

This is a base 3 system. Thus $15_{10} = 120_3 = 1 \times 9 + 2 \times 3 + 0 \times 1$

Base three is as follows: (0 1 2) with (27 9 3 1) alternate (-1 0 1)
with 27 9 3 1)

Base base

10	3	(-1 0 1)
0	0	0 0
1	1	0 1
2	2	1 -1
3	10	1 0
4	11	1 1
5	12	1 -1 -1
6	20	1 -1 0
7	21	1 -1 1
8	22	1 0 -1
9	100	1 0 0
10	101	1 0 1
11	102	1 1 -1
12	110	1 1 0
13	111	1 1 1

1	2	4	5	7	8
10	11	13	14	16	17
19	20	22	23	25	26

3	4	5	6	7	8
12	13	14	15	16	17
21	22	23	24	25	26

9	10	11	12	13	14
15	16	17	18	19	20
21	22	23	24	25	26

Answer black, red, or no if black no. in corner multiplied by; if red by 2, and if no, by 0 .

If 14, red, black, black $14=2 \times 1 + 1 \times 3 + 1 \times 9 = 2 + 3 + 9 = 14$

If 15, no, red, black $15=0 \times 1 + 2 \times 3 + 1 \times 9 = 0 + 6 + 9 = 15$

1	2	4	5	7	8
10	11	13	14	16	17
19	20	22	23	25	26

3	2	4	5	6	7
11	12	13	14	15	16
20	21	22	23	24	25

Could interchange 3 and 2 remembering 3 is corner no.

9	5	6	7	8	10
11	12	13	14	15	16
17	18	19	20	21	22

Place 9 after 8 remember 9 is corner no.

If black multiply number in corner by 1; if red, by -1 and if no, by 0
If sum negative, add 27

$$11 = \text{red black} \quad \text{black} = -1 \times 1 + 1 \times 3 + 1 \times 9 = -1 + 3 + 9 = 11$$

$$15 = \text{no red red} = 0 \times 1 + -1 \times 3 + -1 \times 9 = 0 + -12 = -12 = (27 - 12) = 15$$

1	2	4	5	7	8
10	11	13	14	16	17
19	20	22	23	25	26

3	4	5	6	7	8
12	13	14	15	16	17
21	22	23	24	25	26

9	10	11	12	13	14
15	16	17	18	19	20
21	22	23	24	25	26

Answer black, white, or no if black no. in corner multiplied by; if white by 2, and if no, by 0.

If 14, white, black, black $14=2 \times 1 + 1 \times 3 + 1 \times 9 = 2 + 3 + 9 = 14$

If 15, no, white, black $15=0 \times 1 + 2 \times 3 + 1 \times 9 = 0 + 6 + 9 = 15$

1	2	4	5	7	8
10	11	13	14	16	17
19	20	22	23	25	26

2	3	4	5	6	7
11	12	13	14	15	16
20	21	22	23	24	25

Could interchange 3 and 2 remembering 3 is corner no.

5	6	7	8	9	10
11	12	13	14	15	16
17	18	19	20	21	22

Place 9 after 8 remember 9
Is corner no.

If black multiply number in corner by 1; if white, by -1 and if no, by 0
If sum negative, add 27

11=white black black=-1x1+1x3+1x9=-1+3+9=11
15=no white white =0x1+ -1x3 + -1x9=0+-12=-12 =(27-12)=15