LOGICAL REASONING – CUBES 1

Question 1 - 5:
A large cube is painted with golden colour on all faces and cut into 729 identical pieces. Answer the following questions based on the description.

1) How many smaller cubes have all the sides painted?

2) How many smaller cubes have exactly two sides painted with golden colour?

3) How many smaller cubes have only one side painted?

4) How many smaller cubes have at most one side painted?

5) How many smaller cubes required to make a complete cover for the original cube?

Question 6 - 11:
A large cube is painted with violet colour on two opposite faces, brown colour on the other pair of opposite faces and yellow colour on the third pair of opposite faces. After painting, the cube is sliced into 343 smaller but identical pieces. Answer the following questions.

6) How many smaller cubes have all three colours on them?

7) How many smaller cubes have brown colour on exactly two sides?

8) How many smaller cubes have exactly two sides painted with two different colours?

9) How many of the smaller cubes have no colour on them?

10) How many of the smaller cubes have only yellow colour on them?

11) How many of the smaller cubes have at least two colours?

Question 12 - 18:
A large cube is painted with blue colour on two adjacent faces, red colour on the other two adjacent faces and green colour on the third set of adjacent faces. After painting, the cube is subjected 21 cuts in order to get the maximum number of pieces. Answer the following questions.

12) How many smaller cubes have all three colours on them?

13) How many smaller cubes have red colour on exactly two painted sides?

14) How many smaller cubes have exactly two sides painted with two different colours?

15) How many smaller cubes have exactly two colours on them?

16) How many of the smaller cubes have only green on them?

17) How many of the smaller cubes have blue colour on them?

18) How many of the smaller cubes have only red and green on them?

Answers:

1) Ans: 0 (No cube)

2) Ans: 84 (7 x 12 edges)

3) Ans: 294 (49 x 6 faces)

4) Ans: 637 (294 cubes exactly one face painted + 343 cubes having no face painted)

5) Ans: 602 (1331 - 729)

6) Ans: 8 (All corner cubes)

7) Ans: 0 (No cube)

8) Ans: 60 (5 x 12 edges)

9) Ans: 125 (Inner cube of 7x7x7 cube is 5x5x5)

10) Ans: 50 (25 x 2 faces)

11) Ans: 68 (60 cubes two faces painted + 8 corner cubes)

12) Ans: 2 (Just two corner cubes that are diagonally opposite to each other)

13) Ans: 6 (On the red – red edge)

14) Ans: 54 (6 x 9 faces)

15) Ans: 60 (54 cubes exactly 2 faces painted with 2 colours + 6 cubes exactly 3 faces painted with 2 colours)

16) Ans: 78 (36 + 36 cubes painted green on exactly one face and 6 cubes pained green on exactly 2 faces)

17) Ans: 120 (64 + 56)

18) Ans: 20 (18 cubes have exactly 2 faces painted red and green + 2 cubes 3 faces painted with two colours red and green)