CLOCKS AND DIRECTIONS

Ranchan Kaul

Clocks

An accurate clock shows 8'o clock in the morning. Through how many degrees will the hour hand rotate when the clock shows 2'o clock in the afternoon?

(a) 144°

(b) 150°

(c) 168°

(d) 180°

Through how many degrees does the minute hand rotate between 3:00 AM to 3:15 AM?

(a) 30°

(b) 90°

(c) 60°

(d) $30(5/11)^\circ$

At 3.40, the hour hand and the minute hand of a clock form an angle of :

(a) 120°

(b) 125°

(c) 130°

(d) 135°

The angle between the minute hand and the hour hand of a clock when the time is 8.30 is:

(a) 80°

(b) 75°

(c) 60°

(d) 105°

The angle between the minute hand and the hour hand of a clock when the time is 4:20 AM is :

(a) 0°

(b) 10°

(c) 5°

(d) 20°

At which one of the following times, do the hour hand and the minute hand of a clock make an angle of 180° with each other?

A. Between 8:10 and 8:15

B. At 8:10

C. At 8:05

D. Between 8:05 and 8:10

At what angle the hands of a clock are inclined at 15 minutes past 5 ?

(a) $58\frac{1^o}{2}$ (b) 64^o (c) $67\frac{1^o}{2}$ (d) $72\frac{1^o}{2}$

) At what time,in minutes,between 3'o clock and 4'o clock, both the needles will coincide each other?

(a) $5\frac{1}{11}$ (b) $12\frac{4}{11}$ (c) $13\frac{4}{11}$ (d) $16\frac{4}{11}$

How many times do the hands of a clock coincide in a day?

(a) 20 (b) 21 (c) 22 (d) 24

) At what time between 5.30 and 6 will the hands of a clock be at right angles ?

(a) $43\frac{5}{11}$ min. past 5 (b) $43\frac{7}{11}$ min. past 5 (c) 40 min. past 5 (d) 45 min. past 5

How many times in a day, are the hands of a clock at right angle in a day?

(a) 20 (b) 22 (c) 24 (d) 48

Between 6 PM and 7 PM the minute hand of a clock will be ahead of the hour hand by 3 minutes at:

A. **6: 15 PM**

B. **6: 18 PM**

C. **6: 36 PM**

D. **6: 48 PM**

A watch showed a time of fourteen minutes past nine (9 hrs and 14 minutes). The positions of the hour-hand and the minute hand of the watch are exactly interchanged. The new time shown by the watch is closest to which one of the following?

A. Twelve minutes to three

B. Thirteen minutes to three

C. Fourteen minutes to three

D. Fifteen minutes to three

A clock is set right at 1 pm. If it gains one minute an hour, what is the true time when the clock indicates 6 pm the same day?

A. 5(7/61) min past 5

B. 55(8/61) min past 5

C. 55(8/61) min past 5

D. 56(5/61) min past 5

A watch which gains uniformly is 2 minutes low at noon on Monday and is 4 min. 48 sec fast at 2 PM on the following Monday. When was it correct ?

(a) 2 PM on Tuesday

(b) 2 PM on Wednesday

(c) 3 PM on Thursday

(d) 1 PM on Friday

A watch which gains 5 seconds in 3 minutes was set right at 7 a.m. In the afternoon of the same day, when the watch indicated quarter past 4 o'clock, the true time is :

(a) $59\frac{7}{12}$ min. past 3 (b) 4 p.m (c) $58\frac{7}{11}$ min. past 3 (d) $2\frac{3}{11}$ min. past 4

A clock is set right at 5 a.m. The clock loses 16 minutes in 24 hours. What will be the true time when the clock indicates 10 p.m. on 4th day?

a. **11 PM**

b. **12 PM**

c. **1 PM**

d. **2 PM**

A man started from home at 14:30 hours and drove to a village, arriving there when the village clock indicated 15:15 hours. After staying 25 minutes, he drove back by a different route of length 1.25 times the first route at a rate twice as fast, reaching home at 16:00 hours. As compared to the clock at home the village clock is

A. 10 min slow

B. 5 min slow

C. 5 min fast

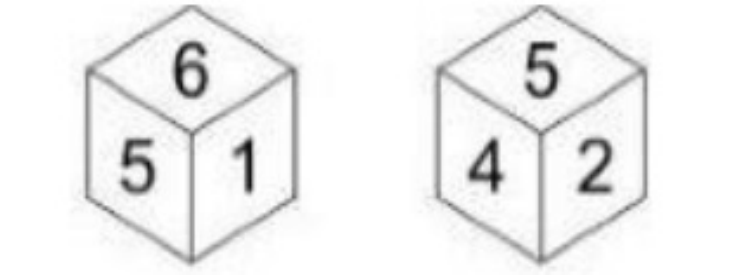
D. 20 min fast

CUBES AND DICE

Ranchan Kaul

Dice

Two position of a cube are shown below. What become opposite to face containing '4'?



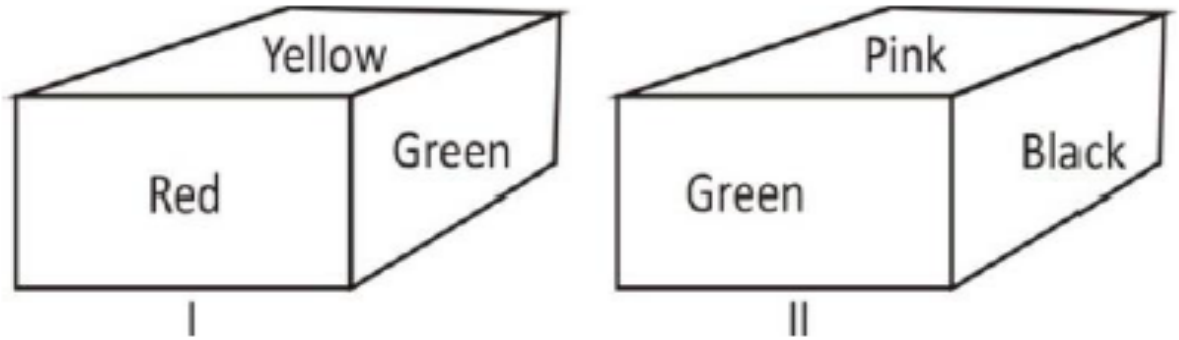
(a) 1

(b) 2

(c) 4

(d) 5

35. Six faces of a wooden block have been painted with Green, Yellow, Red, Black, Pink and White. Two positions of this block are shown in the figure below.



If the face with Pink colour is kept at the top, then the face with which colour will be at the bottom?

(a) Yellow
(b) Red
(c) Green
(d) White

Three positions of a cube are shown below. What will come opposite to face containing '4'?

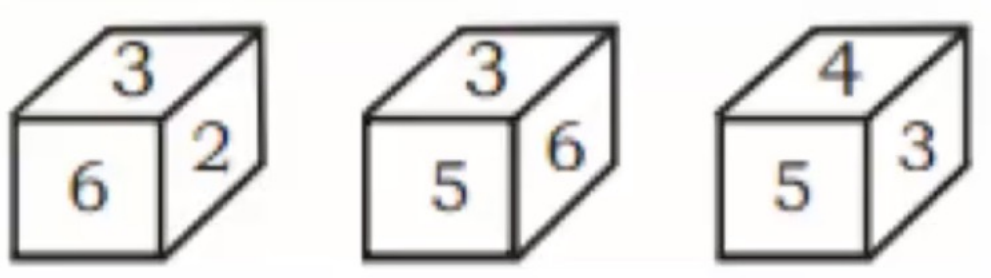
(a) 1

(b) 2

(c) 4

(d) 5

Three positions of a dice are given below. Identify the number on the face opposite to 6.



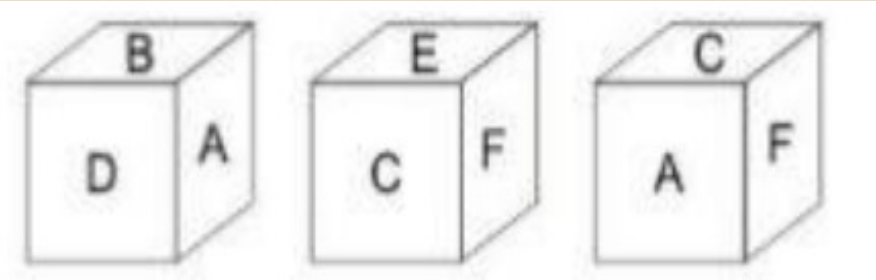
a. 1

b. 4

c. 5

d. 6

Three positions of a cube are shown below. What will come opposite to face containing 'E'?



(a) B (b) D (c) A (d) F

2. A cuboid has six sides of different colours. The red side is opposite to black. The blue side is adjacent to white. The brown side is adjacent to blue. The red side is at the bottom. Which one of the following would be opposite to brown?

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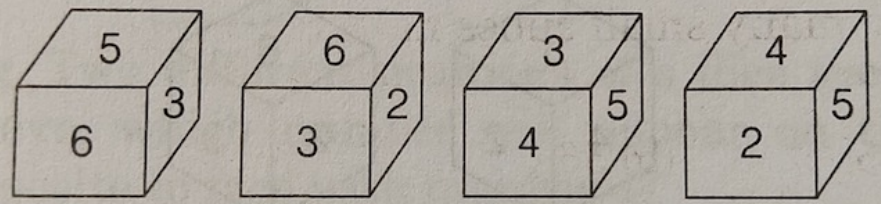
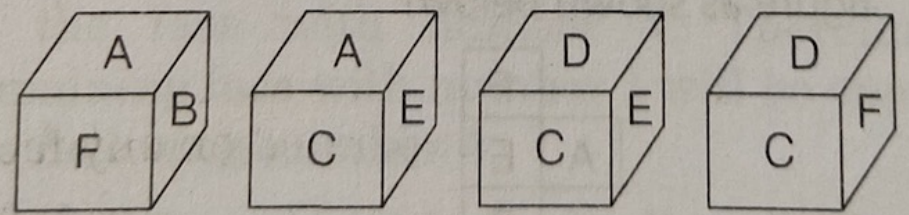
(a) Red (b) Black (c) White (d) Blue

3. In this question four positions of a dice are shown. Which number of the face will be opposite to the face with number 3?



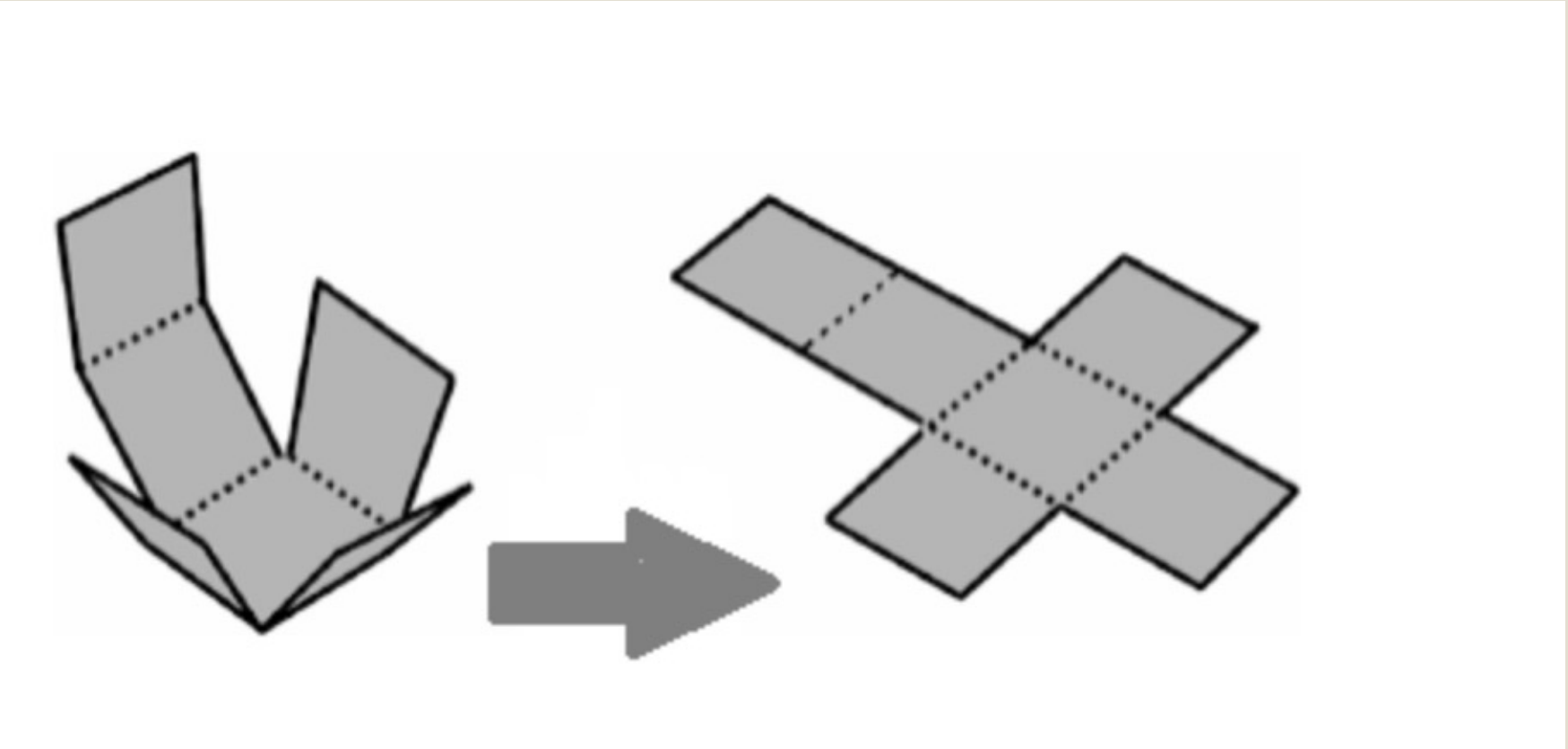
(a) 1 (b) 2 (c) 4 (d) 5

4. Four positions of a cube are shown below. Which letter will be on the face opposite to the face with 'A'?



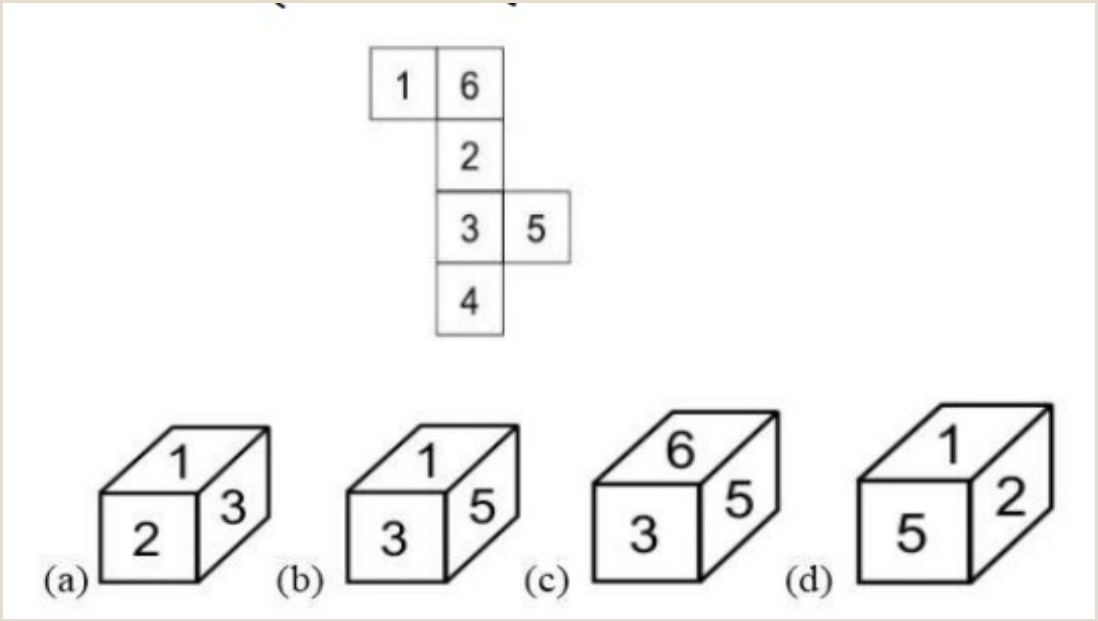
(a) D (b) B (c) C (d) F

Open Dice

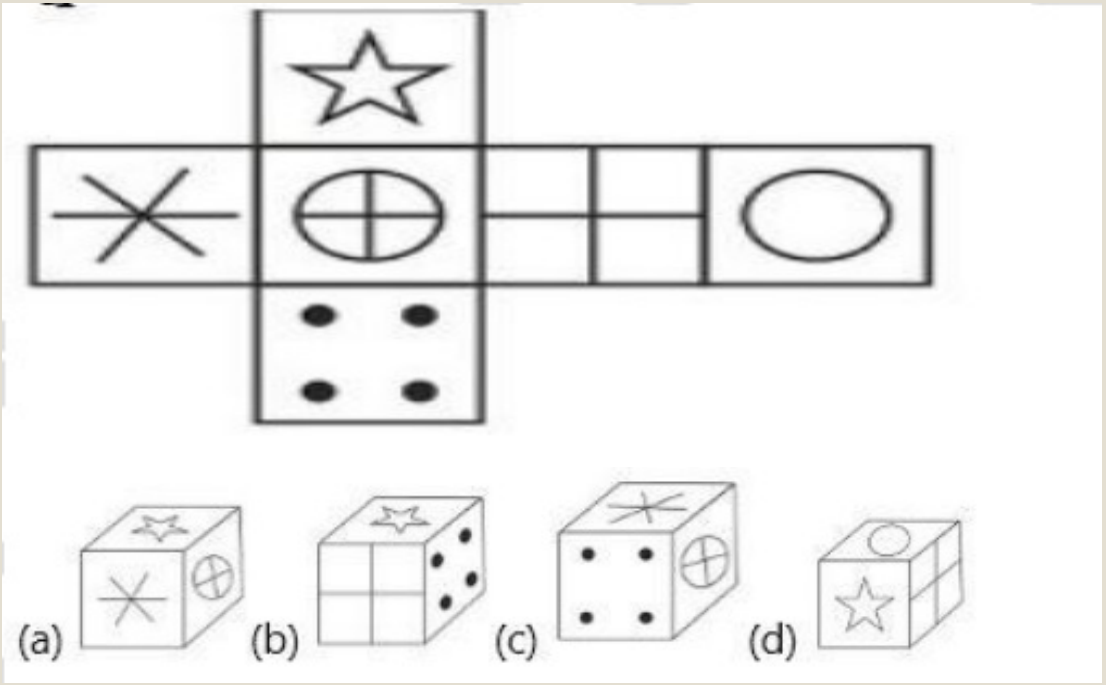


Open Dice

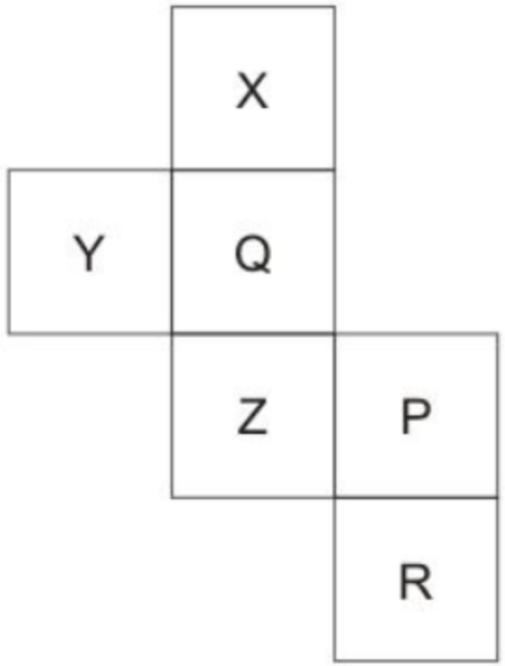
From the given option, which answer figure can be formed by folding the figure given in the question?



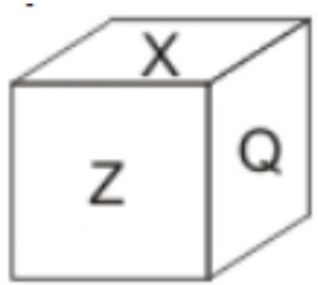
Which of the following cube in the answer figure cannot be made based on the unfolded cube in the question figure?



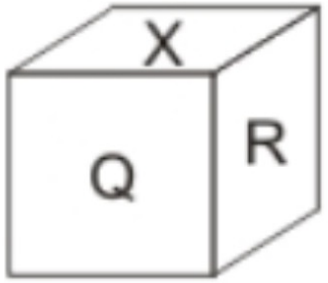
Question 8: From the given options, which answer figure can be formed by folding the figure given in the question ?



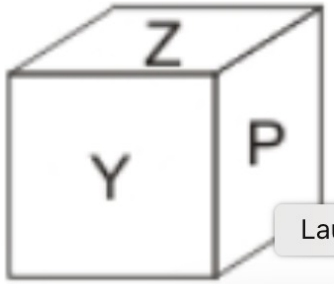
a)



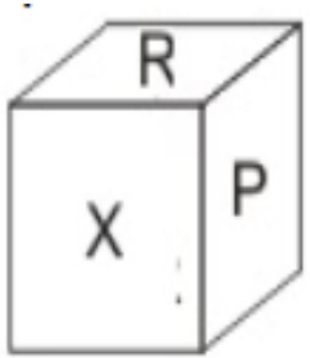
b)



c)

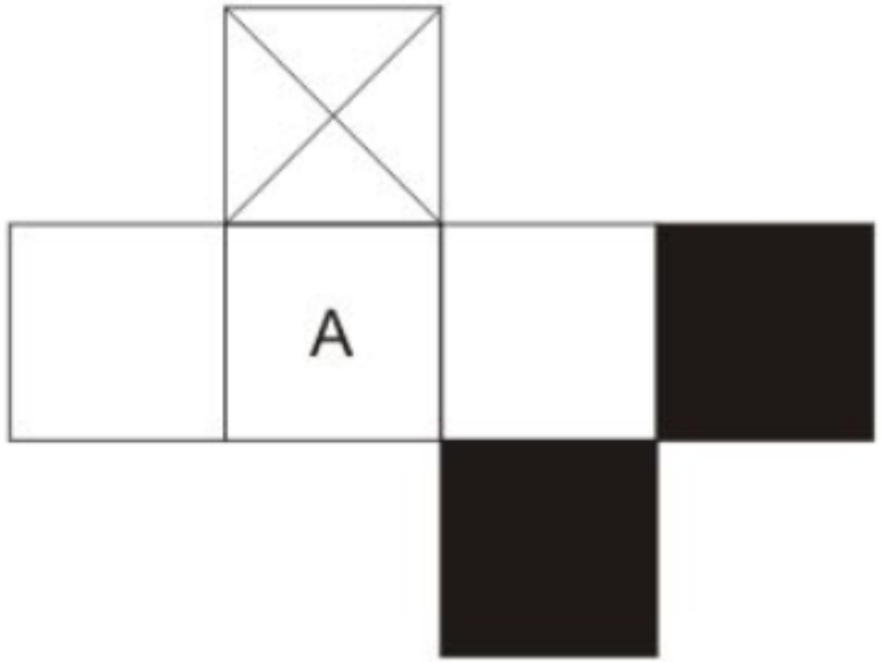


d)



Launch

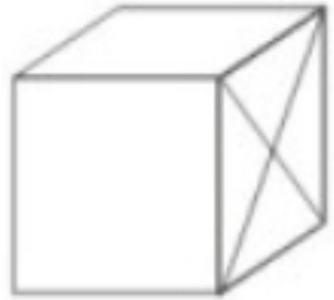
Question 9: From the given options, which answer figure can be formed by folding the figure given in the question ?



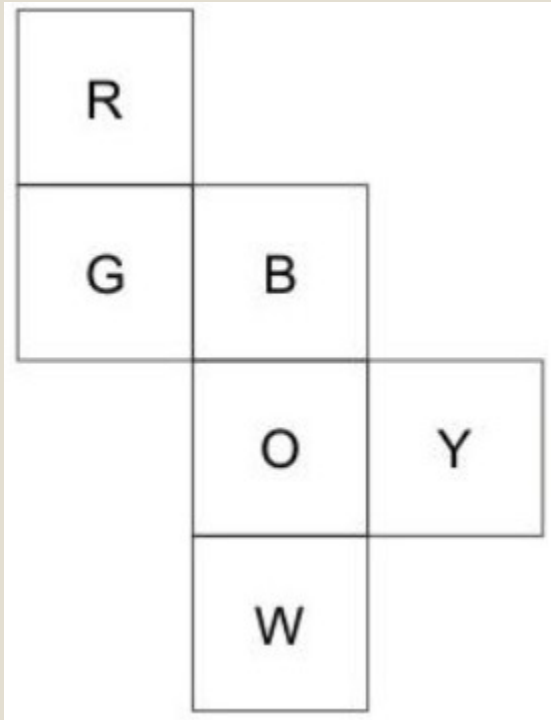
a)

b)

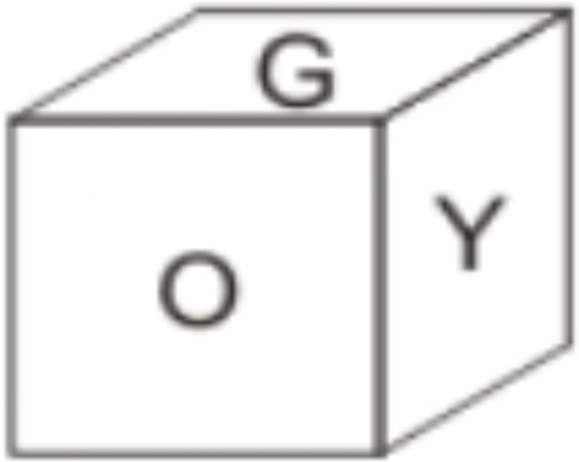
c)



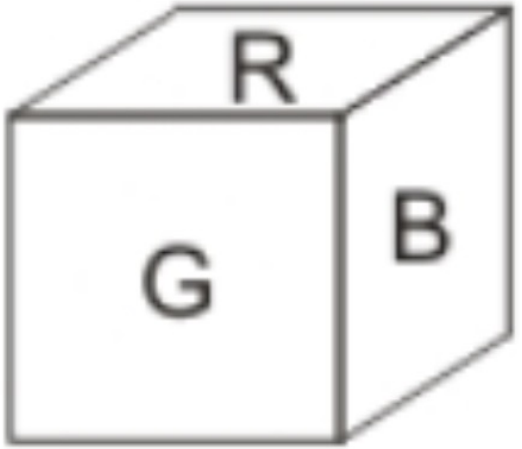
d)



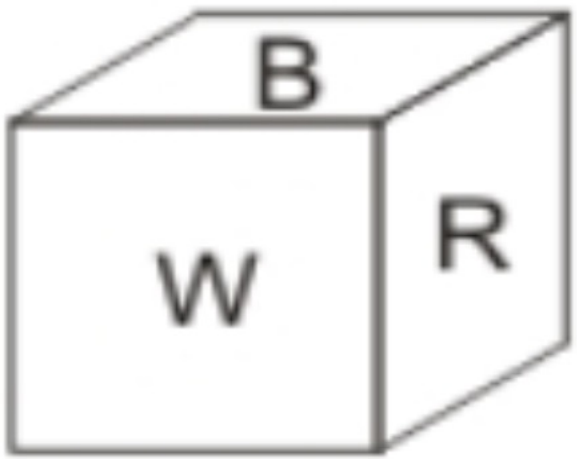
a)



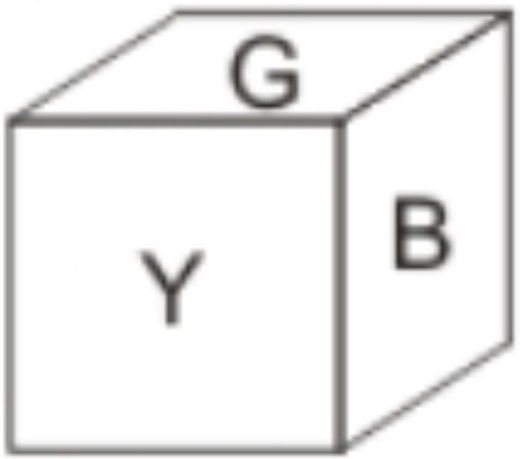
c)



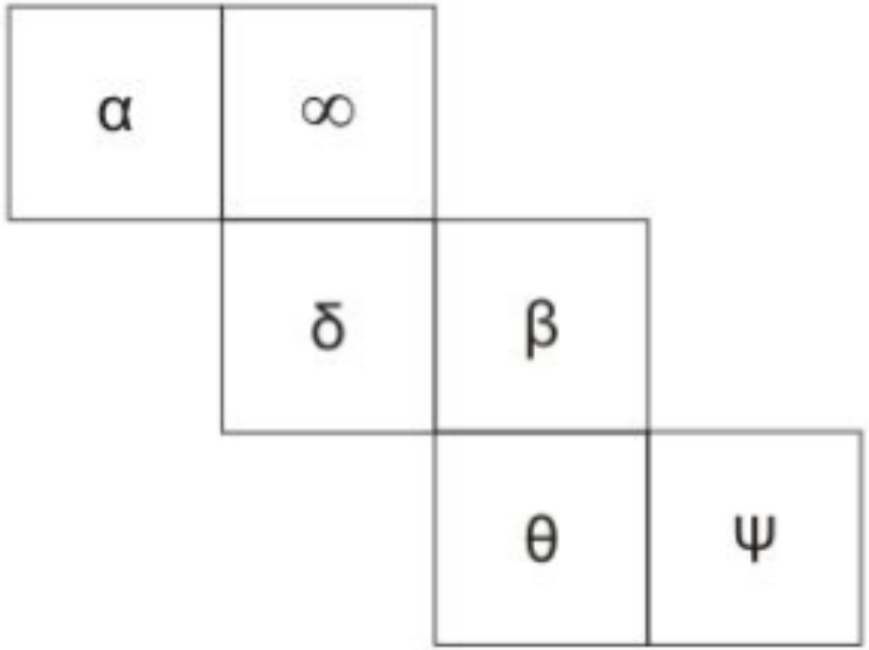
b)



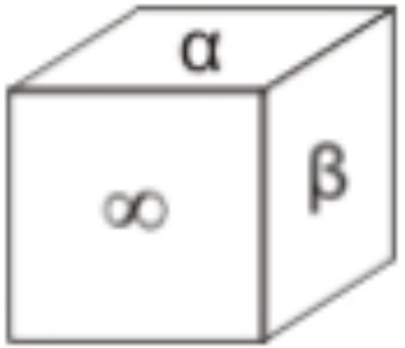
d)



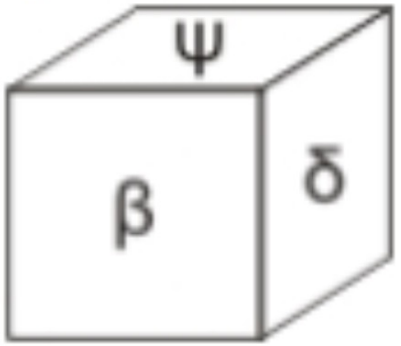
Question 12: From the given options, which answer figure can be formed by folding the figure given in the question ?



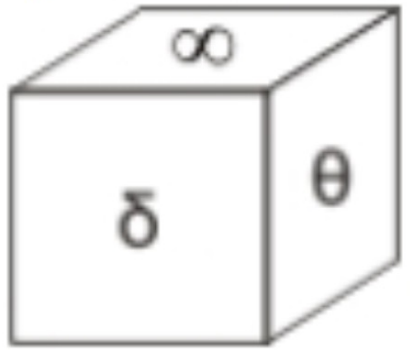
a)



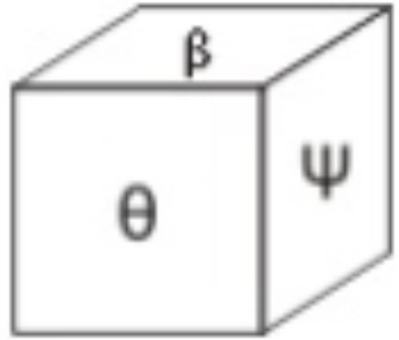
c)

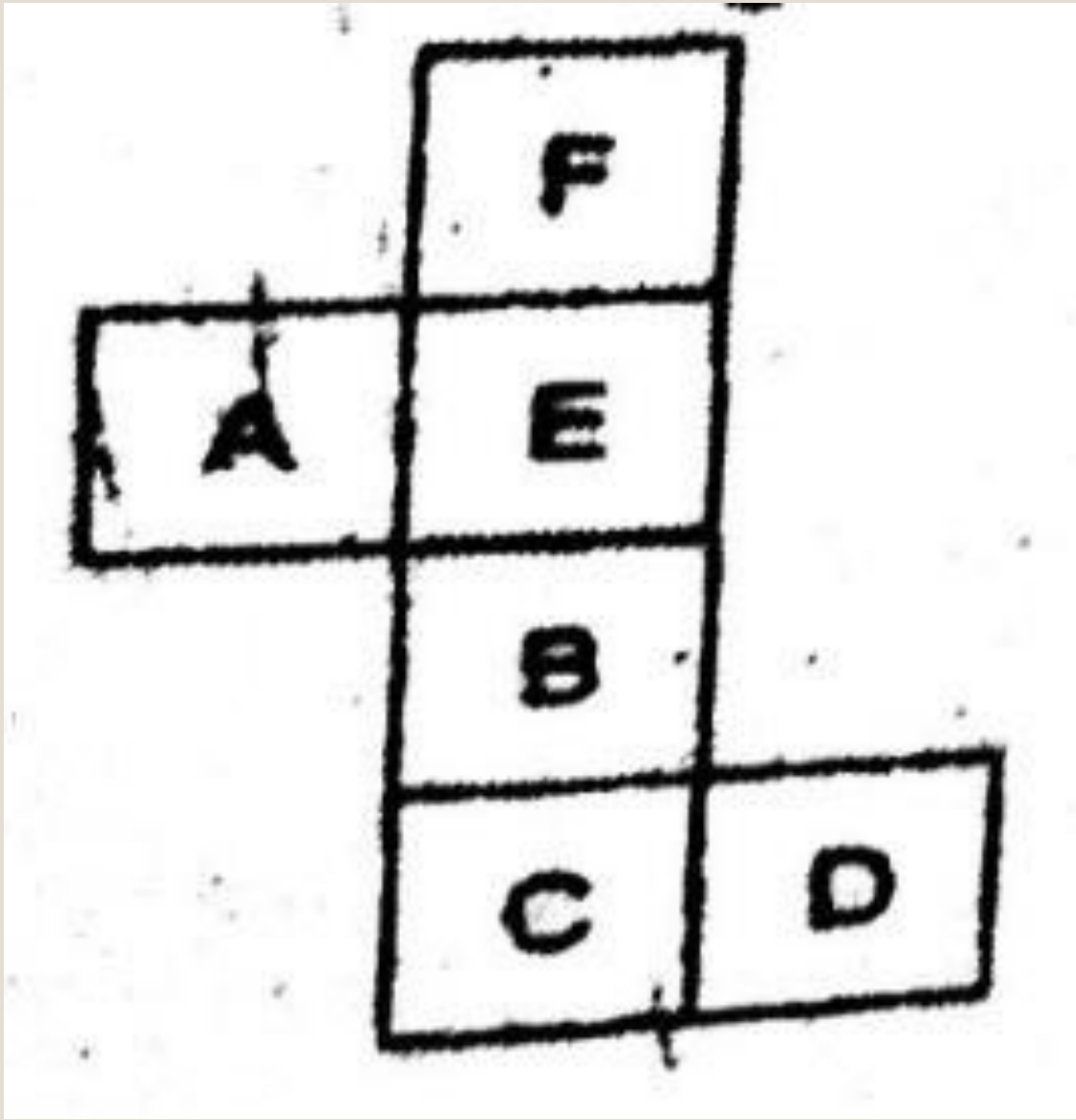


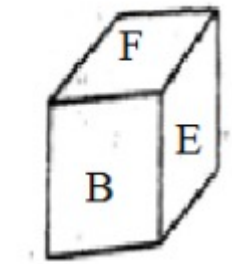
b)



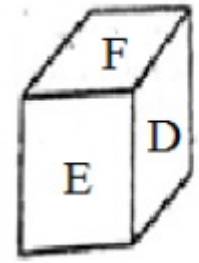
d)



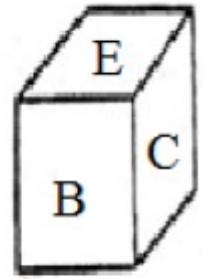




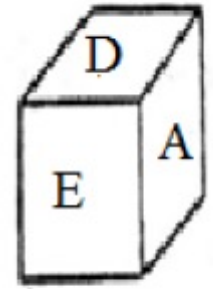
(A)



(B)

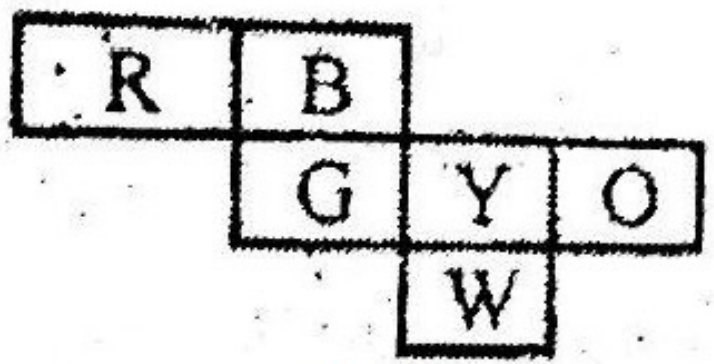


(C)



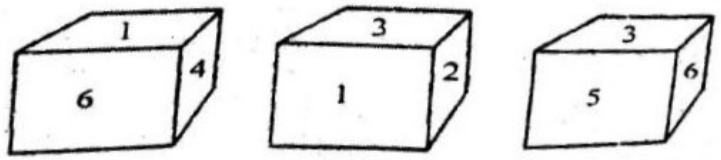
(D)

Six squares are coloured, front and back, red (R), blue (B), yellow (Y), green (G), white (W) and orange (0) and are hinged together as shown in the figure given below. If they are folded to form a cube, what would be the face opposite the white face?

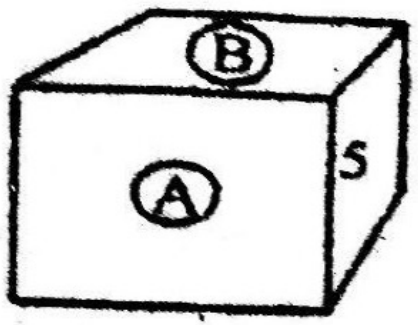


(a) R
(b) G
(c) B
(d) O

A cube has six numbers marked 1, 2, 3, 4, 5 and 6 on its faces. Three views of the cube are shown below:



What possible numbers can exist on the two faces marked (A) and (B), respectively on the cube?



(a) 2 and 3
(b) 6 and 1
(a) 1 and 4
(d) 3 and 1

Each of the six different faces of a cube has been coated with a different colour i.e., V, I, B, G, Y and O. Following information is given:

i. Colours Y, O and B are on adjacent faces.

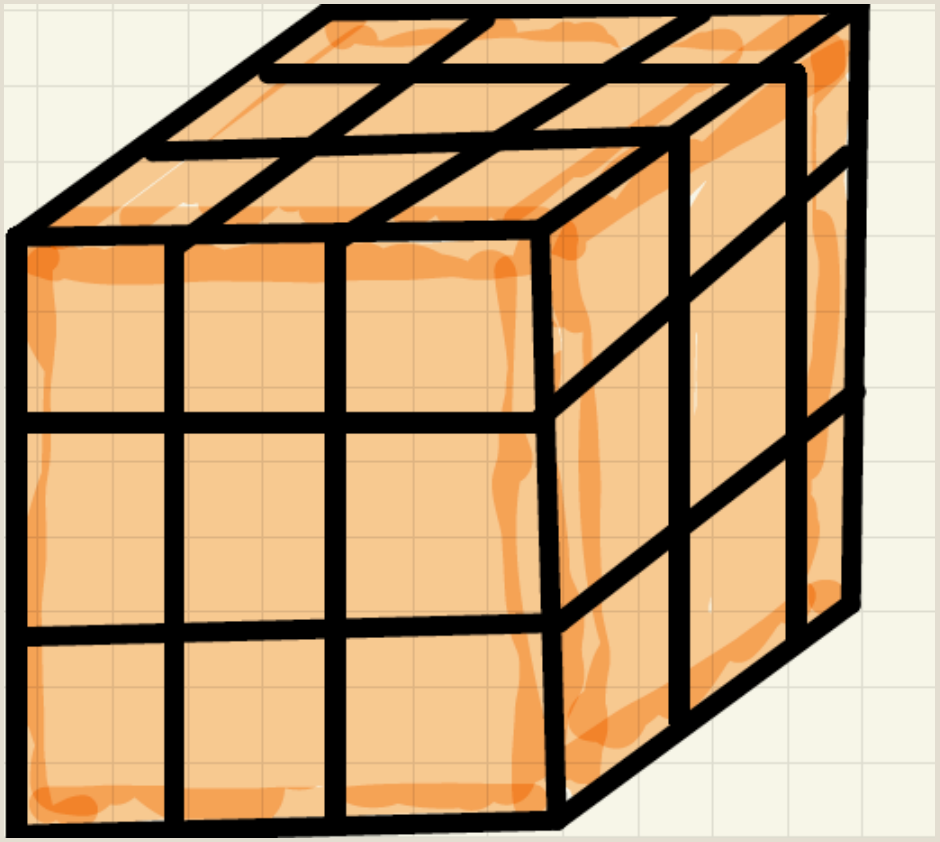
ii. Colours I, G and Y are on adjacent faces.

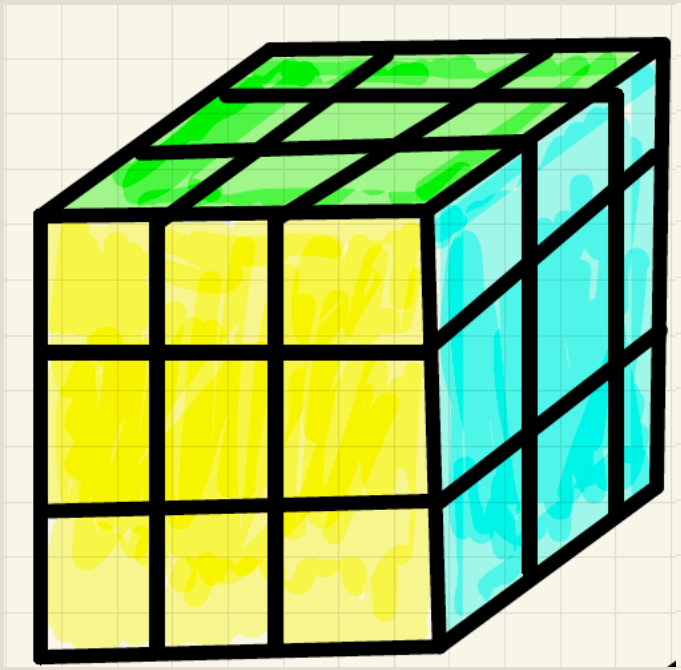
iii. Colours B, G and Y are on adjacent faces.

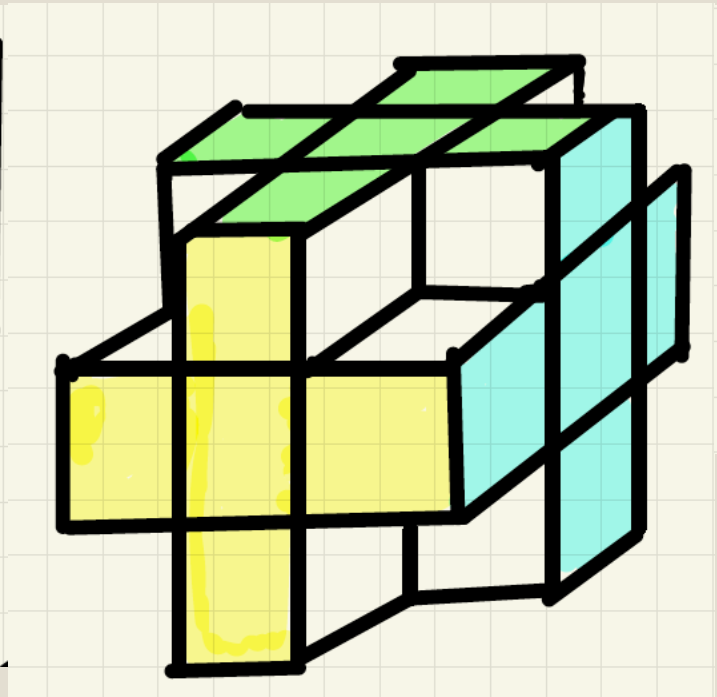
iv. Colours O, V and B are on adjacent faces.

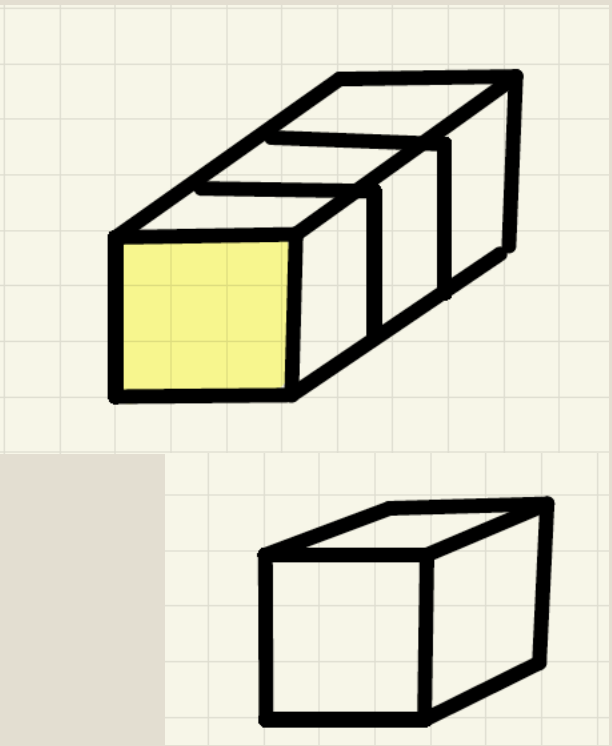
Which is the colour of the face opposite to the face coloured with O?

CUBES









Cubes

Q. A solid cube with each side painted Orange is cut into 216 identical cubical blocks/cubes.

1. How many cubes have no face painted?

A. 125

B. 64

C. 81

D. 27

2. How many cubes have only one face painted orange?

a. 96

b. 144

c. 81

d. 100

3. How many cubes have only two faces painted orange?

A. 54

B. 49

C. 48

D. 64

4. How many cubes have three faces painted orange?

a. 8

b. 6

c. 9

d. 12

Q. A solid cube of each side 15 cm, has been painted green, blue and yellow on pairs of opposite faces. It is then cut into cubical blocks of each side 3 cm.

1. How many cubes have no face painted?

A. 27

B. 54

C. 36

D. 50

2. How many cubes have only one face painted?

a. 27

b. 54

c. 36

d. 50

3. How many cubes have two faces painted green and blue and all other faces unpainted?

a. 12

b. 16

c. 18

d. 8

4. How many cubes have only one face painted yellow and all other faces unpainted?

a. 12

b. 16

c. 18

d. 8

5. How many cubes have at least one face painted green?

a. **27**
b. **54**
c. **36**
d. **50**

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

a. **45**
b. **81**
c. **54**
d. **63**

7. How many cubes have faces painted both green and yellow but not blue?

a. **36**

b. **16**

c. **12**

d. **24**

Three mutually adjacent surfaces of a cube of volume 1728 cubic cm are painted in black, one pair of faces is painted in white and the remaining faces are painted in Red. The cube is then cut into smaller but identical cubes of volume 8 cubic cm.

How many cubes have all three colours on them?

A. 4

B. 3

C. 2

D. 6

How many of the smaller cubes have only white and black colours on them?

A. 19

B. 18

C. 22

D. 20

How many surfaces of the cube have exactly one colour on them?

A. 96

B. 109

C. 117

D. 113

A solid cube coloured brown is cut four times along the length, thrice across the width and twice across the depth. How many cubes have three faces coloured brown?

A. 24

B. 54

C. 8

D. 81

How many cubes have only two faces painted brown?

A. 24

B. 54

C. 12

D. 60

How many cubes have only no face painted brown?

A. 6

B. 12

C. 8

D. 9

How many cuboids of dimensions 3 cm * 4 cm * 6 cm are required to form a cube of the least possible size?

a. 72

b. 36

c. 24

d. 12

A cube has been cut into cuboids of dimensions 2 cm * 3 cm * 4 cm. What is the least possible length of the edge of the cube and how many such cuboids are obtained from this cube?

a. 24, 72

b. 12, 36

c. 24, 144

d. 12, 72

Three mutually adjacent surfaces of a cube of volume 1728 cubic cm are painted in black, one pair of faces is painted in white and the remaining faces are painted in Red. The cube is then cut into smaller but identical cubes of volume 8 cubic cm.

How many cubes have all three colours on them?

A. 4

B. 3

C. 2

D. 6

How many of the smaller cubes have only white and black colours on them?

A. 19

B. 18

C. 22

D. 20

How many surfaces of the cube have exactly one colour on them?

A. 96

B. 109

C. 117

D. 113

A solid cube coloured brown is cut four times along the length, thrice across the width and twice across the depth. How many cubes have three faces coloured brown?

A. 24

B. 54

C. 8

D. 81

How many cubes have only two faces painted brown?

A. 24

B. 54

C. 12

D. 60

How many cubes have only no face painted brown?

A. 6

B. 12

C. 8

D. 9

How many cuboids of dimensions 3 cm * 4 cm * 6 cm are required to form a cube of the least possible size?

a. 72

b. 36

c. 24

d. 12

A cube has been cut into cuboids of dimensions 2 cm * 3 cm * 4 cm. What is the least possible length of the edge of the cube and how many such cuboids are obtained from this cube?

a. 24, 72

b. 12, 36

c. 24, 144

d. 12, 72

A solid cube has been painted yellow, blue and black on pairs of opposite faces. The cube is then cut into 36 smaller cubes such that 32 cubes are of the same size while 4 others are of bigger sizes. Also no faces of any of the bigger cubes is painted blue. How many cubes have two faces painted yellow and black respectively?

A. 8

B. 12

C. 16

D. 32

HOME WORK

The hands of a clock coincide after every 63 minutes of correct time. How much is the clock fast or slow in 24 hours?

A. **56 (8/77) mins fast**

B. **56 (8/77) mins slow**

C. **59 (8/77) mins fast**

D. **59 (8/77) mins slow**

The minute hand of a clock overtakes the hour hand at intervals of 64 minutes of correct time. How much does the clock gain or lose in 12 hours?

A. 16(5/11) min gain

B. 16(4/11) min gain

C. 16(5/11) min loss

D. 16(4/11) min loss

- **A watch gains 4 seconds in 3 minutes and was set right at 8 AM. What time will it show at 10 PM on the same day?**

- **The clock was set on Thursday, at 4 AM. If the clock gains 20 minutes per hour, then what will be the time that the clock shows on Friday, 8:30 PM?**