

F2

The image shows three 3x3 Rubik's cubes in a row, illustrating the effect of the commutator sequence $U'F'UF URU'R'$ on different parts of the cube. Each cube has a white top face, a yellow bottom face, and gray side faces. The sequence is shown in blue rounded rectangles below each cube.

- Left Cube:** Shows the initial state. The front face (F) has a red center and a red square in the bottom-left corner. The right face (R) has a green center and a green square in the bottom-middle position.
- Middle Cube:** Shows the state after the first part of the sequence, $U'F'UF$. The front face (F) has a red center and a red square in the bottom-middle position. The right face (R) has a green center and a green square in the bottom-middle position.
- Right Cube:** Shows the state after the full sequence, $U'F'UF URU'R'$. The front face (F) has a red center and a red square in the bottom-middle position. The right face (R) has a green center and a green square in the bottom-middle position.

Diagram illustrating the sequence of moves for a 3x3 grid transformation:

- Initial state: A 3x3 grid with the center cell (row 2, column 2) highlighted in yellow and labeled 'U'.
- Sequence of moves: $F \text{ } R U R' U' \text{ } F' \text{ } f \text{ } R U R' U' \text{ } f'$
- Intermediate state: A 3x3 grid with the center cell (row 2, column 2) highlighted in yellow and labeled 'U'.
- Final state: A 3x3 grid with the center cell (row 2, column 2) highlighted in yellow and labeled 'U'.

turn U that one edge is in right spot (not two)
put it in back



$R'U^2RUR'U$

do algorithm once or twice

turn cube X^2 that white is on top
look at corner front-right-bottom

- * put in temporary place: RUR'
- * turn D until target position is in front-right-bottom position
- * put corner back: $RU'R'$
- * choose another yellow corner and turn D until it is in front-right-bottom
- * repeat steps until correct permutation

turn cube X^2 that white is on top

- * put misorientated corner in front-right-bottom
- * after doing algorithm, turn D for next corner
- * repeat steps until correct orientation

(RUR'U') 2x

(URU'R') 2x

Turn cube:

- X: like turning R
- Y: like turning U
- Z: like turning F