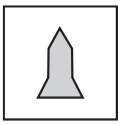
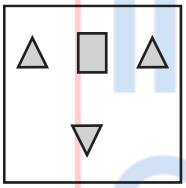
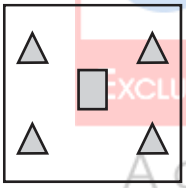
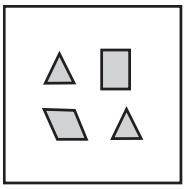
SPATIAL APTITUDE

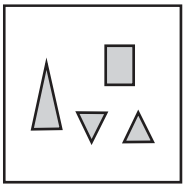
1. 

Which one of the groups given below can be assembled to get the shape that is shown above using each piece only once without overlapping with each other? (Rotation and translation operations may be used).

(A) 

(B) 

(C) 

(D) 

2. Six persons P, Q, R, S, T and U are sitting around a circular table facing the center not necessarily in the same order.

Consider the following statements:

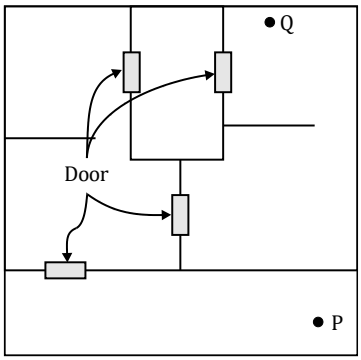
- P sits next to S and T .
- Q sits diametrically opposite to P .
- The shortest distance between S and R is equal to the shortest distance between T and U.

Based on the above statements, Q is a neighbor of

(A) U and S (C) R and U
(B) R and T (D) P and S

3. A building has several rooms and doors as shown in the top view of the building given below. The doors are closed initially.

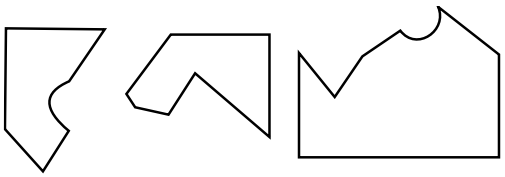
What is the minimum number of doors that need to be opened in order to go from the point P to the point Q?



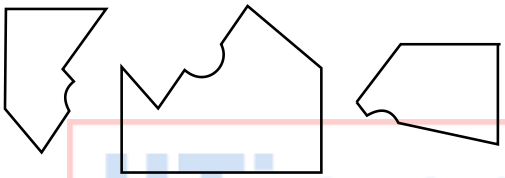
(A) 4 (C) 2
(B) 3 (D) 1

4. Which one of the following sets of pieces can be assembled to form a square with a single round hole near the center? Pieces cannot overlap.

(A)

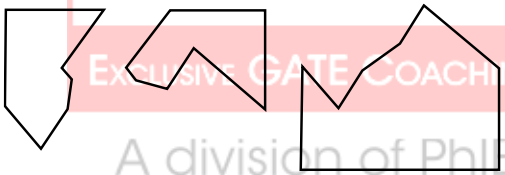


(B)

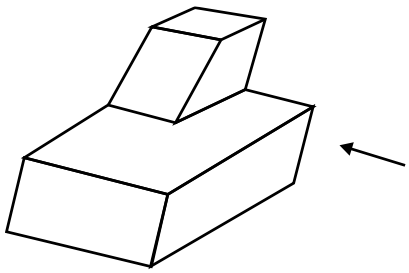


(C)

(D)



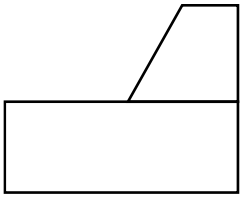
5.



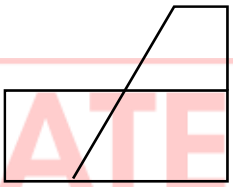
A block with a trapezoidal cross-section is placed over a block with rectangular cross section as shown above.

Which one of the following is the correct drawing of the view of the 3D object as viewed in the direction indicated by an arrow in the above figure?

(A)

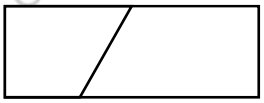


(B)

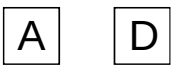


(C)

(D)



6. A palindrome is a word that reads the same forwards and backwards. In a game of words, a player has the following two plates painted with letters.



From the additional plates given in the options, which one of the combinations of additional plates would allow the player to

construct a five-letter palindrome. The player should use all the five plates exactly once. The plates can be rotated in their plane.

(A)

(B)

(C)

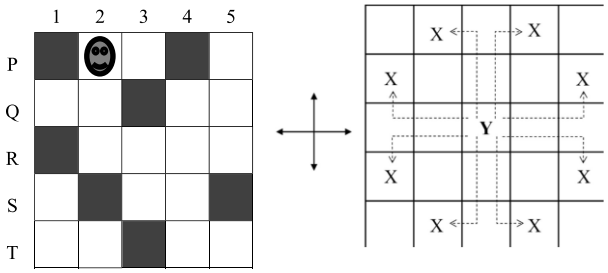
(D)

7. In the square grid shown on the left, a person standing at P2 position is required to move to P5 position.

The only movement allowed for a step involves, "two moves along one direction followed by one move in a perpendicular direction". The pcm1issiblc directions for movement arc shown as dotted arrows in the right

For example, a person at a given position Y can move only to the positions marked X on the right.

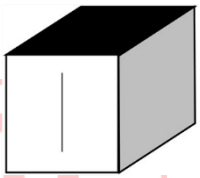
Without occupying any of the shaded squares at the end of each step, the minimum number of steps required to go from P2 to P5 is



Example: Allowed steps for a person at **Y**

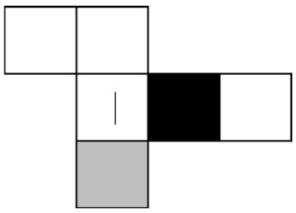
(A) 4
(B) 5
(C) 6
(D) 7

8.

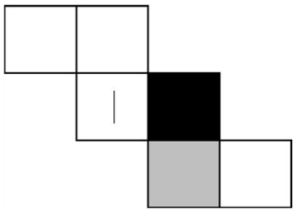


Consider a cube made by folding a single sheet of paper of appropriate shape. The interior faces of the cube are all blank. However, the exterior faces that are not visible in the above view may not be blank. Which one of the following represents a possible unfolding of the cube?

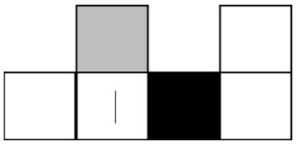
(A)



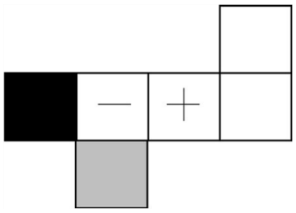
(B)



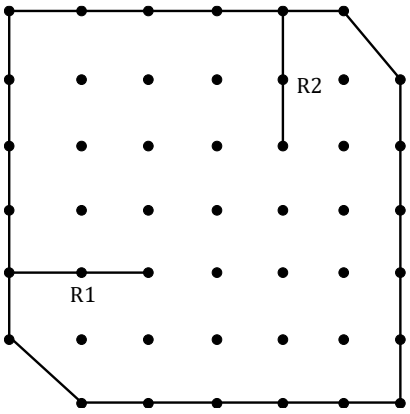
(C)



(D)

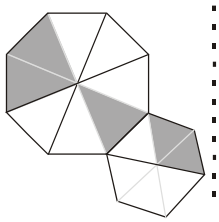


9. A plot of land must be divided between four families. They want their individual plots to be similar in shape, not necessarily equal in area. The land has equally spaced poles, marked as dots in the below figure. Two ropes, R1 and R2, are already present and cannot be moved. What is the least number of **additional** straight ropes needed to create the desired plots? A single rope can pass through three poles that are aligned in a straight line.



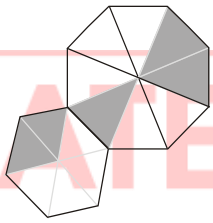
(A) 2
(B) 4
(C) 5
(D) 3

10.

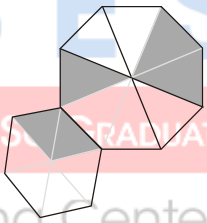


For the picture shown above, which one of the following is the correct picture representing reflection with respect to the mirror shown as the dotted line?

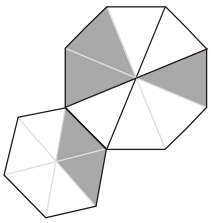
(A)



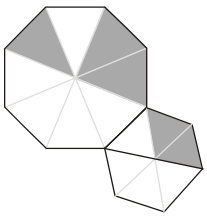
(B)



(C)

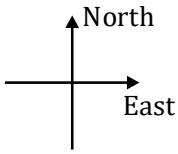


(D)



11. An ant walks in a straight line on a plane leaving behind a trace of its movement. The initial position of the ant is at point P facing East.

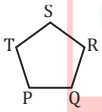
The ant first turns 72° anticlockwise at P, and then does the following two steps in sequence exactly FIVE times before halting.



1. moves forward for 10 cm.
2. turns 144° clockwise

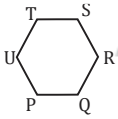
The pattern made by the trace left behind by the ant is

(A)



PQ=QR=RS=ST=TP=10 cm

(B)



PQ=QR=RS=ST=TU=UP=10 cm

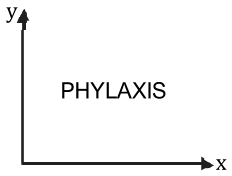
(C)

SQ=QT=TR=RP=PS=10cm

(D)

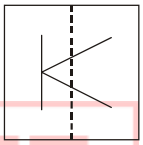
SW=WR=RP=PT=TQ=QU=US=10 cm

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



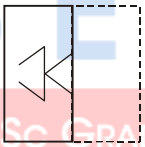
(A) PHʎΓ∀XIS (C) ⅁HʎΓ∀XIS
(B) ЬHʎΓ∀XIS (D) ЬHʎΓ∀XIS

13.

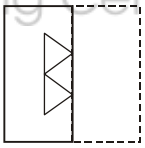


A transparent square sheet shown above is folded along the dotted line. The folded sheet will look like_____.

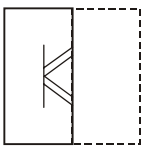
(A)



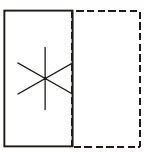
(B)



(C)



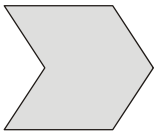
(D)



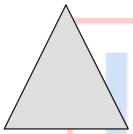
14. A polygon is convex if, for every pair of points, P and Q belonging to the polygon, the line segment PQ lies completely inside or on the polygon.

Which one of the following is **NOT** a convex polygon?

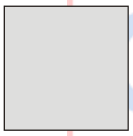
(A)



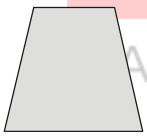
(B)



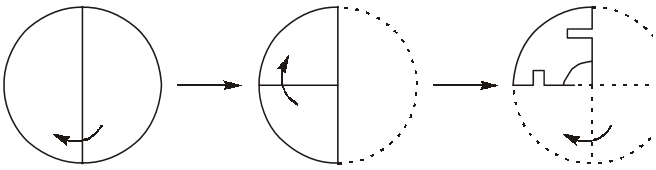
(C)



(D)

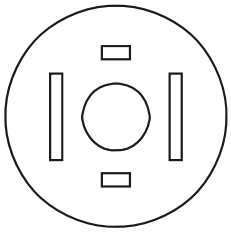


15.

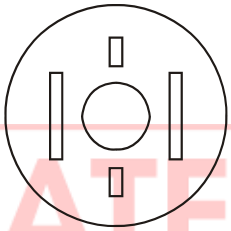


A circular sheet of paper is folded along the lines in the directions shown. The paper, after being punched in the final folded state as shown and unfolded in the reverse order of folding, will look like

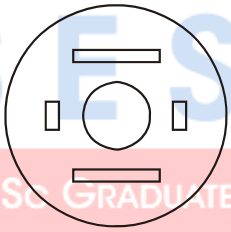
(A)



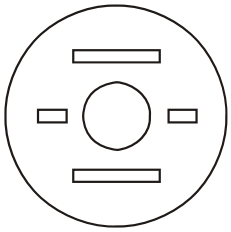
(B)



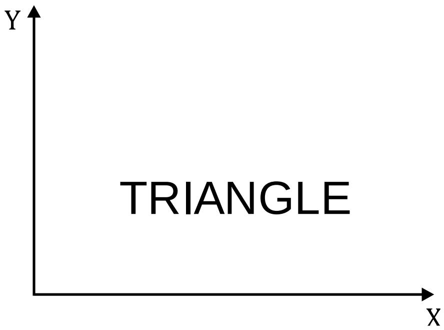
(C)



(D) A

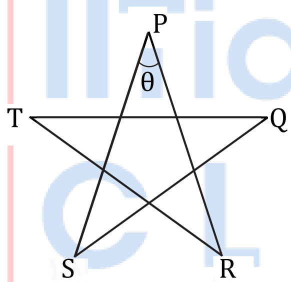


16. The mirror Image of the above text about the x-axis is



(A) 
(C) 
(B) 
(D) 

17.

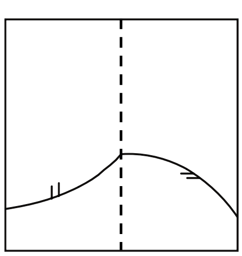


Five line segments of equal lengths, PR, PS, QS, QT and RT are used to form a star as shown in the figure above.

The value of θ, in degrees, is_______.

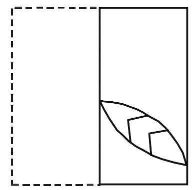
(A) 36
(B) 45
(C) 72
(D) 108

18.

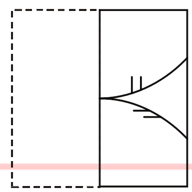


A transparent square sheet shown above is folded along the dotted line. The folded sheet will look like_______.

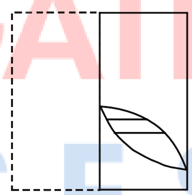
(A)



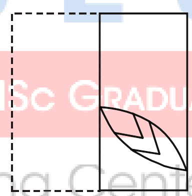
(B)



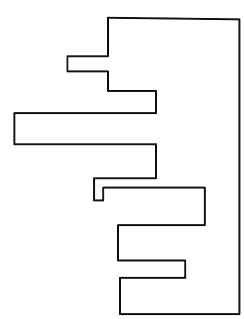
(C)



(D)



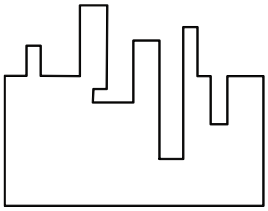
19.



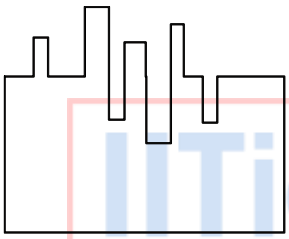
A jigsaw puzzle has 2 pieces. One of the pieces is shown above. Which one of the given options for the missing piece when

assembled will form a rectangle? The piece can be moved rotated or flipped to assemble with the above piece.

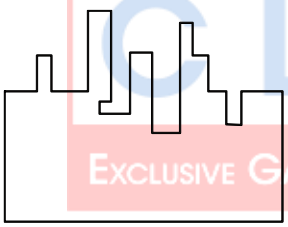
(A)



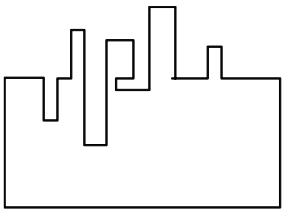
(B)



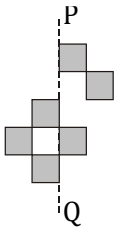
(C)



(D)



20.



The least number of squares that must be added so that the line P-Q becomes the line of symmetry is_____.

(A) 4 (C) 6
(B) 3 (D) 7

1	B and C
2	C
3	C
4	C
5	A
6	B
7	B
8	MTA
9	D
10	A
11	C
12	B
13	B
14	A
15	C
16	B
17	A
18	A
19	A
20	C