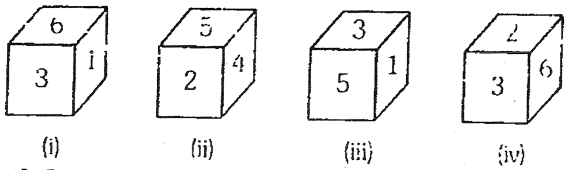
11. Dice & Cube

Dice

Dice is a three dimensional figure with all of its surfaces numbered. We are giving below few properties of Dice which will help candidates to solve various problems on Dice.

Category–I

Ex. A dice has been thrown four times and produces following results. Which number will appear opposite to the number 3?



(i) (ii) (iii) (iv)

(1) 4 (2) 5 (3) 6 (4) 1

Sol. From the figures (i), (ii) and (iv), we find that numbers 6, 1, 5 and 2 appear on the adjacent surfaces to the number 3. Therefore, number 4 will be opposite to number 3. Hence, option (1) is the correct answer.

Category–II

Ex. The figures given below show the two different positions of a dice. Which number will appear opposite to number 2?

(i) (ii)

(1) 3 (2) 4 (3) 5 (4) 6

Sol. The above question, where only two positions of a dice are given, can easily be solved with the following method.

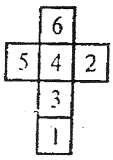


Fig. X

Step-I The dice, when unfolded, will appear as shown in Fig.X

Step-II Write the common number of both the dice in the middle block. Since common number is 4, hence number 4 will appear in the central block.

Step-III Consider the Fig. (i) and write the first number in the anti-clockwise direction of number 4, (common number) in block I and second number in block II. Therefore, numbers 3 and 2 being the first and second number to 4 in anti-clockwise directions respectively, will appear in blocks I and II, respectively.

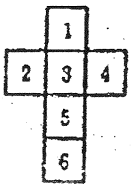
Step-IV Consider Fig. (ii) and write first and second number in the anti-clockwise direction to number 4, (common number) in block III and IV. Hence, numbers 6 and 5 will appear in the blocks III and IV, respectively.

Step-V Write the remaining number in the remaining block. Therefore, number 1 will come in the remaining block.

Now, from the unfolded figures we find that number opposite to 6 is 3, number opposite to 2 is 5 and number opposite to 4 is 1. Therefore, option (3) is the correct answer.

1. **A dice has six surfaces and all of them are numbered from 1 to 6.**
2. **If the surfaces of dice are unfolded and placed on a plane, the figure of dice so obtained will look like one of the following figures:**

Form I



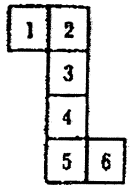
In this case

1 lies opposite 5 ;

2 lies opposite 4 ;

3 lies opposite 6.

Form II **In this case**

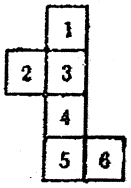


1 lies opposite 6 ;

2 lies opposite 4 ;

3 lies opposite 5.

Form III **In this case**

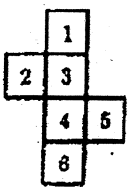


1 lies opposite 4 ;

2 lies opposite 6 ;

3 lies opposite 5.

Form IV **In this case**

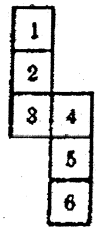


1 lies opposite 4 ;

2 lies opposite 5:

3 lies opposite 6.

Form V **In this case**



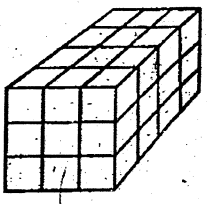
1 lies opposite 3 ;

2 lies opposite 5 ;

4 lies opposite 6.

CUBE

Ex.1 Count the number of blocks in the given solid.



(1) 24 (2) 36 (3) 48 (4) 60

Answer: (2)

Explanation:

Each layer (say top most) of the solid contains 12 blocks.

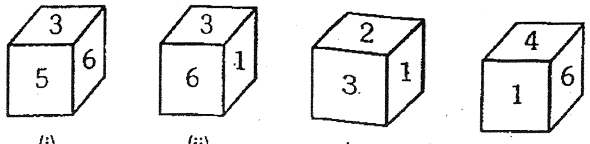
There are 3 identical layers in all.

So, the total number of blocks = $3 \times 12 = 36$

EXERCISE

Direction (Q.1 to Q.8) : In each of the following questions, four positions of the same dice have been shown. You have to see these figures and select the number opposite to the number as asked in each of the question.

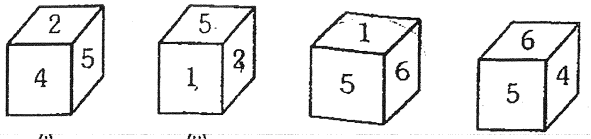
1. Which number is on the opposite surface of number 3?



(i) (ii) (iii) (iv)

(1) 4 (2) 6 (3) 5 (4) 1

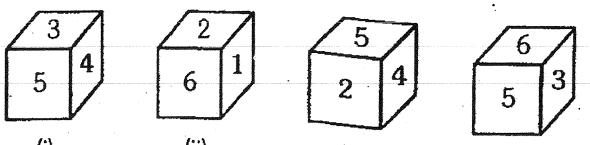
2. Which number is opposite to number 1 ?



(i) (ii) (iii) (iv)

(1) 4 (2) 6 (3) 2 (4) 3

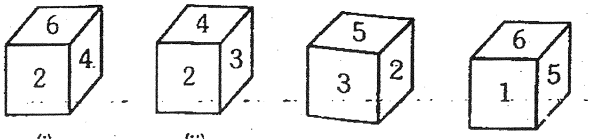
3. Which number is opposite to number 5 ?



(i) (ii) (iii) (iv)

(1) 6 (2) 5 (3) 1 (4) 3

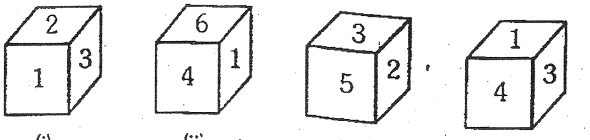
4. Which number is opposite to number 2 ?



(i) (ii) (iii) (iv)

(1) 4 (2) 6 (3) 1 (4) 3

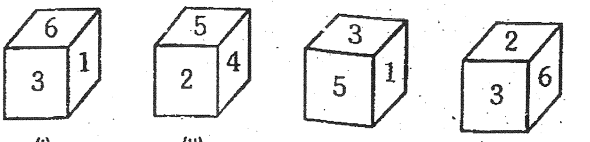
5. Which number is opposite to number 5?



(i) (ii) (iii) (iv)

(1) 4 (2) 6 (3) 1 (4) 3

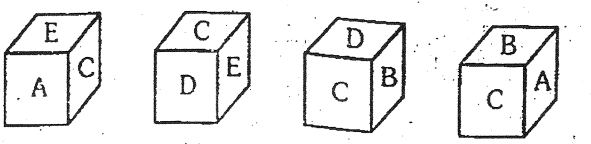
6. Which number is on the opposite surface of number 3 ?



(i) (ii) (iii) (iv)

(1) 2 (2) 3 (3) 4 (4) 6

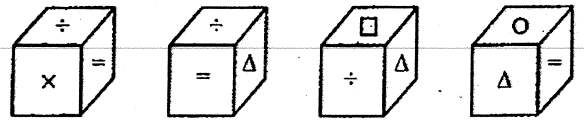
7. Which letter will be opposite to letter D?



(i) (ii) (iii) (iv)

(1) A (2) B (3) E (4) F

8. Which symbol will come opposite to symbol ÷



(i) (ii) (iii) (iv)

(1) ○ (2) = (3) × (4) Δ

9. 

(i) (ii)

Which number will come opposite to number 2 ?

(1) 5 (2) 1 (3) 6 (4) 3

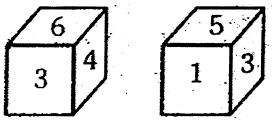
10. Which will be the number at the bottom, if 5 is at the top?

(1) 1
(2) 2
(3) 3
(4) 6

(i) (ii)

11. On the basis of two figures of dice, you have to tell what number will be on the opposite face of number 5 ?

(1) 1
(2) 3
(3) 4
(4) 5



(i) (ii)

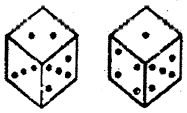
12. What should be the number opposite 3?

(1) 1
(2) 6
(3) 5
(4) 4

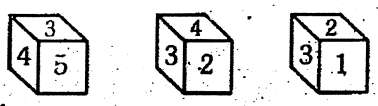
(i) (ii) (ii)

13. What is the number of dots on the face opposite to that containing 2 dots?

(1) 1
(2) 3
(3) 4
(4) 6



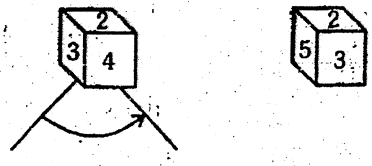
14. The different positions of a dice has been shown. What digit will be opposite to digit 4 ?



(1) 6 (2) 1 (3) 5 (4) 2

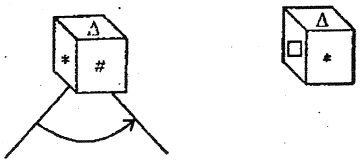
Directions (Q.15 to Q.17): In each of the following questions, the second die is obtained by rotating the first die horizontally to right by an angle of 90°. Observe the dice and answer the questions.

15. The faces of this die show numbers 1. 2. 3. 4, 5 and 6. Number on the face opposite to the face showing 4 is



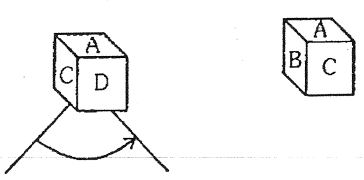
(1) 1 (2) 6 (3) 5 (4) 3

16. The faces of this die show symbols Δ, #, *, X, □, and O. Symbol on the face opposite to the face showing □ is



(1) A (2) O or X (3) # (4) X

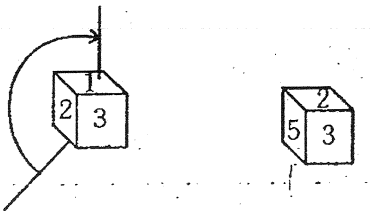
17. The faces of this die shows letters A, B, C, D. E and F. Letter on the face opposite to the face showing the letter C is



(1) F (2) E (3) B (4) E or F

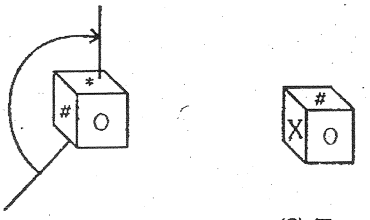
Directions (Q.18 to Q.20): In each of the following questions, the second die is obtained by rotating the first die vertically to right by an angle of 90°. Observe the dice and answer the questions.

18. The faces of this die show numbers 1. 2, 3. 4. 5 and 6. Number on the face opposite to the face showing 1 is



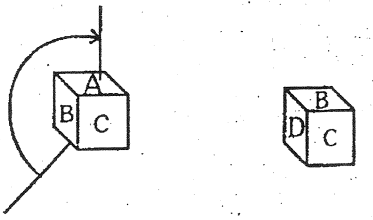
(1) 4 (2) 6 (3) 5 (4) 2

19. The faces of this die show symbols Δ, #, *, X, □ and O. Symbol on the face opposite to the face showing X is



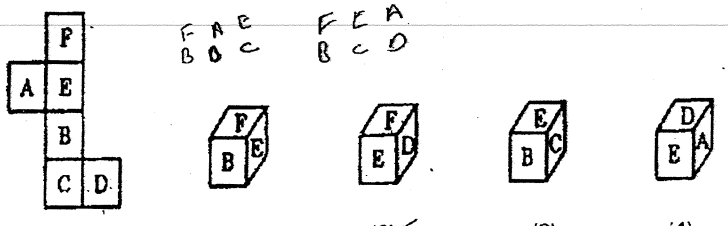
(1) O (2) □ (3) Δ (4) *

20. The faces of this die show letters A. B, C. D, E and F. Letter on the face opposite to the face showing the letter B is



(1) E or F (2) E (3) F (4) C

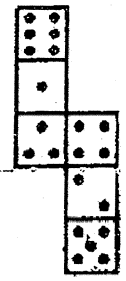
21. Choose the box that is similar to the box formed from the given sheet of paper (X).



(X) (1) (2) (3) (4)

(1) 1 only (2) 2 only (3) 1 and 3 only (4) 1, 2, 3 and 4

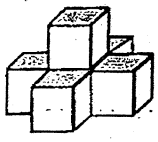
22. How many dots lie opposite to the face having three dots, when the given figure is folded to form a cube?



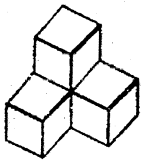
6 1 4
3 2 5

(1) 2 dots (2) 3 dots (3) 4 dots (4) 6 dots

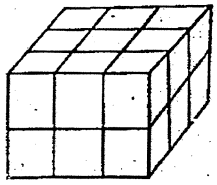
Direction (Q.23 to Q.30) : Count the number of cubes in the given solid in each of the following questions.

23. 

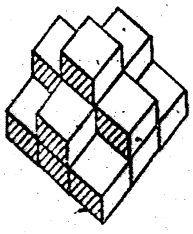
(1) 8 (2) 7 (3) 6 (4) 5

24. 

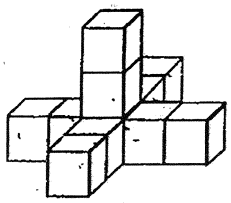
(1) 3 (2) 4 (3) 5 (4) 6

25. 

(1) 10 (2) 15 (3) 18 (4) 21

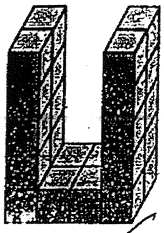
26. 

(1) 15 (2) 13 (3) 16 (4) 14

27. 

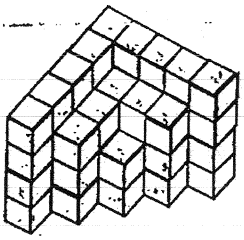
(1) 18 (2) 16 (3) 12 (4) 11

28. Count the number of cubes in the following figure.



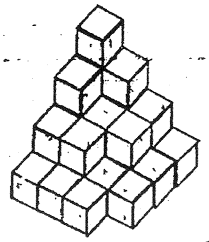
(1) 16 (2) 20 (3) 24 (4) 28

29. How many unit cubes are there in the figure?



(1) 52 (2) 53 (3) 54 (4) 56

30. Number of unit cubes in the given figure is_____.



(1) 25 (2) 26 (3) 27 (4) 28

EXERCISE ANSWER KEY

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Ans.	1	1	3	3	3	3	1	1	4	2	3	2	1	2	3	3	4	3	4	1
Que.	21	22	23	24	25	26	27	28	29	30										
Ans.	2	4	3	2	3	1	4	3	2	3										

Important Notes