

fol the	Directions (Q. lowing information e questions based of I. The length, br of a rectangula are 4 cm, 3 respectively. II. Opposite sides piece are coloured III. Opposite sides are coloured in IV. Rest sides of 3 coloured on gr V. Now the piece way that cubes 1 cm will be m	1-4): Read the ons and answer on it. eadth and height ar piece of wood cm and 5 cm s of 5 cm \times 4 cm ared in red. s of 4 cm \times 3 cm n blue. 5 cm \times 3 cm are een in both sides. e is cut in such a of 1 cm \times 1 cm \times pade	5.	 IV. The blue V. The yell of the cu The faces ac colours a) Yellow, g b) Yellow, b c) Yellow, g d) Can't be constructed e) None of t The face op a) green c) blue e) None of t
1.	How many cubes three colours? a) 8 c) 12 e) None of these	shall have all the b) 10 d) 14	7.	The colour of cube is a) red c) green e) None of t
2.	How many cubes s colour? a) No any c) 4 e) None of these	shall not have any b) 2 d) 6	of gre op cul 8.	Directions each side 15 een, blue an posite faces bical blocks How many
3.	How many cubes two colours red at two sides? a) 8 c) 16 e) None of these	b) 12 d) 20	9.	painted? a) 27 c) 36 e) 18 How many c painted?
4.	How many cubes one colour? a) 12 c) 22	b) 16 d) 28	10.	a) 27 c) 36 e) 18 How many

e) None of these

Directions (Q. 5-7): The six faces of a cube are coloured, each with a different colour.

- I. The white face is between yellow and green.
- II. The red face is adjacent to brown.
- III. The green face is opposite the yellow side.

- face is adjacent to red.
- ow face is the top face ıbe.
- djacent to white bear the
 - reen, brown and red
 - prown, blue and green
 - reen, blue and red
 - determined
 - these
- posite the red face is b) white d) brown
 - these
- of the bottom face of the b) brown d) blue these

(Q. 8-13): A solid cube cm has been painted d yellow on pairs of . It is then cut into of each side 3 cm.

- cubes have no face b) 54 d) 50
- cubes have only one face b) 54 d) 50

 - How many cubes have only two faces painted? b) 54 a) 27 c) 36 d) 50 e) 12
- 11. How many cubes have two faces painted green and blue and all other faces unpainted? a) 12 b) 16

c) 18 d) 8

- e) 24
- 12. How many cubes have one face painted yellow and other faces unpainted?

a) 12	b) 16
c) 18	d) 8
e) 24	

13. How many cubes have atleast one face green? a) 27 b) 54

d) 60 c) 36

e) 50

14. How many cubes have at most one face painted?

a) 27	b) 45
c) 54	d) 63
e) 36	

15. How many cubes have painted both green and yellow but not blue? b) 16 a) 36 c) 12 d) 24 e) 27

- 16. How many cuboids of the dimensions $3 \text{ cm} \times 4 \text{ cm} \times 6 \text{ cm}$ are required to form a cube of the least possible size?
 - a) 72 b) 36 c) 24 d) 12 e) None of these
- 17. A cube has been cut into cuboids of size $2 \text{ cm} \times 3 \text{ cm} \times 4 \text{ cm}$. What is the least possible length of the edge of the cube and how many such cuboids are obtained from this cube?

a) 12, 36	b) 24, 144
c) 24, 72	d) 12, 72
e) 12, 144	

18. The six faces of a dice are marked as faces 1, 2, 3, 4, 5 and 6. Given below are two different views of the same dice



Which face is opposite the face marked as 5?

d) 3

- a) 1 b) 4
- c) 6
- e) 2
- 19. The six faces of a dice and marked as faces A, B, C, D, E and F. Given below are two different views of the same dice.



Which face is opposite the face marked as B?

- a) E b) C c) F d) Can't determined e) None of these
- 20. The faces of a dice are marked as faces #, @, ★, & and %. Given below are two different views of the

SOLUTION

same dice.



Which face is opposite the face marked as @?

- a) \$ c) ★
- d) Can't determined
- e) None of these

Answers and explanations (Cube, Cuboid and Dice) - I (1-4):



- 1. a; Three surfaces coloured is constantly 8.
- 2. d; No. surface coloured = (1 2) (b 2)(h - 2) = $3 \times 1 \times 2 = 6$
- 3. b; There are three cubes on each redgreen interface (barring corner cubes). So, $4 \times 3 = 12$ cubes.
- 4. c; One surface coloured = 2(1 2) (b -2) + 2 (1 - 2) (h - 2) + 2 (b - 2) (h - 2) = 2 { 3 × 1 + 3 × 2 + 1 × 2} = 22
- (5-7): From the given information we deduce red face is opposite to white face, yellow face is opposite to green face, and brown face is opposite to blue face.
 - 5. b
 - 6. b
 - 7. c; If yellow face is at the top then green will be at the bottom because yellow face and green face are opposite to

each other.

(8-13): Let 3 cm = 1 unit,

then 15 cm = 5 units Number of total cubes = $5 \times 5 \times 5 =$

125

Number of cubes only one face painted comprises three types of cubes ie cubes having one face green, one face yellow and the cubes having one face blue.

Cubes having only one face green = $2(n - 2)^2 = 2(5 - 2)^2 = 18.$

Where n = side of cube

Cubes having one face blue = $2(n - 2)^2 = 2 \times 3 \times 3 = 18$

Cubes having one face yellow = $2(n - 2)^2 = 2 \times 3 \times 3 = 18$

Cubes having only one face painted are 18 + 18 + 18 = 54

Cubes of only two faces painted comprises three types of cube

1st type: one face blue and one face yellow

$$4(5-2) \Longrightarrow 4(n-2) = 4 \times$$

3 = 12

2nd type: one face yellow and one face green

$$4(n-2) \implies 4(5-2) = 4 \times 3 = 12$$

3rd type: one face green and one face blue

$$4(n-2) \Longrightarrow 4(5-2) = 4 \times$$

3 = 12

Cubes having only two faces painted are 12 + 12 + 12 = 36

Cubes which have no any face painted are (n - 2) (n - 2) (n - 2) = (5 - 2) (5 - 2) (5 - 2) = 27

[where n is the side of a cube.]

8. a	9. b
10. c	
11. a	12. c
3. e	

14. b; At most one face painted means cubes which are painted. Only one side and cubes which are not painted.

15. c;



Edges which are not painted blue are 4

and one each edges 3 cubes have only two faces painted.

So, $4 \times 3 = 12$

16. c; 1 cm of 3, 4 and 6 = 12 12 cm length is required

$$\frac{12}{3} = 4$$
, $\frac{12}{4} = 3$, $\frac{12}{6} = 2$
4 × 3 × 2 = 24

$$\frac{12}{2} = 6$$
, $\frac{12}{3} = 4$, $\frac{12}{4} = 3$

 $6 \times 4 \times 3 = 72.$

72 cuboids are obtained from this cube.

18. d; In given 2 dice 1, 6, 4 and 2 are near to 3. So, 3 and 5 are opposite to each other. 19. a; After compiling both dice we get E and B are opposite to each other.

20. c; After compiling both dice we get the \star is opposite to @.