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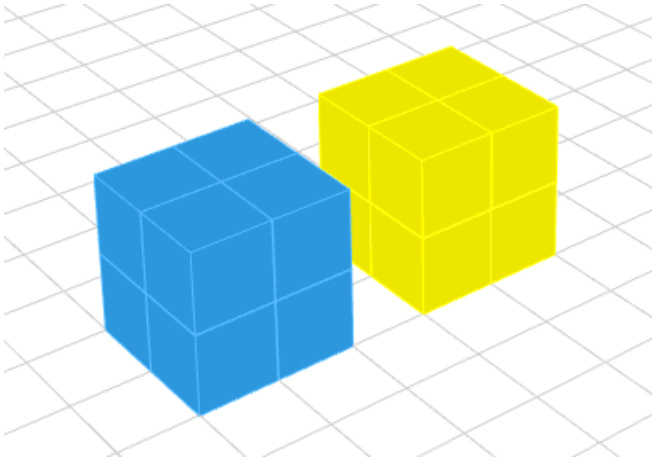
Coloured Cubes

Using a combination of blue and yellow cubes, we got 23 different 2x2x2 cubes. We first figured out the number of blue and yellow combinations were n+1, n being the number of cubes. So in our case we got 8+1 (9) colour combinations. We then determined the number of different arrangements for each blue and yellow combination.

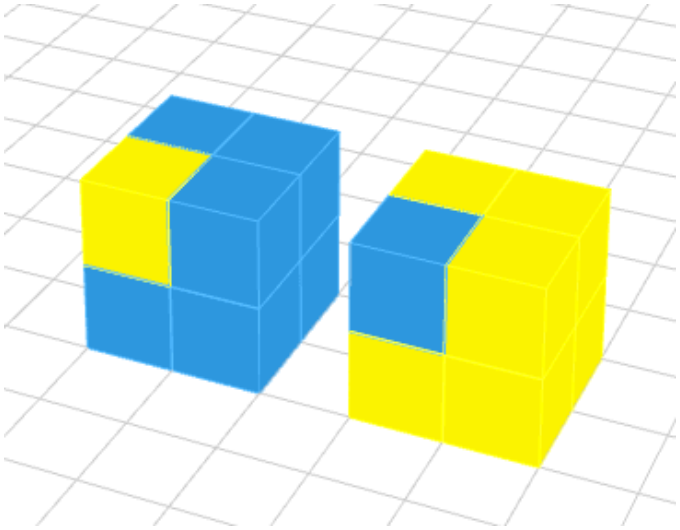
To avoid counting the same arrangement twice, for one particular configuration we start by trading one colour cube on the top layer with another on the bottom layer, to get a different configuration. From there for that particular configuration we only swap cubes on the bottom layer until we get all cases. From then on we traded a different cube from the top layer to the bottom to get two cubes of the same colour on the top layer and followed the same process as before. We followed this process until we could not find any more unique arrangements for each colour combination.



Colour Combination 1:
8x Blue
Arrangements: 1

Colour Combination 2:
8x Yellow
Arrangements**:** 1

Total Overall Arrangements= 2



Colour Combination 3:
7x Blue
1x Yellow
Arrangements: 1

Colour Combination 4:
1x Blue
7x Yellow
Arrangements**:** 1

Total Overall Arrangements= 4

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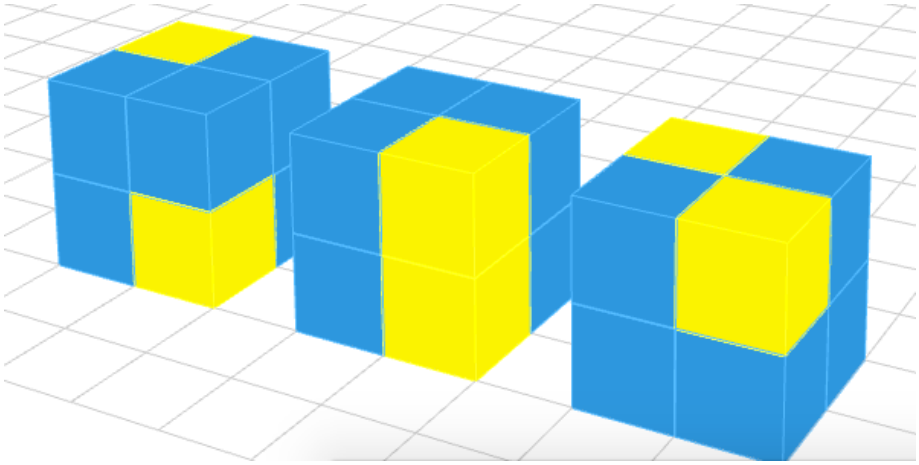
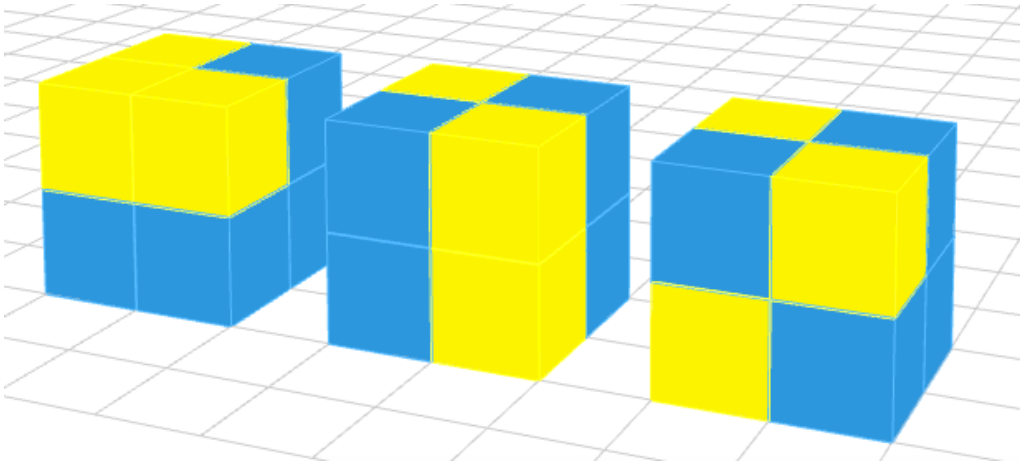


Colour Combination 5:
6x Blue
2x Yellow
Arrangements: 3

Colour Combination 6:
2x Blue
6x Yellow
Arrangements**:** 3

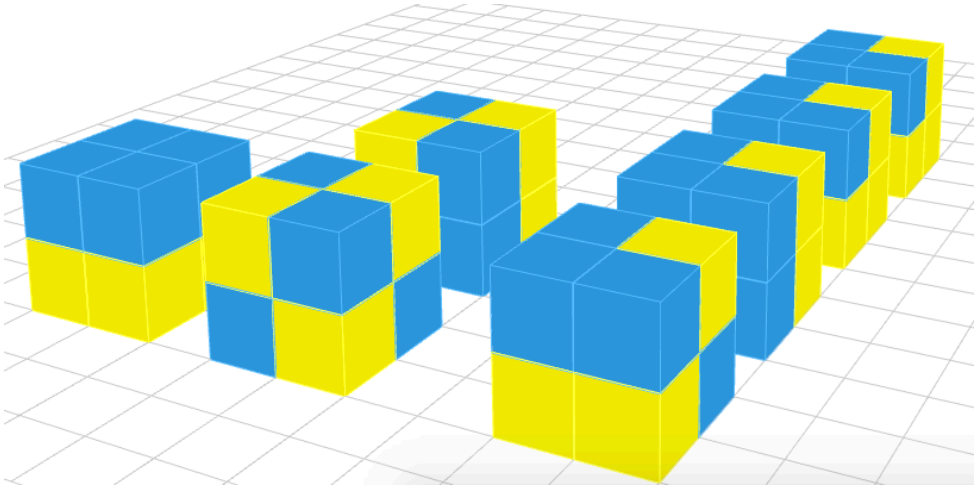
Total Overall Arrangements= 10



Colour Combination 7:
5x Blue
3x Yellow
Arrangements: 3

Colour Combination 8:
3x Blue
5x Yellow
Arrangements**:** 3

Total Overall Arrangements= 16



Colour Combination 9:
4x Blue
4x Yellow
Arrangements: 7

Total Overall Arrangements= 23