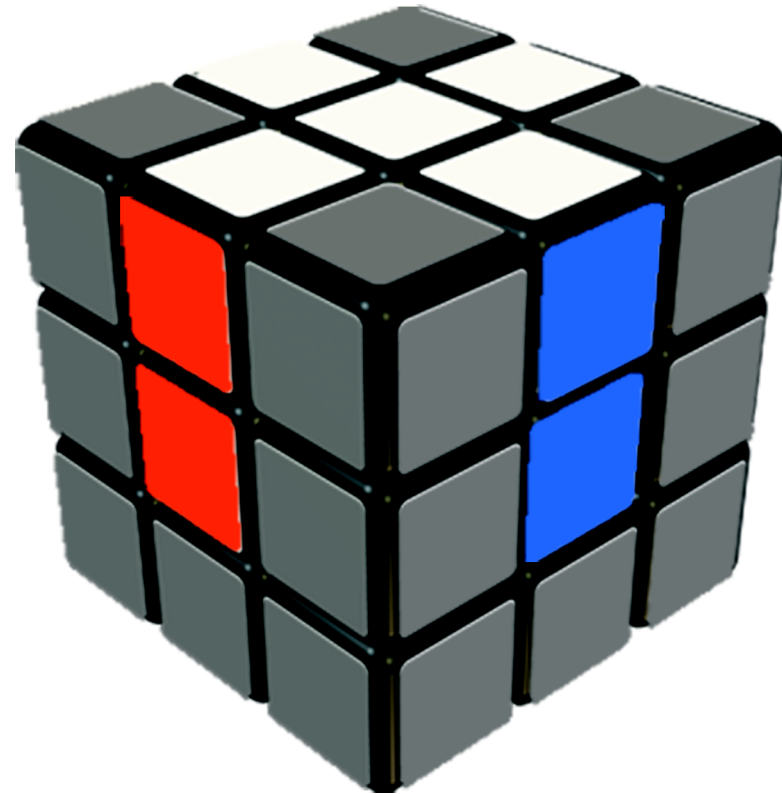
Rubik's Trivia



PP2

GOAL: The **WHITE** Cross

The goal of this stage is to get the **WHITE** cross on the **UP** face with all the **WHITE** edges matching the center pieces.



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PP3



FACES

The flat (two-dimensional) square, on each surface of the cube. There are six (6) faces on the cube, each with a directional name.



Up Face



Back Face



Down Face



Right Face



Left Face



Front Face

Lesson 1 Review

Vocabulary

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Rubik's Trivia

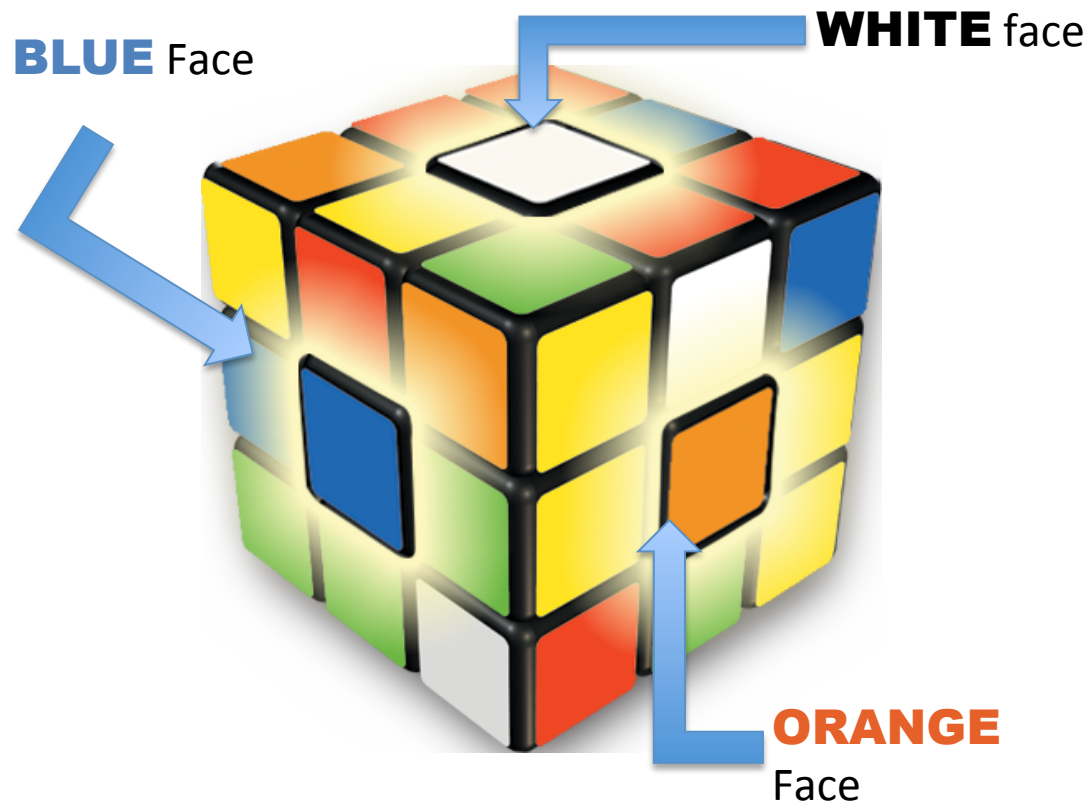


PP4



CENTER Pieces

Pieces with one color.
There are six (6) center pieces, one in the center of each face. Center pieces DO NOT MOVE. They represent the color of their face.



Lesson 1 Review

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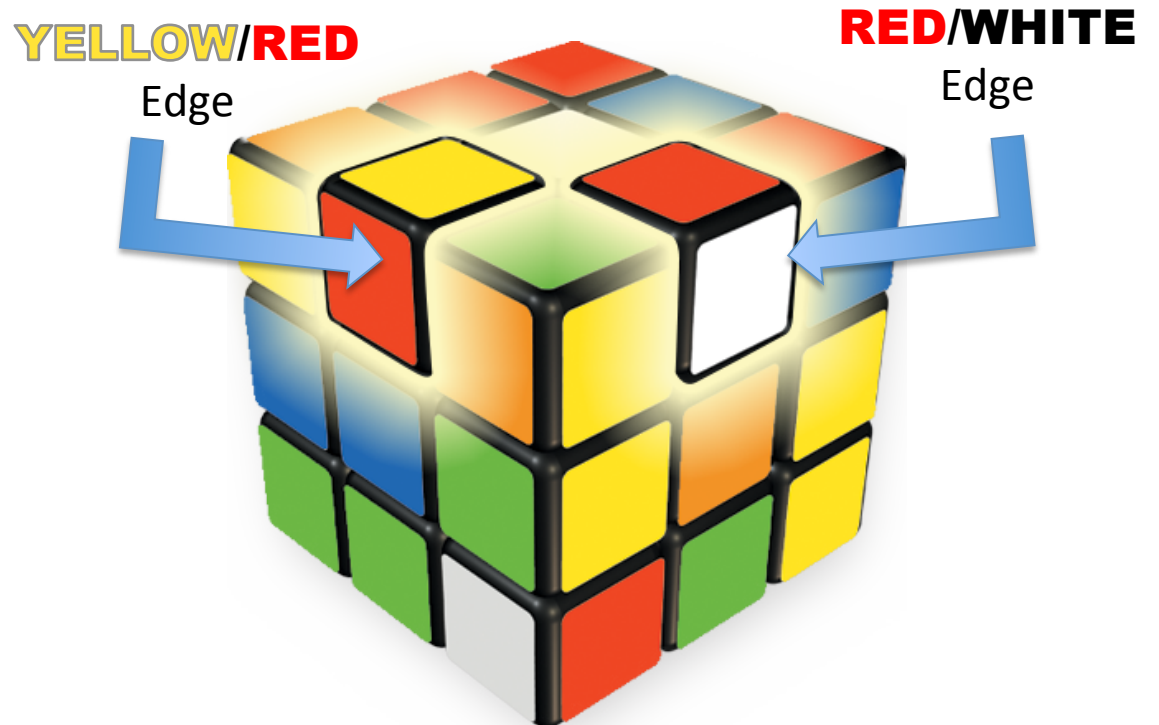


PP5



EDGE Pieces

Pieces with two colors.
There are twelve (12) edge pieces.



Lesson 1 Review

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PP6



GREEN/ORANGE/YELLOW Corner



CORNER Pieces

Pieces with three colors.
There are eight (8) corner pieces located on the corners.

Lesson 1 Review

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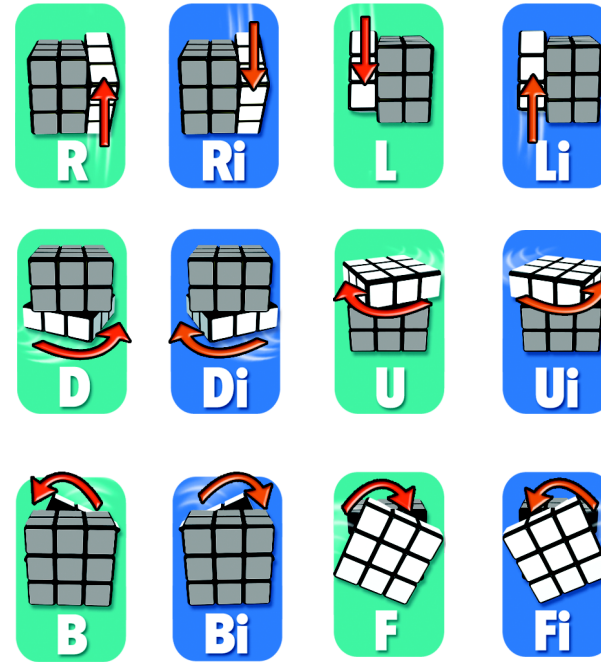
Lesson Review

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PP7



1/4 Turns

R	U
Ri	Ui
L	B
Li	Bi
D	F
Di	Fi

- Inverted means opposite.
- By inverting a move, the move can be undone.

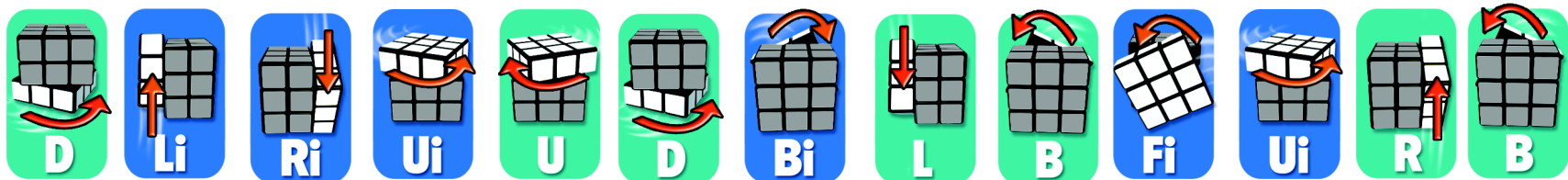
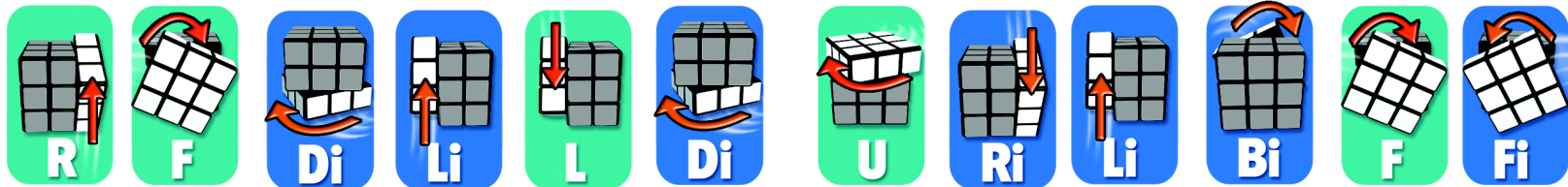


PP8



SCRAMBLED CUBE

25 Random 1/4 Turns



Lesson 1 Review

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Rubik's Trivia



Layers and Faces

- “Layers” are three-dimensional (Length, width and height).
- The word “face” refers to the flat area of a “layer”. Faces are two-dimensional (length and width).

LEFT Face of the Cube



Left layer of the Cube

RIGHT Face of the Cube



Right layer of the Cube

FRONT Face of the Cube



Front layer of the Cube

DOWN Face of the Cube



Bottom layer of the Cube

UP Face of the Cube



Top layer of the Cube

BACK Face of the Cube



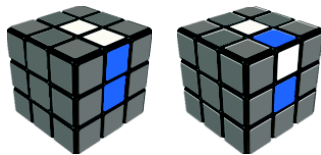
Back layer of the Cube



STEP 1

First Goal:

To get the **WHITE/BLUE** edge on the **TOP** layer and in line with the **BLUE** center piece.



- **WHITE** face UP.
BLUE face RIGHT.

Find the **WHITE/BLUE** edge.

- Is it on the **BOTTOM** layer?

If **NOT** (do this before the next step):

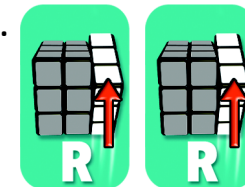
- Twist the layer of the cube that has the **WHITE/BLUE** edge until the **WHITE/BLUE** edge piece is on the **BOTTOM** layer.

- Twist the **DOWN** face a “**D**” ¼ turn.

- After completing the **DOWN** face “**D**” ¼ turn, reverse the original ¼ turn(s) to put the layer back to its previous position to keep the **WHITE** Cross intact.



- Put the **WHITE/BLUE** edge directly below the **BLUE** center piece.
- Make two “**R**” ¼ turns so the **WHITE/BLUE** edge piece is on the **TOP** layer.



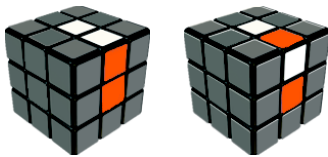
- At this point it does not matter if the **WHITE** part of the edge is on the **UP** face or the **FRONT** face.



STEP 1

Second Goal:

To get the **WHITE/ORANGE** edge on the **TOP** layer and in line with the **ORANGE** center piece.



- **WHITE** face **UP**.
ORANGE face **RIGHT**.

Find the **WHITE/ORANGE** edge.

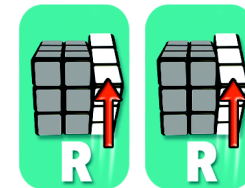
- Is it on the **BOTTOM** layer?

If **NOT** (do this before the next step):

- Twist the layer of the cube that has the **WHITE/ORANGE** edge until the **WHITE/ORANGE** edge piece is on the **BOTTOM** layer.
- Twist the **DOWN** face a “**D**” $\frac{1}{4}$ turn.
- After completing the **DOWN** face “**D**” $\frac{1}{4}$ turn, reverse the original $\frac{1}{4}$ turn(s) to put the layer back to its previous position to keep the **WHITE** Cross intact.



- Put the **WHITE/ORANGE** edge directly below the **ORANGE** center piece.
- Make two “**R**” $\frac{1}{4}$ turns so the **WHITE/ORANGE** edge piece is on the **TOP** layer.



- At this point it does not matter if the **WHITE** part of the edge is on the **UP** face or the **FRONT** face.



PP11

Lesson 1 Review

Vocabulary

Lesson Focus

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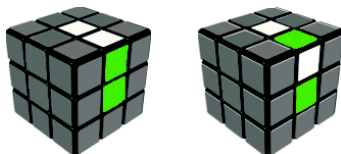
Rubik's Trivia



STEP 1

Third Goal:

To get the **WHITE/GREEN** edge on the **TOP** layer and in line with the **GREEN** center piece.



- **WHITE** face **UP**.
GREEN face **RIGHT**.

Find the **WHITE/ GREEN** edge.

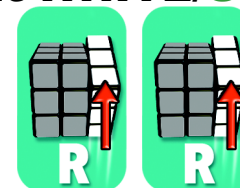
- Is it on the **BOTTOM** layer?

If **NOT** (do this before the next step):

- Twist the row of the cube that has the **WHITE/ GREEN** edge until the **WHITE/GREEN** edge piece is on the **BOTTOM** layer.
- Twist the **DOWN** face a “**D**” ¼ turn.
- After completing the **DOWN** face “**D**” ¼ turn, reverse the original ¼ turn(s) to put the layer back to its previous position to keep the **WHITE** Cross intact.



- Put the **WHITE/GREEN** edge directly below the **GREEN** center piece.
- Make two “**R**” ¼ turns so the **WHITE/GREEN** edge piece is on the **TOP** layer.



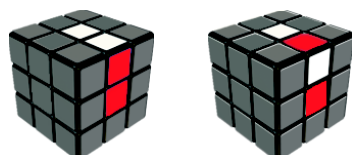
- At this point it does not matter if the **WHITE** part of the edge is on the **UP** face or the **FRONT** face.



STEP 1

Fourth Goal:

To get the **WHITE/RED** edge on the **TOP** layer and in line with the **RED** center piece.



- **WHITE** face **UP**.
- **RED** face **RIGHT**.

Find the **WHITE/RED** edge.

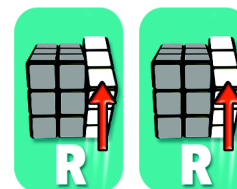
- Is it on the **BOTTOM** layer?

If **NOT** (do this before the next step):

- Twist the row of the cube that has the **WHITE/ RED** edge until the **WHITE/RED** edge piece is on the **BOTTOM** layer.
- Twist the **DOWN** face a “**D**” ¼ turn.
- After completing the **DOWN** face “**D**” ¼ turn, reverse the original ¼ turn(s) to put the layer back to its previous position to keep the **WHITE** Cross intact.



- Put the **WHITE/RED** edge directly below the **RED** center piece.
- Make two “**R**” ¼ turns so the **WHITE/RED** edge piece is on the **TOP** layer.



- At this point it does not matter if the **WHITE** part of the edge is on the **UP** face or the **FRONT** face.



- **WHITE** face UP.
- **RED** face FRONT.
- **BLUE** face RIGHT.

Does the cube show the **WHITE, WHITE, BLUE, BLUE** pattern from the **WHITE** center piece to the **BLUE** center piece?

If YES:

- Wait patiently and listen carefully.



STEP 2

First Goal:

To get the **WHITE, WHITE, BLUE, BLUE** pattern from the **WHITE** center piece to the **BLUE** center piece.



If NOT:



- Make sure the **WHITE** face is UP, **RED** face is FRONT and **BLUE** face is on the RIGHT face.
- Complete the following sequence:



- Now does your cube show the **WHITE, WHITE, BLUE, BLUE** pattern from the **WHITE** center piece to the **BLUE** piece?



- **WHITE** face UP.
- **BLUE** face FRONT.
- **ORANGE** face RIGHT.

Does the cube show the **WHITE, WHITE, ORANGE, ORANGE** pattern from the **WHITE** center piece to the **ORANGE** center piece?

If YES:

- Wait patiently and listen carefully.



If NOT:

- Make sure the **WHITE** face is UP, **BLUE** face is FRONT and **ORANGE** face is on the RIGHT face.
- Complete the following sequence:



- Now does your cube show the **WHITE, WHITE, ORANGE, ORANGE** pattern from the **WHITE** center piece to the **ORANGE** piece?

STEP 2

Second Goal:

To get the **WHITE, WHITE, ORANGE, ORANGE** pattern from the **WHITE** center piece to the **ORANGE** center piece.





- **WHITE** face UP.
- **ORANGE** face FRONT.
- **GREEN** face RIGHT.

Does the cube show the **WHITE, WHITE, GREEN, GREEN** pattern from the **WHITE** center piece to the **GREEN** center piece?

If YES:

- Wait patiently and listen carefully.



If NOT:

- Make sure the **WHITE** face is UP, **ORANGE** face is FRONT and **GREEN** face is on the RIGHT face.
- Complete the following sequence:



STEP 2

Third Goal:

To get the **WHITE, WHITE, GREEN, GREEN** pattern from the **WHITE** center piece to the **GREEN** center piece.



- Now does your cube show the **WHITE, WHITE, GREEN, GREEN** pattern from the **WHITE** center piece to the **GREEN** piece?



- **WHITE** face UP.
- **GREEN** face FRONT
- **RED** face RIGHT.

Does the cube show the **WHITE, WHITE, RED, RED** pattern from the **WHITE** center piece to the **RED** center piece?

- If YES:
 - Wait patiently and listen carefully.



STEP 2

Fourth Goal:

To get the **WHITE, WHITE, RED, RED** pattern from the **WHITE** center piece to the **RED** center piece.



If NOT:

- Make sure the **WHITE** face is UP, **GREEN** face is FRONT and **RED** face is on the RIGHT face.
- Complete the following sequence:



- Now does your cube show the **WHITE, WHITE, RED, RED** pattern from the **WHITE** center piece to the **RED** piece?



- Make a “**Ri**” $\frac{1}{4}$ turn
- Make a “**U**” $\frac{1}{4}$ turn
- Make a “**Fi**” $\frac{1}{4}$ turn
- Make a “**Ui**” $\frac{1}{4}$ turn

Troubleshooting

If the **WHITE, WHITE** pattern is not complete, make sure the pattern you are trying to change is on the **RIGHT** face, then:

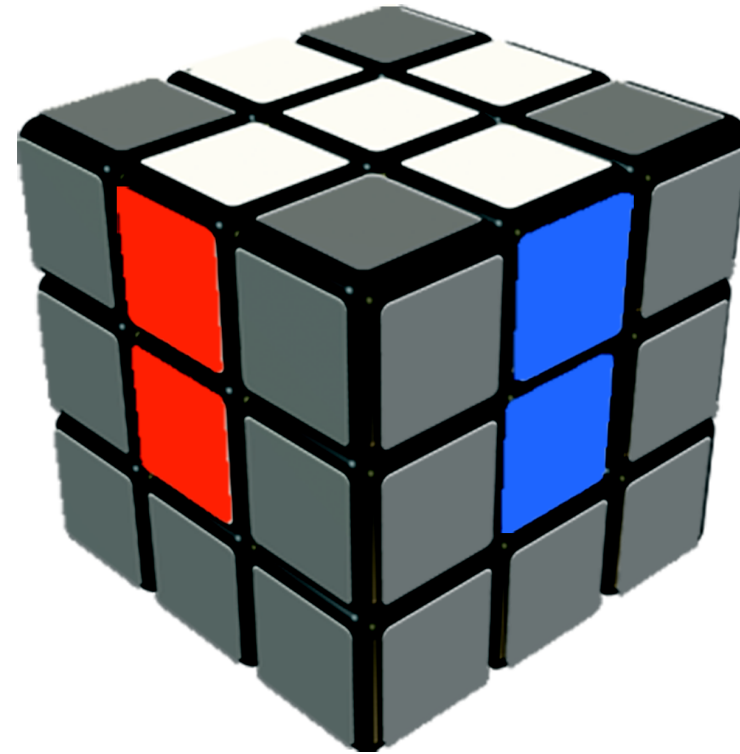




PP19



Examine your Rubik's Cube.



GOAL: The **WHITE** Cross

The goal of this stage is to get the **WHITE** cross on the **UP** face with all the **WHITE** edges matching the center pieces.

Does your Rubik's Cube look like this?

Lesson 1 Review

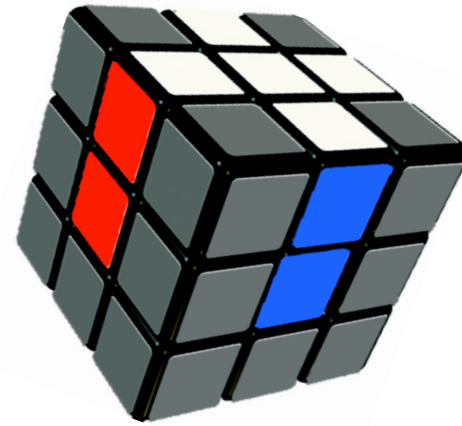
Vocabulary

Lesson Focus

Lesson Review

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Rubik's Trivia



PP20

Congratulations!
Congratulations!
Congratulations!
Congratulations!
Congratulations!
Congratulations!
You have achieved
The WHITE Cross

Lesson 1 Review

Vocabulary

Lesson Focus

Lesson Review

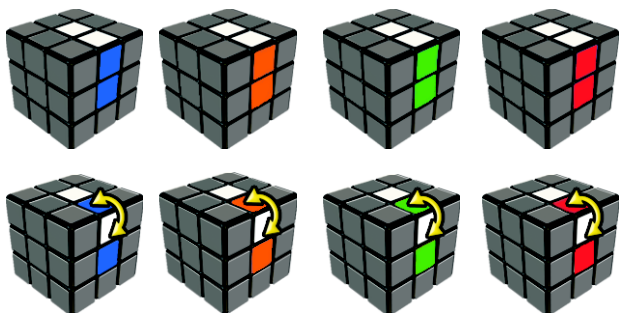
Lesson
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REVIEW

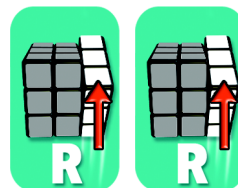
To get the **WHITE** edges matched with the correct faces:



- Make sure the **WHITE** face is **UP**.
- Find a **WHITE** edge.
- Twist the layer of the cube that has the **WHITE** edge until the **WHITE** edge is on the **BOTTOM** layer.
- Twist the **DOWN** Face “**D**” ¼ turn.



- Put the layer you moved back where it was originally.
- Put the **WHITE** edge directly below the matching colored center piece. Turn cube so the center is on **RIGHT**.
- Make two “**R**” ¼ turns, so the **WHITE** edge is on the **TOP** layer.



- Repeat all the steps for each **WHITE** edge.
- If the pattern is not **WHITE, WHITE**, use the sequence to correct the pattern:





PP23



Question: If you made a single turn of one of the Rubik's Cube faces every second, how many years would it take to go through all the possibilities?

Answer: 1.4 Trillion Years

Lesson 1 Review

Vocabulary

Lesson Focus

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Rubik's Trivia