# **Cube and Dice**

#### REASONING WORKBOOK

## QUESTIONS



**Direction (6-15):** In each of the following questions, a sheet of paper is given in figure (X) which has to be folded to form a box. Choose a box from amongst the alternatives that is similar to the box formed. **6**.







9.



(i) (a) 3 (b) 2 (c) 6

(d) Cannot be determined

18. Two positions of the dice are given below. What will be the number at the bottom if 5 is at the top?



(d) 6 19. Two positions of a brick are shown below. When the number 6 will be on the top, then which number will be at the bottom?



(a) 1 (b) 4 (d) 6 20. Two positions of a cuboid are shown below. When the three dots will be on the top face, then how many dots will be at the bottom face?



(b) 4 (d) 6 (a) 1 21. Two positions of a dice are shown below. When there are two dots at the bottom, the number of dots at the top will be



(c) 6 (d) Cannot be determined

22. Four different positions of a dice are shown below. Find the number on the face opposite to the face showing 2. (SOF NCO 2016)



(c) 5

(a) 3 (b) 4 23. Three different positions of a dice are given below. 2 6 3



(b) 4

(b) 3

(b) 4







(SOF NSO 2016)

(a) 2

(a) 1

(a) 5

25. Two positions of a dice are given below. When 1 is at the top, which number will be at the bottom?

(SOF IMO 2016)

(SOF IMO 2016)



(d) 6

(d) 62

(d) Blue

(d)↓

26. Some equal cubes are arranged in the form of a solid block as shown in the given figure. All the visible surfaces of the block (except bottom) are then painted.

How many cubes have only one face painted?

(b) 3



(a) 9 (b) 45

Four different positions of a dice are shown here. Which of the following colors will be opposite to the face having 27. violet colour?

> Yellow Orange Blue Rec Violet Red Orang (c) Red

(a) Orange (b) Yellow

(b) •

28. Three positions of a dice are given. Find the symbol opposite to symbol SB.

	$\sim$	
+ +		

(c) **O** 

(a) +

29. A cube is painted red on the two adjacent faces and black on the surfaces opposite to red surfaces and orange on the remaining faces. Now the cube is divided into 216 smaller cubes of equal size. How many smaller cubes will have no surface painted?

(a) 2

(c) 60

(b) 64 (d) 54 30. Given below are the three different positions of a dice. What shall come in the place of 'X'?

(SOF IMO 2017)

(SOF IMO 2017)

(a) 1 (b) 2 (c) 4 (d) 5

#### (SOF NCO 2017)

(SOF NSO 2017)

ANSWER - KEY									
1.	С	2.	В	3.	С	4.	В	5.	С
6.	D	7.	В	8.	D	9.	В	10.	В
11.	С	12.	В	13.	А	14.	D	15.	D
16.	А	17.	В	18.	С	19.	С	20.	С
21.	В	22.	С	23.	В	24.	С	25.	D
26.	С	27.	В	28.	С	29.	В	30.	А

### **EXPLANATIONS**

- 1. (c) : In the figure, there are 1 column containing 2 blocks and 3 columns containing 1 block each. Therefore, total number of blocks  $=(1\times 2)+(3\times 1)=5.$
- 2. (b) : There are two levels in the figure. Bottom level contains 4 blocks and the upper level contains 3 blocks.
- 3. (c): Clearly there are 1 column, containing 3 cubes, 2 columns containing 2 cubes each and 3 columns containing 1 cube each.

Hence, there are  $(1 \times 3) + (2 \times 2) + (3 \times 1) = 3 + 4 + 3 = 10$  cubes in the given figure.

- (b): Clearly, there are 4 columns containing 2 blocks each and 6 columns containing 1 block each. 4. Therefore, total number of blocks  $=(4 \times 2) + (6 \times 1) = 8 + 6 = 14.$
- (c) : In the figure, there are 9 columns containing 5 cubes each, 7 columns containing 4 cubes each, 5 columns 5. containing 3 cubes each and 1 column containing 1 cube.
  - $\therefore$  Total number of cubes =  $(9 \times 5) + (7 \times 4) + (5 \times 3) + (1 \times 1) = 89$ .
- (d) Not Available 6.
- 7. (b): When the sheet in figure (X)ds folded to form a cube, T' appears opposite 'B', 'E' appears opposite 'C' and 'A' appears opposite 'D'. Therefore, the cube in figure (P) which shows 'F' adjacent to 'B', the cube in figure (R) which shows 'E' adjacent to 'C and the cube in figure (S) which shows 'A' adjacent to 'D' cannot be formed. Hence, only the cube in figure (Q) can be formed.
- (d): Opposite faces are : (1, 6), (2, 4) and (3,5) 8.
- 9. (b): Opposite faces are:



- must be adjacent to one black core of . These properties are in option (b).
- Also one core of face 10. (b): If the sheet in figure (X) is folded to form a cube, then the completely shaded face lies opposite to the half shaded face. Therefore, the cubes shown in figures (P) and (R) cannot be formed. Hence, only the cubes in figures (Q) and (S) can be formed.
- 11. (c) Not Available
- 12. (b) Not Available
- 13. (a) Not Available
- 14. (d) Not Available
- (d) Not Available 15.



- (a) : If we do upside down the cube in figure (i), then it will look like of which bottom and back faces lie 16. 2 dots and 4 dots respectively. Comparing this figure with the figure (ii), we obtain 3 dots and 4 dots faces are opposite to each other.
- 17. (b) Not Available
- 18. (c): From figures (i) and (ii), it is clear that 4, 1, 3 and 6 lie adjacent to 2. Therefore, 5 must lie opposite 2. Thus, if 5 is at the top, then 2 must be at the bottom.
- 19. (c): If we turn figure (i) in such a way that the positions of its nos. 2 and 3 as in figure (ii), the 5 will reach bottom. So 5 and 6 are opposite each other.
- 20. (c) : The number 2 is common to both the figures. We assume the cuboid in figure (ii) to be rotated so that 2 appears at the same position as in figure (i) i.e. on the RHS face and the numbers 6 and 3 move to the faces hidden behind the numbers 1 and 5 -respectively, [in fig. (i)] Then, the combined figure will have 1 opposite 6 and 5 opposite 3. Thus, when 3 will appear on the top, then 5 will appear at the bottom.

21.	(b) Not Available
22.	(c) Not Available
23.	(b) Not Available
<b>24</b> .	(c) Not Available
25.	(d) Not Available
26.	(c) Not Available
27.	(b) Not Available
28.	(c) Not Available
29.	(b) Not Available
30.	(a) Not Available