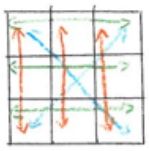
Marbles in a box

1. 

3 down
3 across
1 diagonal

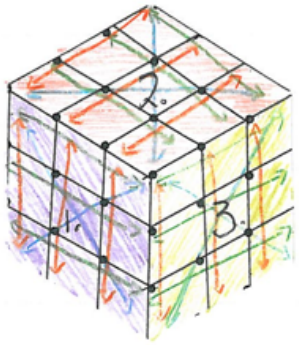
total 8

2. As the cube is three rows deep, You can multiply 8 by 3.

$8 \times 3 = 24$.

3. Opposite faces on a cube have the same solutions. There fore the 6 faces on a cube are divided by 2.

$6 \div 2 = 3$

4. 

You then need to multiply the three established faces by 24

$24 \times 3 = 72$

We then need to consider overlaps.

5. There are 18 diagonals so as these wont over lap we take 18 off of 72

$72 - 18 = 54$

6. you then divide 54 by two because half of these results will appear twice (each line apears on two faces)

$54 \div 2 = 27$

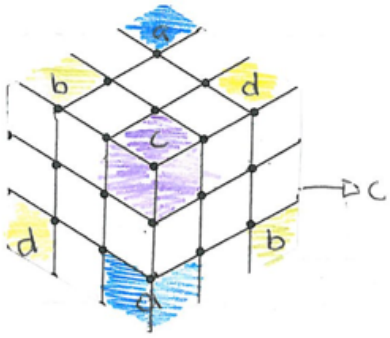
7. 27 can then be added to 18

$27 + 18 = 45$

8. 4 diagonal lines will through the centre of the cube so you need to add 4 to 45

$45 + 4 = 49$

the diagonals would go from point a, b, c, d through the middle and to the opposite vertice.



9. Final answer = 49.