

## **Spatial Aptitude**

Space

Mirroring

Mirror Image

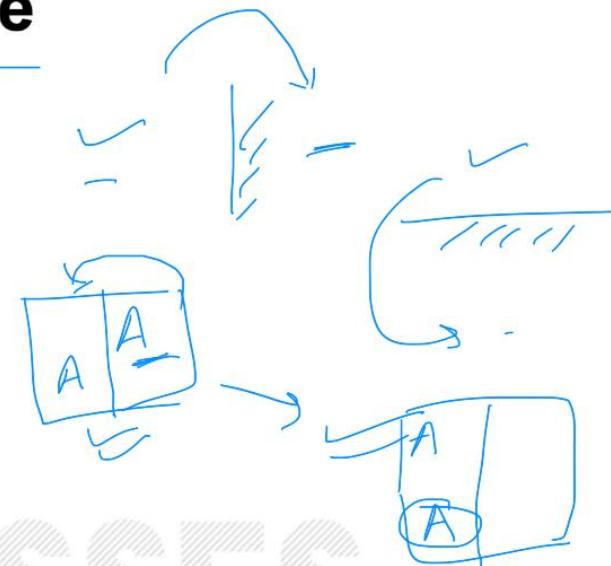
Paper Folding and cutting

Next figure, Odd Man out of shapes

Pattern in 2D and 3D

Cubes and dices

Assembling of an image



# Mirroring

1. Choose the alternative which is closely resembles the mirror image of the given combination.

ANS43Q12

(1) ANS43Q12

(3) SNS43Q12

(2) S1Q34ANS

(4) 1S043ANS

Start for End letter

MALAYALAM

MAJAYAJAM

2. MALAYALAM

(1) MALAYALAM

(3) MAGAYAGAM

(2) MAJAYAJAM

(4) MAGAYAGAM

3. INFORMATIONS 

(1) ~~INFORMATIONS~~

(3) ~~INFORMATIONS~~

(2) INFORMATIONS

(2) ~~INFORMATION~~

(4) ~~INFORMATIONS~~



4. TERMINATE 

(1) ~~TERMINATE~~

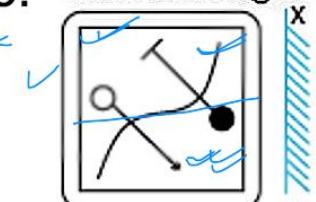
(3) ~~TERMINATE~~

(2) TERMINATE

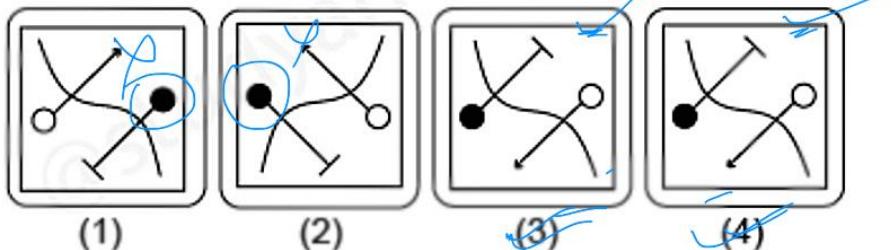
(2) ~~TERMINATE~~

(4) ~~TERMINATE~~

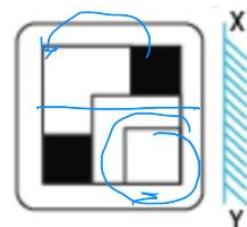
5. Question figure:



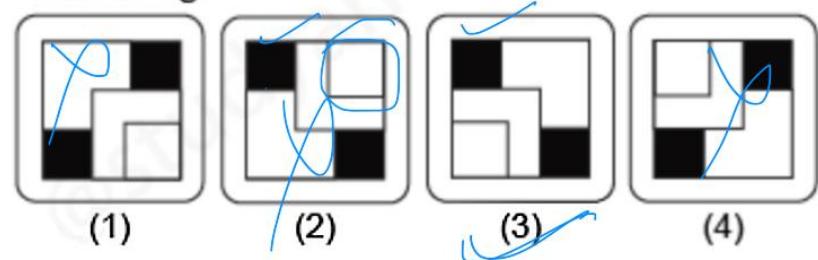
Answer figures:

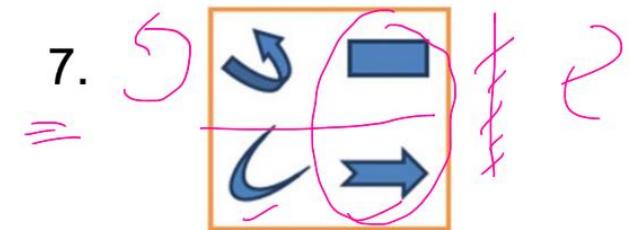


6.



Answer figures:





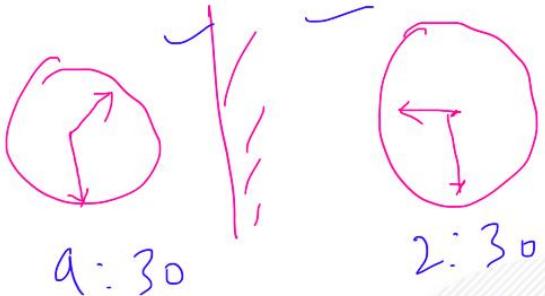
✓ Sample question in  
GATE syllabus

Which one of the following closely resembles the mirror image of the above figure?

GO  
CLASSES

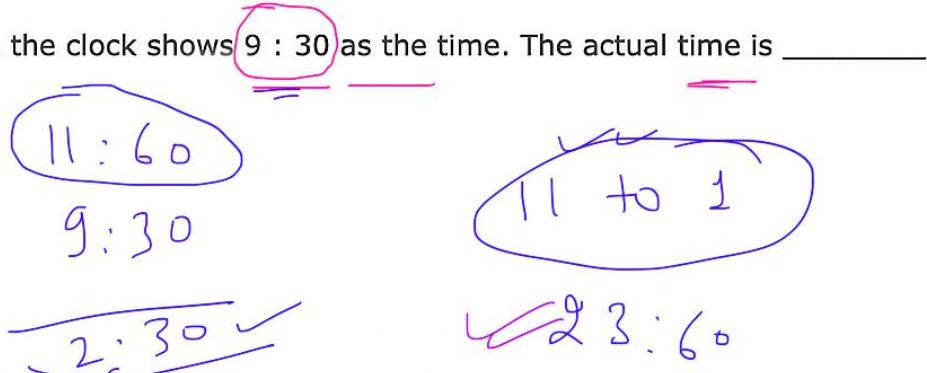
GO  
CLA

- A.
- B.
- C.
- D.



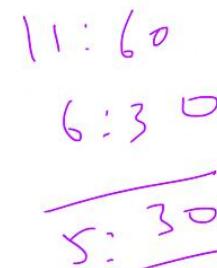
8. Looking into a mirror, the clock shows 9 : 30 as the time. The actual time is \_\_\_\_\_

- A. 2 : 30
- B. 3 : 30
- C. 4 : 30
- D. 6 : 30



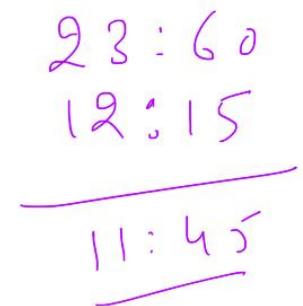
9. By looking in a mirror, it appears that it is 6 : 30 in the clock. What is the real time?

- A. 6 : 30
- B. 5 : 30
- C. 6 : 00
- D. 4 : 30



10. When seen through a mirror, a watch shows 12 : 15. The correct time is \_\_\_\_\_

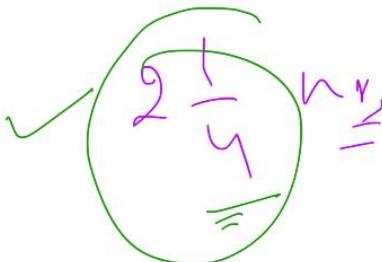
- A. 12 : 30
- B. 1 : 15
- C. 12 : 45
- D. 11 : 45



11. Two and quarter hours back, when seen in a mirror, the reflection of a wall clock without number markings seemed to show 1 : 30. What is the actual current time shown by the clock?

- A. 8 : 15
- B. 11 : 15
- C. 12 : 15
- D. 12 : 45

Gate 2016 EC

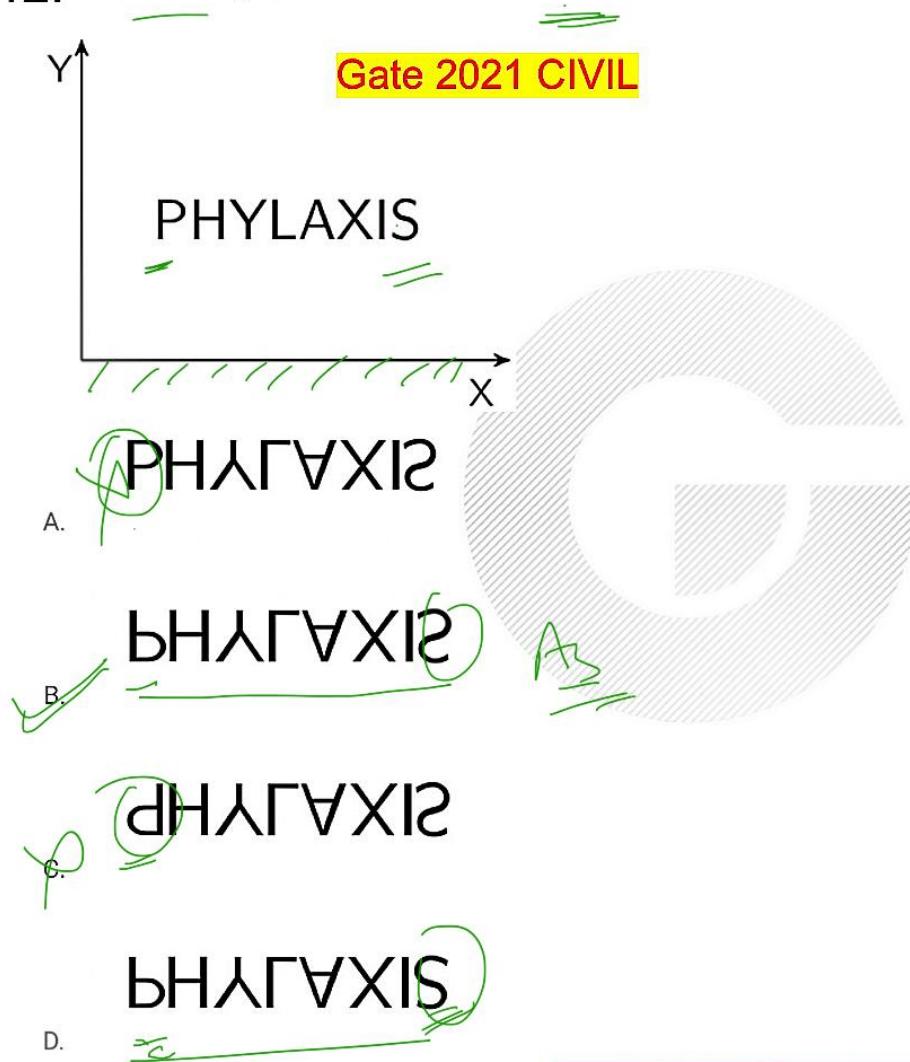


11:60  
1:30

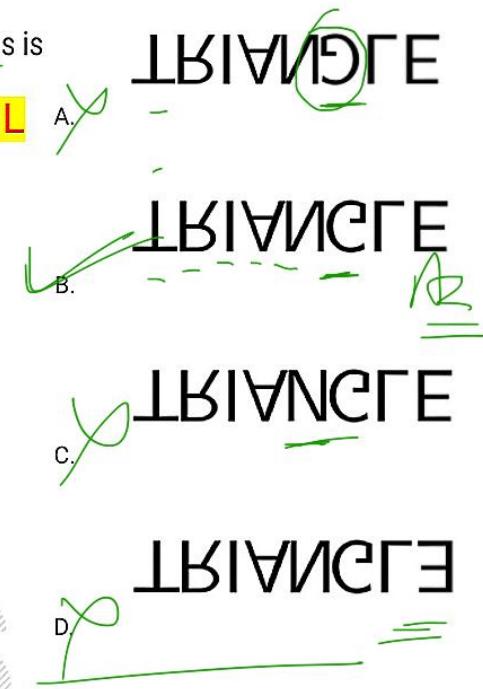
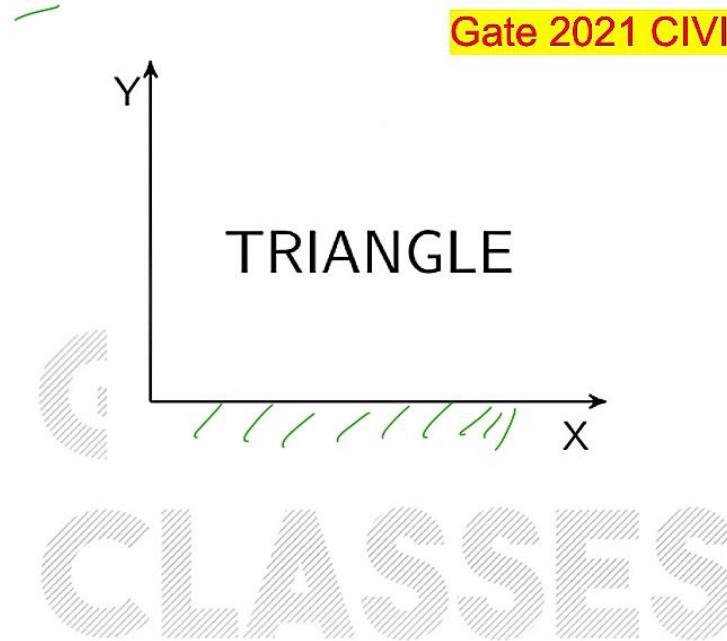
10:30



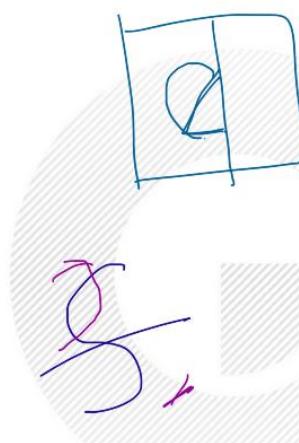
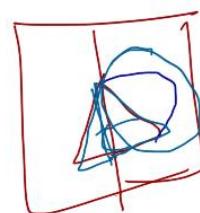
12. The mirror image of the above text about the  $x$ -axis is



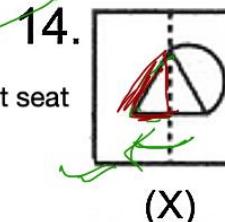
13. The mirror image of the above test about the  $X$ -axis is



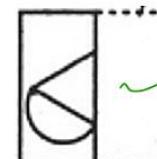
# Paper Folding



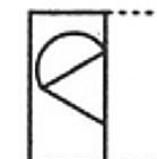
14.  
Transparent seat



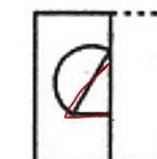
(X)



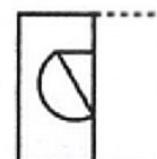
(1)



(2)

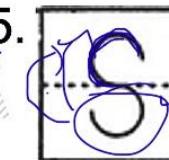


(3)

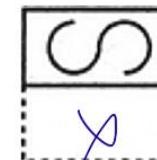


(4)

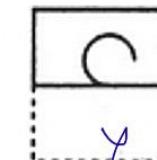
15.



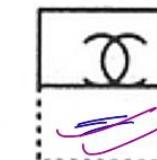
(X)



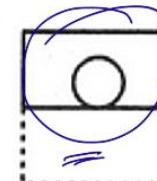
(1)



(2)

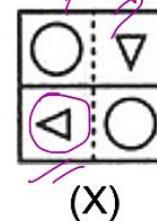


(3)

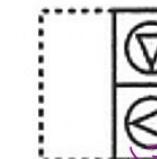


(4)

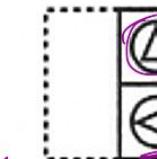
16.



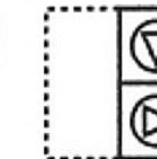
(X)



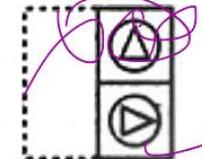
(1)



(2)



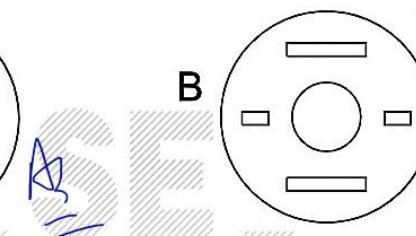
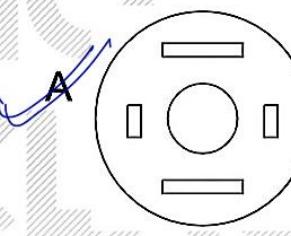
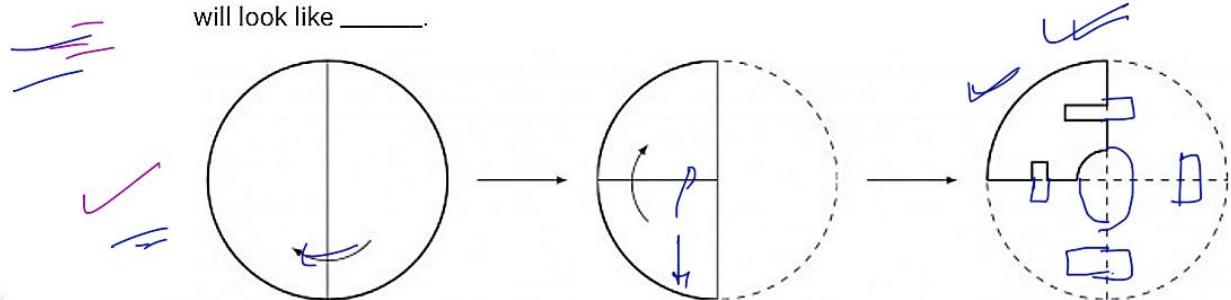
(3)



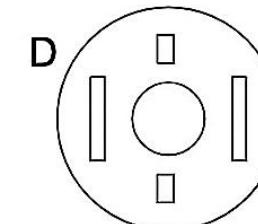
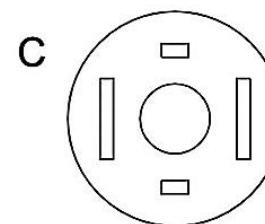
(4)

17.

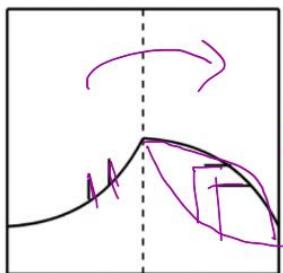
A circular sheet of paper is folded along the lines in the directions shown. The paper, after being punched in the final folded state as shown and unfolded in the reverse order of folding, will look like \_\_\_\_\_.



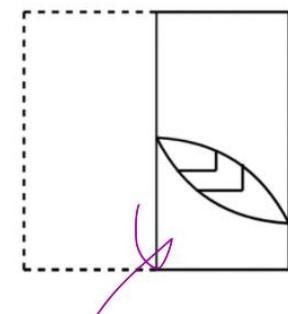
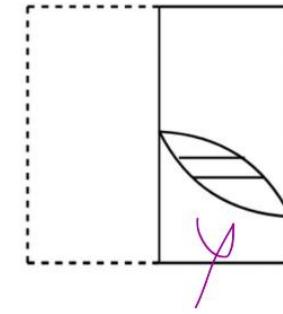
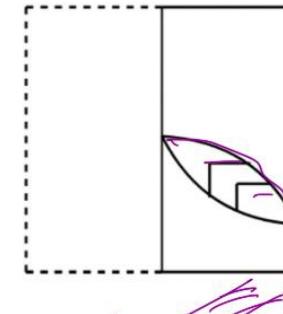
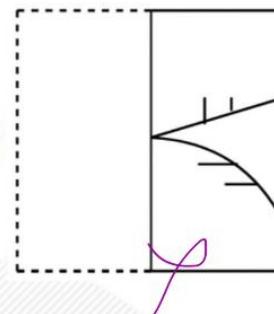
Gate 2021 CSE



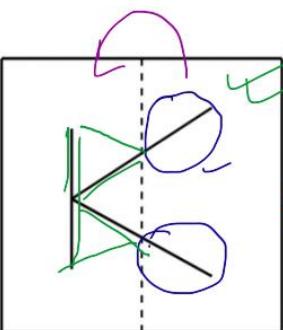
18.



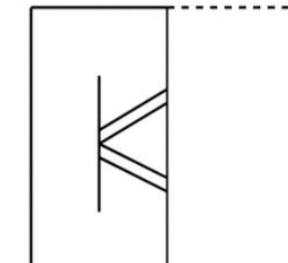
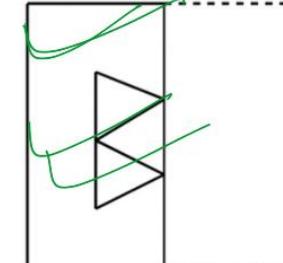
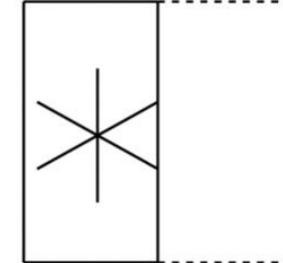
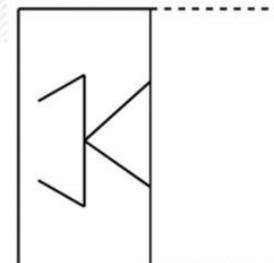
Gate 2021 CSE



19.



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20.

Consider two rectangular sheets, Sheet M and Sheet N of dimensions  $6 \text{ cm} \times 4 \text{ cm}$  each.

- Folding operation 1 : The sheet is folded into half by joining the short edges of the current shape.
- Folding operation 2 : The sheet is folded into half by joining the long edges of the current shape.

Folding operation 1 is carried out on Sheet M three times.

Folding operation 2 is carried out on Sheet N three times.

The ratio of perimeters of the final folded shape of Sheet N to the final folded shape of Sheet M is \_\_\_\_\_.

- A.  $13 : 7$   
 B.  $3 : 2$   
 C.  $7 : 5$   
 D.  $5 : 13$

$$\left. \begin{array}{l} 13 : 9 \\ 26 : 9 \end{array} \right\}$$

Gate 2021 CIVIL

$$6 + 6 + \frac{1}{2} + \frac{1}{2} = 13$$

$$9 + \frac{3}{2} = \frac{19}{2} = 9.5$$

21. Consider a square sheet of side 1 unit. The sheet is first folded along the main diagonal. This is followed by a fold along its line of symmetry. The resulting folded shape is again folded along its line of symmetry. The area of each face of the final folded shape, in square units, equal to \_\_\_\_\_

- A.  $\frac{1}{4}$   
 B.  $\frac{1}{8}$   
 C.  $\frac{1}{16}$   
 D.  $\frac{1}{32}$

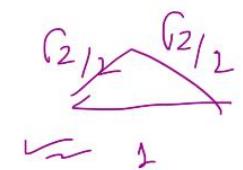
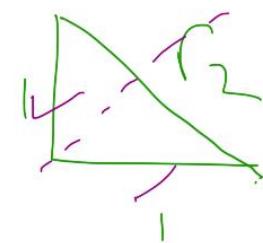
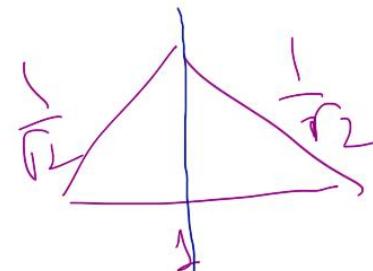
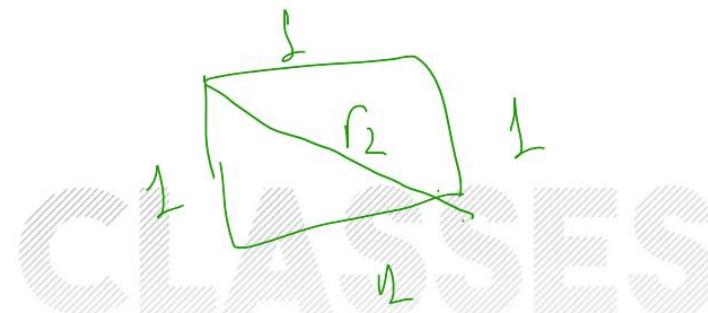
AS

$$\frac{1}{2} = \frac{1}{4} + \frac{h}{2}$$

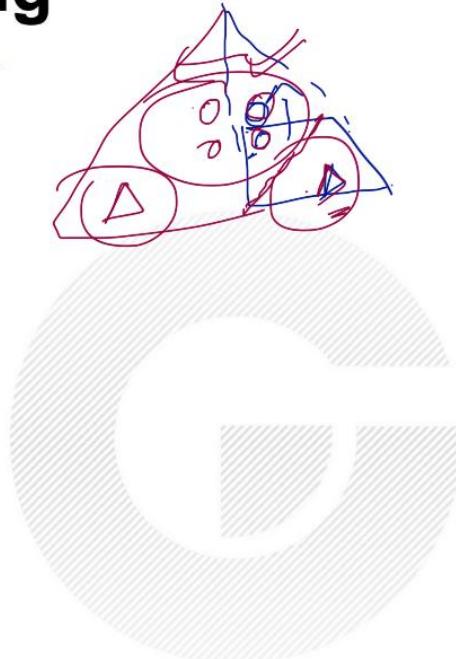
$$h = \frac{1}{2}$$



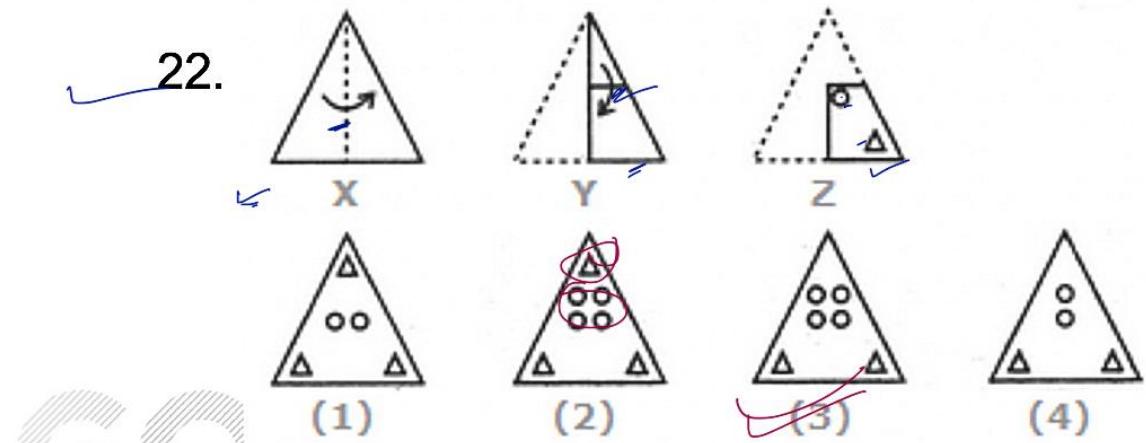
$$\frac{1}{2} + \frac{1}{2} + \frac{1}{2}$$



# Paper Cutting



22.

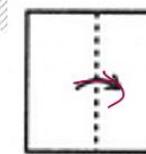


GC

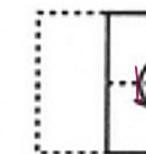
CLASSEEE

23.

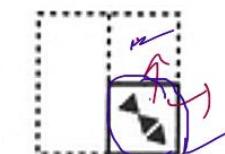
✓



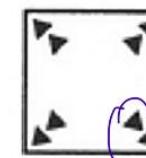
X



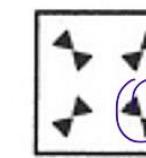
Y



Z



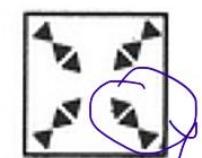
(1)



(2)



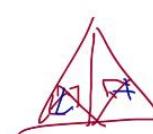
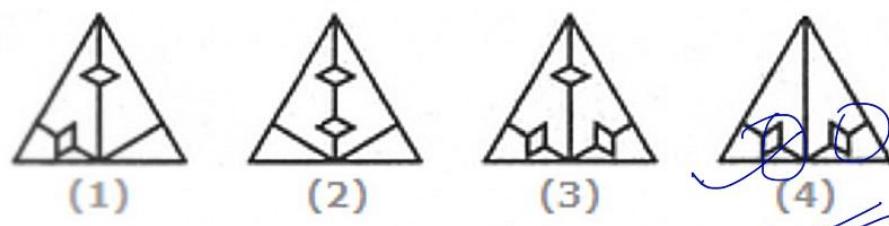
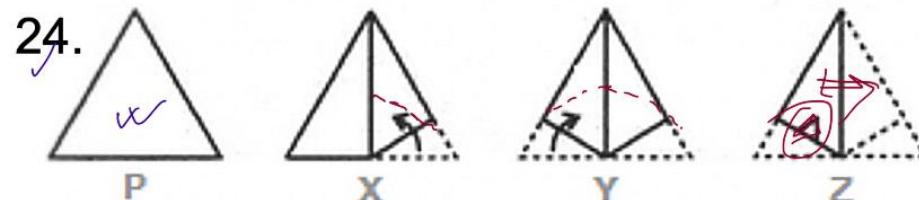
(3)



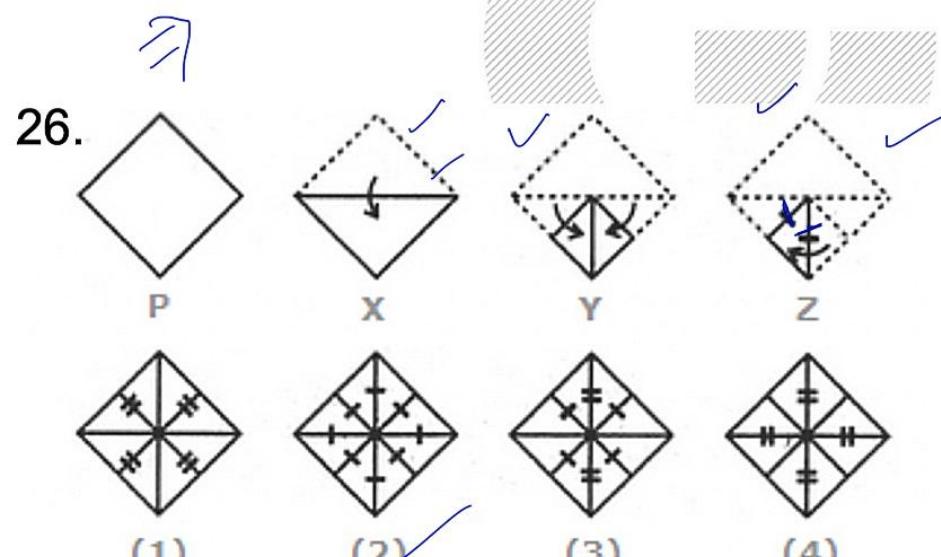
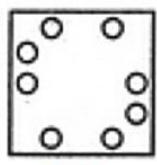
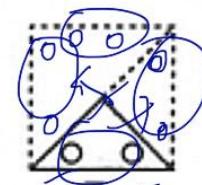
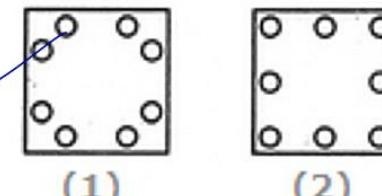
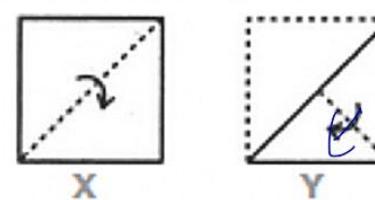
(4)



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25.

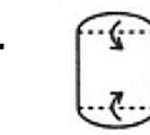


GO

ASSES

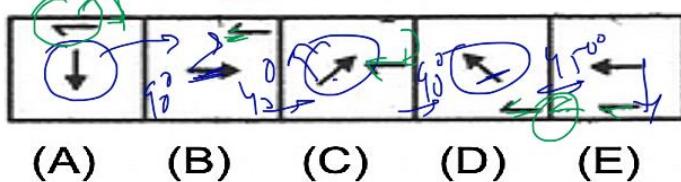


27.

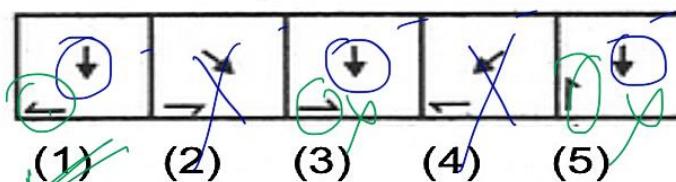


✓ **Next figure, Odd Man out, Rotation of shapes**

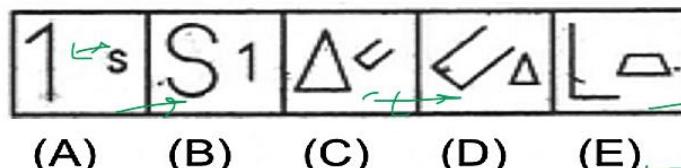
28. Problem Figures:



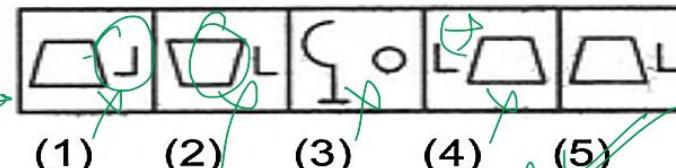
Answer Figures:



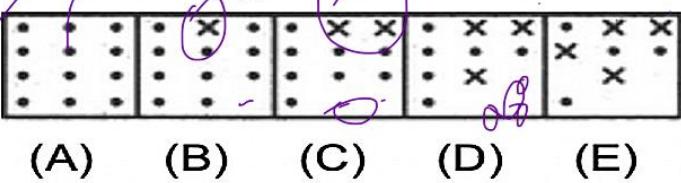
29. Problem Figures:



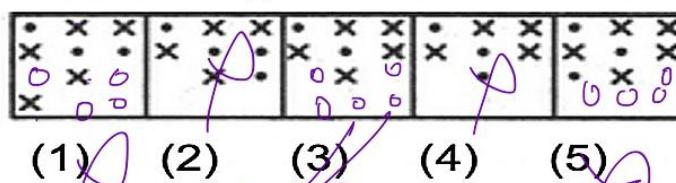
Answer Figures:



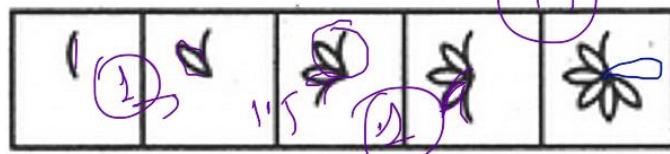
30. Problem Figures:



Answer Figures:

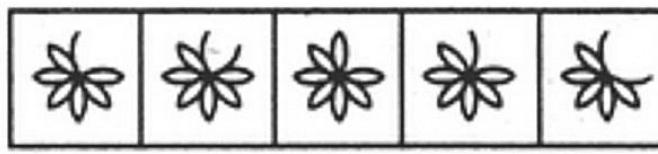


31. Problem Figures:



- (A) (B) (C) (D) (E)

Answer Figures:



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

1  
1-8  
1-5  
1



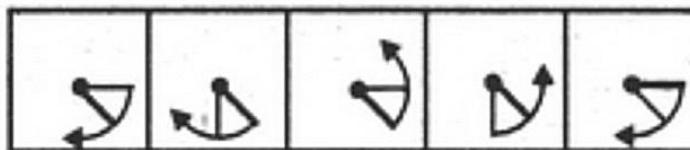
32. Problem Figures:



- (A) → (B) → (C) → (D) → (E)

→  $160^\circ$   
→  $90^\circ$   
→  $160^\circ$   
→  $160^\circ$  ✓

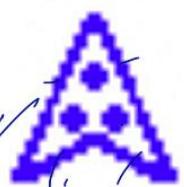
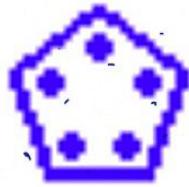
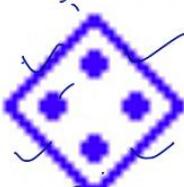
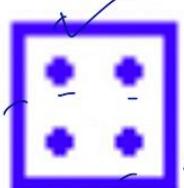
Answer Figures:



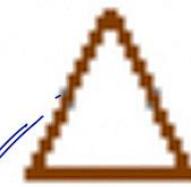
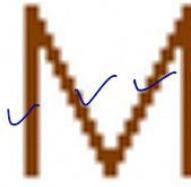
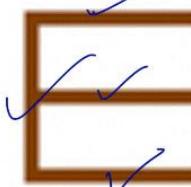
- (1) (2) (3) (4) (5)

## Odd Man Out

33.



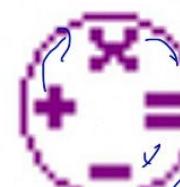
34.



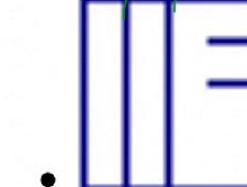
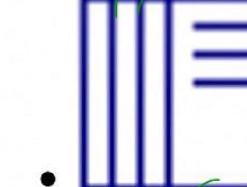
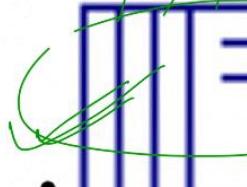
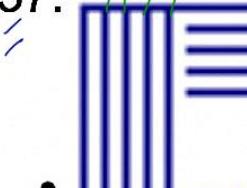
35.



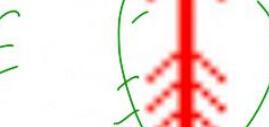
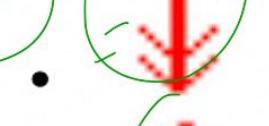
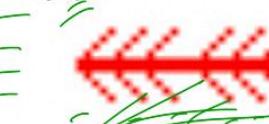
36.



37.



38.

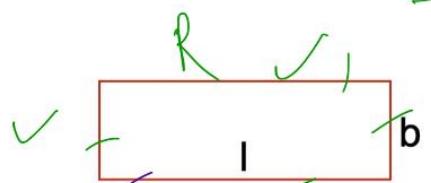


39.



## Pattern in 2D and 3D

≡



2D

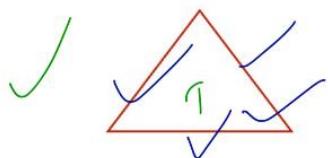
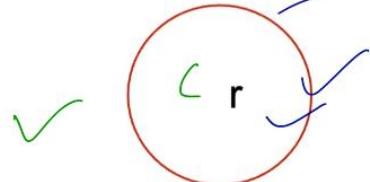
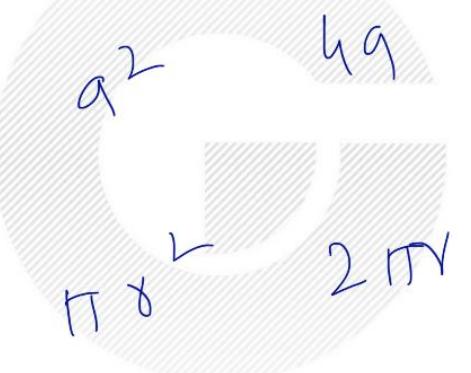
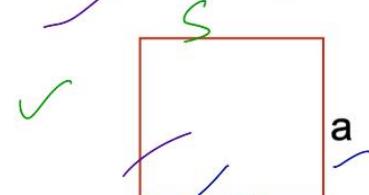


Area

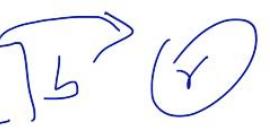
$$\overline{lb}$$

Perimeter

$$2(l+b)$$

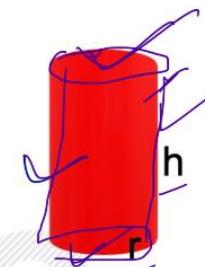


$$\frac{1}{2} \times b \times h$$



V

TSA



V

TSA

3D

TSA

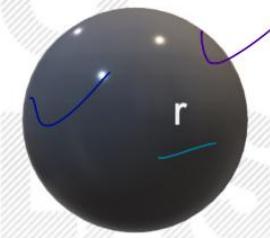
SA

$$2\pi r^2 + 2\pi rh$$

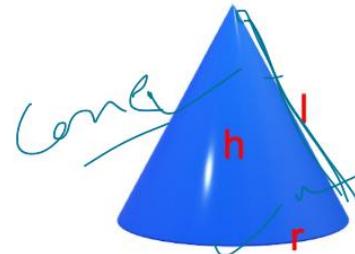
$$2\pi r(h+r)$$

$$2\pi r(r+h)$$

~~$$4\pi r^2$$~~



$$\frac{4}{3}\pi r^3$$



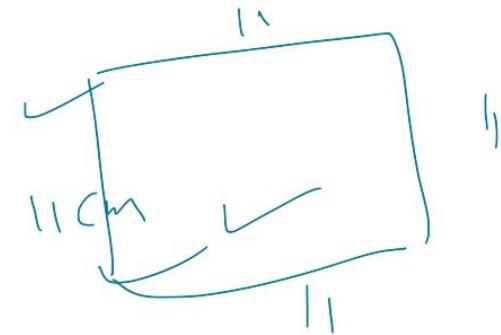
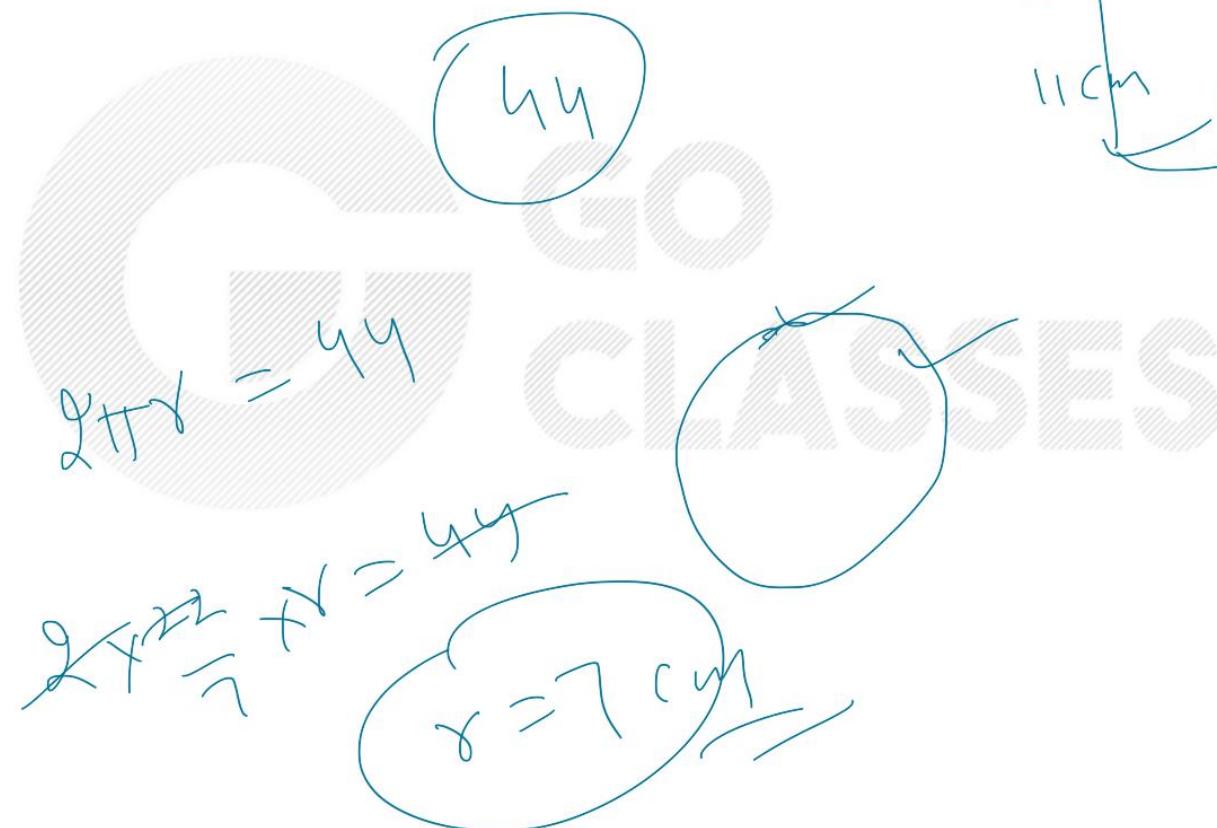
$$\frac{1}{3}\pi r^2 h$$

~~$$\pi r^2 h$$~~

~~$$\pi r^2 + \pi r l$$~~

40.

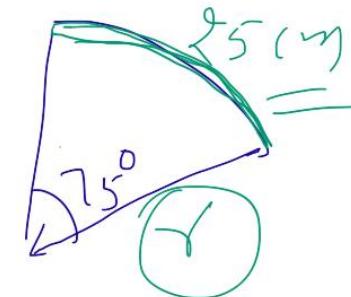
A wire is in the form of square of side 11Cm is cut and again bend in the form of a circle.  
Find the radius of circle.



41. A piece of wire 25 cms long is bent into an arc of a circle subtending an angle of 75 degree at center then radius of the circle is?



$$3\pi r =$$



$$25 + 2\pi r = 25$$

$$120 \angle 60$$

$$\frac{r}{l} = \frac{60}{22} \times 7$$

$$\approx \frac{420}{22} \approx 19 \text{ cm}$$

42.

A wire would enclose an area of  $1936 \text{ m}^2$ , if it is bent to a square. The wire is cut into two pieces. The longer piece is thrice as long as the shorter piece. The long and the short pieces are bent into a square and a circle, respectively. Which of the following choices is closest to the sum of the areas enclosed by the two pieces in square meters?

- A. 1096
- B. 1111
- C. 1243
- D. 2486

Gate 2018 ME

$$\begin{aligned} 4s &= 4x + 3 \\ s &= 33 \\ 4x + 3 &= 3l \\ l &= 3l \end{aligned}$$

$$4y = l$$

$$As \quad a^2 = 1936$$

$$a = 44$$

$$4a = 4x + 4$$

$$s = 4x$$

$$2\pi r = 4y$$

$$D^2 \times \pi \times 7$$

$$r = 7$$

$$\begin{aligned} D^2 &= 7^2 \\ &= 49 \\ 49 + 154 &= 203 \\ 203 &= As \end{aligned}$$

$$s^2 + \pi r^2$$

43.

A rectangular sheet of length 6cm and breadth 4cm is coiled to form an open cylinder (say, P) such that the breadth sides meet. The same sheet can also be coiled to form a cylinder (say, Q) such that the length sides meet. Which one of the following statements is **FALSE**?

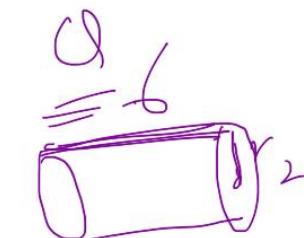
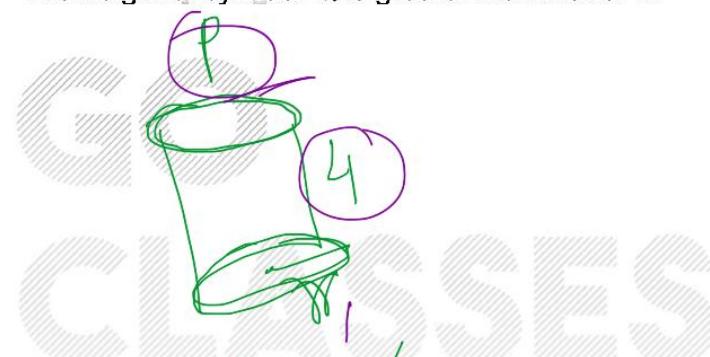
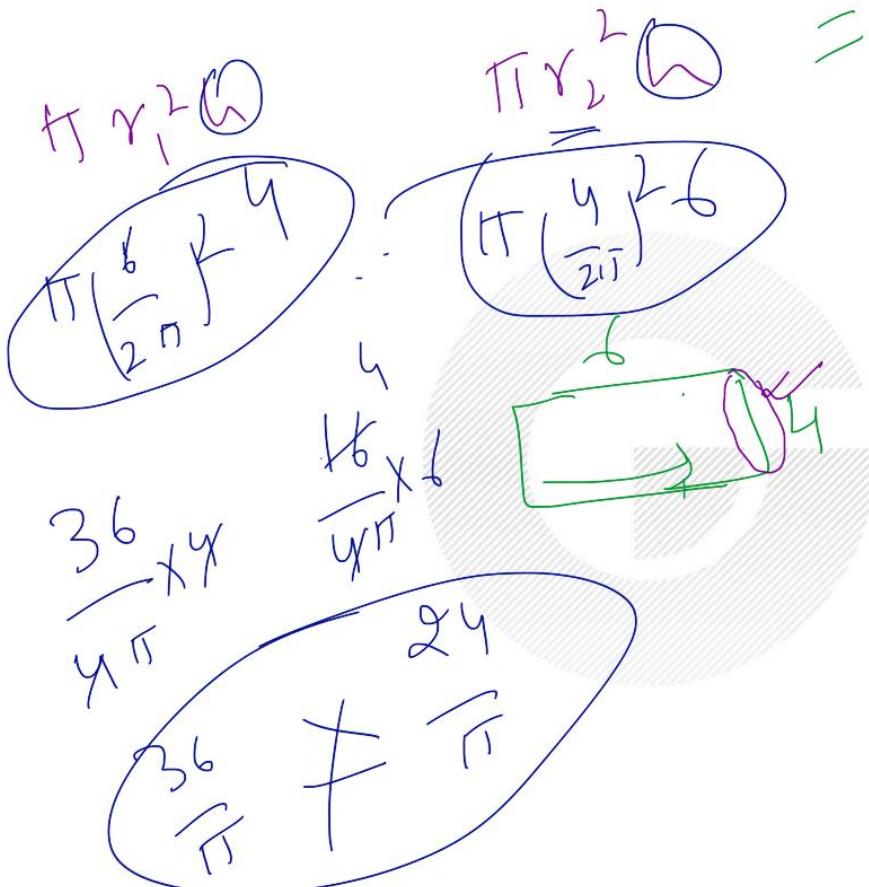
Surface area of the open cylinders P and Q are equal.

Volume of P and Volume of Q are equal.

Volume of P is greater than that of Q.

The height of cylinder Q is greater than that of P.

Sample question in  
GATE syllabus



$$2\pi r_2 = 4$$

$$\begin{aligned} Q &= (2\pi r_2)h \\ &= \cancel{2\pi} \cancel{r_2} h \\ &= 4 \times 6 \end{aligned}$$

44. For a regular polygon having 10 sides, the interior angle between the sides of the polygon, in degrees, is:

- A. 396
- B. 324
- C. 216
- D. 144

Gate 2021 EE

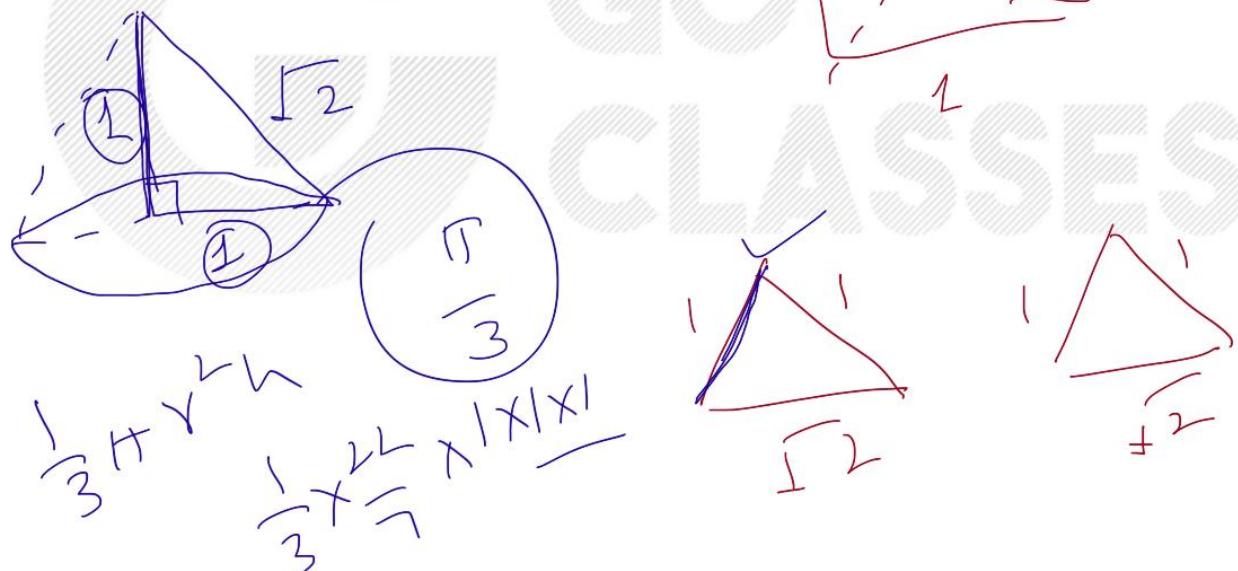


$$\frac{(n-2) \times 100^\circ}{10} = 144^\circ$$

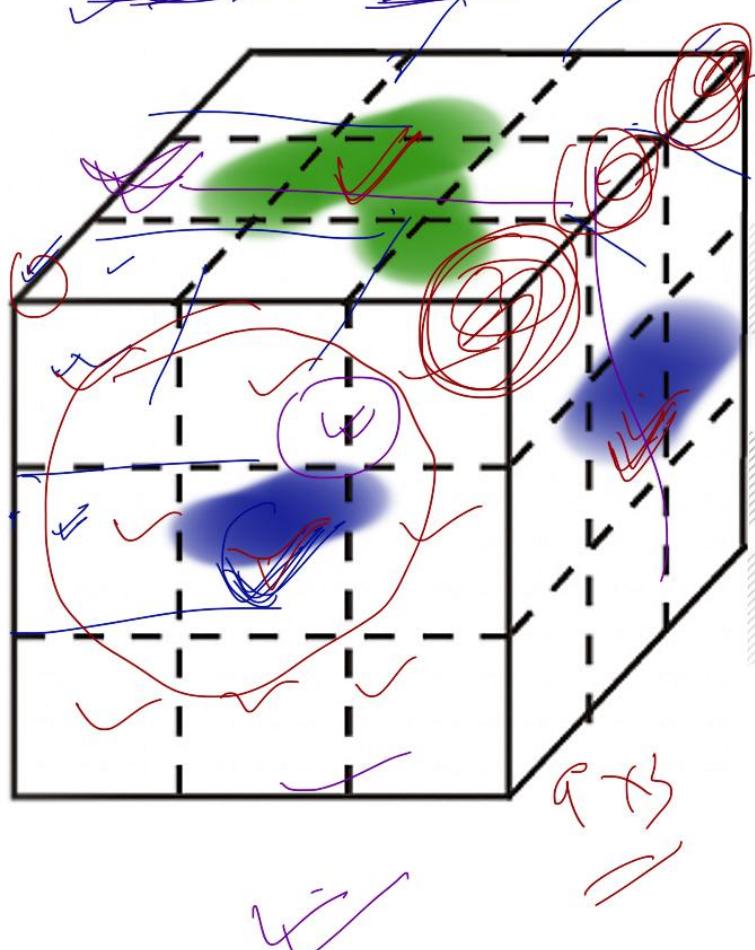
**45.** Consider a square sheet of side 1 unit. In the first step, it is cut along the main diagonal to get two triangles. In the next step, one of the cut triangles is revolved about its short edge to form a solid cone. The volume of the resulting cone, in cubic units, is \_\_\_\_\_

- A.  $\frac{\pi}{3}$
- B.  $\frac{2\pi}{3}$
- C.  $\frac{3\pi}{2}$
- D.  $3\pi$

Gate 2021 EC



## Cubes & Dices



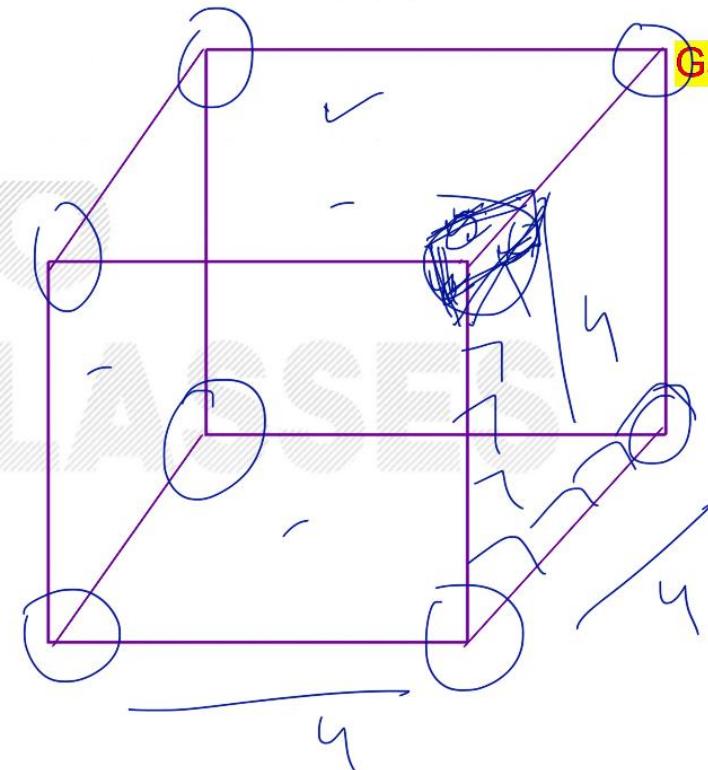
Directions (Qs.46-50) A wooden cube is painted Blue on all the four adjoining sides and Green on two opposite sides i.e. top and bottom. It is then cut at equal distances at right angles four times vertically (top to bottom) and two times horizontally (along the sides) as shown in the figure where the dotted lines represents the cuts made. Study the diagram and answer the following questions :

46. How many cubes will have one face painted only in Blue?
- A. 1      B. 2      C. 3      **D. 4**
47. How many cubes will have one face painted only in Green?
- A. 1      **B. 2**      C. 3      D. 4
48. How many cubes are formed in all?
- A. 16      B. 24      C. 32      **D. 27**
49. How many cubes will have at least three sides painted?
- A. 8**      B. 6      C. 3      D. 2
50. How many cubes will have no face painted at all?
- A. 2      B. 3      C. 4      **D. 1**

51. A cube is built using 64 cubic blocks of side one unit. After it is built, one cubic block is removed from every corner of the cube. The resulting surface area of the body (in square units) after the removal is \_\_\_\_\_.

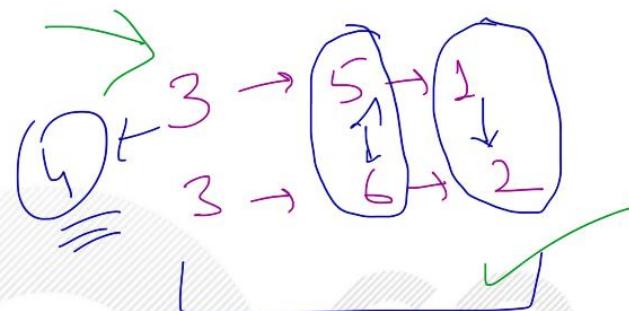
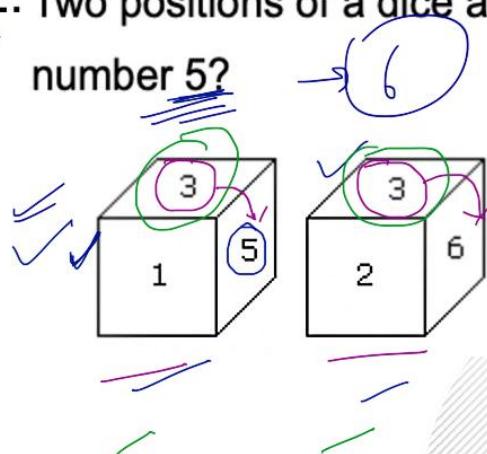
- a. 56
- b. 64
- c. 72
- d. 96

A



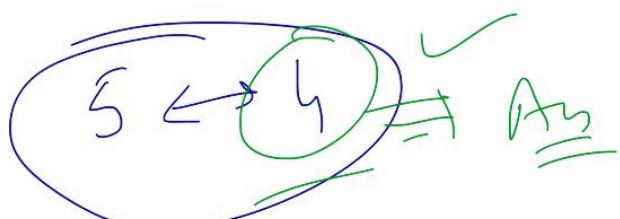
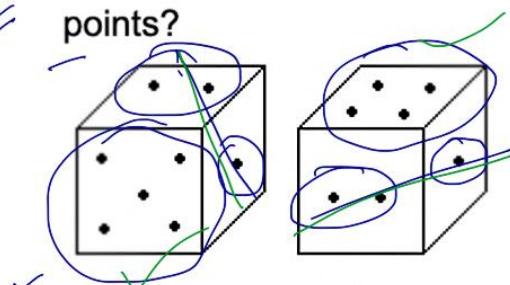
$$\begin{aligned} & 6a^2 \\ & l \times 4^2 \\ & \Rightarrow 6 \times 4^2 \end{aligned}$$

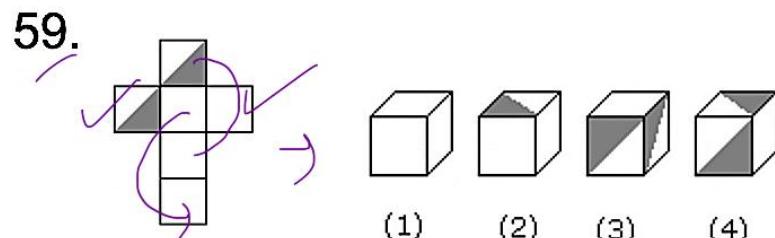
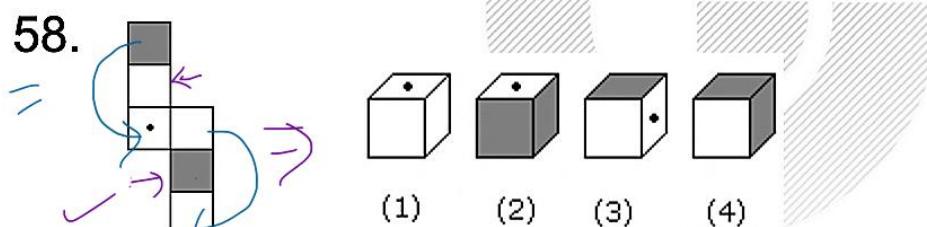
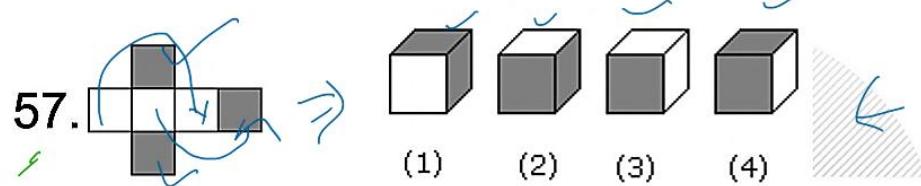
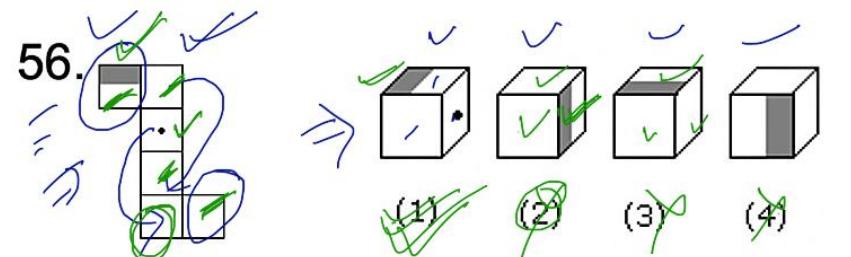
52. Two positions of a dice are shown below. Which number will appear on the face opposite to the face with the number 5?



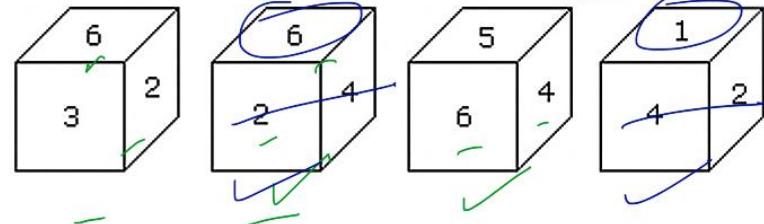
DICE

53. Two positions of dice are shown below. How many points will appear on the opposite to the face containing 5 points?

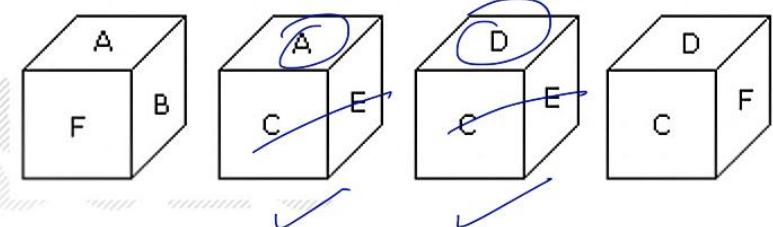




54. Which number is on the face opposite to 6?



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

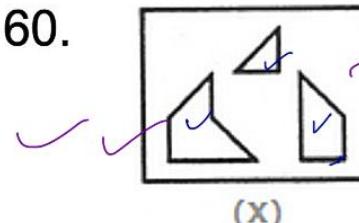


A  $\leftrightarrow$  D

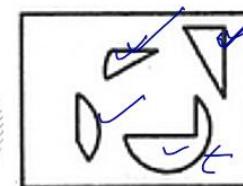
## Assembling of an image



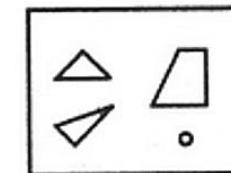
60.



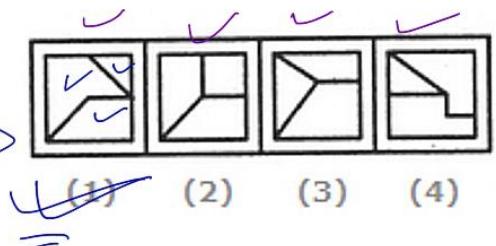
61.



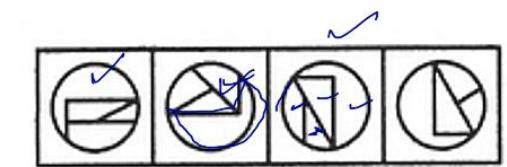
62.



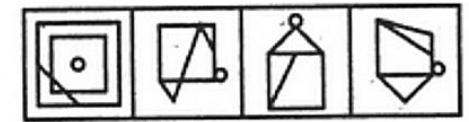
(X)



(X)



(X)



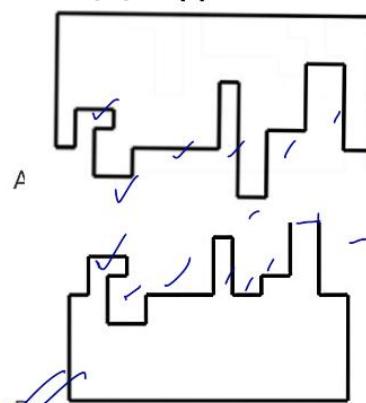
(X)

63.

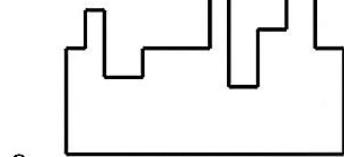


Gate 2021 ME

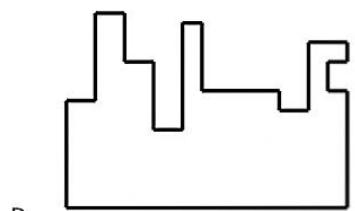
A jigsaw puzzle has 2 pieces. One of the pieces is shown above. Which one of the given options for the missing piece when assembled will form a rectangle? The piece can be moved, rotated or flipped to assemble with the above piece.



A.



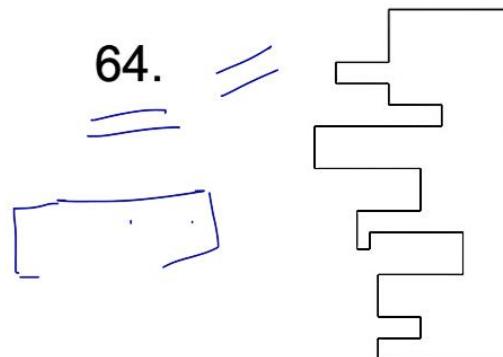
C.



D.

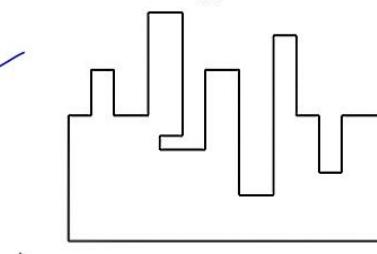


64.

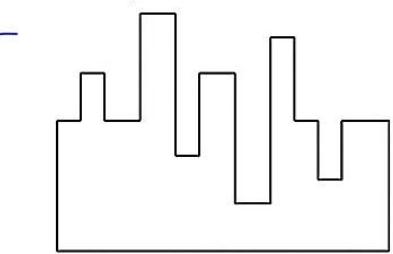


Gate 2021 CSE

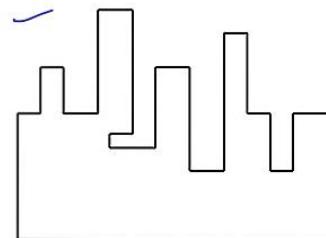
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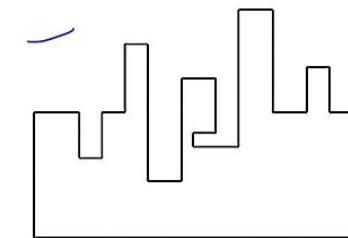
A.



B.



C.



D.