

# 100 Rubik's Cube Sudoku Puzzles

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*Sudoku for cubers*

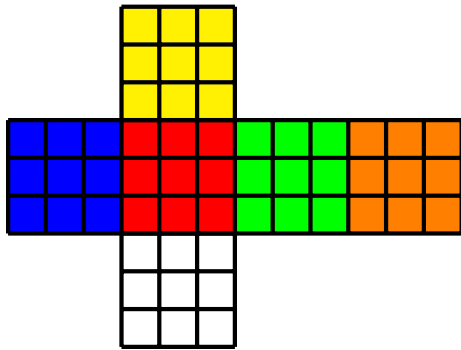
Made by **Zixing Wang**

# Preface

## Rules

Cube Sudoku is to fill colors in a  $3 \times 3 \times 3$  Rubik's cube with the Western color scheme. Once the puzzle is solved, this means that the state is solvable by legal moves (that is, without taking the cube apart again).

## Western color scheme



## Solutions

Each problem has only one solution. Solution can be accessed after each problem. You can apply the scramble in the solution to your Rubik's cube with yellow on the top and red on the front.

## Acknowledgement

Thanks to Xi'an Jiao Tong University Rubik's Cube Club, for providing the idea of "Cube Sudoku".

## Github link

<https://github.com/nbwzx/CubeSudoku>

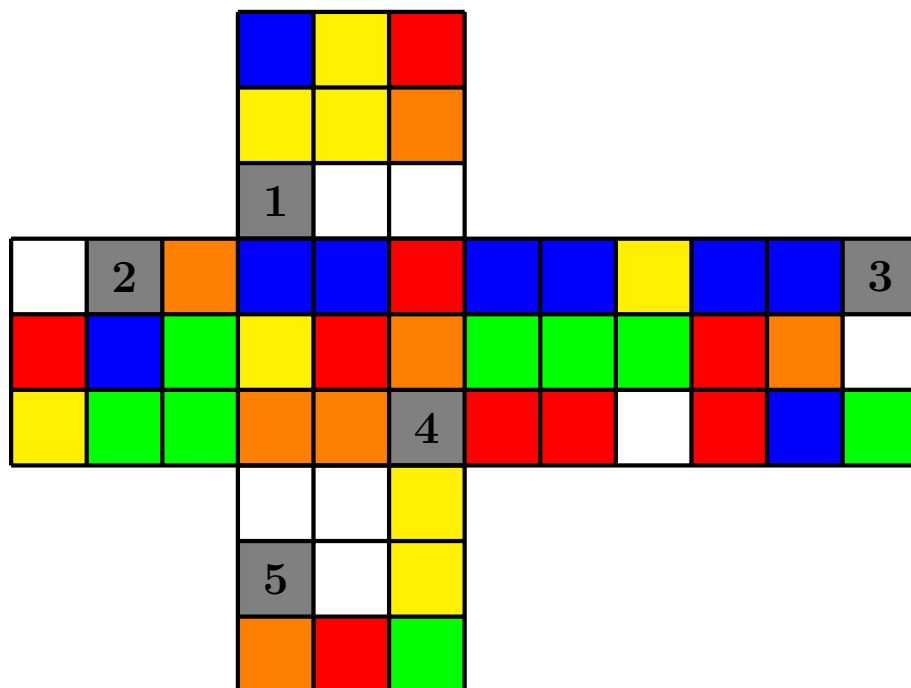
## Contributors

Zixing Wang

## License

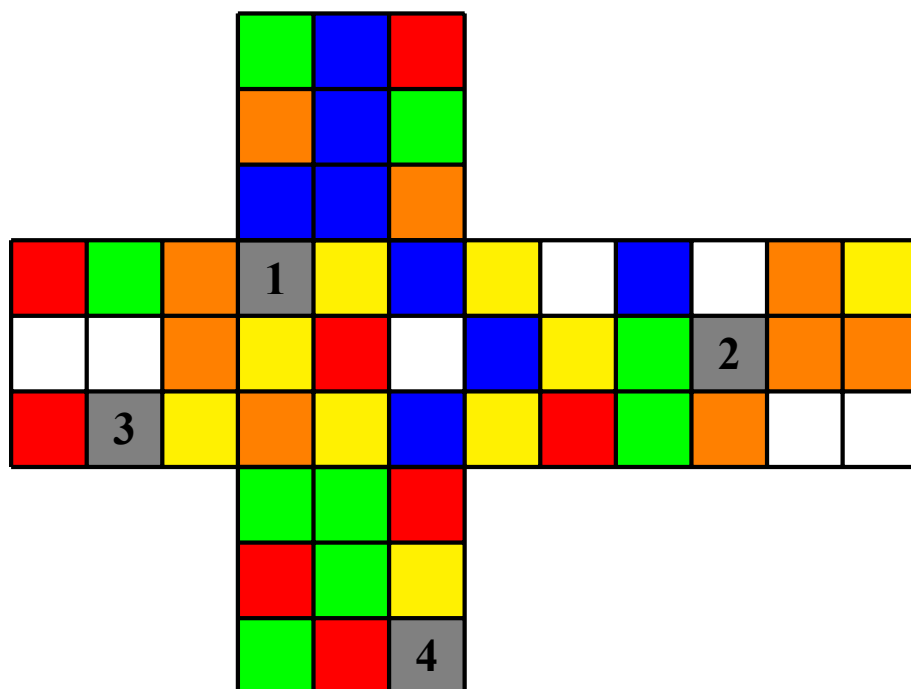
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No. 1      Difficulty:★



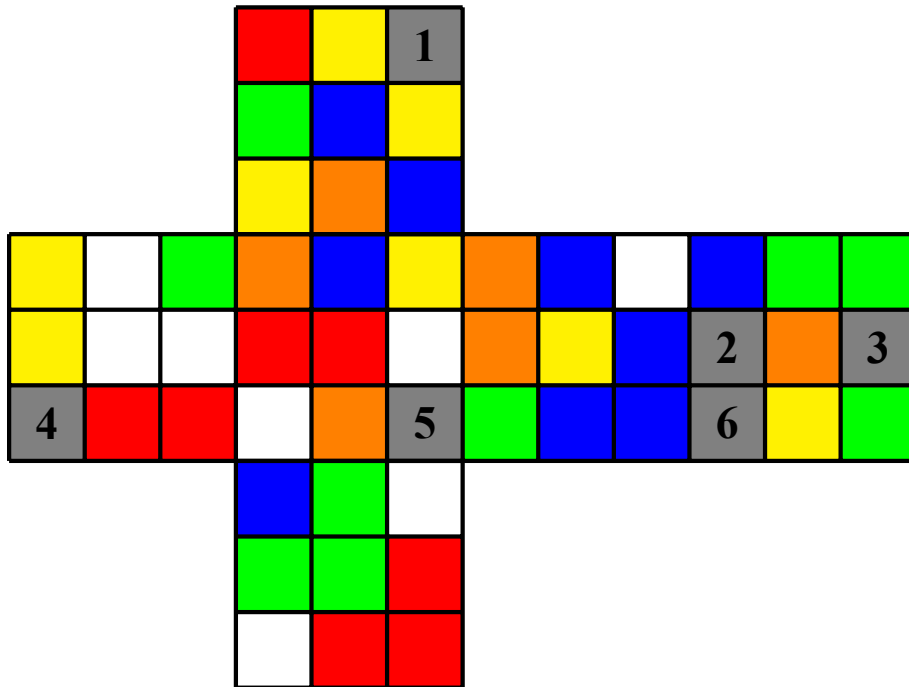
Solution 1: U2 D2 R D2 B2 D2 R D2 B2 D' B2 L U D'

No. 2      Difficulty:★



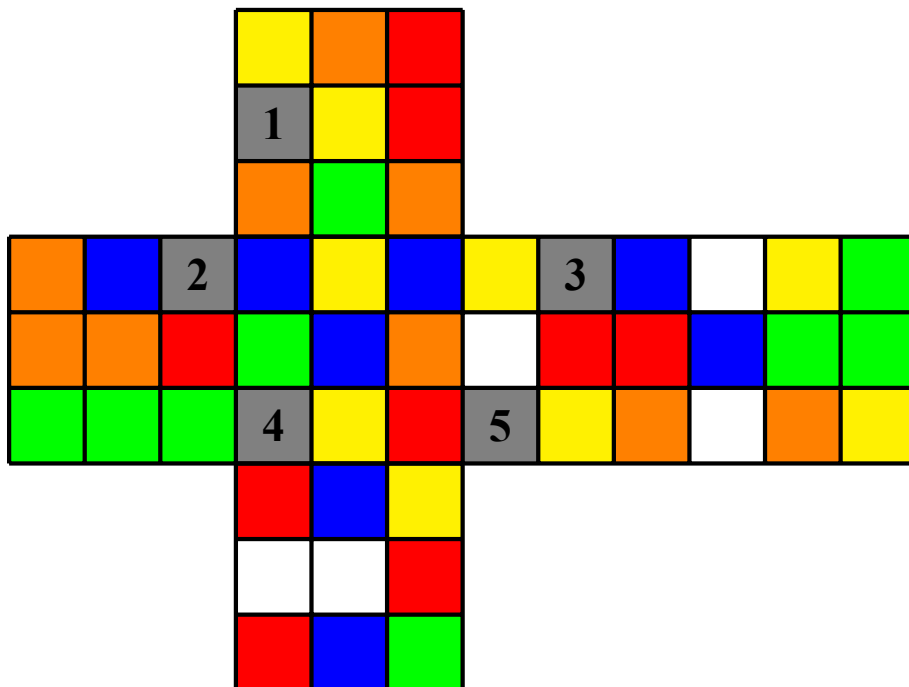
Solution 2: R D2 F D2 B L2 B U2 F U2 R2 B2 R2 L' F' L2 B R F D' Fw

**No. 3      Difficulty:★**



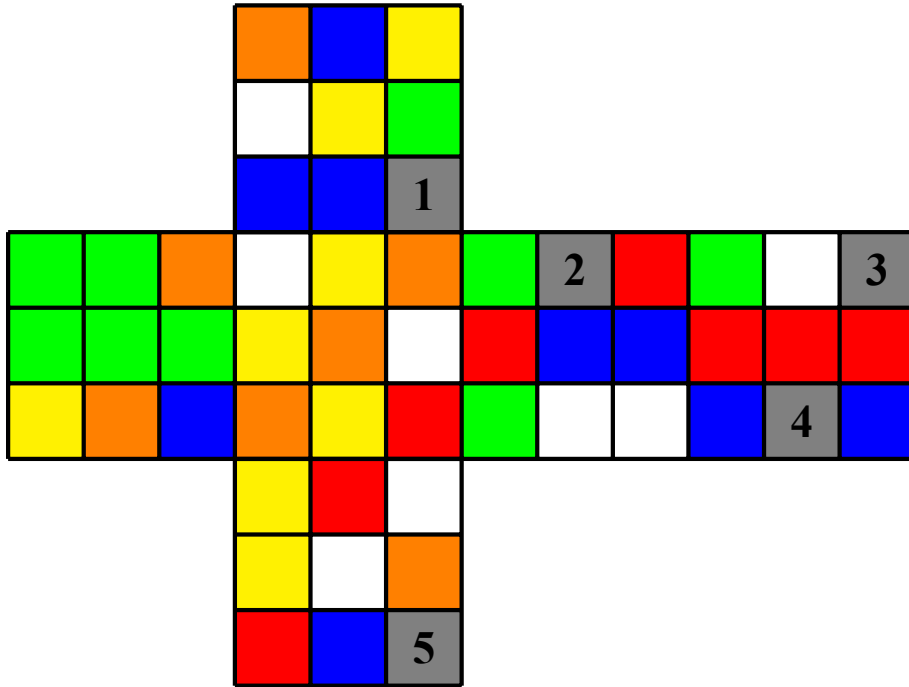
**Solution 3: B2 L' U2 L' D2 B2 U2 L' D2 B2 L R B' R' B2 D R' B' F2 U L2 Fw**

**No. 4      Difficulty:★**



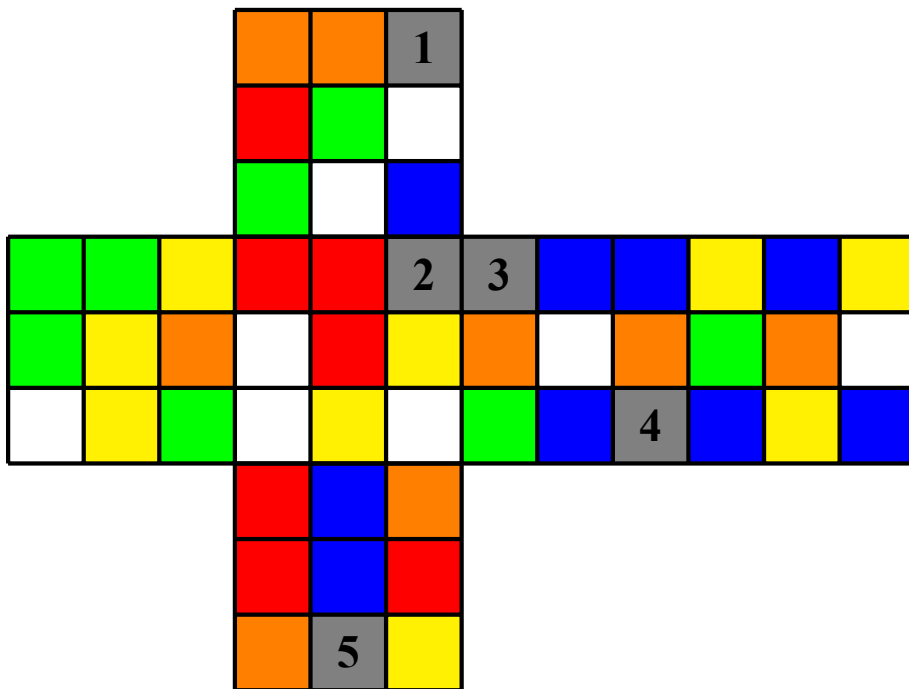
**Solution 4: B2 U L2 F2 D2 L2 F2 U' R2 U B2 D' F R B2 L D2 L2 F L' R2 Uw'**

**No. 5      Difficulty: ★**



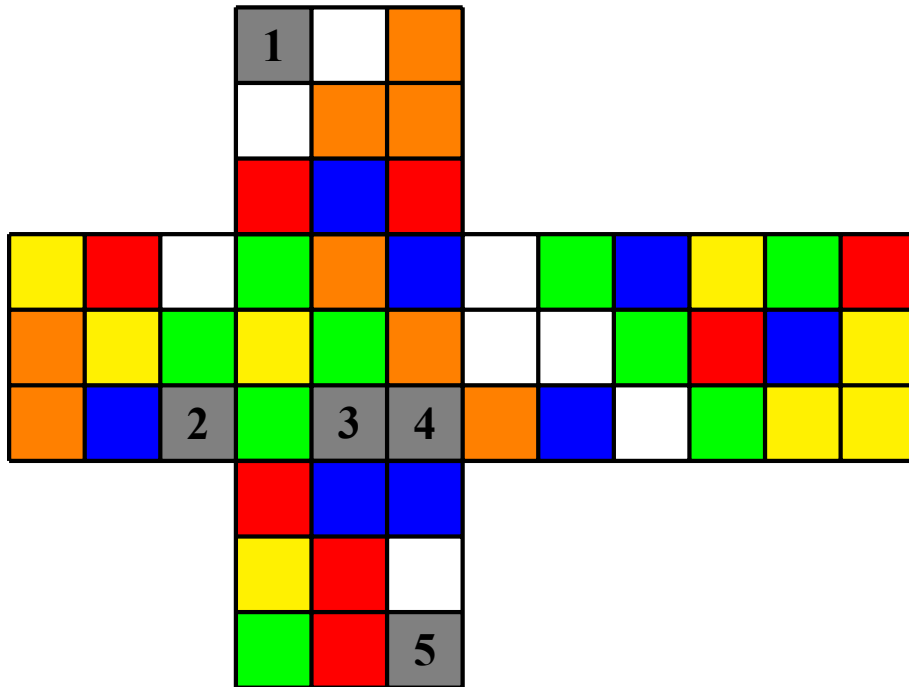
**Solution 5:** R2 B2 D2 R2 F2 U' L2 D B2 L2 D2 F' L' F' R2 F D2 R2 F' R' U Uw2

**No. 6      Difficulty: ★**



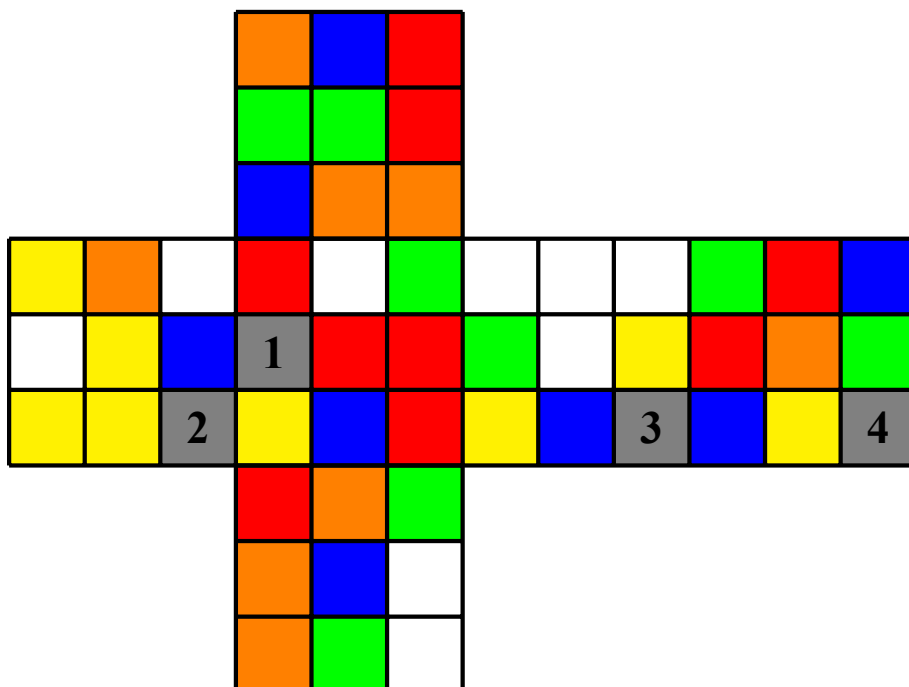
**Solution 6: F2 R2 F' R2 F2 R2 F' R2 B L2 F2 R B R2 F2 L' B D' B U Fw'**

**No. 7      Difficulty:★**



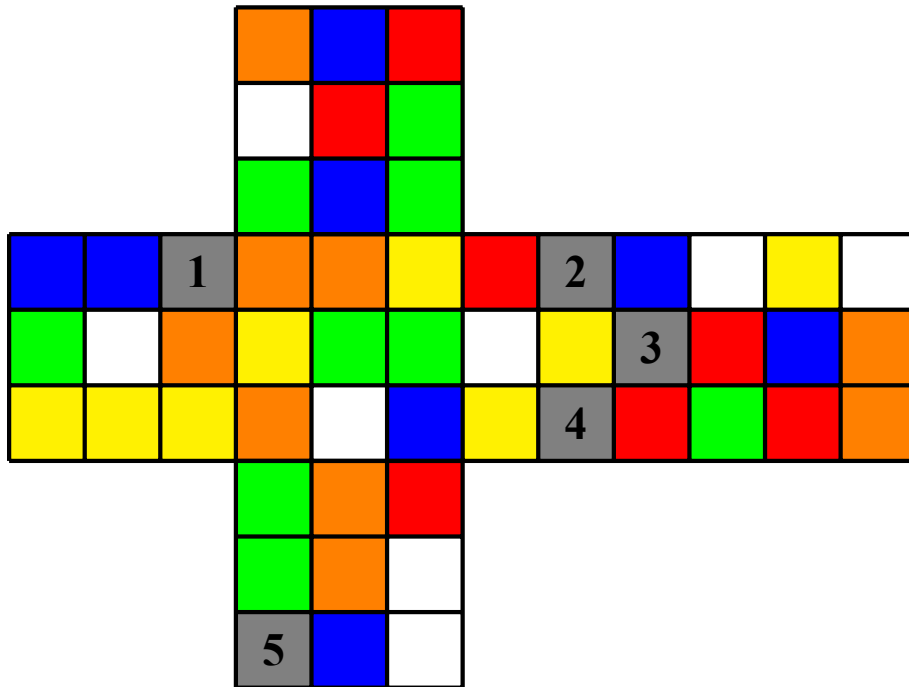
**Solution 7: F' U' R2 B2 U L2 F2 L2 D R2 U' R2 B R U B D F' L2 B' R Rw' Uw**

**No. 8      Difficulty:★**



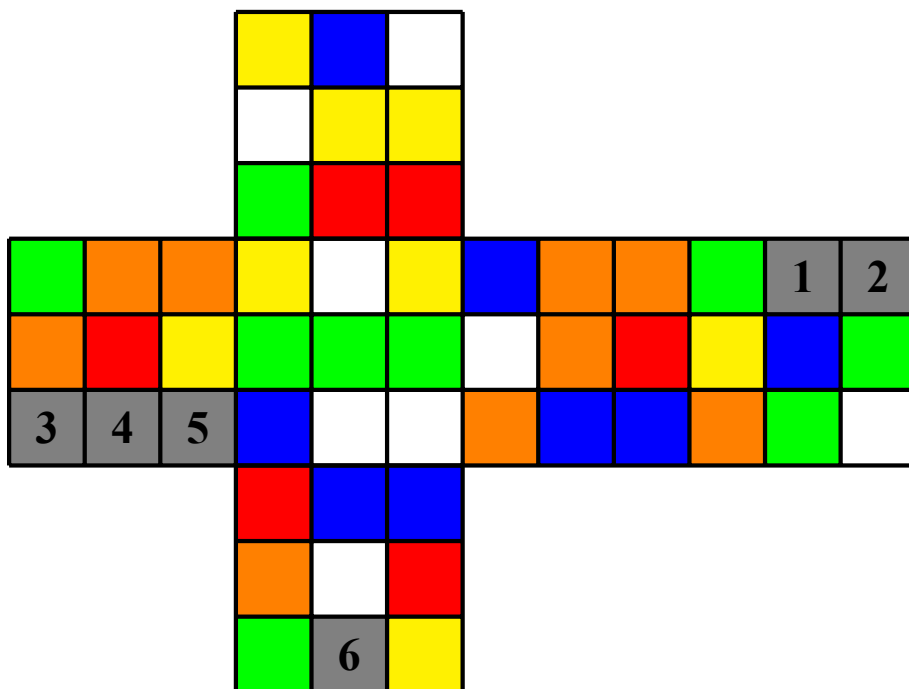
**Solution 8: D R2 U2 F' L2 F' L2 B2 L2 D2 B F' D2 R' U F2 U R2 F R D2 Fw'**

**No. 9      Difficulty:★**



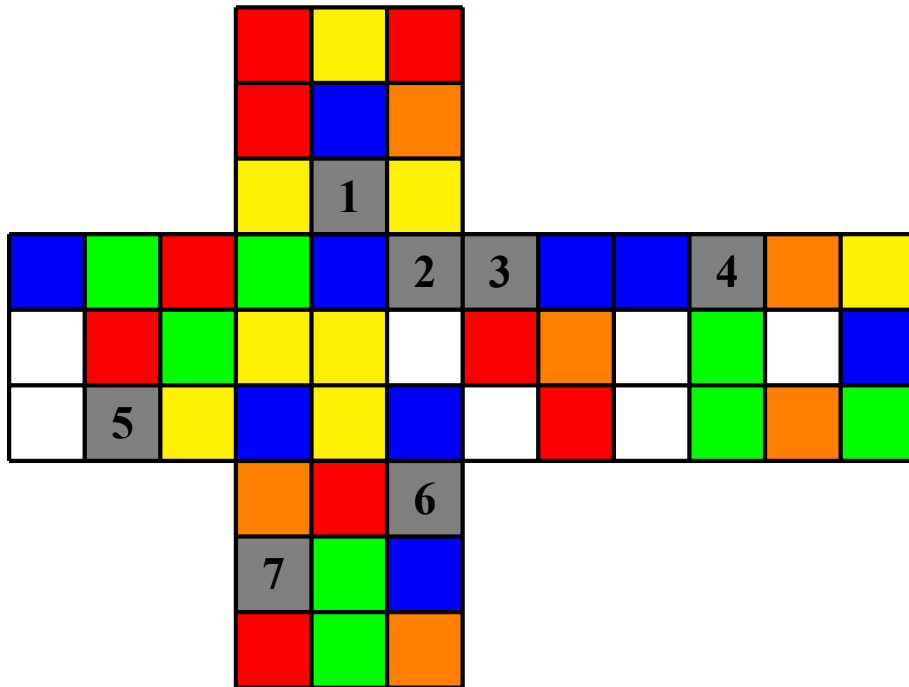
**Solution 9: B' R U R L D B2 L' B R2 U2 R F2 L F2 U2 R2 B2 D2 R2 B2 Rw Uw**

**No. 10      Difficulty:★**



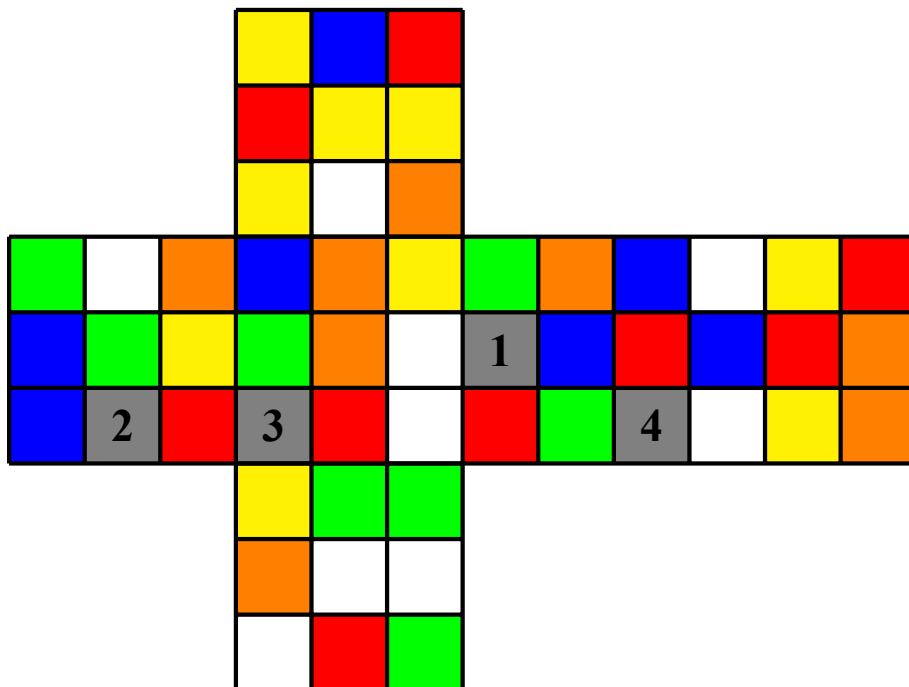
**Solution 10: B' F2 U' R2 D' B2 U' L2 B2 U' F2 D2 R U2 B' D F R U2 R2 Uw**

**No. 11      Difficulty:★**



**Solution 11: D2 L2 F2 L2 R2 D2 F' R2 U2 B' L2 F' U' B' D B R B D' L Fw Uw**

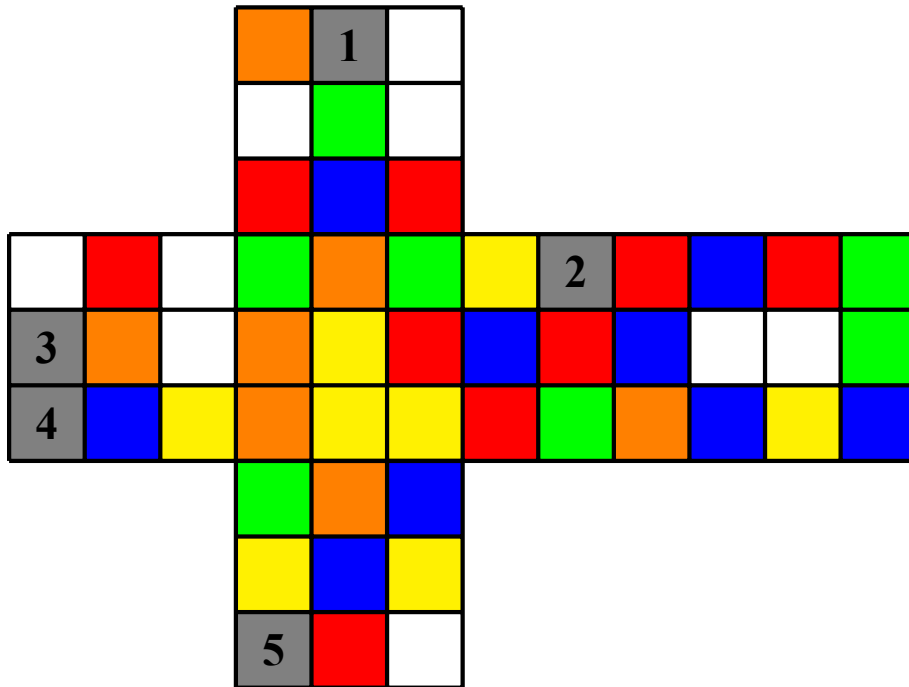
**No. 12      Difficulty:★**



**Solution 12: F' L R2 U B2 U2 B2 L2 R2 U' L2 D2 R2 D' R F U2 F U2 R2 D2 Uw2**

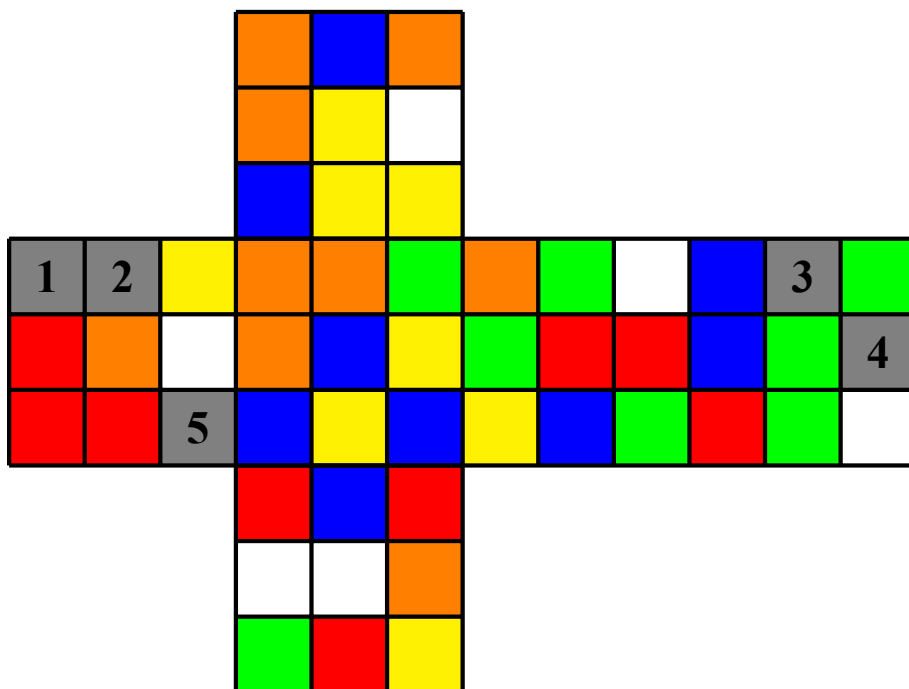


**No. 13      Difficulty:★**



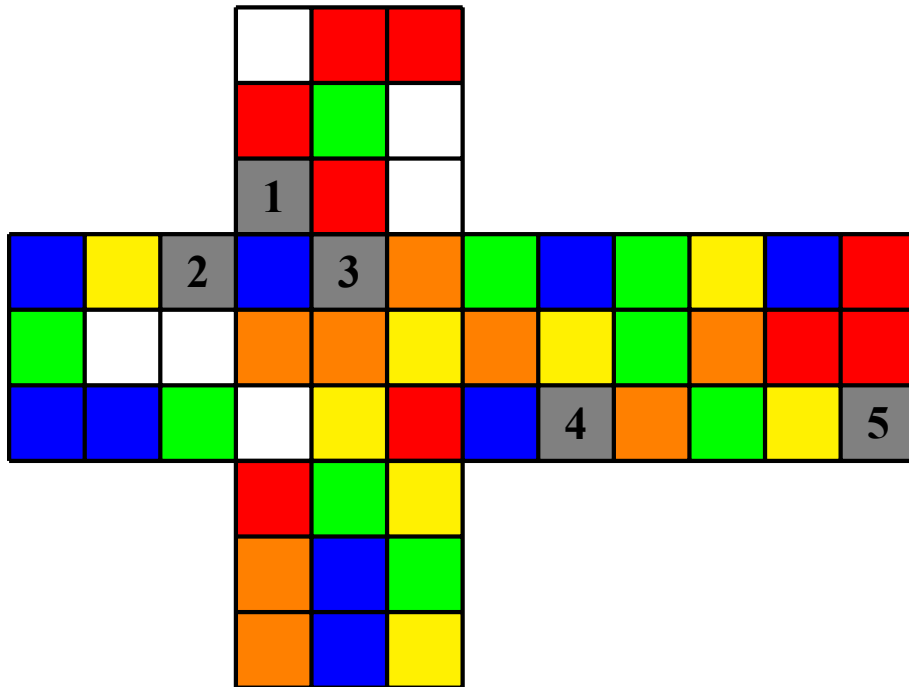
**Solution 13: F U B' U2 R F B R2 D F2 R2 U2 R' U2 L' D2 L2 D2 F2 R' U2 Fw' Uw'**

**No. 14      Difficulty:★**



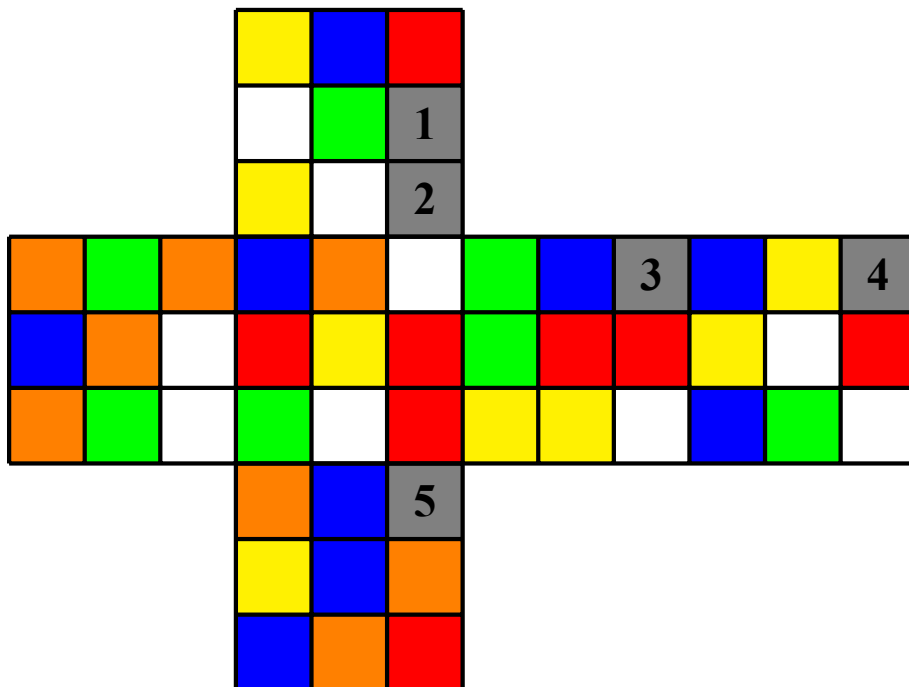
**Solution 14: L' D' R2 B' L2 D2 U2 B R2 B2 R2 F' U2 B2 R' F2 D L2 U' F R2 Uw'**

**No. 15      Difficulty:★**



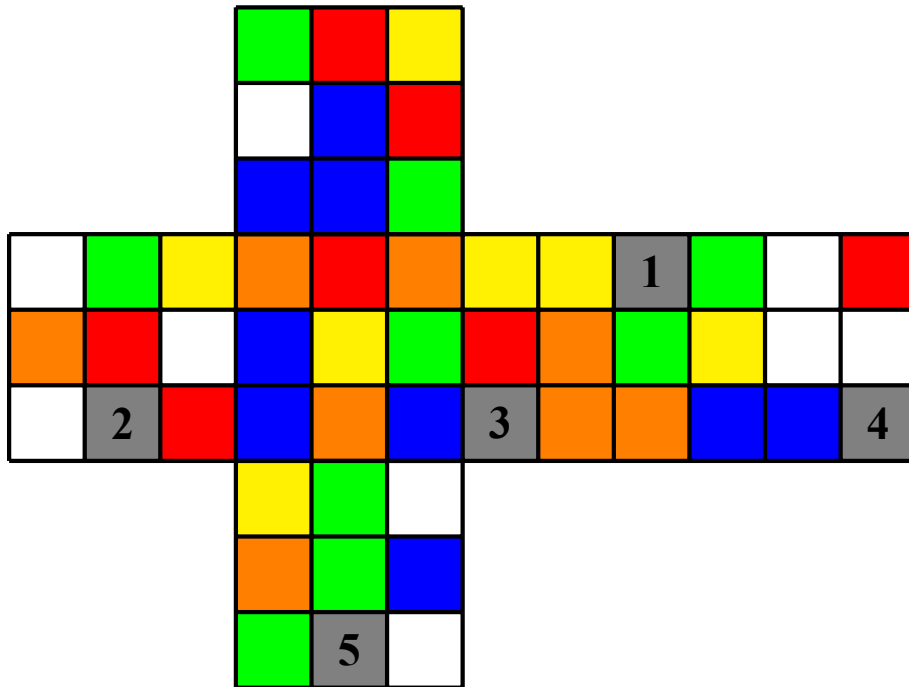
**Solution 15: B D' R2 D2 B L2 B' L2 F R2 B' F2 U2 L' R D F D2 B' L F' Fw' Uw2**

**No. 16      Difficulty:★**



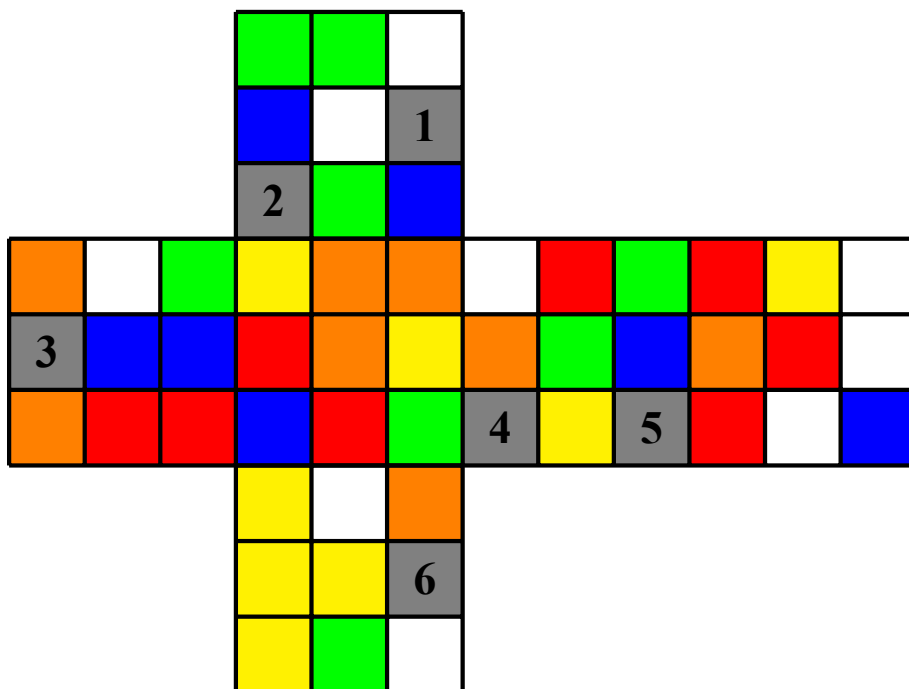
**Solution 16: R' F2 L' D2 L' U2 R' F2 R' F2 D2 U' B D2 L' F2 R2 D2 U R Fw' Uw'**

**No. 17      Difficulty:★**



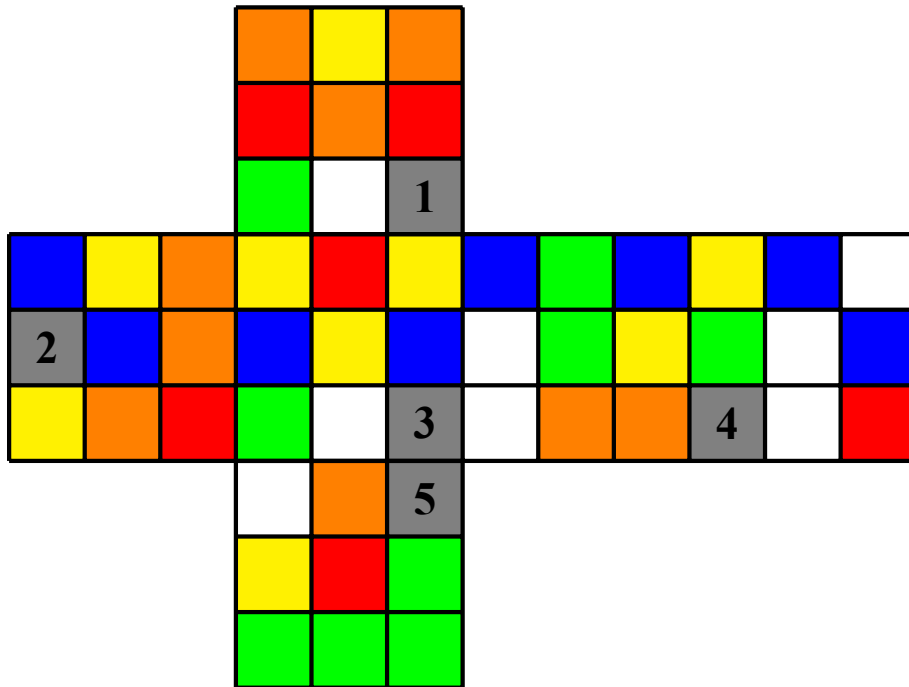
**Solution 17: R' F' U2 F2 R' U2 L U2 B2 L2 R' D2 R' F2 U F R2 D2 B D L' Fw Uw**

**No. 18      Difficulty:★**



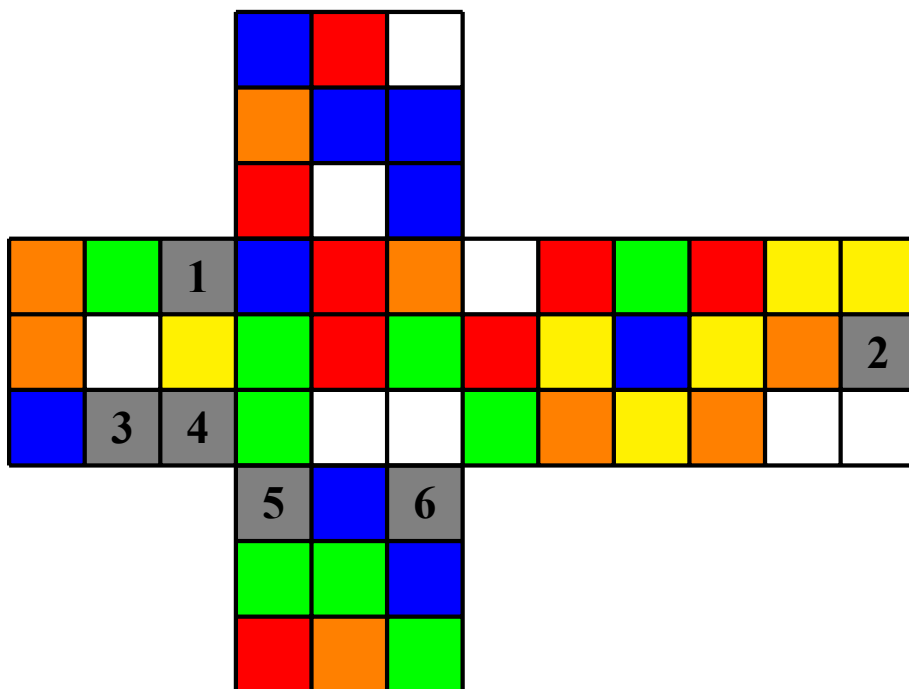
**Solution 18: L D B U2 L D F' R' U B2 U2 B' L2 B' L2 U2 L2 F2 R2 D2 F2 Rw2**

**No. 19      Difficulty:★**



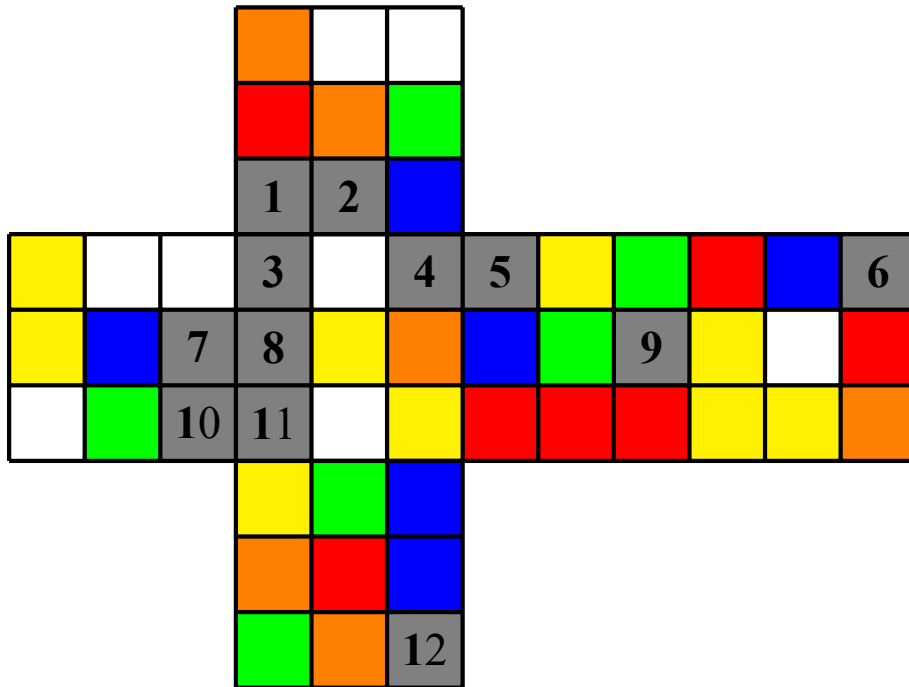
**Solution 19: F2 D L F' R' U L F' B U2 L2 B2 R2 D2 B D2 B2 R2 U R2 Rw'**

**No. 20      Difficulty:★**



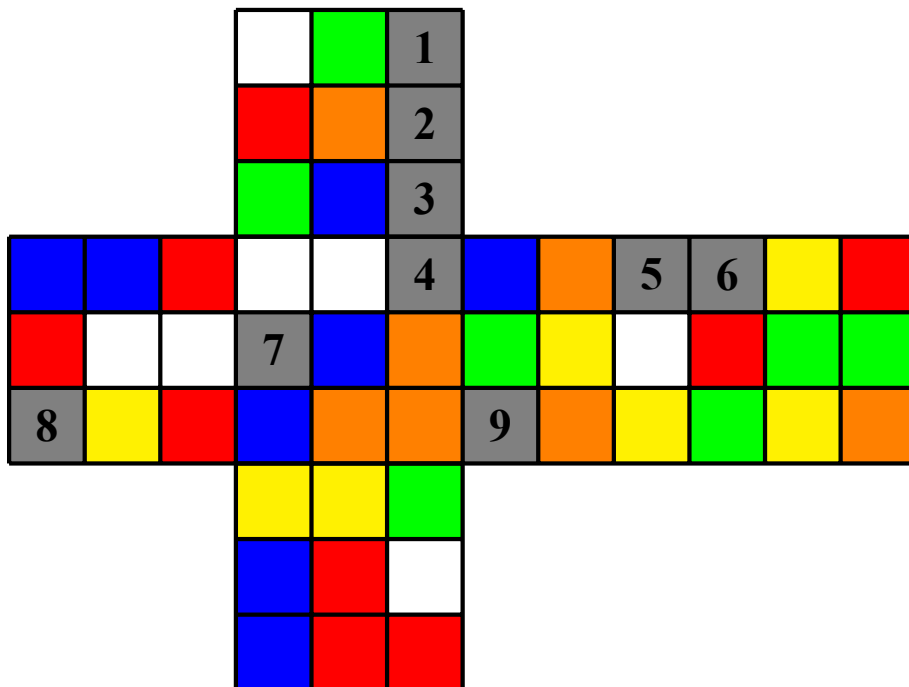
**Solution 20: U' B2 L2 U2 B L2 B U2 R2 D2 F U2 F' R B2 L D' F' U2 F' R' Fw**

**No. 21      Difficulty:★★**



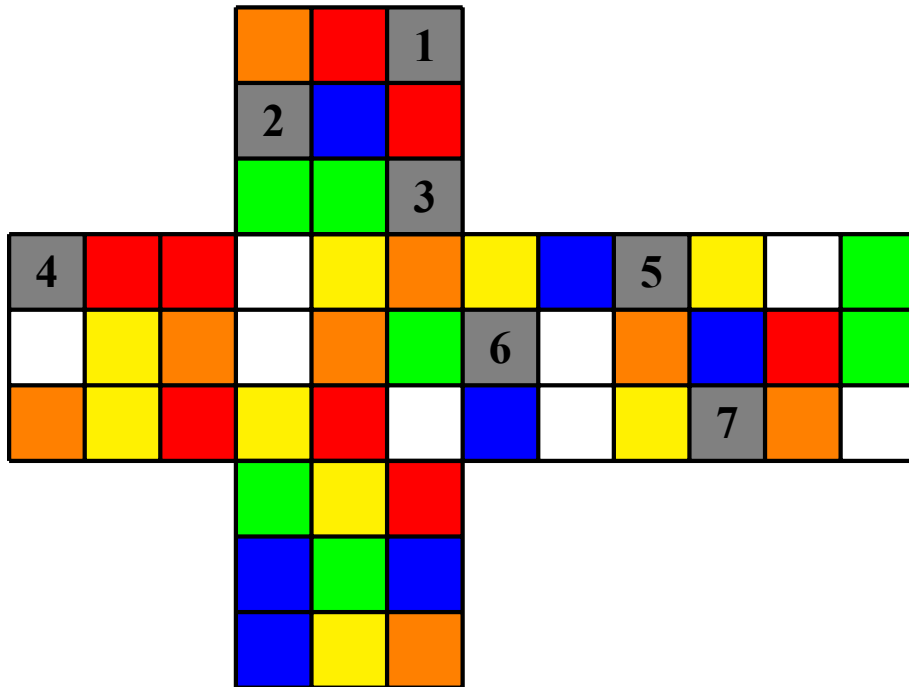
**Solution 21: D R2 D F2 L2 U B2 U L2 U B2 U F' U' R U2 R2 D' L2 B' L Rw'**

**No. 22      Difficulty:★★**



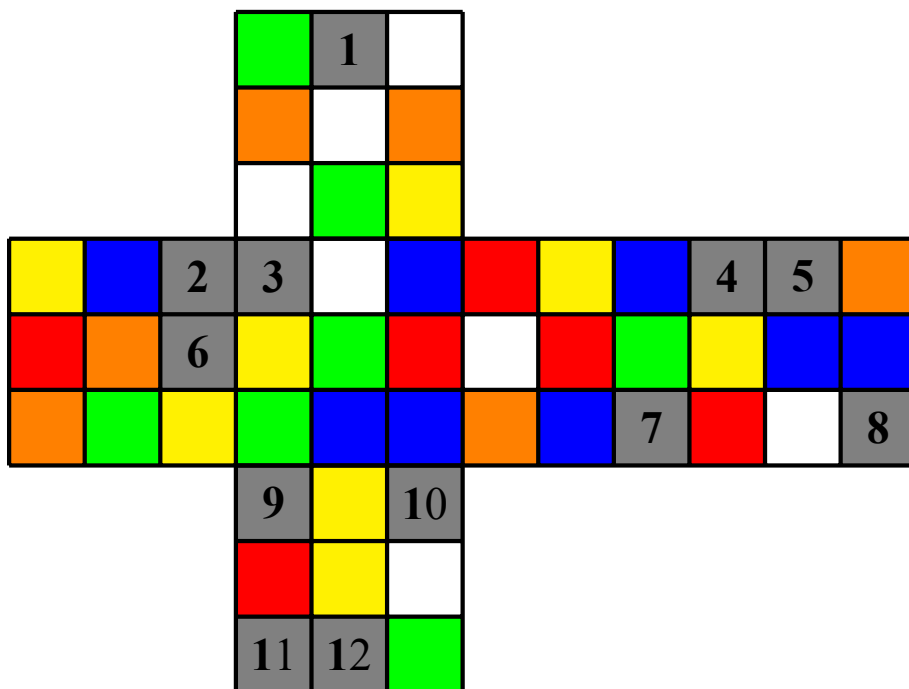
**Solution 22: F2 R2 D R2 U L2 U' F2 D' U2 R2 F' U' L' R' D B' D F2 U' Rw' Uw'**

**No. 23      Difficulty:★★**



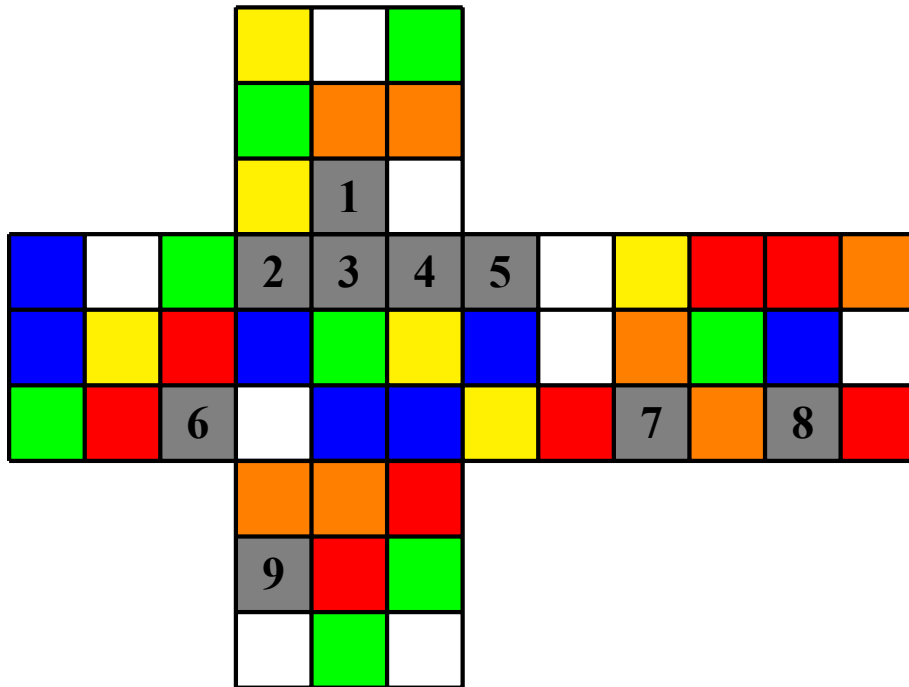
**Solution 23: B2 R2 D2 B2 D2 F2 R2 F2 U' L2 U' L' F2 D' B' F2 D2 R' D' R' Fw Uw2**

**No. 24      Difficulty:★★**



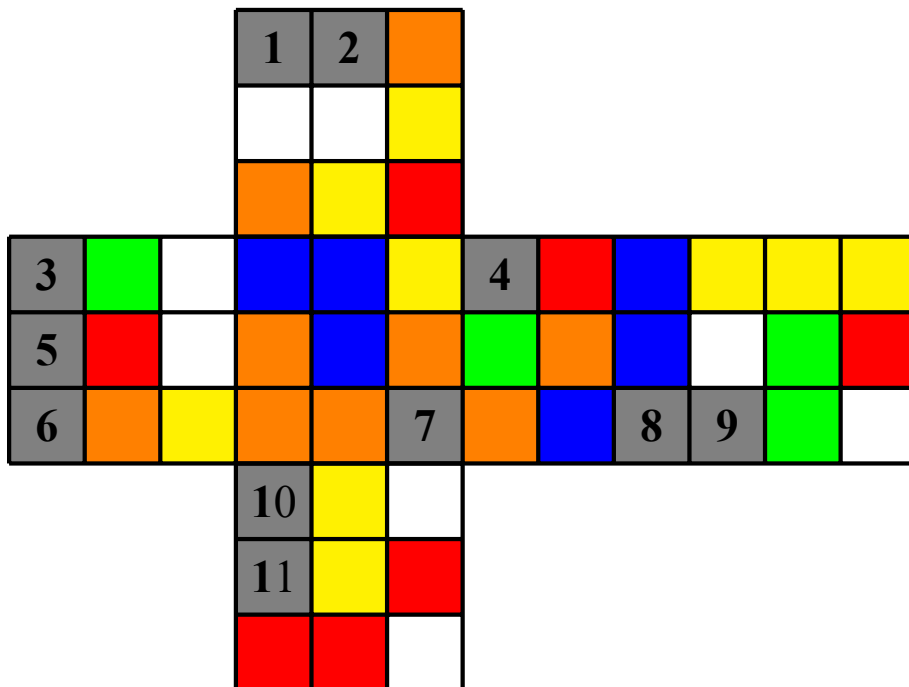
**Solution 24: B R D2 F2 R2 F' U D L D L2 U F2 U' R2 F2 B2 U B2 D R2 Rw2 Uw**

**No. 25      Difficulty:★★**



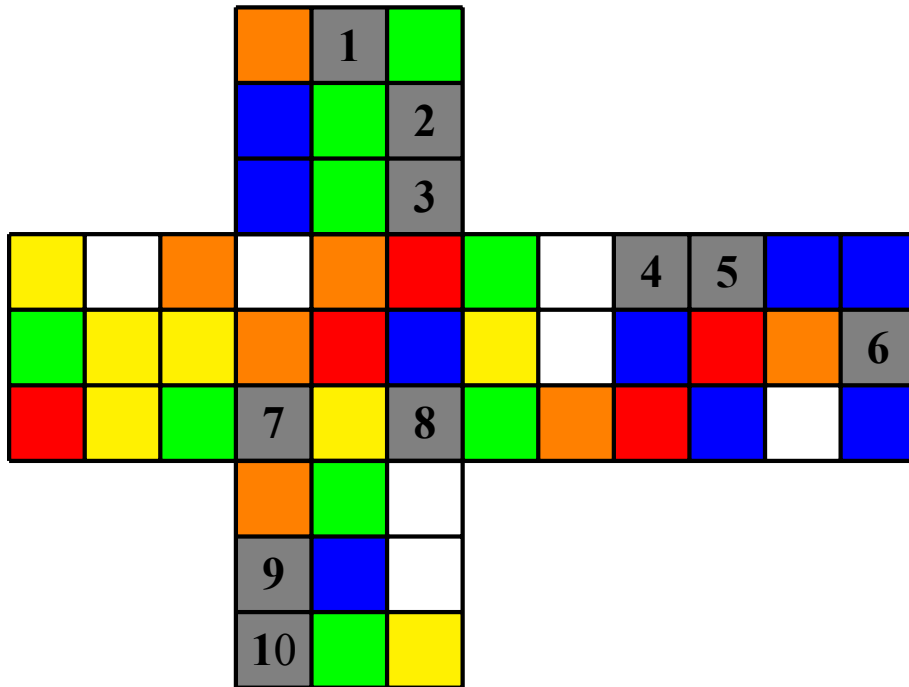
**Solution 25: F2 D L2 D R2 B2 U2 L2 D2 L2 U B' D U2 R2 D2 B2 F R Rw' Uw**

**No. 26      Difficulty:★★**



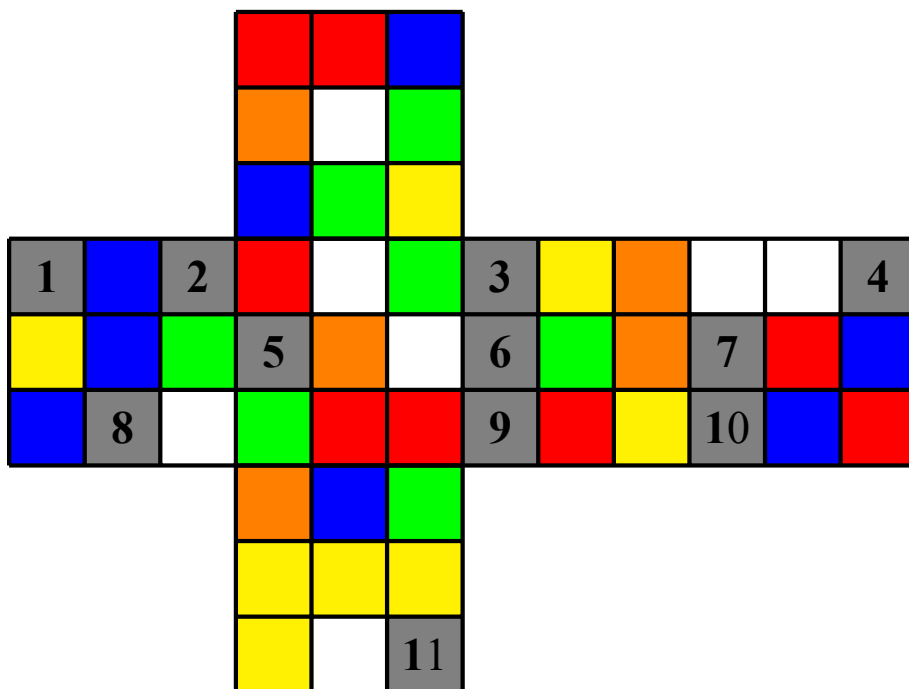
**Solution 26: R2 D U2 B2 D' U' F2 U' F D R' U R2 F' L R2 U' Rw2 Uw'**

**No. 27      Difficulty:★★**



**Solution 27: F' R2 D2 B' D2 L2 F2 D2 F' D2 B' R' F L2 D2 U' R2 F2 Fw'**

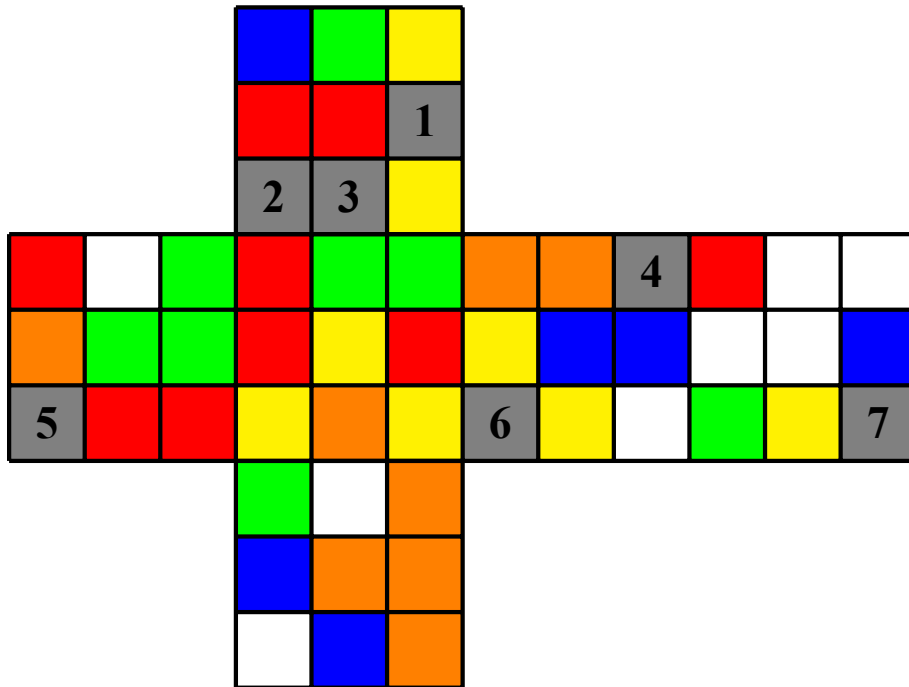
**No. 28      Difficulty:★★**



**Solution 28: F2 R B R2 U' B R B2 R2 B2 L2 U' L2 F2 U B2 U2 F2 D B D2 Rw2**

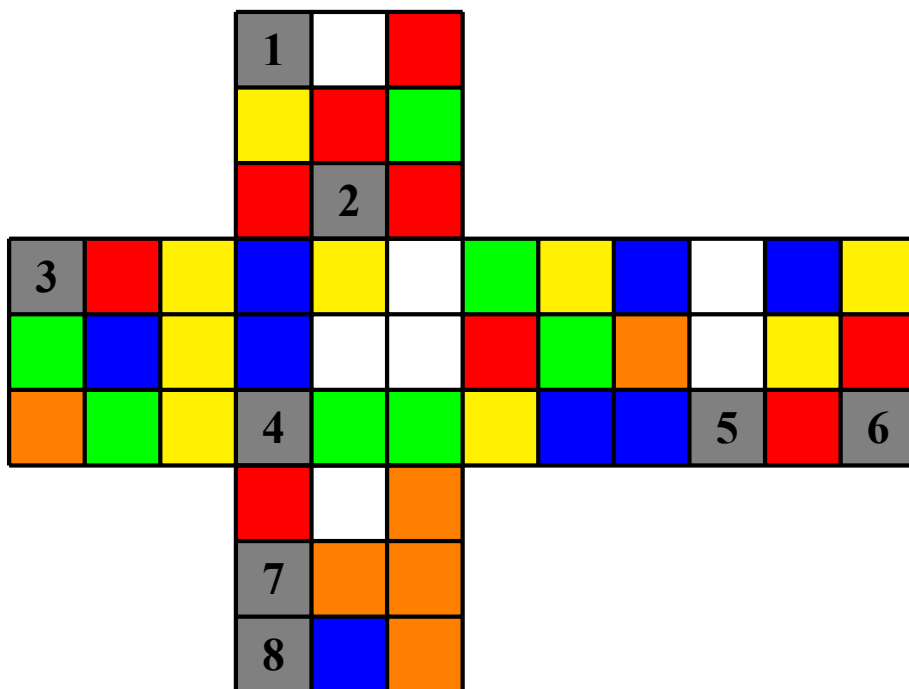


**No. 29      Difficulty:★★**



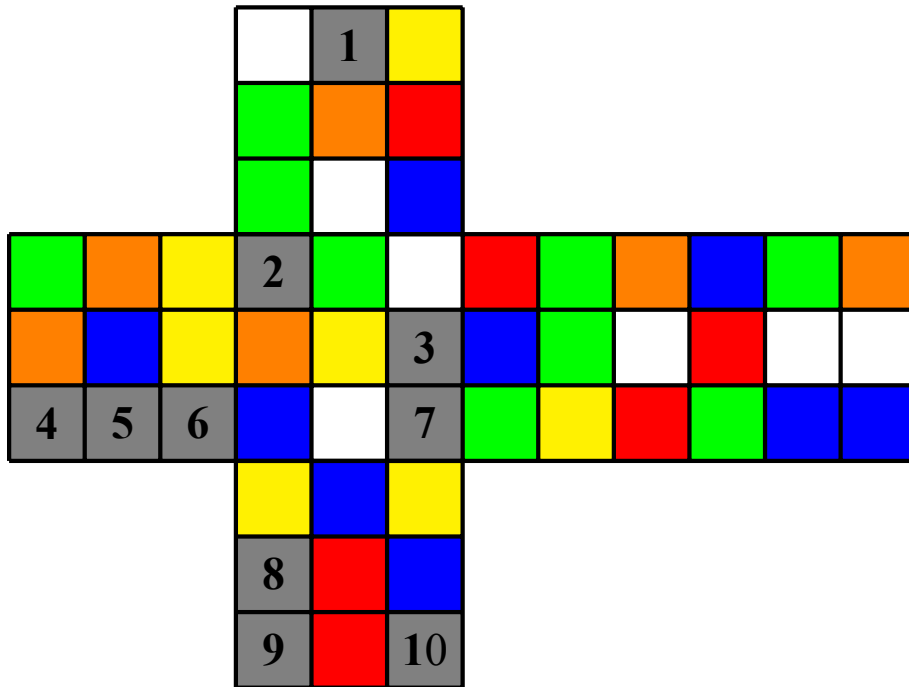
**Solution 29: B' L2 D B2 L2 D' R2 D' B2 D B2 U L2 F R2 U' B' R D' B' F2 Rw Uw2**

**No. 30      Difficulty:★★**



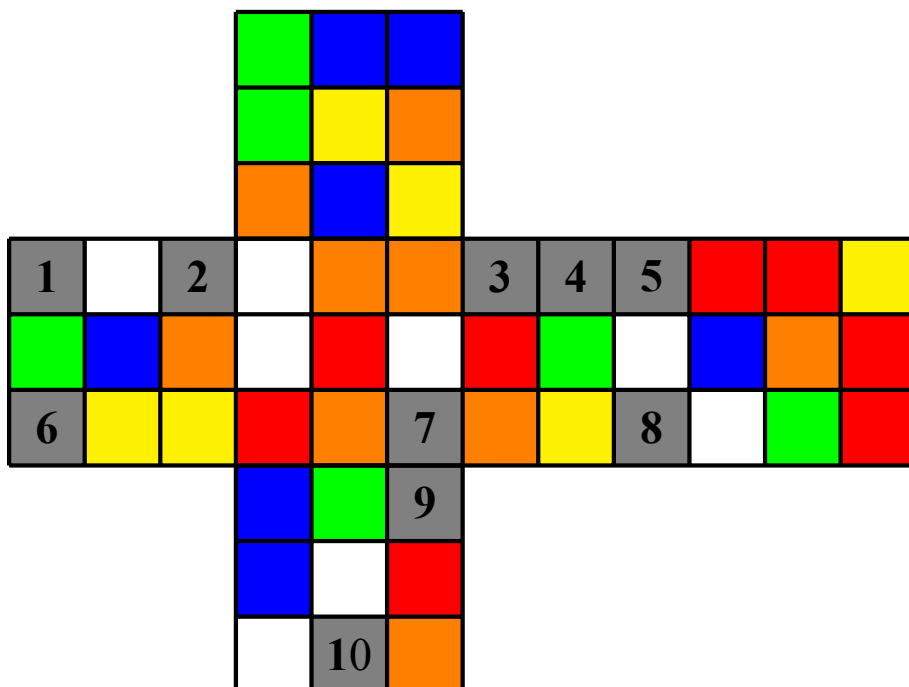
**Solution 30: F2 U' L2 U' R2 U2 L2 B2 D R2 B2 U L' D' L2 B2 L U R2 F' D2 Rw**

**No. 31      Difficulty:★★**



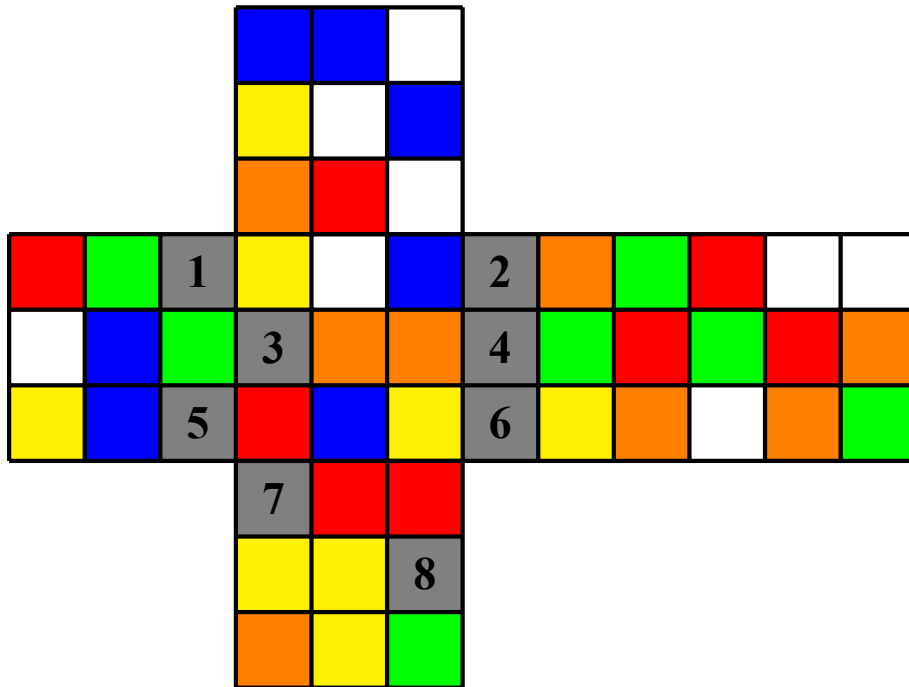
**Solution 31: B U' R2 F B2 D B U2 F2 L' D2 F2 B2 L U2 R2 F2 D2 L2 B' L2 Rw'**

**No. 32      Difficulty:★★**



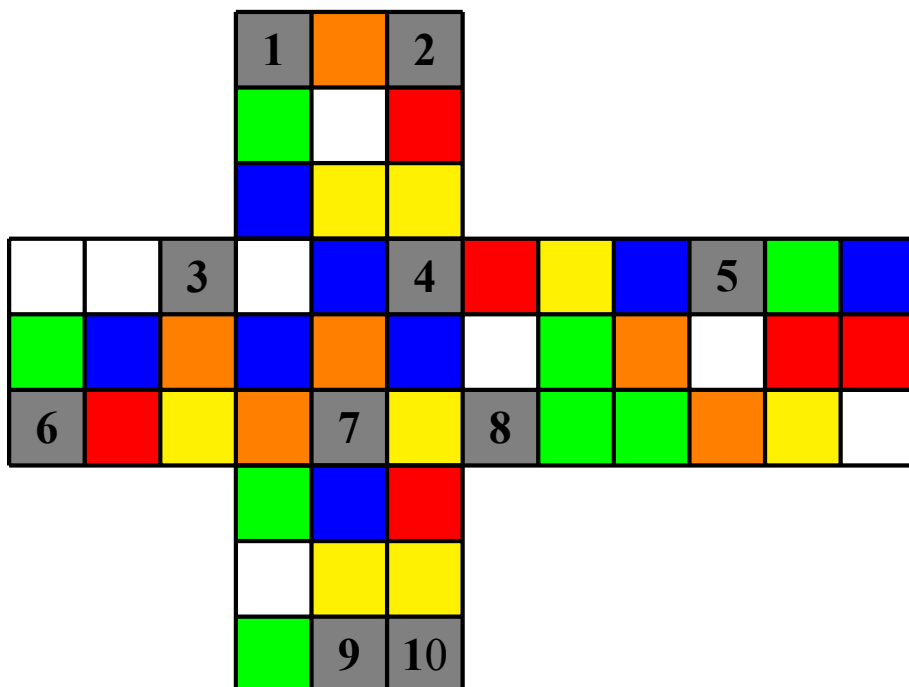
**Solution 32: D' R F2 U' F2 R' F' U B R2 U2 R' F2 L' U2 L' U2 L' B2 R' U2**

**No. 33      Difficulty:★★**



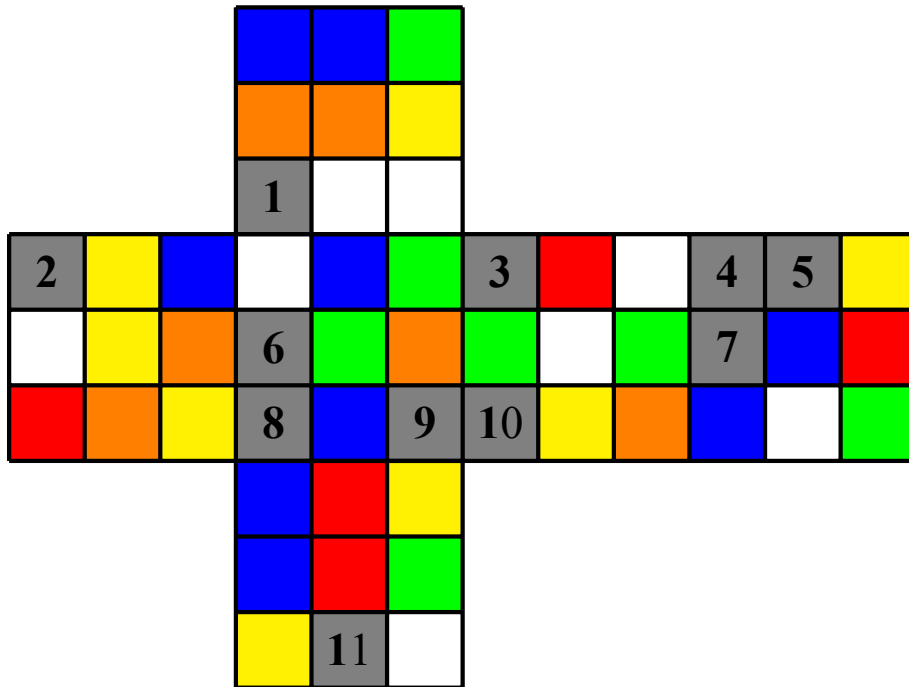
**Solution 33: R' D' F' L' D L' F U2 B2 R U2 B2 R2 L' U2 L2 D2 L' F2 B R2 Rw2**

**No. 34      Difficulty:★★**



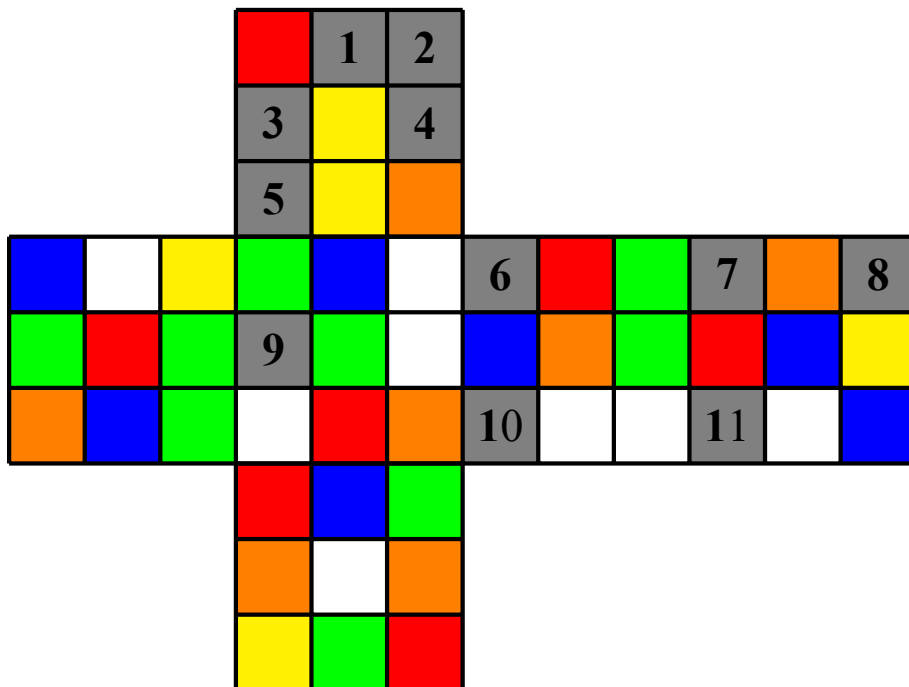
**Solution 34: D B' R' F R2 F U2 R2 B D2 F L2 B F' U' F2 U2 R B' L D2 Rw2**

**No. 35      Difficulty:★★**



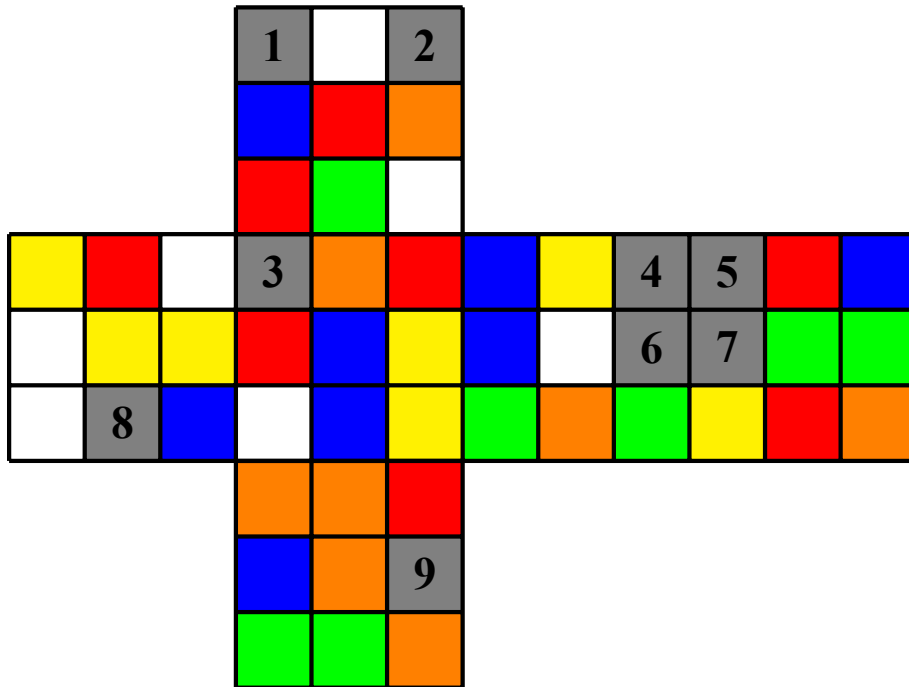
**Solution 35:** F' L' F B D F' U' R' F' R2 F U2 L2 B R2 B2 L2 B' L2 F Rw' Uw

**No. 36      Difficulty:★★**



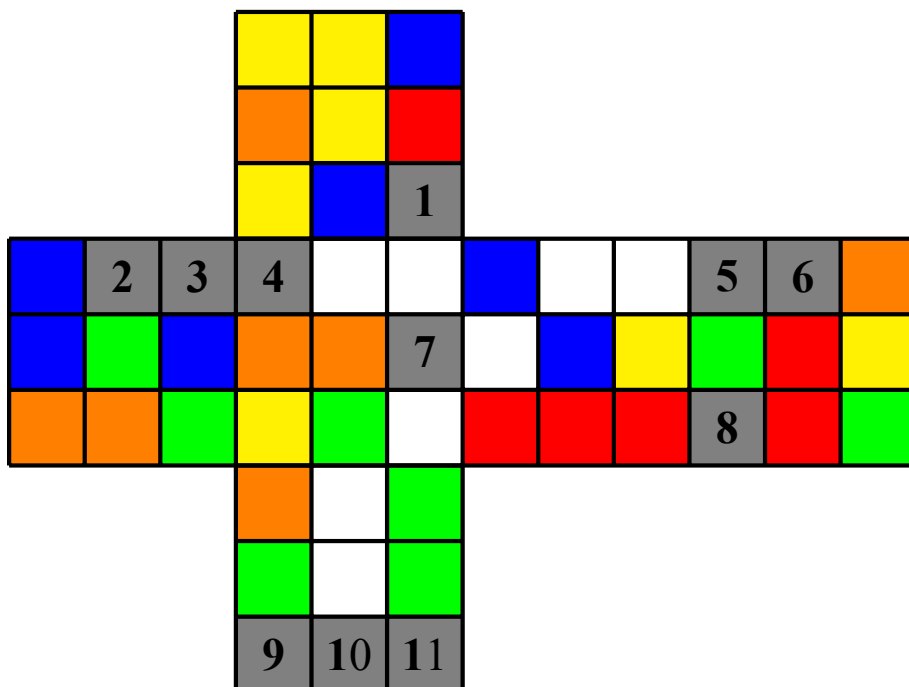
**Solution 36:** R' F2 U2 F2 D2 L2 D F2 U2 L2 B2 U' L2 R' D' L2 B' D' B2 U F' Uw

**No. 37      Difficulty:★★**



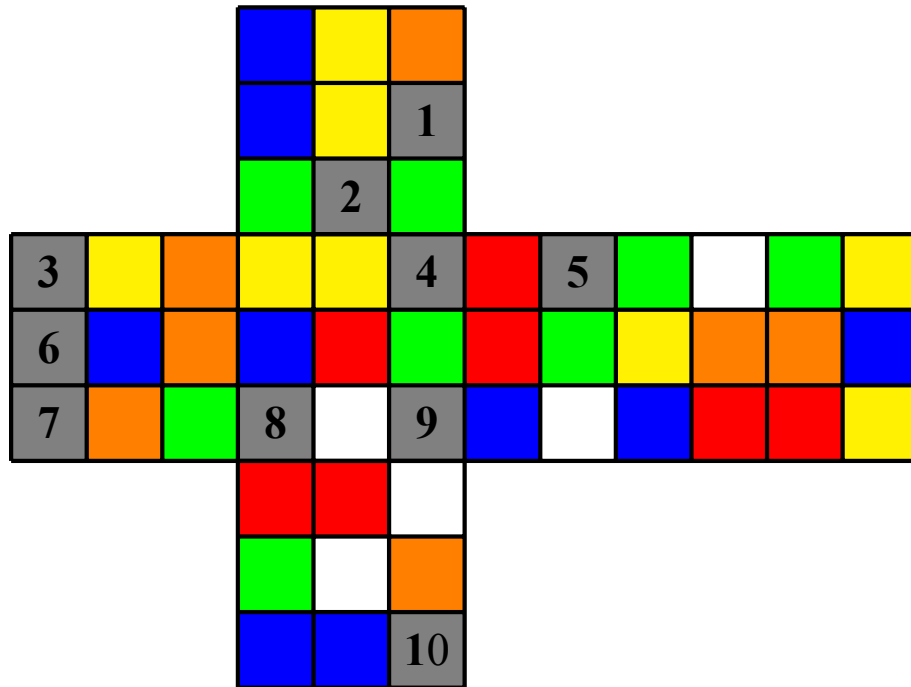
**Solution 37: R2 U R B2 L U' B F2 U F2 U' R2 L2 F2 U R2 D2 R2 D' R U2 Rw Uw'**

**No. 38      Difficulty:★★**



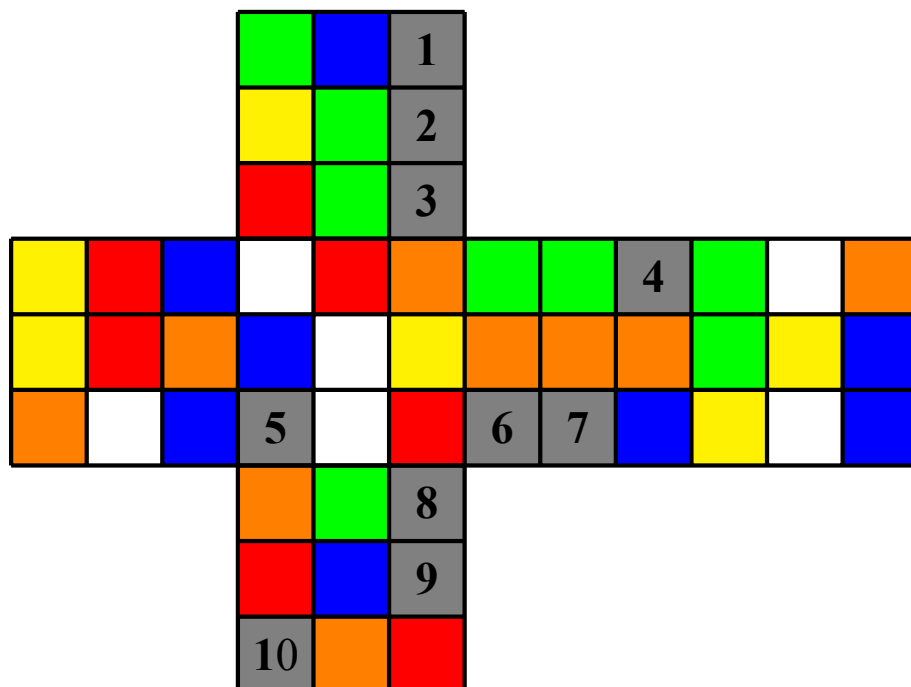
**Solution 38: F D' B' U2 L2 F' D' L F L2 D2 F' U2 F2 U2 L2 D2 R' L2 Uw2**

**No. 39      Difficulty:★★**



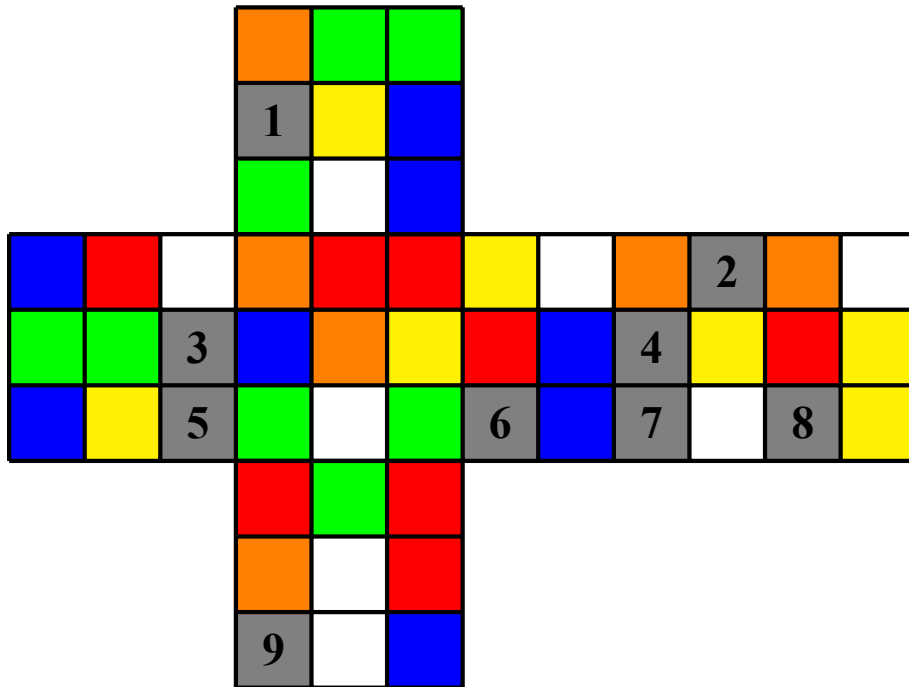
**Solution 39: R F B2 L2 D L2 D2 R2 B2 F2 U' L2 U2 L' D' R' B' F' D' U' L2**

**No. 40      Difficulty:★★**



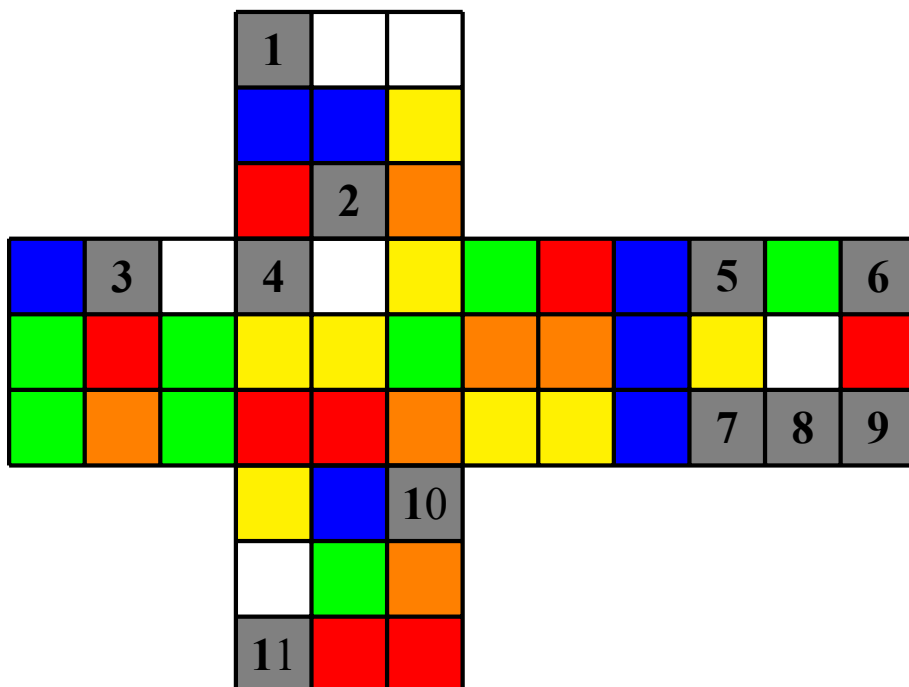
**Solution 40: L2 B' D2 B2 R2 D2 R' D2 F U' L2 U' F2 U B2 R2 U2 F2 U L2 D' Fw' Uw**

**No. 41      Difficulty:★★**



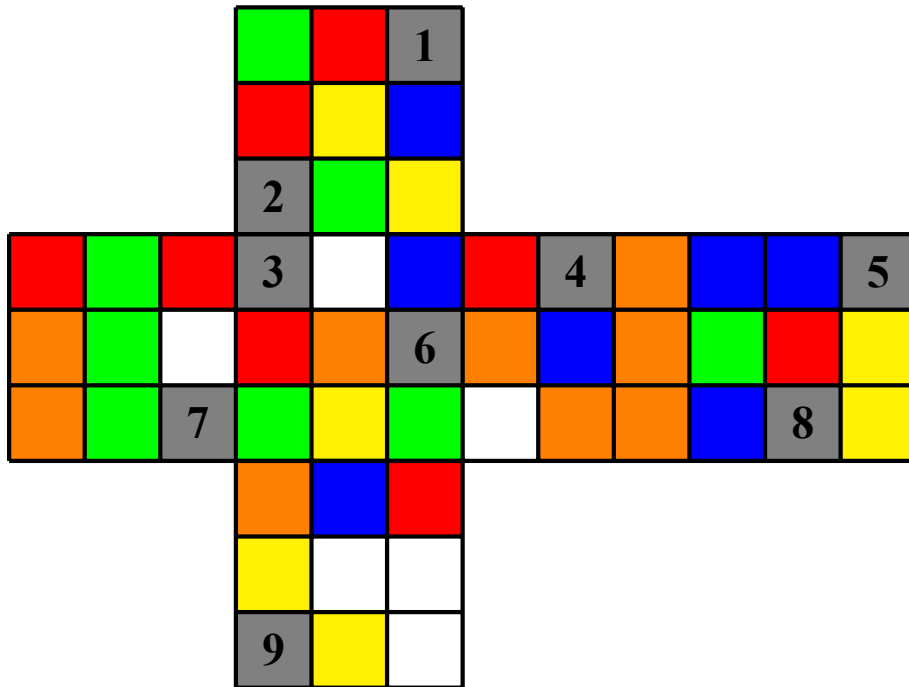
**Solution 41: F2 U' F2 U' L2 B2 U2 B2 U R2 D' L2 B D' F L2 F R' U F L' Uw2**

**No. 42      Difficulty:★★**



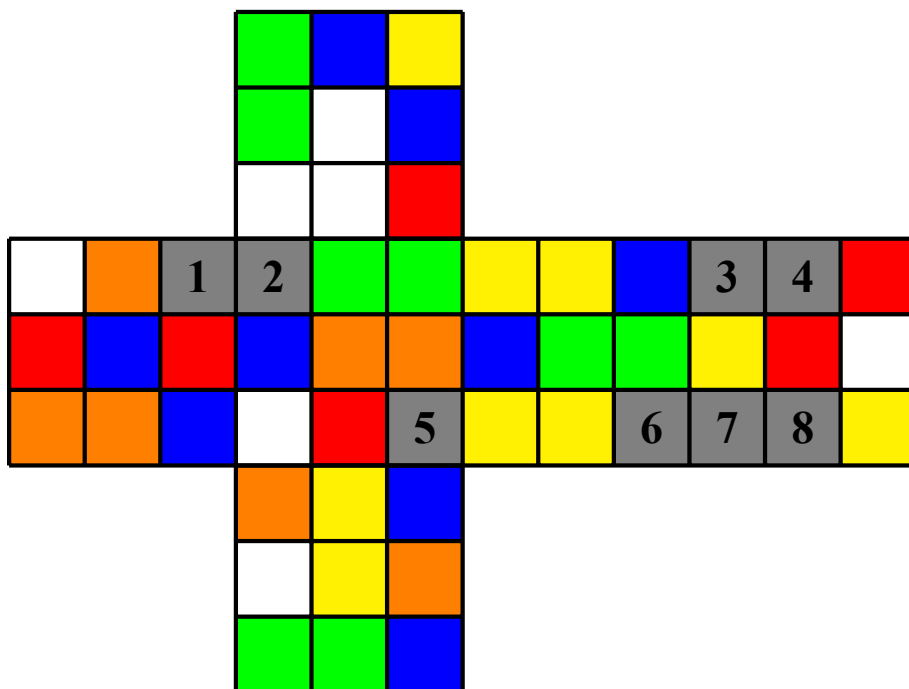
**Solution 42: D2 B2 L2 B2 D L2 R2 B2 D R2 D2 U' L F2 U' B' F2 U L' B R2 Fw Uw**

**No. 43      Difficulty:★★**



**Solution 43:** L U2 B2 U2 R B2 D2 L' D2 L' U2 D' F2 R' U L2 F' R2 U B' Uw2

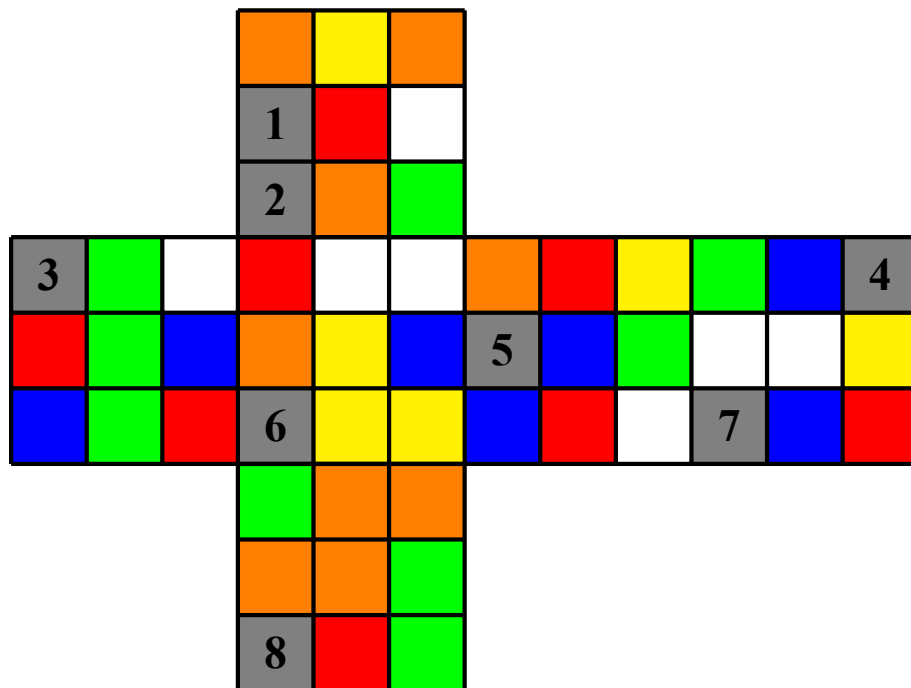
**No. 44      Difficulty:★★**



**Solution 44:** B' D2 L D F R2 L' B U2 B2 L2 D2 L U2 D2 L2 F2 U2 L' U2 D' Rw2

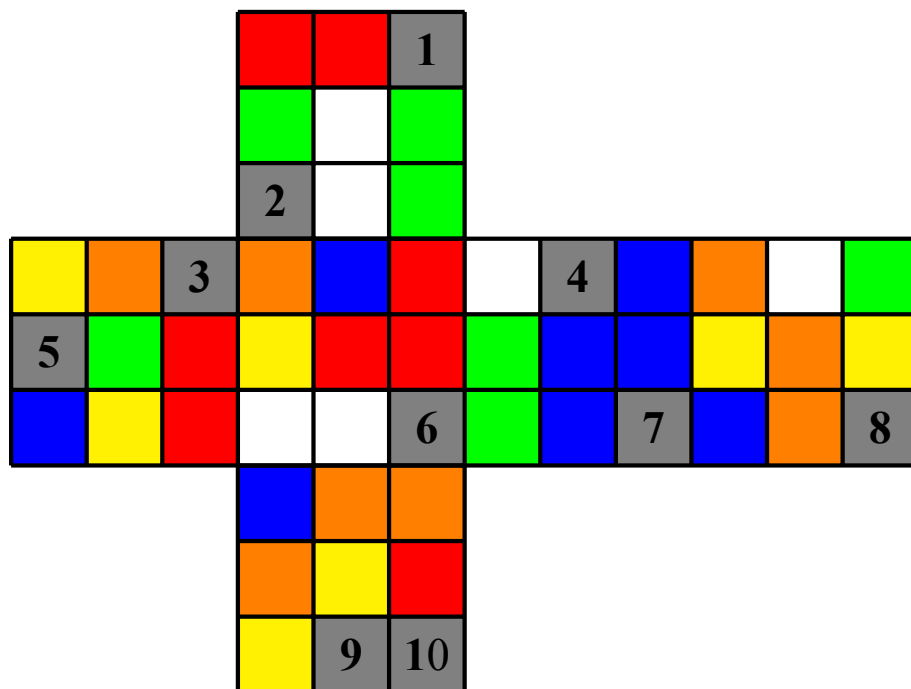


**No. 45      Difficulty:★★**



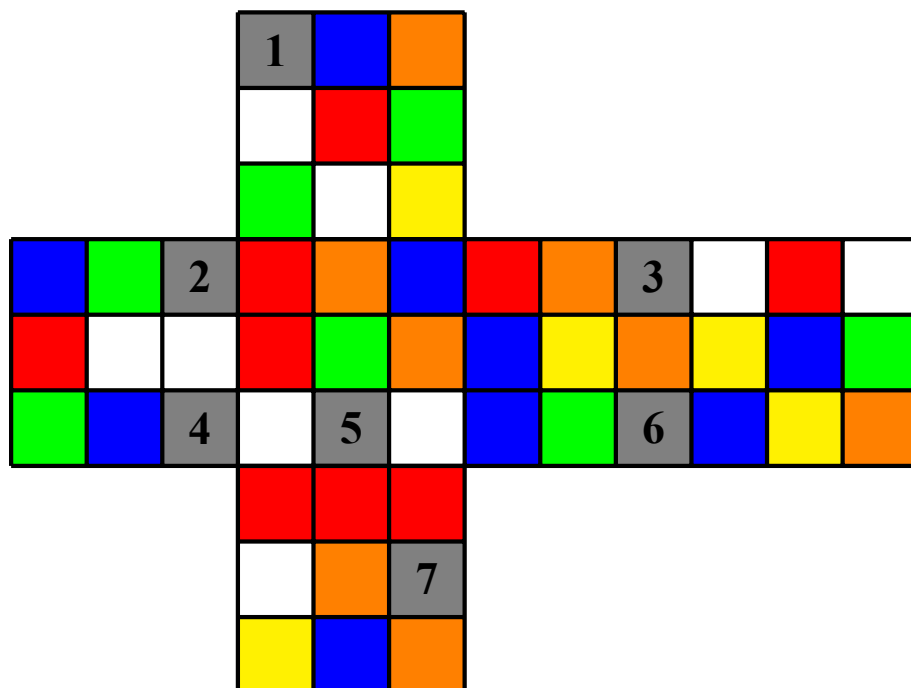
**Solution 45:** R' L2 D2 U L2 D' F2 D B2 U F2 U' L2 R' U' L2 R U L2 B' D2 Rw Uw2

**No. 46      Difficulty:★★**



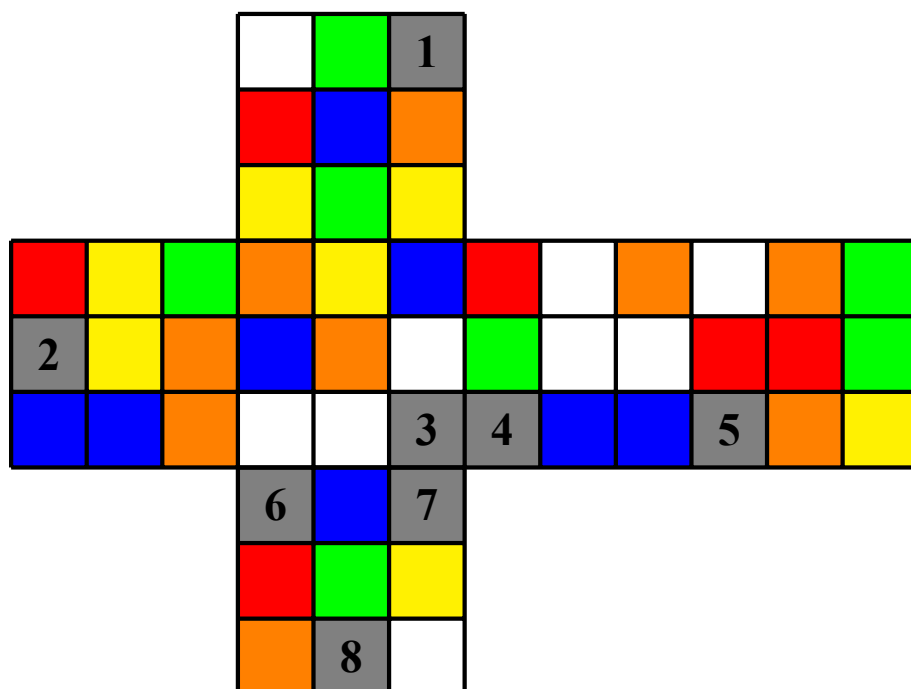
**Solution 46:** D2 L2 D2 U L2 U' L2 R2 B2 L2 R2 B L2 R D' B' L B' D' B2 F2 Rw2 Uw2

**No. 47      Difficulty:★★**



**Solution 47: D' U' B2 L2 D B2 U R2 U2 F2 U' R2 F D2 R' B' L2 U B D' Rw Uw**

**No. 48      Difficulty:★★**



**Solution 48: R D L' U F2 D' B U F2 L D2 L' D2 L D2 F2 L' D2 L' D2 U' Fw Uw2**

The image shows a 10x10 grid with a cross-shaped pattern of colored squares. The grid is composed of 100 squares in total. The cross shape is formed by 17 squares: 10 squares in the center row and 7 squares in the center column. The squares are colored as follows:

- Center Row (Row 5):** 10 squares. From left to right: Red, Orange, Blue, Yellow, Red, White, Orange, Orange, Yellow, Red, White, White.
- Center Column (Column 5):** 7 squares. From top to bottom: Blue, Yellow, Orange, White, Red, Orange, White.
- Numbered Gray Squares:** 7 squares. 1 (Row 3, Column 5), 2 (Row 5, Column 10), 3 (Row 5, Column 4), 4 (Row 5, Column 6), 5 (Row 5, Column 7), 6 (Row 9, Column 4), 7 (Row 9, Column 5).
- Other Colored Squares:** 13 squares. 3 Blue squares (Row 3, Column 3; Row 5, Column 3; Row 7, Column 3), 3 Yellow squares (Row 3, Column 2; Row 3, Column 4; Row 5, Column 9), 3 Orange squares (Row 3, Column 1; Row 3, Column 8; Row 3, Column 10), 3 Red squares (Row 3, Column 5; Row 3, Column 6; Row 3, Column 7), 3 White squares (Row 3, Column 7; Row 3, Column 8; Row 3, Column 9).

The image shows a 12x12 grid with a cross pattern of colored squares. The grid is composed of 144 cells. The central cross is formed by 24 colored squares: 12 red squares, 12 blue squares, 12 green squares, and 12 orange squares. The numbered gray squares are located at the intersections of the cross arms. The numbers are: 1 (top), 2 (right), 3 (right), 4 (right), 5 (right), 6 (right), 7 (right), 8 (left), 9 (left), 10 (left), 11 (left), 12 (bottom). The grid is symmetric about the center.

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A crossword puzzle grid with 14 numbered squares. The grid is composed of white squares for letters and black squares for empty space. Some squares are colored: orange, yellow, green, blue, and red. The numbered squares are:

- 1: Top center, grey background.
- 2: Top right, grey background.
- 3: Second row, first column, grey background.
- 4: Third row, fourth column, grey background.
- 5: Third row, fifth column, grey background.
- 6: Third row, eighth column, grey background.
- 7: Third row, eleventh column, grey background.
- 8: Fourth row, sixth column, grey background.
- 9: Fourth row, seventh column, grey background.
- 10: Fifth row, fourth column, grey background.
- 11: Fifth row, tenth column, grey background.
- 12: Sixth row, first column, grey background.
- 13: Sixth row, third column, grey background.
- 14: Seventh row, first column, grey background.

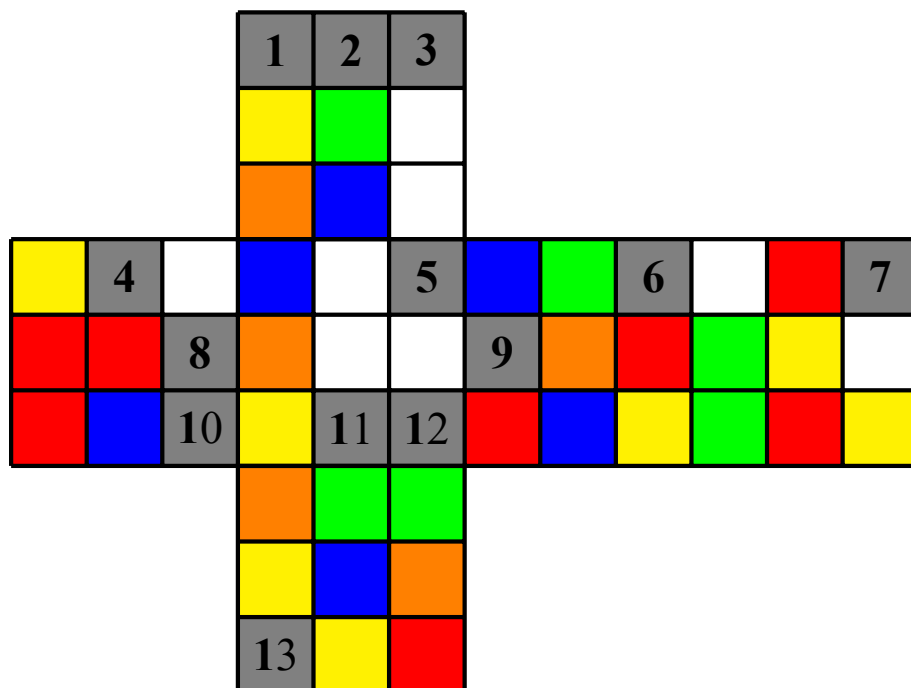
The colored cells are:

- Orange: (3,3), (4,2), (4,4), (4,6), (5,2), (5,5), (6,2), (6,5), (7,2), (7,5), (7,7), (7,9), (7,11), (7,13), (8,2), (8,5), (8,7), (8,9), (8,11), (8,13), (9,2), (9,5), (9,7), (9,9), (9,11), (9,13), (10,2), (10,5), (10,7), (10,9), (10,11), (10,13), (11,2), (11,5), (11,7), (11,9), (11,11), (11,13), (12,2), (12,5), (12,7), (12,9), (12,11), (12,13), (13,2), (13,5), (13,7), (13,9), (13,11), (13,13), (14,2), (14,5), (14,7), (14,9), (14,11), (14,13), (15,2), (15,5), (15,7), (15,9), (15,11), (15,13), (16,2), (16,5), (16,7), (16,9), (16,11), (16,13), (17,2), (17,5), (17,7), (17,9), (17,11), (17,13), (18,2), (18,5), (18,7), (18,9), (18,11), (18,13), (19,2), (19,5), (19,7), (19,9), (19,11), (19,13), (20,2), (20,5), (20,7), (20,9), (20,11), (20,13), (21,2), (21,5), (21,7), (21,9), (21,11), (21,13), (22,2), (22,5), (22,7), (22,9), (22,11), (22,13), (23,2), (23,5), (23,7), (23,9), (23,11), (23,13), (24,2), (24,5), (24,7), (24,9), (24,11), (24,13), (25,2), (25,5), (25,7), (25,9), (25,11), (25,13), (26,2), (26,5), (26,7), (26,9), (26,11), (26,13), (27,2), (27,5), (27,7), (27,9), (27,11), (27,13), (28,2), (28,5), (28,7), (28,9), (28,11), (28,13), (29,2), (29,5), (29,7), (29,9), (29,11), (29,13), (30,2), (30,5), (30,7), (30,9), (30,11), (30,13), (31,2), (31,5), (31,7), (31,9), (31,11), (31,13), (32,2), (32,5), (32,7), (32,9), (32,11), (32,13), (33,2), (33,5), (33,7), (33,9), (33,11), (33,13), (34,2), (34,5), (34,7), (34,9), (34,11), (34,13), (35,2), (35,5), (35,7), (35,9), (35,11), (35,13), (36,2), (36,5), (36,7), (36,9), (36,11), (36,13), (37,2), (37,5), (37,7), (37,9), (37,11), (37,13), (38,2), (38,5), (38,7), (38,9), (38,11), (38,13), (39,2), (39,5), (39,7), (39,9), (39,11), (39,13), (40,2), (40,5), (40,7), (40,9), (40,11), (40,13), (41,2), (41,5), (41,7), (41,9), (41,11), (41,13), (42,2), (42,5), (42,7), (42,9), (42,11), (42,13), (43,2), (43,5), (43,7), (43,9), (43,11), (43,13), (44,2), (44,5), (44,7), (44,9), (44,11), (44,13), (45,2), (45,5), (45,7), (45,9), (45,11), (45,13), (46,2), (46,5), (46,7), (46,9), (46,11), (46,13), (47,2), (47,5), (47,7), (47,9), (47,11), (47,13), (48,2), (48,5), (48,7), (48,9), (48,11), (48,13), (49,2), (49,5), (49,7), (49,9), (49,11), (49,13), (50,2), (50,5), (50,7), (50,9), (50,11), (50,13), (51,2), (51,5), (51,7), (51,9), (51,11), (51,13), (52,2), (52,5), (52,7), (52,9), (52,11), (52,13), (53,2), (53,5), (53,7), (53,9), (53,11), (53,13), (54,2), (54,5), (54,7), (54,9), (54,11), (54,13), (55,2), (55,5), (55,7), (55,9), (55,11), (55,13), (56,2), (56,5), (56,7), (56,9), (56,11), (56,13), (57,2), (57,5), (57,7), (57,9), (57,11), (57,13), (58,2), (58,5), (58,7), (58,9), (58,11), (58,13), (59,2), (59,5), (59,7), (59,9), (59,11), (59,13), (60,2), (60,5), (60,7), (60,9), (60,11), (60,13), (61,2), (61,5), (61,7), (61,9), (61,11), (61,13), (62,2), (62,5), (62,7), (62,9), (62,11), (62,13), (63,2), (63,5), (63,7), (63,9), (63,11), (63,13), (64,2), (64,5), (64,7), (64,9), (64,11), (64,13), (65,2), (65,5), (65,7), (65,9), (65,11), (65,13), (66,2), (66,5), (66,7), (66,9), (66,11), (66,13), (67,2), (67,5), (67,7), (67,9), (67,11), (67,13), (68,2), (68,5), (68,7), (68,9), (68,11), (68,13), (69,2), (69,5), (69,7), (69,9), (69,11), (69,13), (70,2), (70,5), (70,7), (70,9), (70,11), (70,13), (71,2), (71,5), (71,7), (71,9), (71,11), (71,13), (72,2), (72,5), (72,7), (72,9), (72,11), (72,13), (73,2), (73,5), (73,7), (73,9), (73,11), (73,13), (74,2), (74,5), (74,7), (74,9), (74,11), (74,13), (75,2), (75,5), (75,7), (75,9), (75,11), (75,13), (76,2), (76,5), (76,7), (76,9), (76,11), (76,13), (77,2), (77,5), (77,7), (77,9), (77,11), (77,13), (78,2), (78,5), (78,7), (78,9), (78,11), (78,13), (79,2), (79,5), (79,7), (79,9), (79,11), (79,13), (80,2), (80,5), (80,7), (80,9), (80,11), (80,13), (81,2), (81,5), (81,7), (81,9), (81,11), (81,13), (82,2), (82,5), (82,7), (82,9), (82,11), (82,13), (83,2), (83,5), (83,7), (83,9), (83,11), (83,13), (84,2), (84,5), (84,7), (84,9), (84,11), (84,13), (85,2), (85,5), (85,7), (85,9), (85,11), (85,13), (86,2), (86,5), (86,7), (86,9), (86,11), (86,13), (87,2), (87,5), (87,7), (87,9), (87,11), (87,13), (88,2), (88,5), (88,7), (88,9), (88,11), (88,13), (89,2), (89,5), (89,7), (89,9), (89,11), (89,13), (90,2), (90,5), (90,7), (90,9), (90,11), (90,13), (91,2), (91,5), (91,7), (91,9), (91,11), (91,13), (92,2), (92,5), (92,7), (92,9), (92,11), (92,13), (93,2), (93,5), (93,7), (93,9), (93,11), (93,13), (94,2), (94,5), (94,7), (94,9), (94,11), (94,13), (95,2), (95,5), (95,7), (95,9), (95,11), (95,13), (96,2), (96,5), (96,7), (96,9), (96,11), (96,13), (97,2), (97,5), (97,7), (97,9), (97,11), (97,13), (98,2), (98,5), (98,7), (98,9), (98,11), (98,13), (99,2), (99,5), (99,7), (99,9), (99,11), (99,13), (100,2), (100,5), (100,7), (100,9), (100,11), (100,13), (101,2), (101,5), (101,7), (101,9), (101,11), (101,13), (102,2), (102,5), (102,7), (102,9), (102,11), (102,13), (103,2), (103,5), (103,7), (103,9), (103,11), (103,13), (104,2), (104,5), (104,7), (104,9), (104,11), (104,13), (

[illegible]

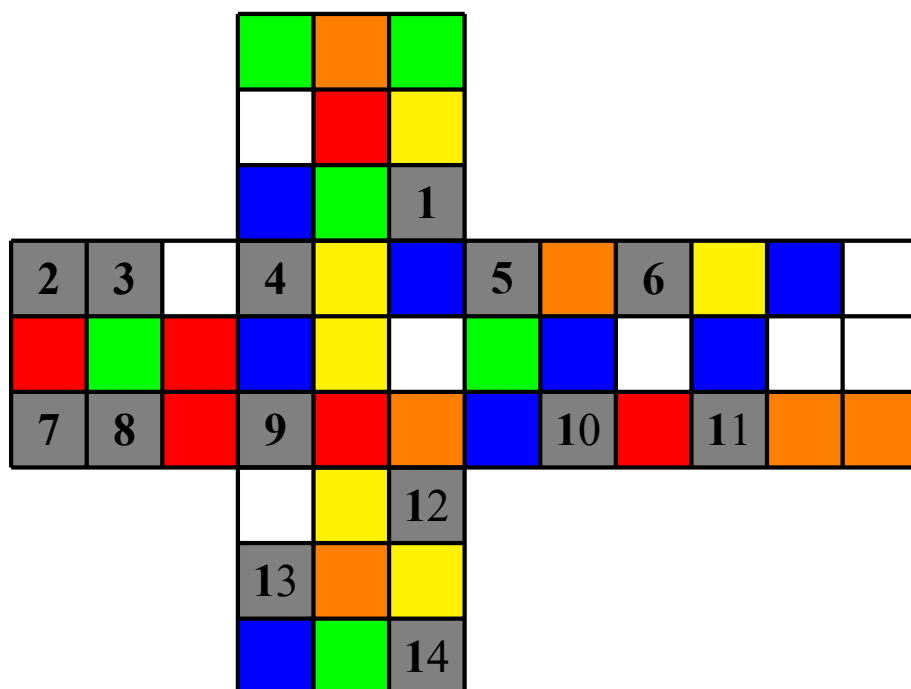
27

**No. 53      Difficulty:★★★**



**Solution 53: B2 R' B2 U2 R' D2 L F R2 D L2 F2 D' B2 D' B2 R2 U' B2 L2 Fw' Uw**

**No. 54      Difficulty:★★★**

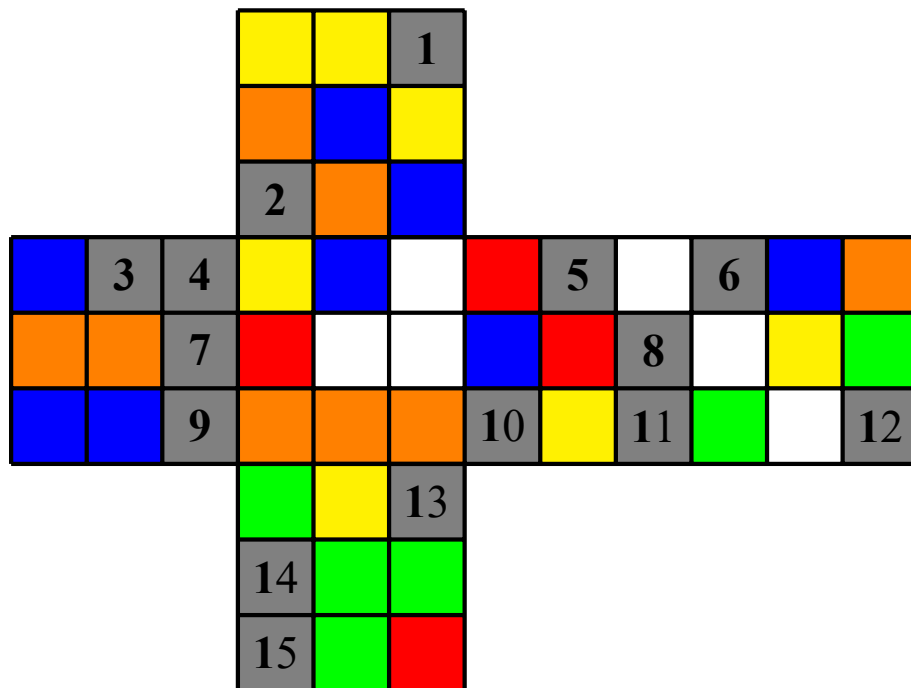


**Solution 54: R' F' R2 F' L2 B' R2 D2 L2 R2 B2 D2 F' D B' R' D R2 D L2 U' Rw Uw2**

[illegible]

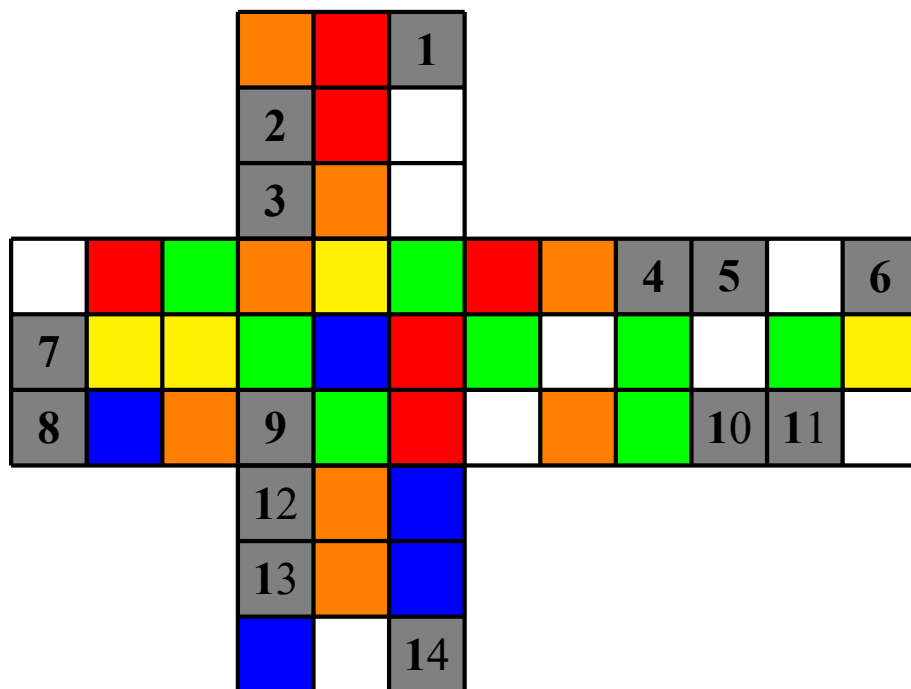
29

**No. 57**      **Difficulty:★★★**



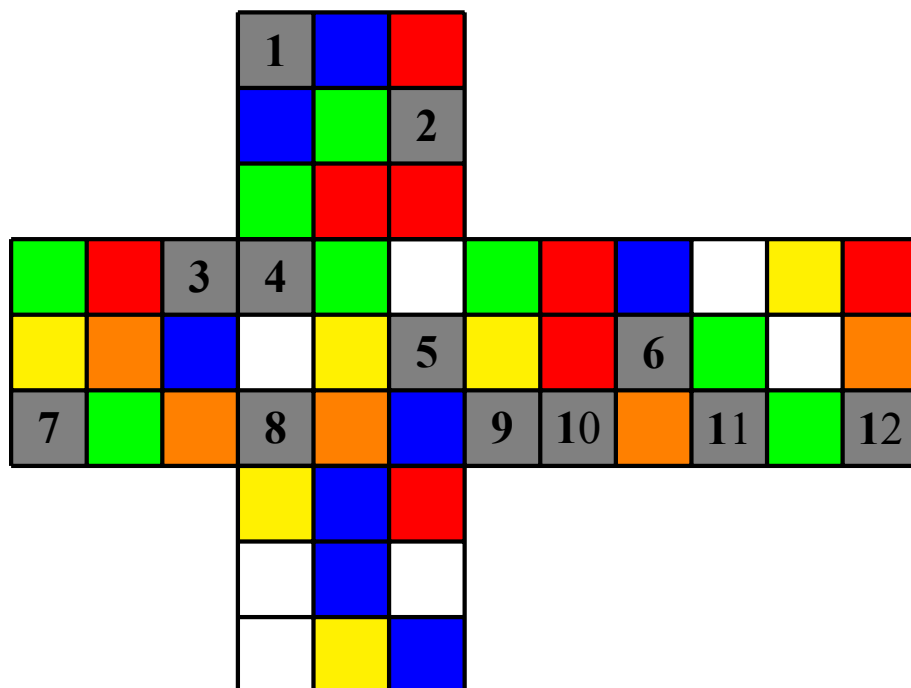
**Solution 57:** R2 B' R D2 L D R2 F' R U' B2 U L2 D' F2 U R2 U2 L2 B2 D2 Fw Uw'

**No. 58**      **Difficulty:★★★**



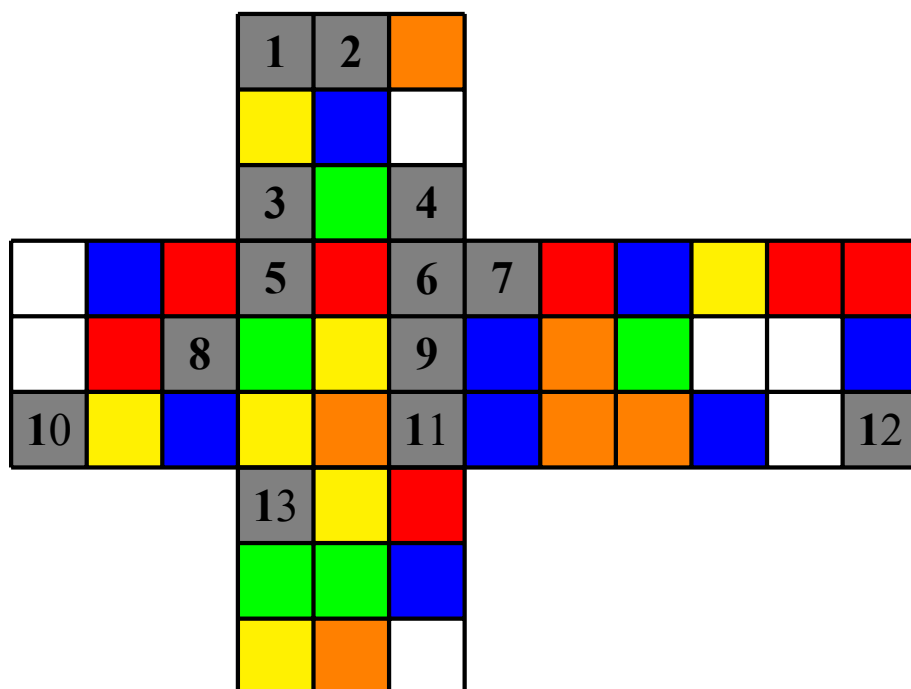
**Solution 58:** D2 L' B D2 B' F2 U2 L2 F D2 L2 F U2 L D' U' R' D' R B' L Rw Uw'

**No. 59**      **Difficulty:★★★**



**Solution 59:** L U' L F2 R2 B R2 D2 L2 R2 B D2 R2 B2 L' B' F2 L' U' B F' Fw' Uw'

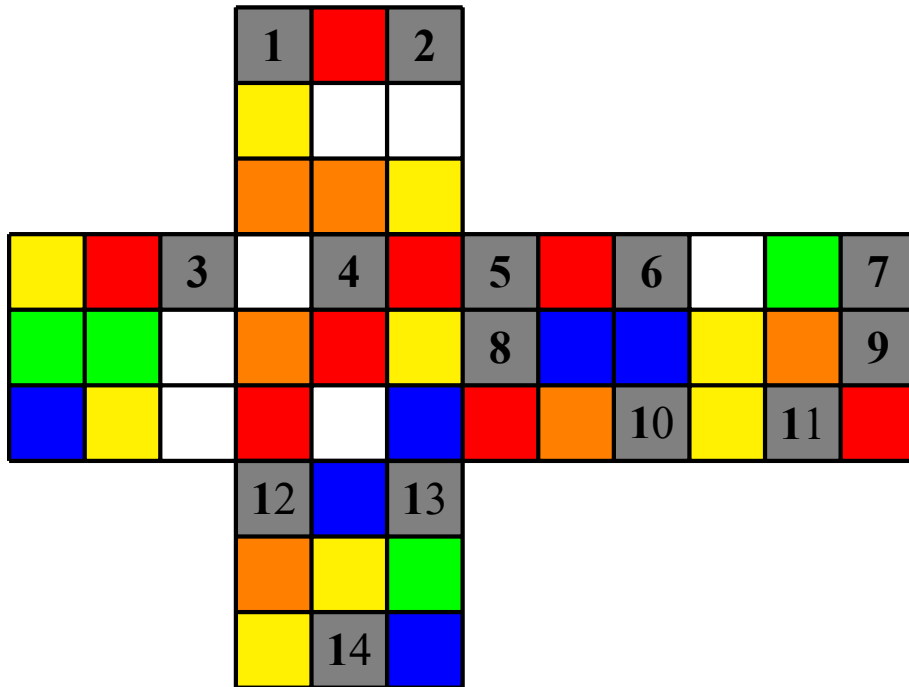
**No. 60**      **Difficulty:★★★**



**Solution 60:** B2 R B2 U2 R F2 R' F2 U2 L' D2 R2 D B2 D2 R2 F' U L B U2 Fw Uw

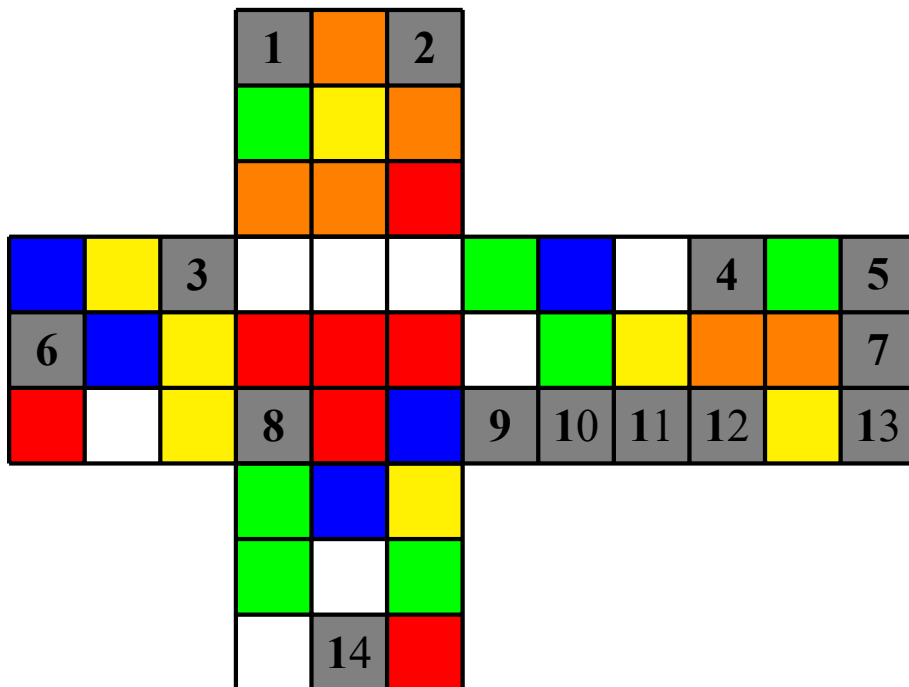


**No. 61      Difficulty:★★★**



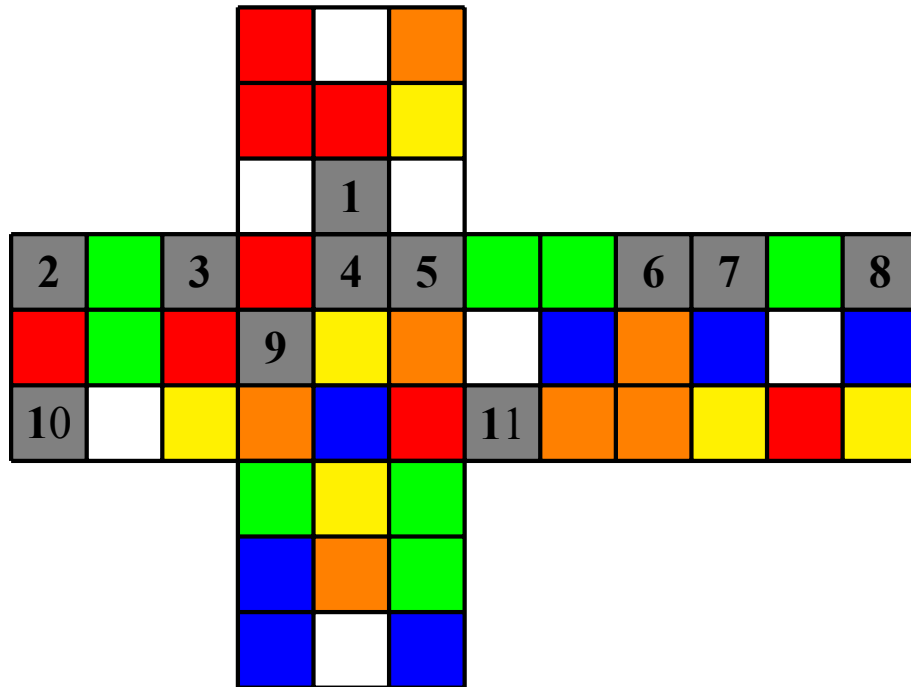
**Solution 61: U' B2 L2 D2 B2 U2 B R2 D2 U2 F' R2 F' D F' L R U' F' D' Rw2 Uw2**

**No. 62      Difficulty:★★★**



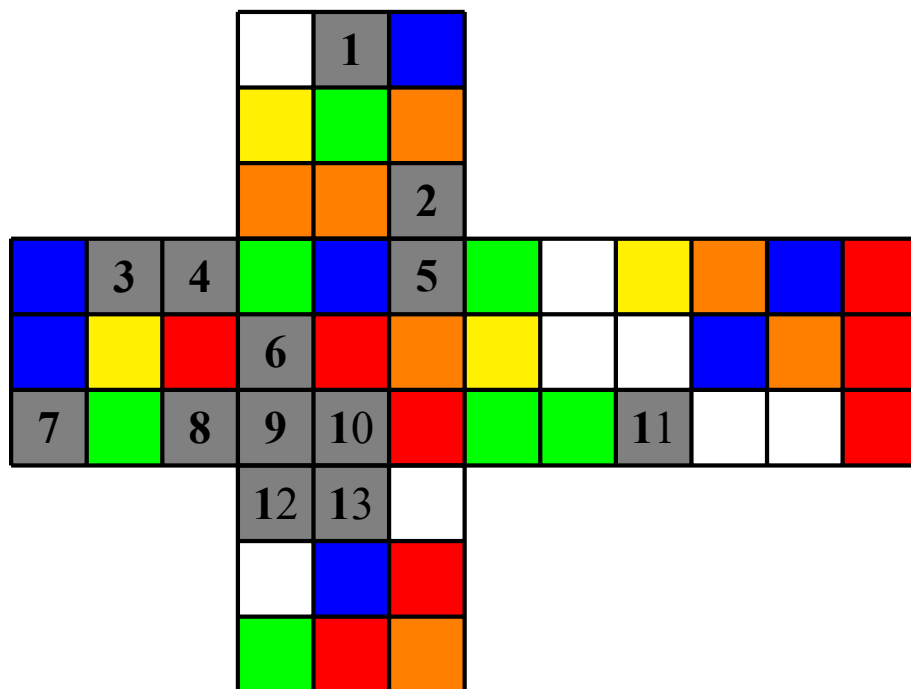
**Solution 62: R2 D2 B2 L2 B L2 U2 F2 D2 B D2 F' R' D' L B' F' D F2 L D2**

**No. 63      Difficulty:★★★**



**Solution 63: D R2 U2 B2 L2 R2 D2 F L2 B' D2 F' R' D U F2 R' U' L' R B Rw Uw2**

**No. 64      Difficulty:★★★**



**Solution 64: L2 F U2 B U2 L2 B' F' R2 U2 F D' U L' B' L R' U2 F' D R Fw'**

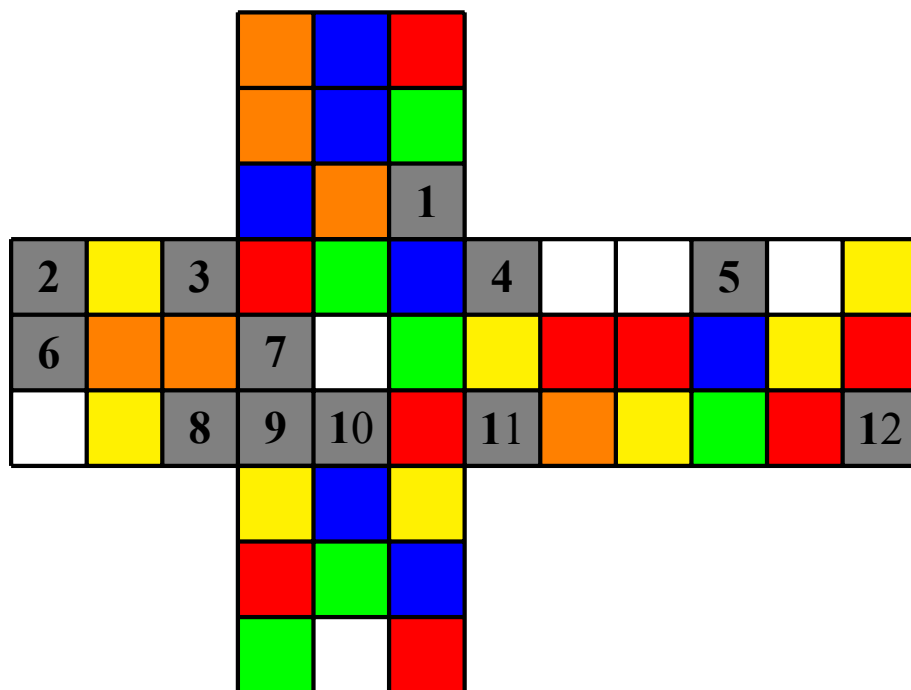
The image shows a 12x12 grid with a cross-shaped pattern of colored squares. The grid is composed of 144 squares in total. The cross shape is formed by 24 squares, with 12 squares in each of the four arms. The squares are colored as follows:

- Top Arm (Row 1):** Orange, Gray (1), Gray (2)
- Second Row:** Red, Green, Orange
- Third Row:** Gray (3), Blue, White
- Fourth Row:** Gray (4), Green, Gray (5), Green, Red, Gray (6), Green, Yellow, Red, Gray (7), Orange, White
- Fifth Row:** Gray (8), White, Yellow, Green, Orange, Orange, White, Yellow, White, Green, Red, Red
- Sixth Row:** Red, White, White, Blue, Red, Gray (9), Yellow, Yellow, White, Red, Gray (10), Yellow
- Seventh Row:** Red, White, Blue
- Eighth Row:** Blue, Blue, Blue
- Ninth Row:** Gray (11), Blue, Gray (12)

[illegible]

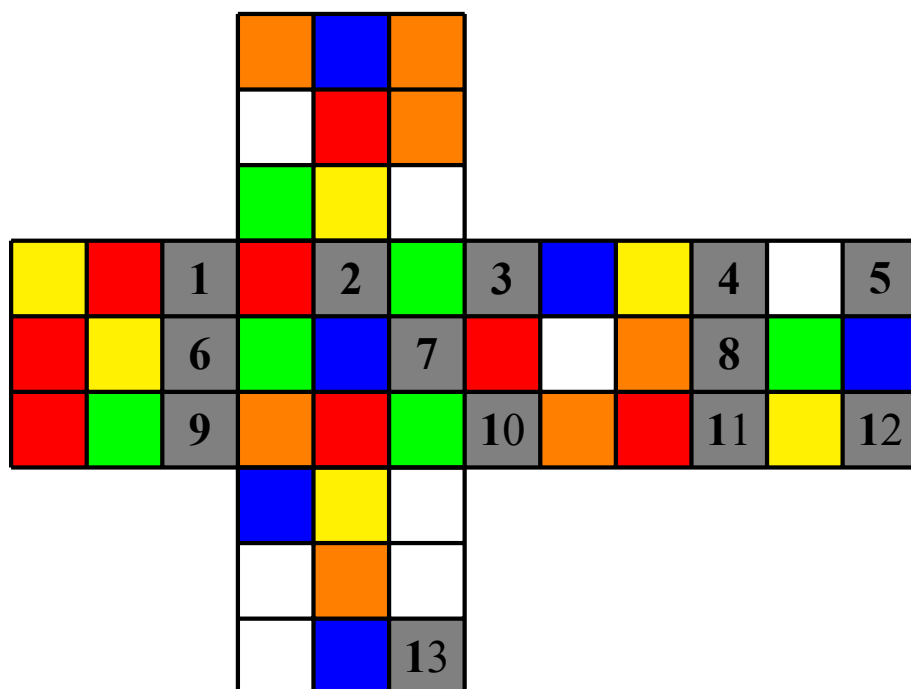
34

**No. 67      Difficulty:★★★**



**Solution 67: R F2 D2 B2 U L2 F2 R2 B2 D2 U R2 U F' R' B D' F D F2 D2 Fw Uw'**

**No. 68      Difficulty:★★★**



**Solution 68: D F2 L2 R2 U B2 L2 B2 D2 R2 D2 F2 R' F' R2 F2 R' U L2 D R Rw Uw'**

The image shows a 12x12 grid with a cross-shaped pattern of colored squares. The grid is composed of 12 columns and 12 rows. The central cross is formed by a vertical column of 12 squares and a horizontal row of 12 squares, intersecting at a 3x3 area. The squares are colored in a repeating pattern of red, blue, yellow, orange, green, and white. The numbers 1 through 11 are placed in gray squares, which are part of the cross pattern. The grid is as follows:

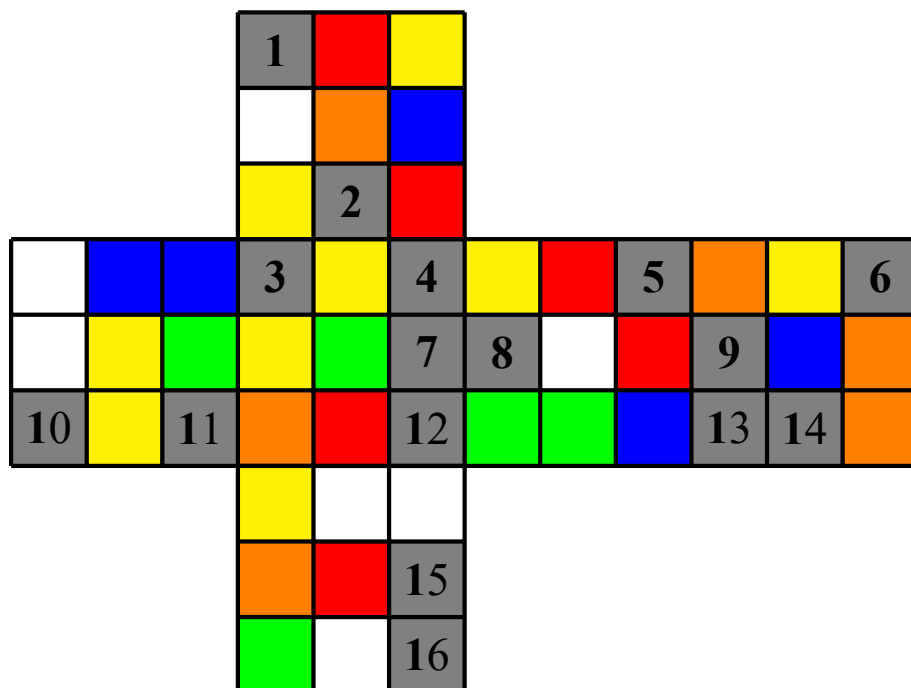
Red	Red	Blue	Red	1	2	3	White	4	Orange	Blue	5
6	White	Yellow	Orange	Blue	Green	Orange	Yellow	Green	White	Green	Red
Green	Green	Yellow	7	White	8	White	Green	Green	White	Red	Yellow
			9	10	Orange						
			Red	Red	Yellow						
			Red	Blue	11						

The image shows a 13x13 grid with a cross shape highlighted in black. The grid contains numbers 1-13 and colored squares (orange, red, yellow, green, blue, white) in a pattern that suggests a 13x13 magic square. The numbers are placed in the following positions:

- Row 1: 1 (orange), 2 (orange)
- Row 2: 3 (orange), 4 (orange), 5 (orange), 6 (orange), 7 (orange), 8 (orange), 9 (orange), 10 (orange), 11 (orange), 12 (orange), 13 (orange)
- Row 3: 1 (orange), 2 (orange), 3 (orange), 4 (orange), 5 (orange), 6 (orange), 7 (orange), 8 (orange), 9 (orange), 10 (orange), 11 (orange), 12 (orange), 13 (orange)
- Row 4: 1 (orange), 2 (orange), 3 (orange), 4 (orange), 5 (orange), 6 (orange), 7 (orange), 8 (orange), 9 (orange), 10 (orange), 11 (orange), 12 (orange), 13 (orange)
- Row 5: 1 (orange), 2 (orange), 3 (orange), 4 (orange), 5 (orange), 6 (orange), 7 (orange), 8 (orange), 9 (orange), 10 (orange), 11 (orange), 12 (orange), 13 (orange)
- Row 6: 1 (orange), 2 (orange), 3 (orange), 4 (orange), 5 (orange), 6 (orange), 7 (orange), 8 (orange), 9 (orange), 10 (orange), 11 (orange), 12 (orange), 13 (orange)
- Row 7: 1 (orange), 2 (orange), 3 (orange), 4 (orange), 5 (orange), 6 (orange), 7 (orange), 8 (orange), 9 (orange), 10 (orange), 11 (orange), 12 (orange), 13 (orange)
- Row 8: 1 (orange), 2 (orange), 3 (orange), 4 (orange), 5 (orange), 6 (orange), 7 (orange), 8 (orange), 9 (orange), 10 (orange), 11 (orange), 12 (orange), 13 (orange)
- Row 9: 1 (orange), 2 (orange), 3 (orange), 4 (orange), 5 (orange), 6 (orange), 7 (orange), 8 (orange), 9 (orange), 10 (orange), 11 (orange), 12 (orange), 13 (orange)
- Row 10: 1 (orange), 2 (orange), 3 (orange), 4 (orange), 5 (orange), 6 (orange), 7 (orange), 8 (orange), 9 (orange), 10 (orange), 11 (orange), 12 (orange), 13 (orange)
- Row 11: 1 (orange), 2 (orange), 3 (orange), 4 (orange), 5 (orange), 6 (orange), 7 (orange), 8 (orange), 9 (orange), 10 (orange), 11 (orange), 12 (orange), 13 (orange)
- Row 12: 1 (orange), 2 (orange), 3 (orange), 4 (orange), 5 (orange), 6 (orange), 7 (orange), 8 (orange), 9 (orange), 10 (orange), 11 (orange), 12 (orange), 13 (orange)
- Row 13: 1 (orange), 2 (orange), 3 (orange), 4 (orange), 5 (orange), 6 (orange), 7 (orange), 8 (orange), 9 (orange), 10 (orange), 11 (orange), 12 (orange), 13 (orange)

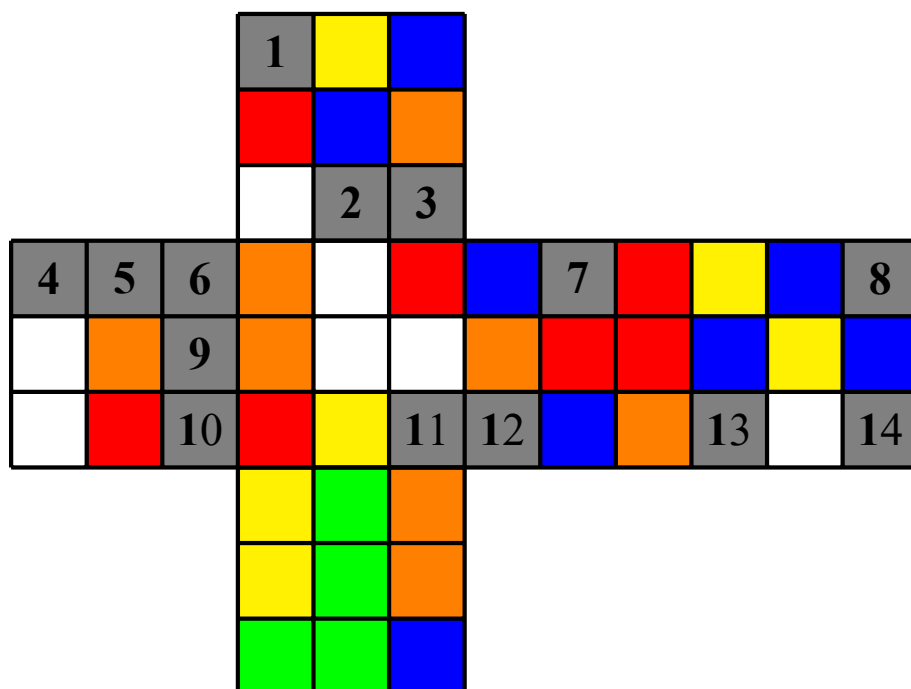
36

**No. 71      Difficulty:★★★★**



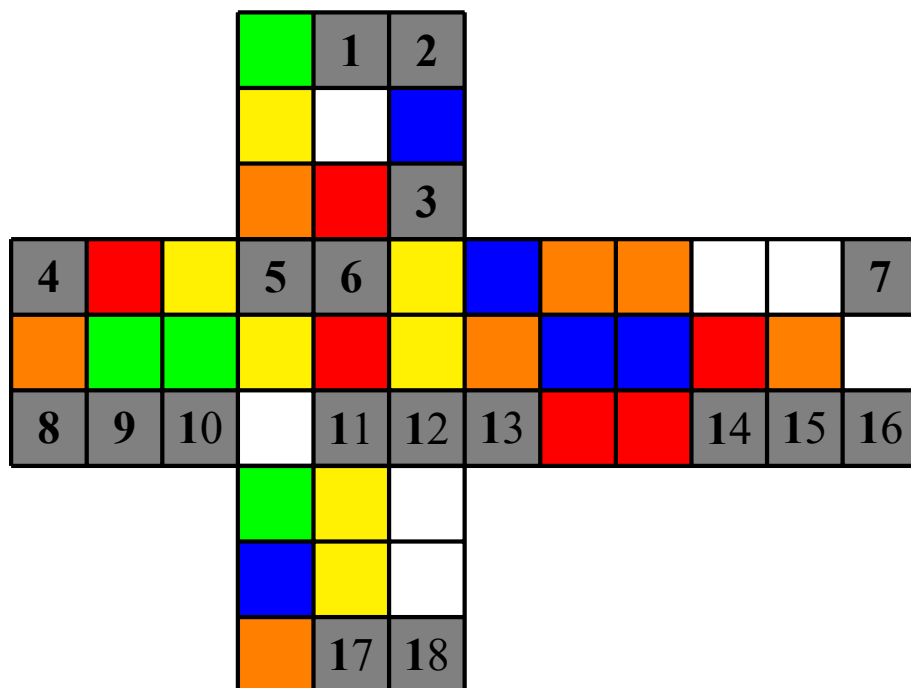
**Solution 71: F U' F2 B' R L F' U B L2 U' R2 D' F2 U' F2 L2 D2 L2 U Rw' Uw**

**No. 72      Difficulty:★★★★**



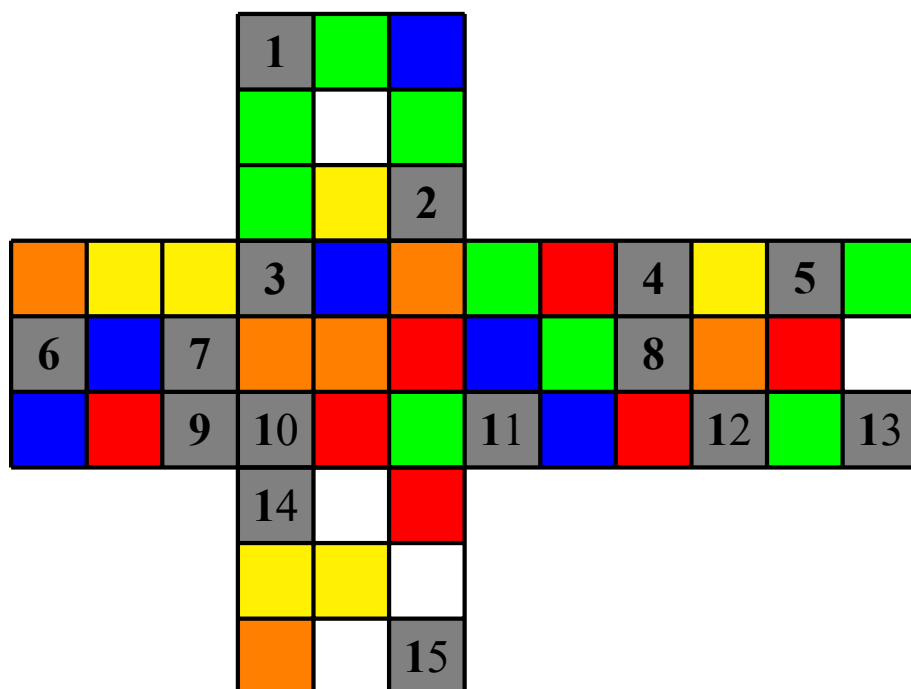
**Solution 72: D R' D2 B2 R2 U2 B' D2 B D2 F2 L2 B' R2 D U L U2 B R' U2 Fw Uw'**

**No. 73      Difficulty:★★★★**



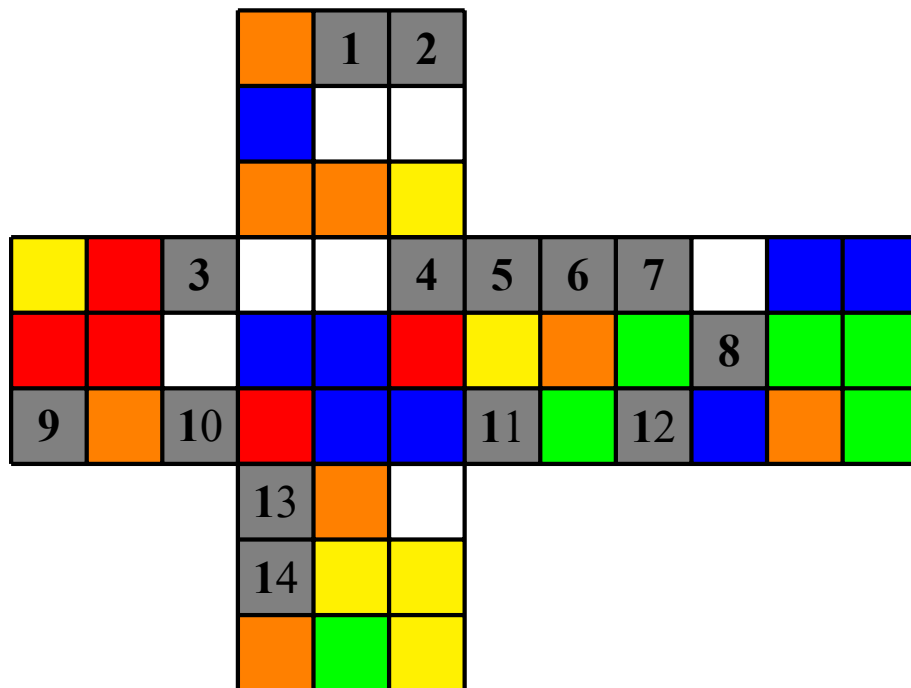
**Solution 73: B2 U' F2 D' L2 D' R2 B2 F2 D' L2 B L R2 B2 R' U B' L' D U2 Rw2 Uw2**

**No. 74      Difficulty:★★★★**



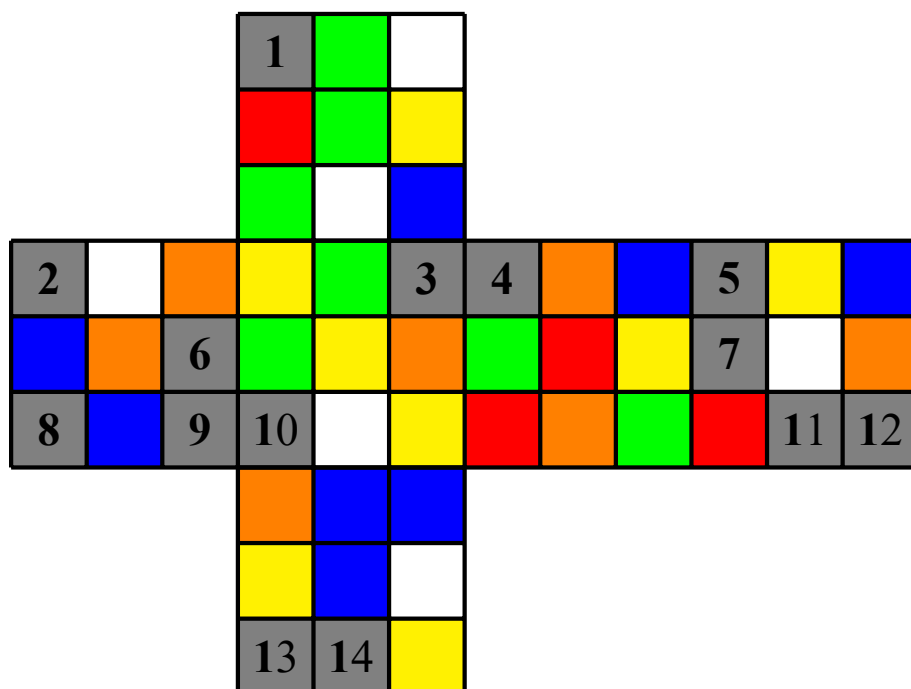
**Solution 74: D' B2 U L2 R2 U F2 U' L2 U L2 U' B' L' F L' B2 U R2 B Rw2**

**No. 75**      **Difficulty:★★★★**



**Solution 75:** B' L2 D2 L2 R2 F2 D' F2 D F2 L2 R2 D' B L U' L U2 L D Rw2 Uw'

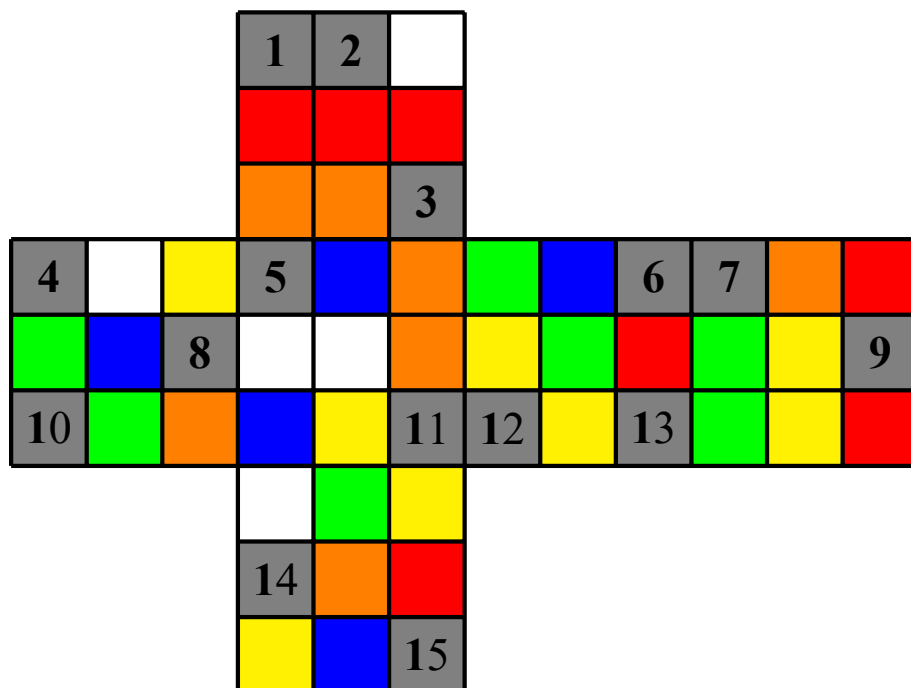
**No. 76**      **Difficulty:★★★★**



**Solution 76:** F L2 B2 F' D2 R2 D2 U2 B2 U2 L' D F2 L' B U R' F' L' Fw' Uw'

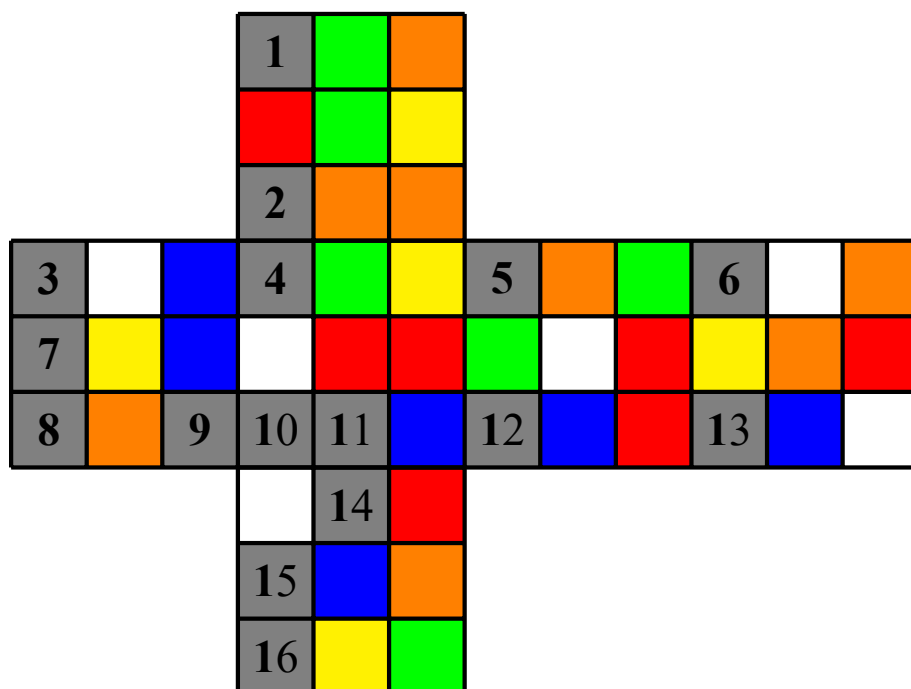


**No. 77**      **Difficulty:★★★★**



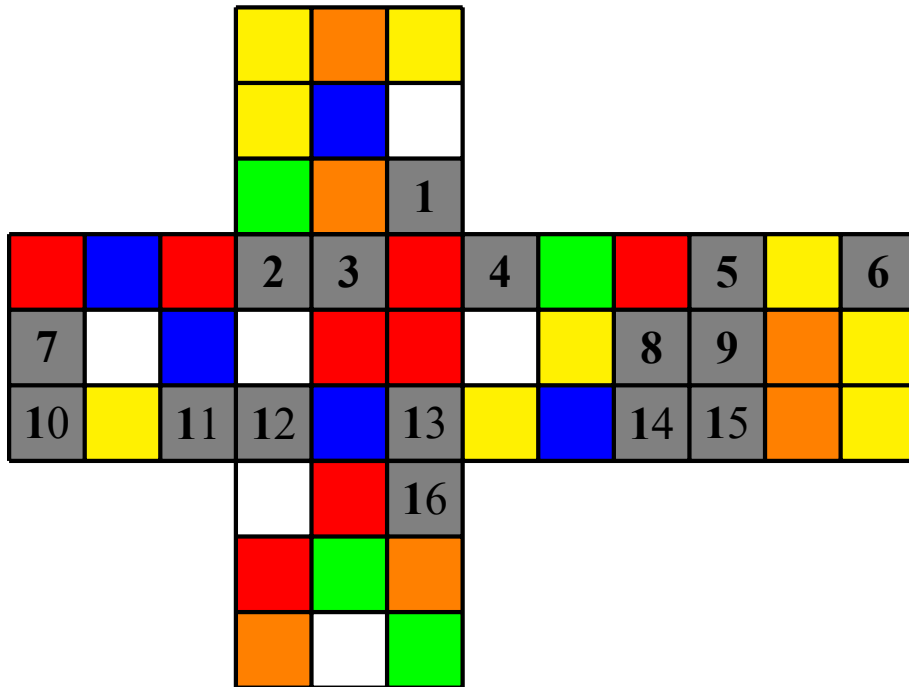
**Solution 77: R2 D' R2 D2 R2 U2 R2 F2 U L2 U2 B R B2 F' R' U L' B' Rw**

**No. 78**      **Difficulty:★★★★**



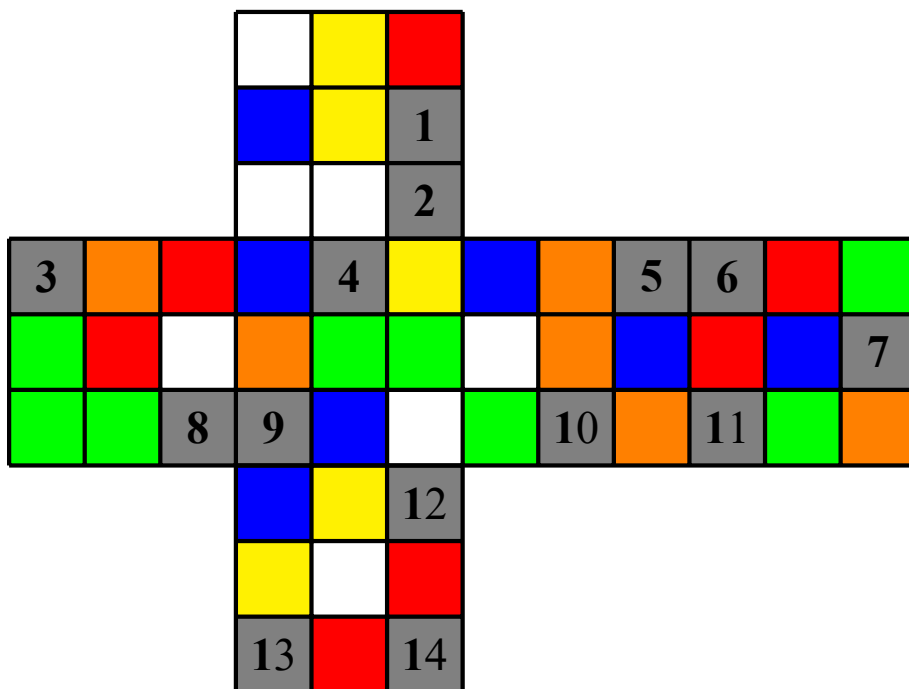
**Solution 78: B' U2 F2 R2 F' U2 F' D2 B' D2 B D L' D F2 U R B' D' F' Fw'**

**No. 79**      **Difficulty:★★★★**



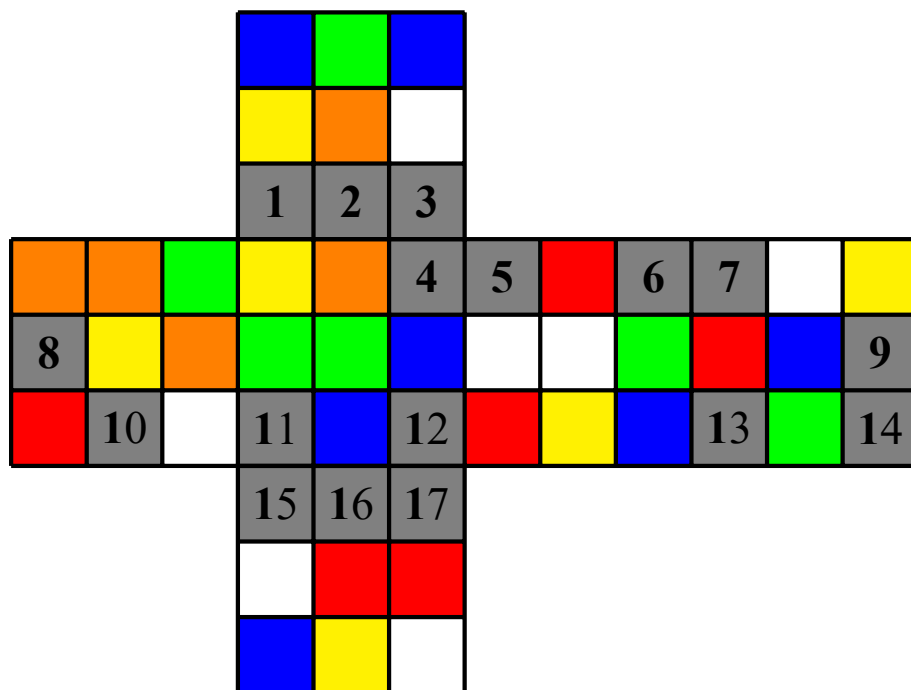
**Solution 79:** L F2 U2 R2 F2 D2 R' D2 R B2 F2 L2 D' B' U F D' F2 L' D' B' Fw

**No. 80**      **Difficulty:★★★★**



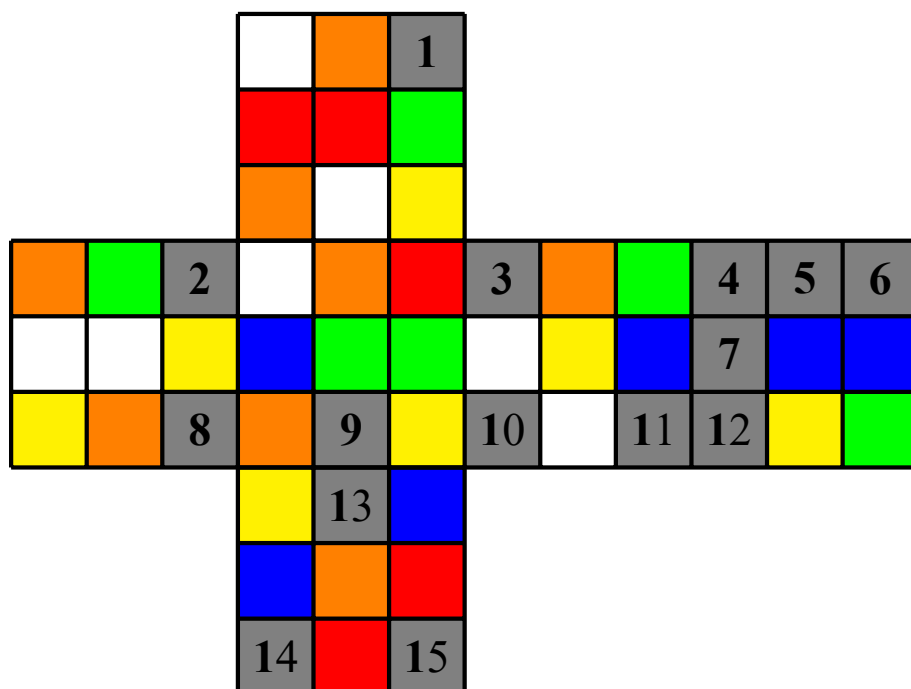
**Solution 80:** L' B U F2 U2 B' L F2 L2 U2 F' U2 L2 F2 D2 L2 F U2 F' D R Uw

**No. 81      Difficulty:★★★★**



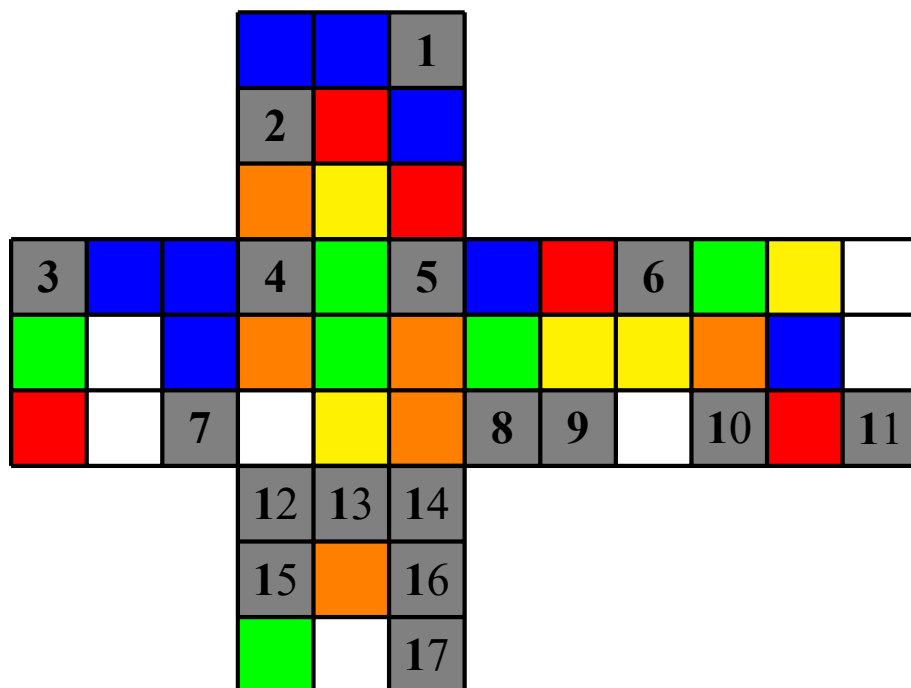
**Solution 81: U' B2 L2 R F2 D2 L' D2 U2 F2 U2 R B2 U' L' D' F R B' U2 F2 Rw' Uw**

**No. 82      Difficulty:★★★★**



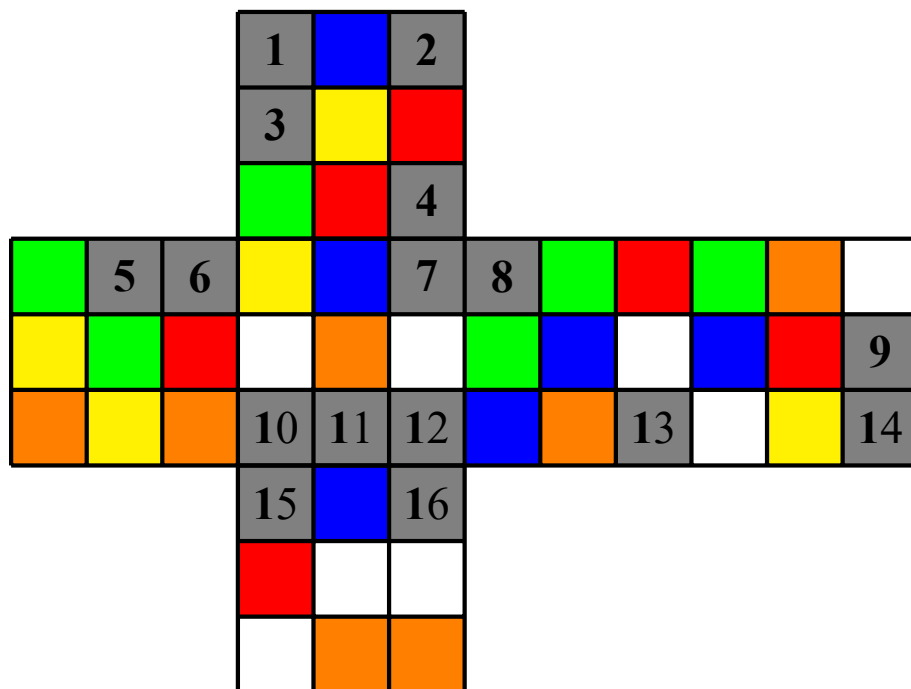
**Solution 82: R' F' L2 D R2 D L2 D' F2 R2 U2 L2 R2 D' F R B2 F2 U2 R' D' Rw Uw**

**No. 83**      **Difficulty:★★★★**



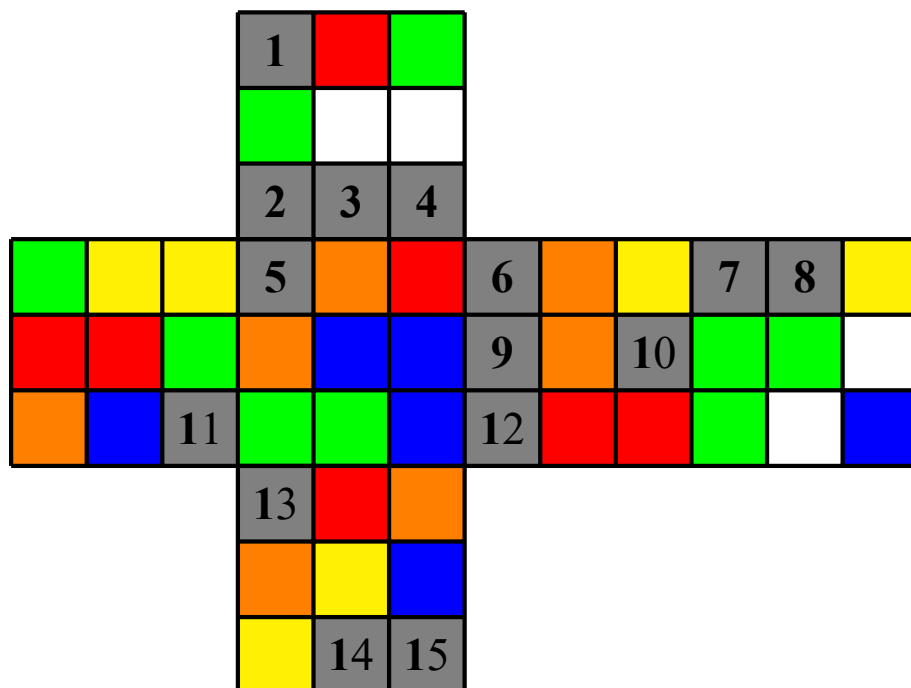
**Solution 83:** L2 R2 F U2 F' U2 F L2 B L2 D2 F' L' U L2 R' B R2 D2 F' U' Rw Uw

**No. 84**      **Difficulty:★★★★**



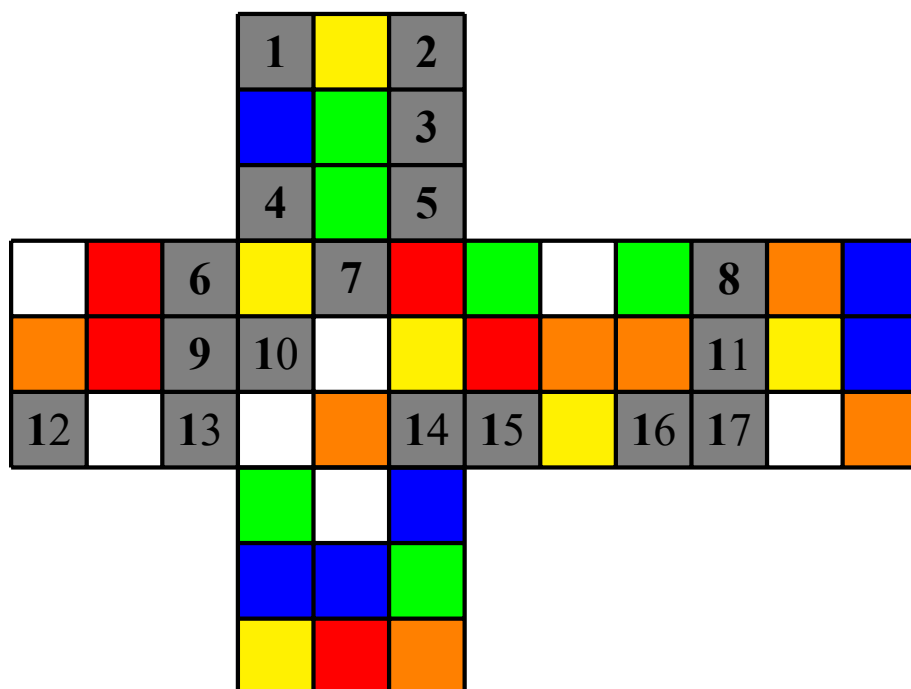
**Solution 84:** R D2 B U L' D B U' B2 U2 D B2 R2 D2 R2 D2 R2 F2 B2 R D' Uw2

**No. 85**      **Difficulty:★★★★**



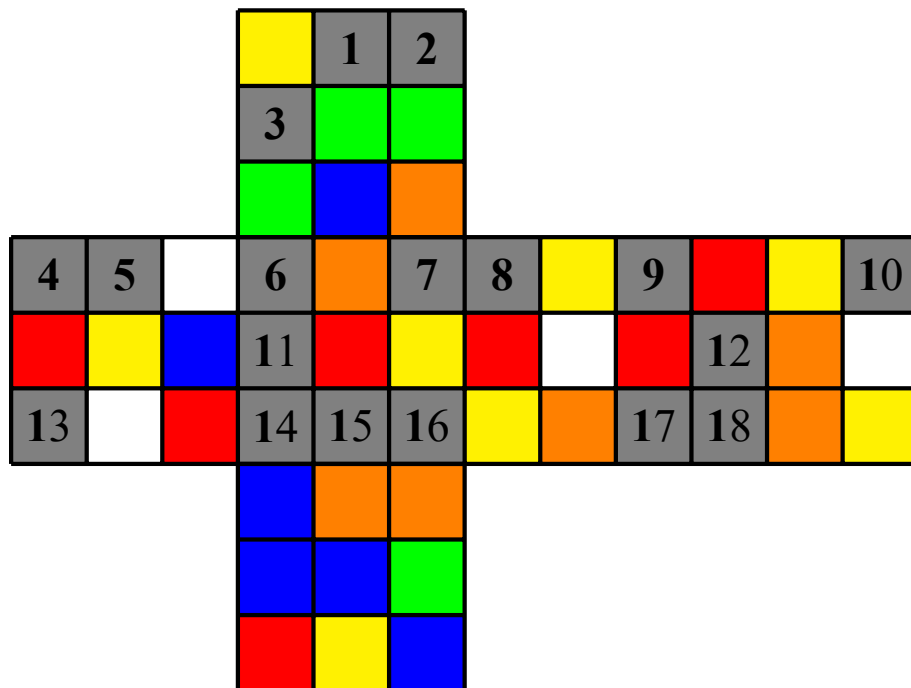
**Solution 85: F R2 B2 L2 D2 L2 R2 F' D2 B U2 R2 L B F' L' R F U B U2 Rw2 Uw'**

**No. 86**      **Difficulty:★★★★**



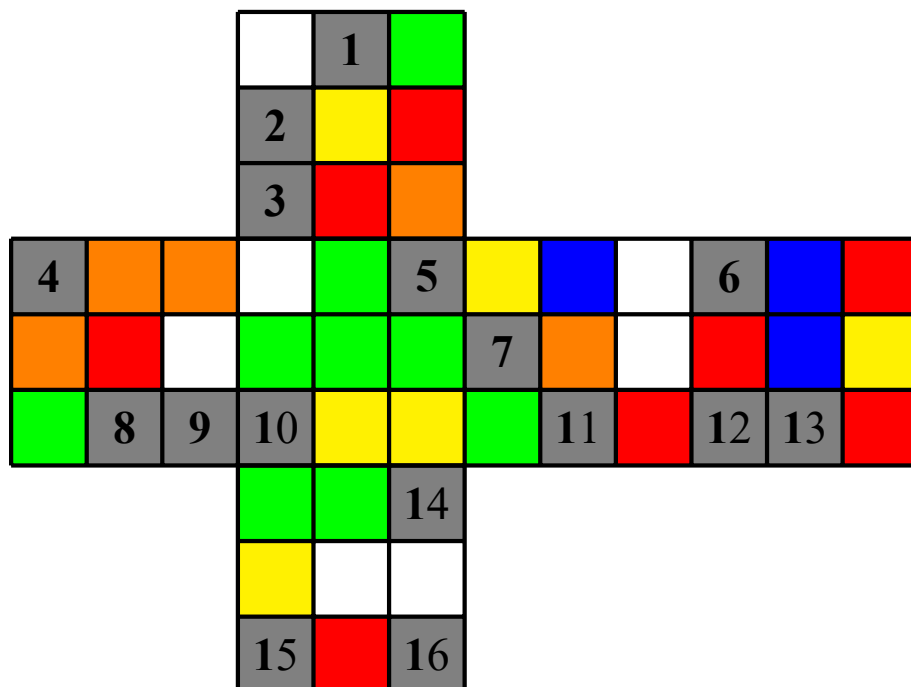
**Solution 86: R2 L D' L U2 D' F' R F2 U2 R2 U2 R' U2 F2 U2 L2 D2 L2 B Fw' Uw**

**No. 87**      **Difficulty:★★★★**



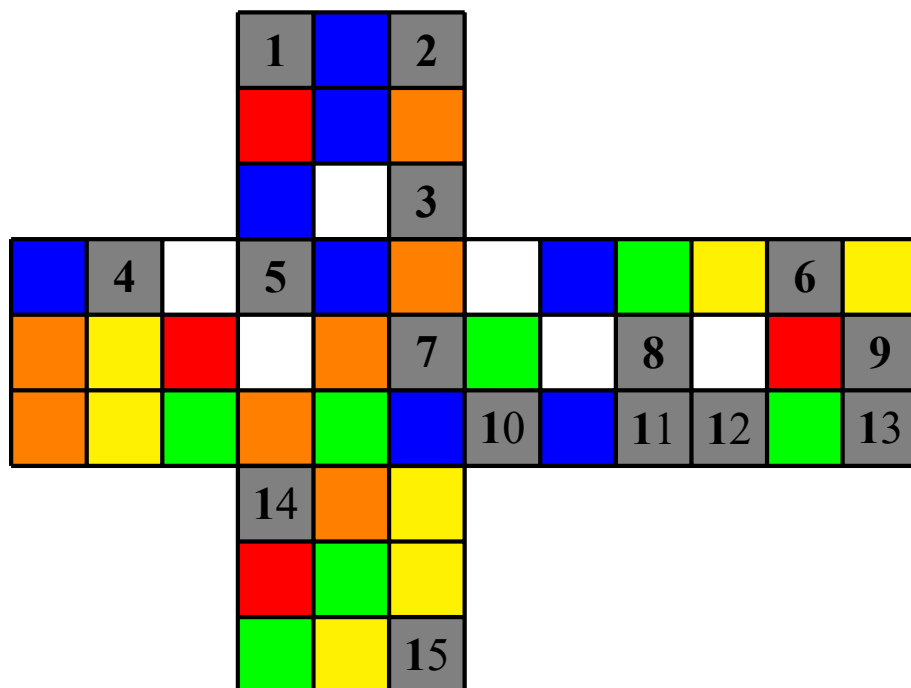
**Solution 87:** U' L2 R2 U R2 U F2 D' L2 R2 D2 U' R' F L' R' D2 B2 D L' B Fw'

**No. 88**      **Difficulty:★★★★**



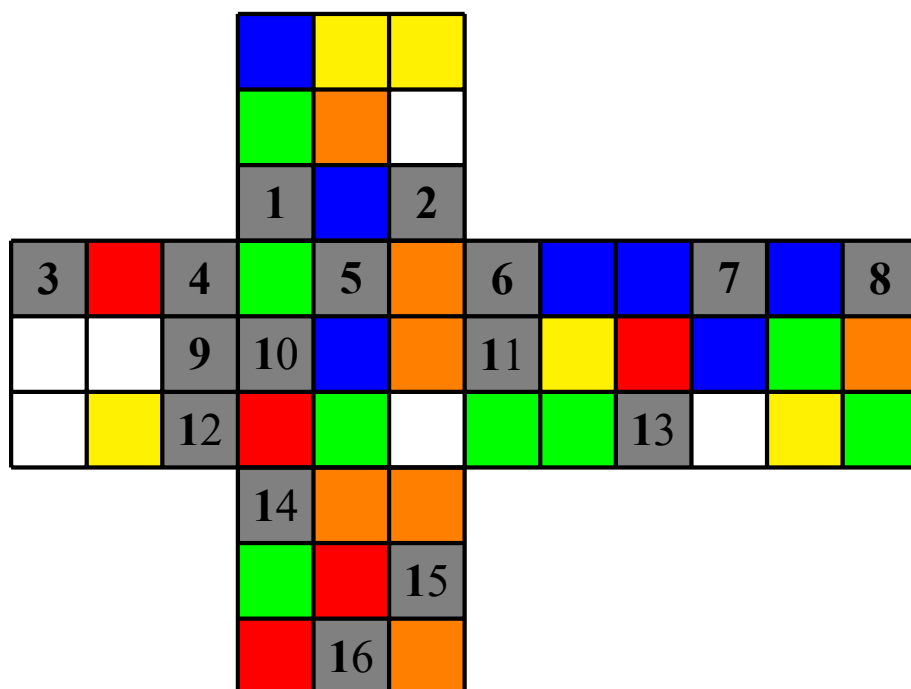
**Solution 88:** L D' L2 D2 L' F2 U2 B2 L2 B2 R F2 R2 F2 B' L2 D' L D B F' Uw

**No. 89**      **Difficulty:★★★★**



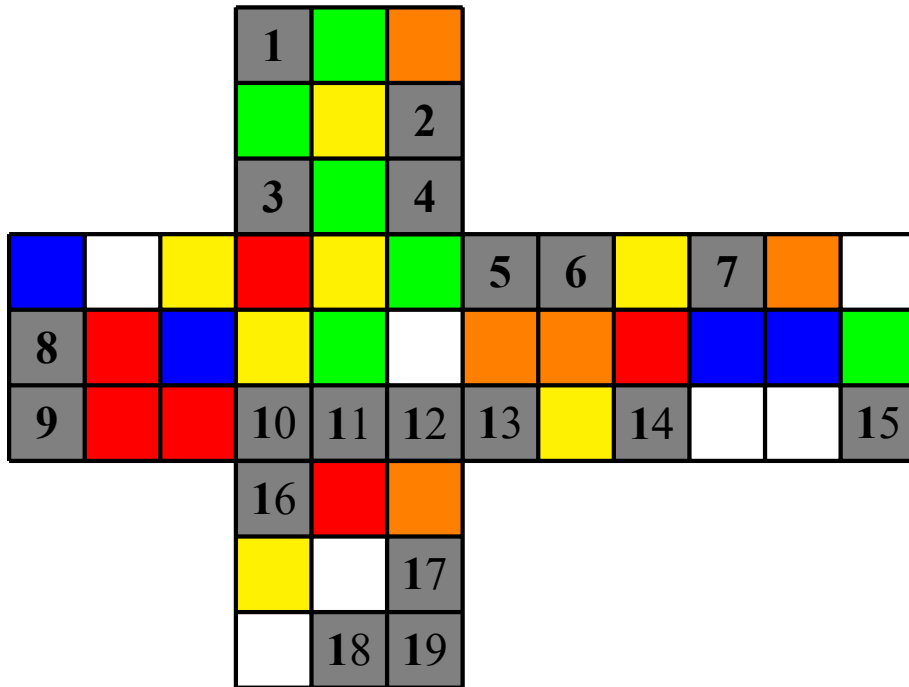
**Solution 89:** R D R2 U2 B2 F2 U R2 D2 L2 B2 L2 R' D' F' U R2 F2 R D2 F' Fw Uw2

**No. 90**      **Difficulty:★★★★**



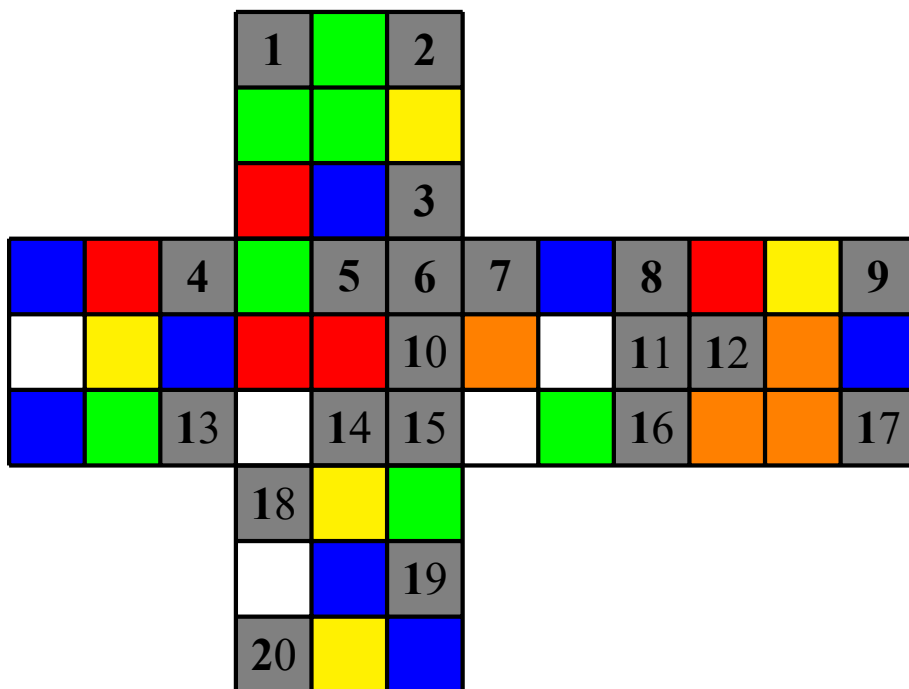
**Solution 90:** L2 F' R F R' L' U F R2 B' L2 U2 B2 R2 L2 B D2 L2 U2 D L Rw' Uw'

**No. 91**      **Difficulty:★★★★★**



**Solution 91: R2 B' U2 B D2 F' D2 B2 L2 R2 D2 F D L R B R' F' D2 U Uw**

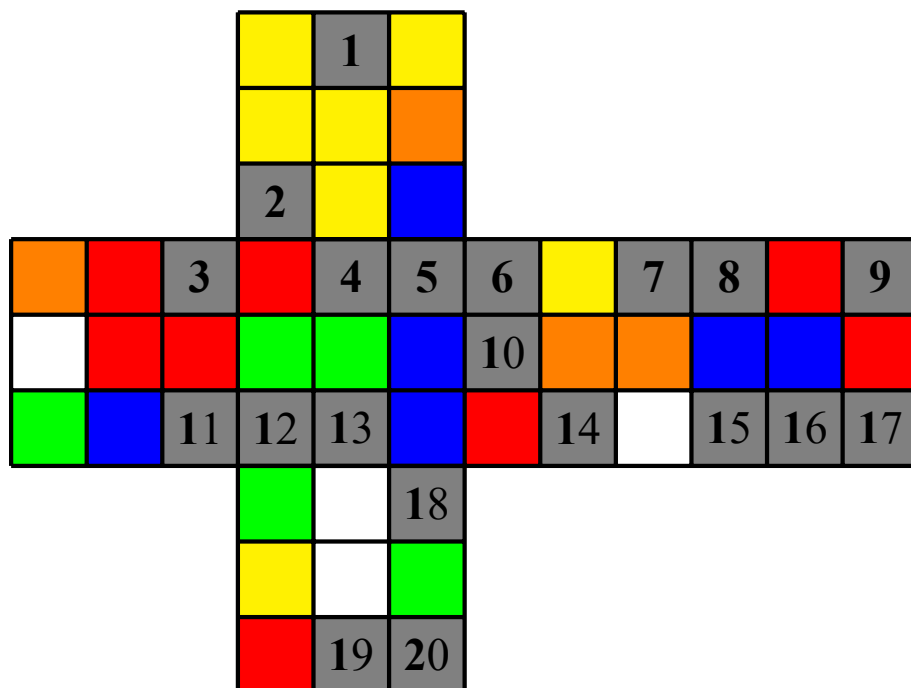
**No. 92**      **Difficulty:★★★★★**



**Solution 92: R' U2 B2 D2 U2 R2 D2 B2 L' F2 R2 D B F D' L F D' L B2 D Fw'**

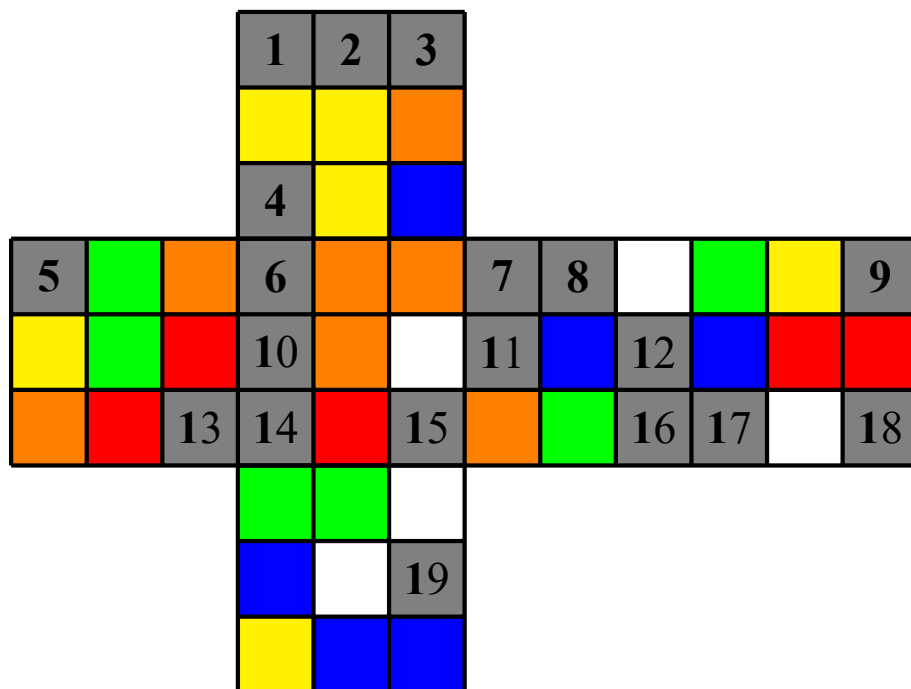


**No. 93**      **Difficulty:★★★★★**



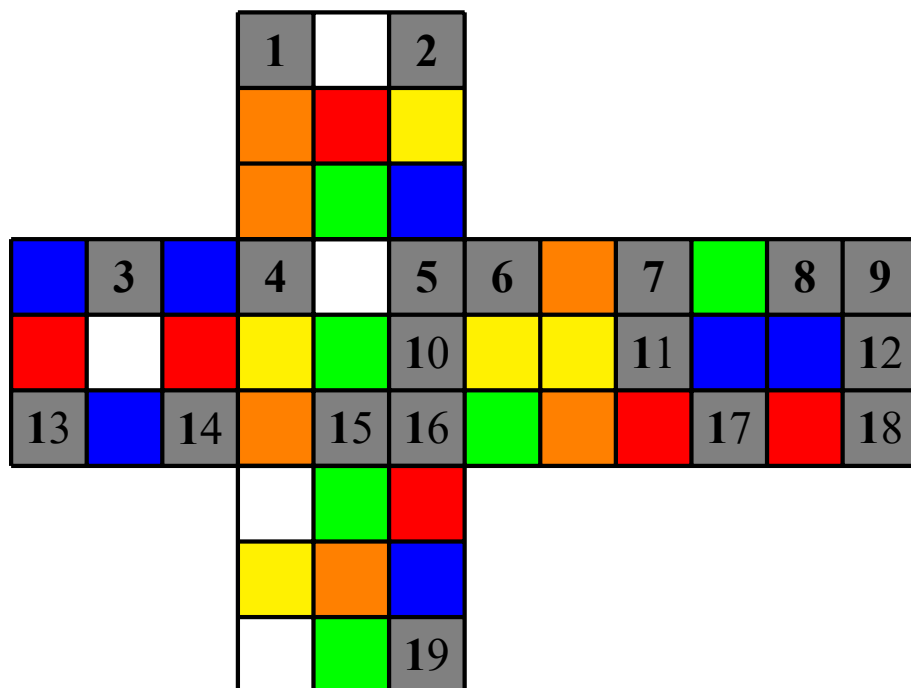
**Solution 93:** L B2 D' L2 D F2 R2 B2 D2 L2 U B2 D' R' F R2 F2 R D L' U2 Uw

**No. 94**      **Difficulty:★★★★★**



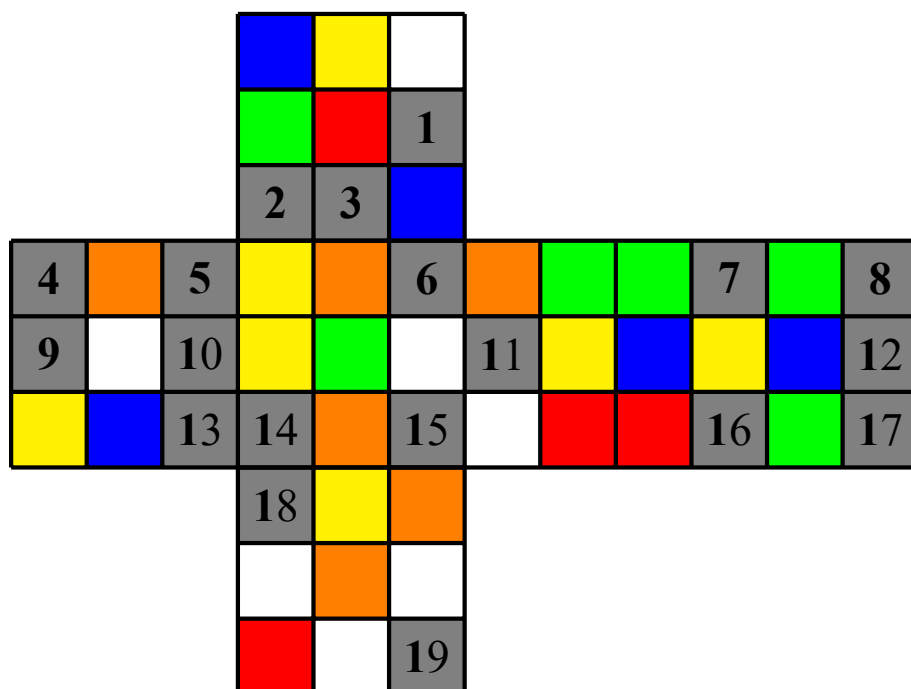
**Solution 94:** F' B2 R2 D' B2 L2 R2 D2 B2 U F2 D' B2 R D' U B2 L' F D2 R2 Uw2

**No. 95**      **Difficulty:★★★★★**



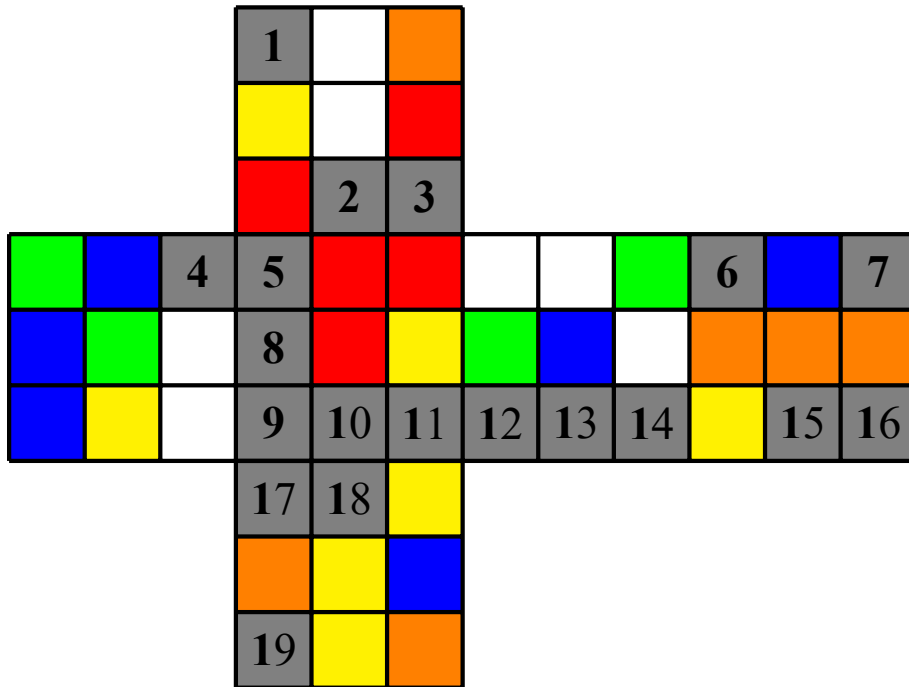
**Solution 95: L2 D2 F D2 B L2 F2 U2 L2 D2 F2 R' D' F L' U' F' R' D2 F' Rw Uw**

**No. 96**      **Difficulty:★★★★★**



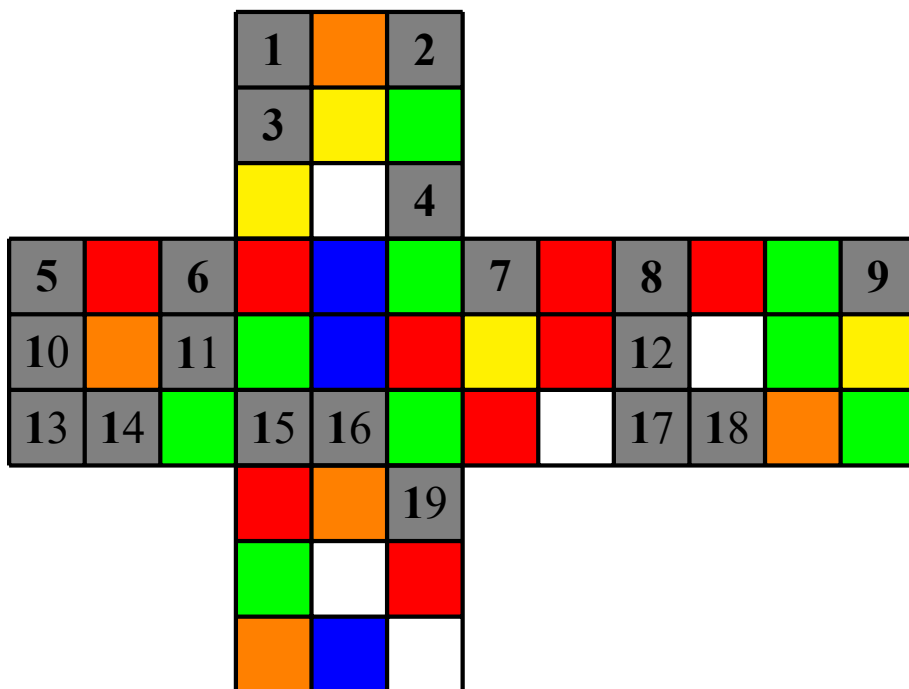
**Solution 96: U L' R2 D2 B2 L2 F2 D' R2 U' F2 R2 D' F' L D2 R D' B' L2 B2 Rw Uw**

**No. 97**      **Difficulty:★★★★★**



**Solution 97:** D' R2 D R2 D2 B2 D B2 F2 R2 D' B L2 R' B' R2 B2 F' D2 U' Rw2 Uw2

**No. 98**      **Difficulty:★★★★★**



**Solution 98:** U' B2 F' R2 D2 R2 U2 R2 F' R2 B2 F' R' F U2 L' B2 U2 R' Uw'

[illegible]

The image shows a 15x15 grid with a cross-shaped pattern of colored squares. The grid is composed of 225 cells. The central cross consists of 29 cells: a vertical column of 7 cells and a horizontal row of 7 cells, intersecting at a single cell. The remaining 196 cells are gray and contain numbers 1 through 19. The colored squares are arranged as follows:

- Row 1:** Cell 1 (gray, 1), Cell 2 (yellow), Cell 3 (gray, 2).
- Row 2:** Cell 4 (gray, 3), Cell 5 (red), Cell 6 (gray, 4).
- Row 3:** Cell 7 (green), Cell 8 (yellow), Cell 9 (yellow).
- Row 4:** Cell 10 (blue), Cell 11 (gray, 5), Cell 12 (gray, 6), Cell 13 (gray, 7), Cell 14 (gray, 8), Cell 15 (gray, 9), Cell 16 (gray, 10), Cell 17 (orange), Cell 18 (white), Cell 19 (orange), Cell 20 (orange), Cell 21 (gray, 11).
- Row 5:** Cell 22 (white), Cell 23 (blue), Cell 24 (red), Cell 25 (green), Cell 26 (white), Cell 27 (orange), Cell 28 (blue), Cell 29 (green), Cell 30 (white), Cell 31 (orange), Cell 32 (yellow), Cell 33 (green).
- Row 6:** Cell 34 (blue), Cell 35 (gray, 12), Cell 36 (yellow), Cell 37 (gray, 13), Cell 38 (yellow), Cell 39 (red), Cell 40 (gray, 14), Cell 41 (blue), Cell 42 (red), Cell 43 (gray, 15), Cell 44 (gray, 16), Cell 45 (gray, 17).
- Row 7:** Cell 46 (red), Cell 47 (blue), Cell 48 (gray, 18).
- Row 8:** Cell 49 (blue), Cell 50 (orange), Cell 51 (white).
- Row 9:** Cell 52 (gray, 19), Cell 53 (green), Cell 54 (yellow).

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