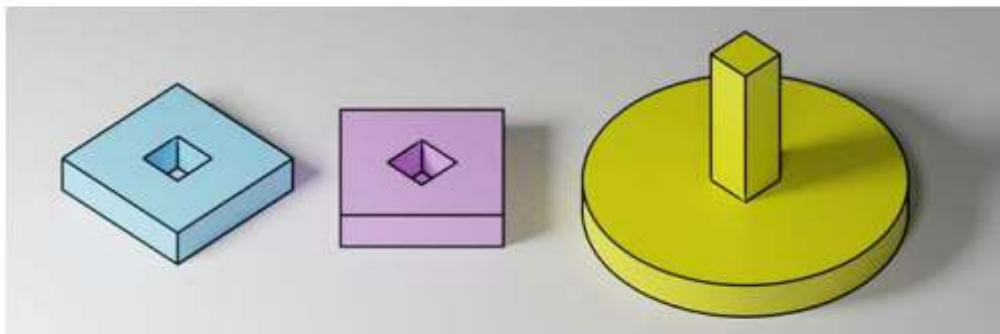


Part A – Section I: Numerical Answer Type Questions

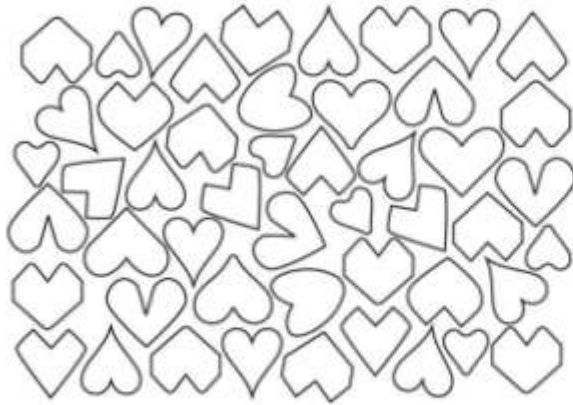
- Q.01** The two objects on the left have a height of 1 cm and sides of 4 cm. The yellow object on the right has a total height of 5 cm. The cylindrical base of the yellow object has a diameter of 6 cm and a height of 1 cm. The two objects on the left are to be stacked on the yellow object on the right. After all the objects are stacked together, how many outer surfaces will the resulting structure have?



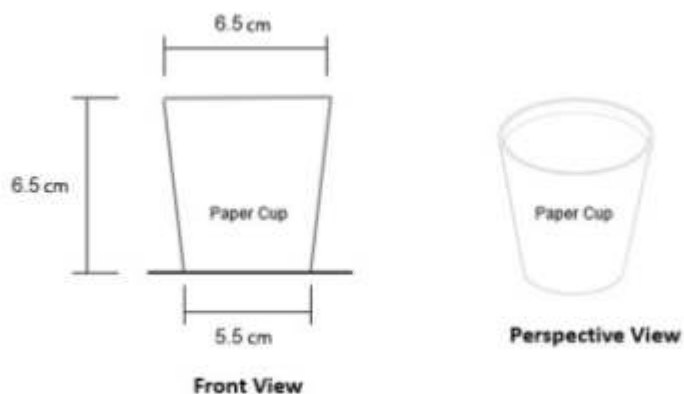
- Q.02** A "group of letters" has a few letters flipped on vertical axis. The mirror image of this "group of letters" is shown below. What is the total number of flipped letters in the group?



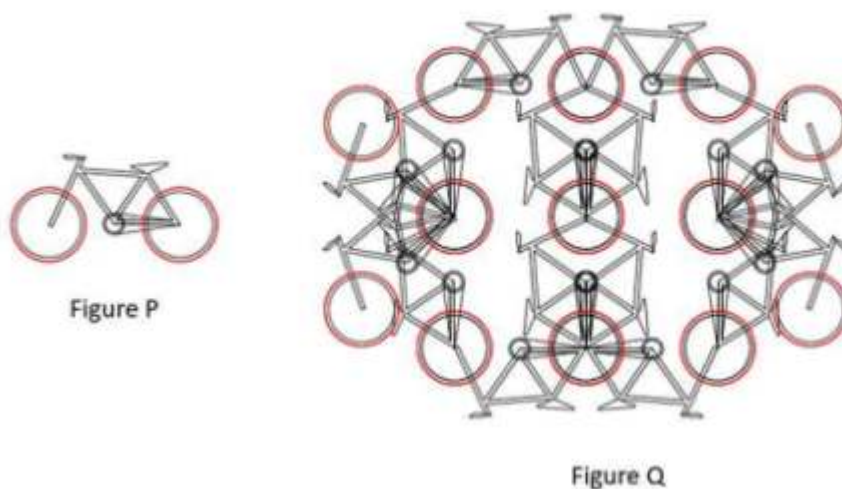
- Q.03** How many unique shapes are there in the image below?



Q.04 How many paper cups (of the dimensions shown below) can be made from one A4 paper?



Q.05 Figure P is the image of a complete bicycle. If parts can be shared between two or more bicycles and flipping of Figure P is allowed, how many complete bicycles are there in the Figure Q?

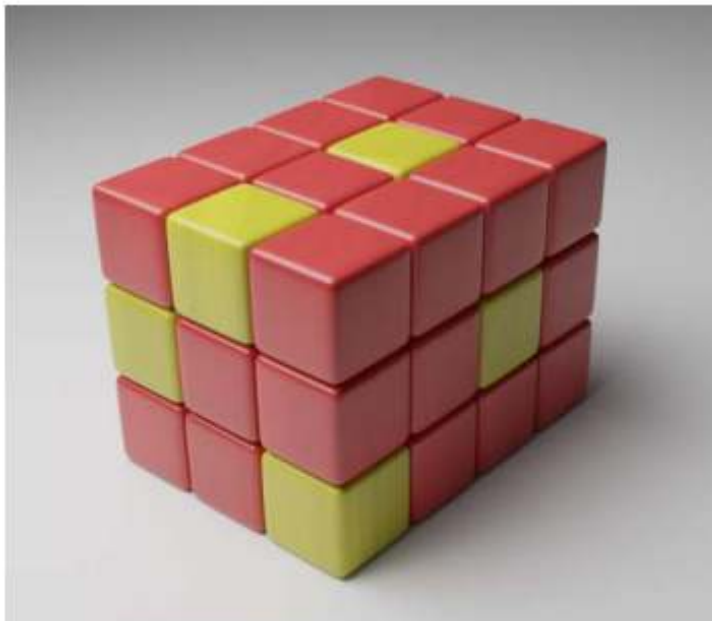


Q.06 What number will replace the question mark?

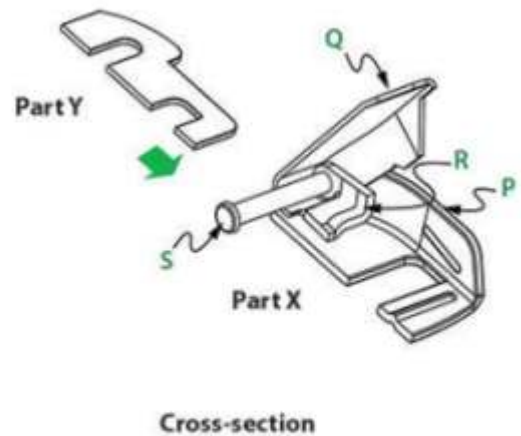
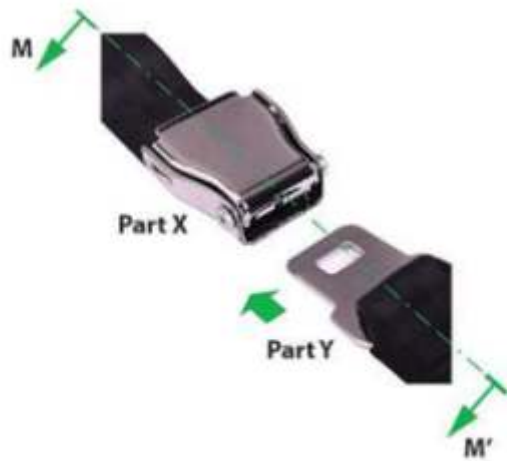
2	4	10	5	12	9
12		75		?	

6	7	8	3
63		36	

Q.07 Coloured cubes (red and yellow) of equal size are arranged and stacked to form the cuboidal structure as shown in the image. If the ratio of the number of yellow cubes to that of the red cubes is 1:3, how many yellow cubes are NOT visible in the image?

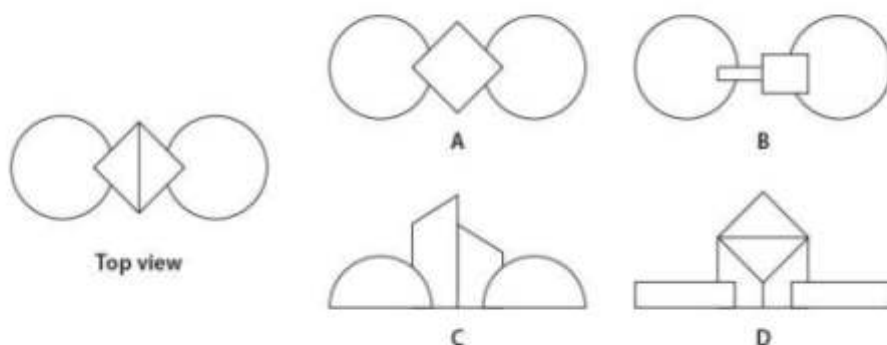


Q.08 Shown below is the view and cross-section of a seat belt used in aeroplanes. Part X has four different components P, Q, R and S. How many springs are required to be fixed on the part S to make the seat belt work?

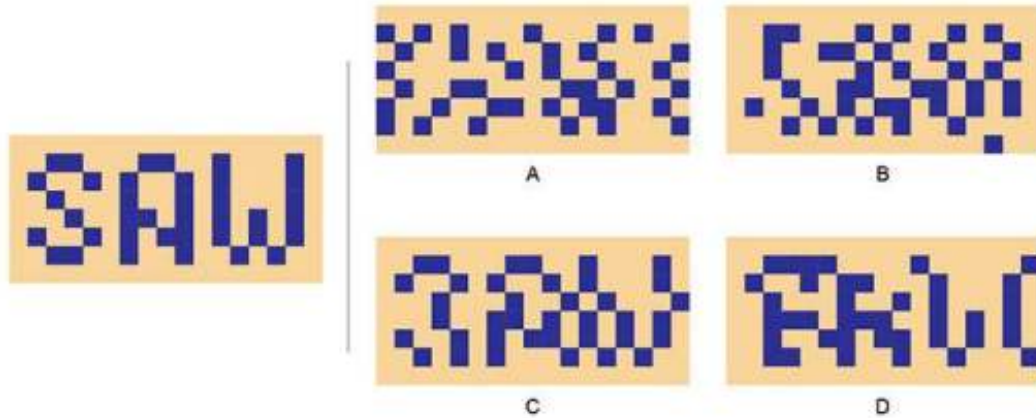


Part A – Section II: Multiple Select Questions

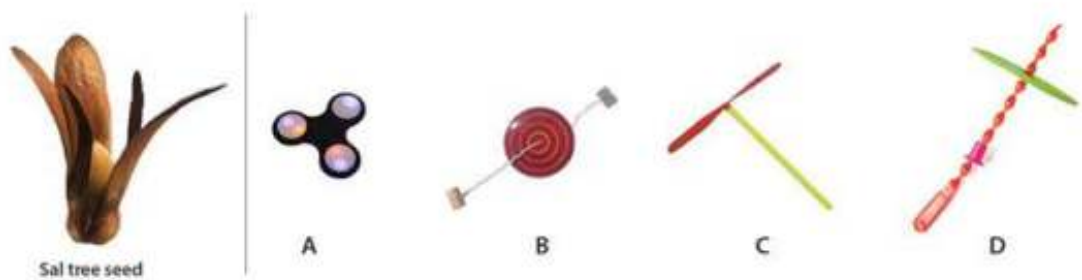
Q.09 Shown below (on the left) is the top view of a 3D form. Identify the possible front view(s).



Q.10 The pixels in the image on the left are shifted horizontally to create one or more options on the right side. Identify the correct option(s).



Q.11 Sal tree seed moves in a particular manner, while free falling. Which toy(s) given below has/have a similar movement?



Q.12 Which option(s) is/are NOT a part of the image on the left?



- Q.13** A professional animation studio has created a paper cut-out model with movable joints as shown below. This is to be used for an animation feature film. Which material(s) will the studio use for the joints?

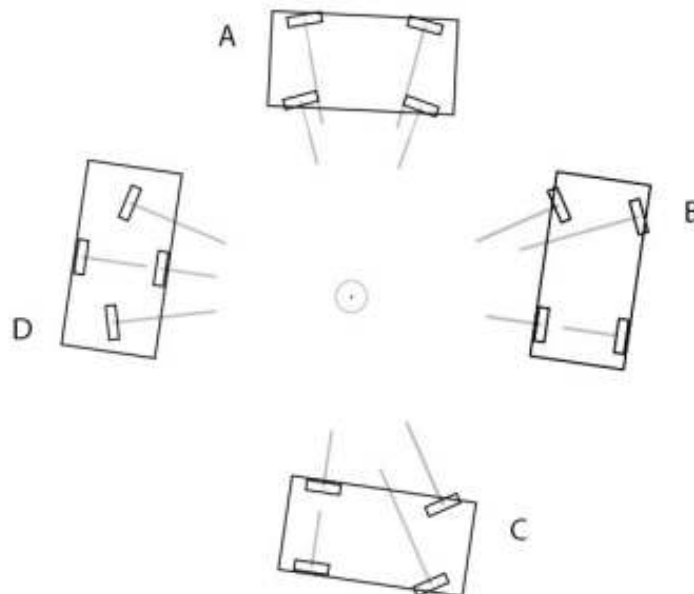


- A. Nylon Wire
 - B. Mouldable Clay
 - C. Eyelet Rivet
 - D. Chalk
- Q.14** Which of the materials given in the options is/are used in the painting style shown below?



- A. Brick
- B. Vegetables
- C. Minerals
- D. Gold

Q.15 Four-wheeler vehicles are trying to take a circular path around the marked point in the centre. Select the vehicle(s) with the correct wheel positions.



Q.16 9 coloured tiles are arranged in a 3x3 columns and rows as follows.

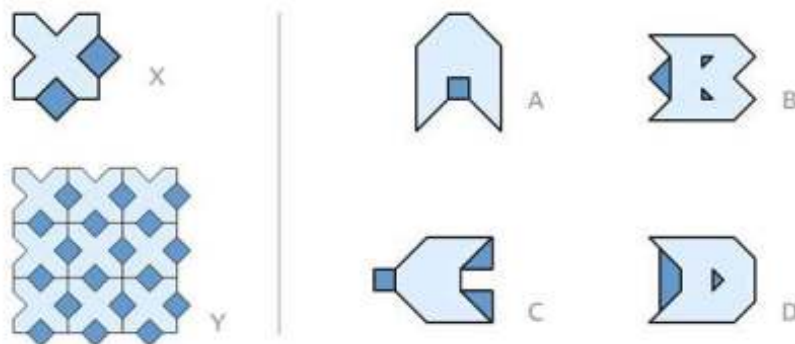
1. Red, Blue and Purple are in the corners.

2. Brown, Pink and Yellow are arranged linearly.
3. Black touches Green and Blue.
4. Orange does not touch Brown and Pink.
5. Blue touches Pink.
6. Red touches Brown.

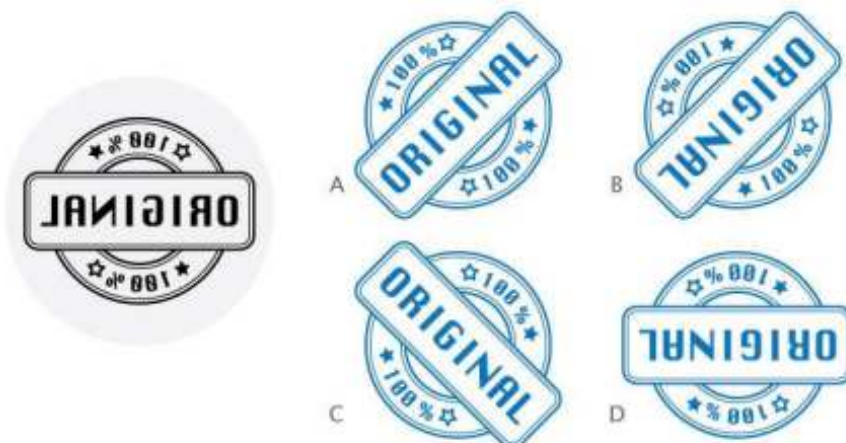
Which of the statements is/are TRUE?

- A. Additive primary colours are in diagonal arrangement.
- B. Red and Green is either in the same row or column.
- C. Purple and Green are diagonally opposite to each other.
- D. Pink is in the centre.

Q.17 Tile X was used to create a pattern which is seamless (without gaps and/or overlaps) when arranged as shown in Y. In a similar manner, which tile(s) from the options will create another seamless pattern?



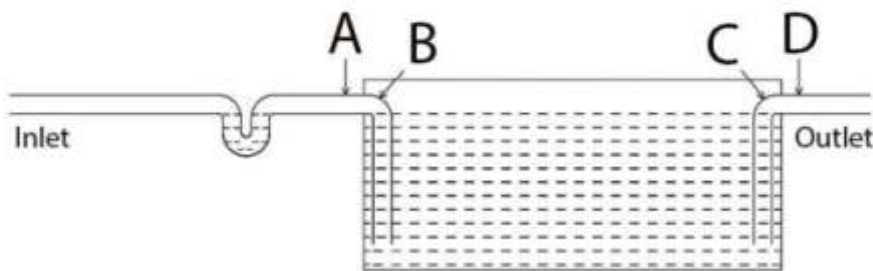
Q.18 Which of the option(s) is/are created by the stamp shown on the left?



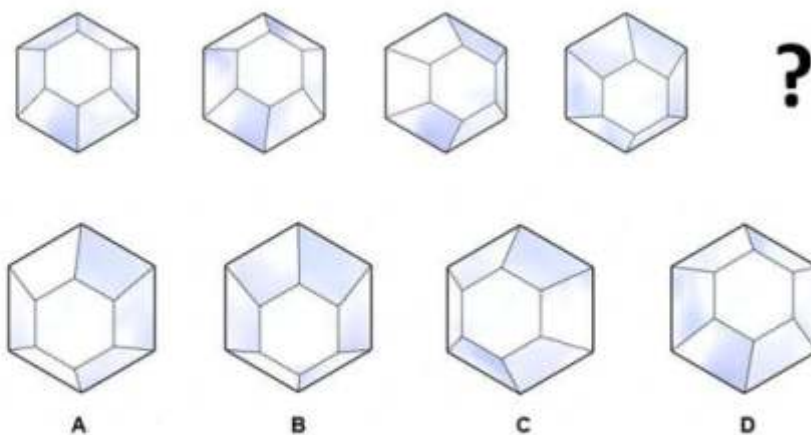
1. Red, Blue and Purple are in the corners.

Part A – Section III: Multiple Choice Questions

- Q.19** A tank is converted to treat organic waste water from kitchen as shown in the figure below. Bio gas gets accumulated on top part of the tank. Which of the following options is a suitable location for drilling an air hole to maintain the water level inside the tank?



- Q.20** Which option will replace the question mark?



- Q.21** Parts of the letters have been hidden by vertical strips in the given options. Which option contains a meaningful word with correct spelling?

ROF GET

A

E O' N F E

B

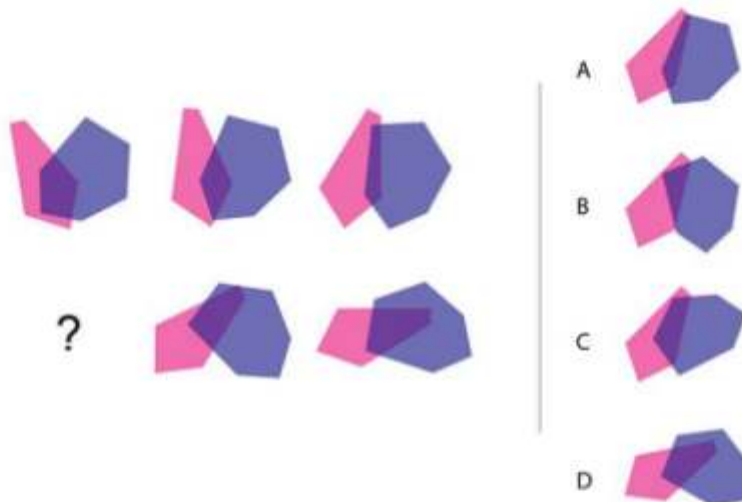
F O' C' E

C

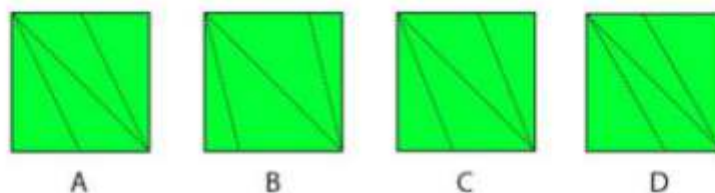
R O' N' E

D

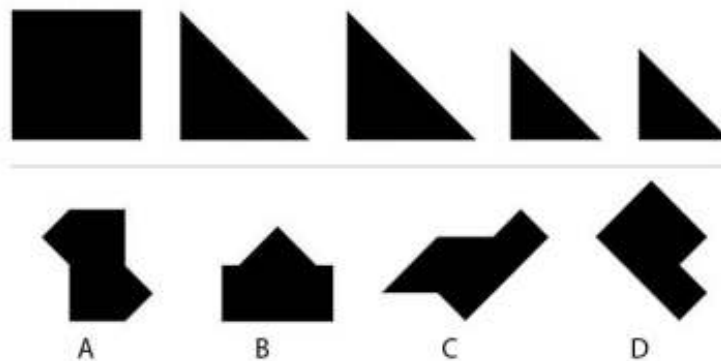
Q. 22 Which option will replace the question mark?



Q.23 Given is the one side of a folded sheet of paper with green color on one side and red color on the other side. Find the correct option when this sheet is unfolded. Dotted lines represent the fold lines.



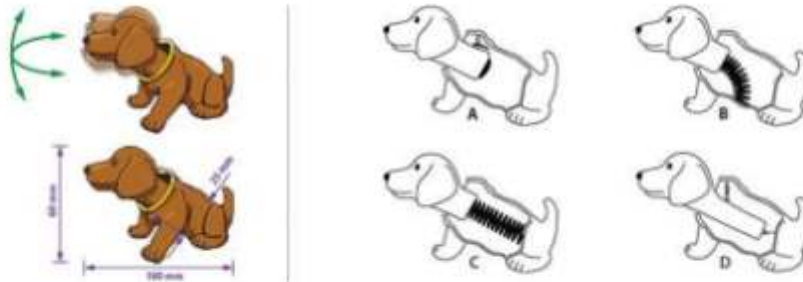
- Q.24** One square and 4 triangles given below are used to make shapes without overlapping. Among the options, which is the shape that CANNOT be made?



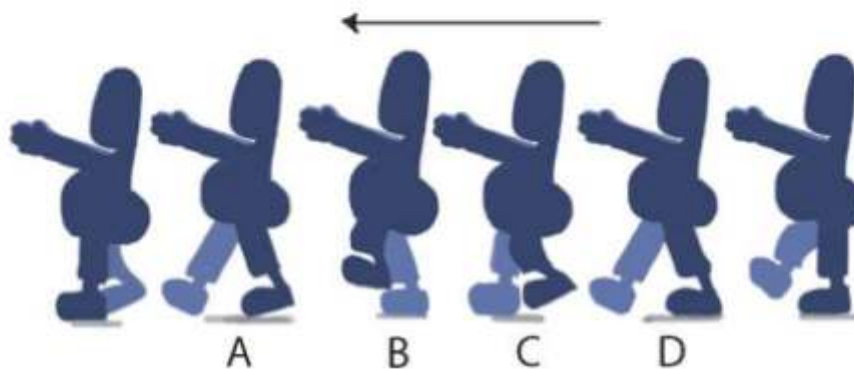
- Q.25** A glider toy as shown in the image below is usually made with Balsa wood. Due to the unavailability of Balsa wood, a student is considering an alternative material. Considering the density of the material that is required to make the fuselage, which will be the most suitable option?



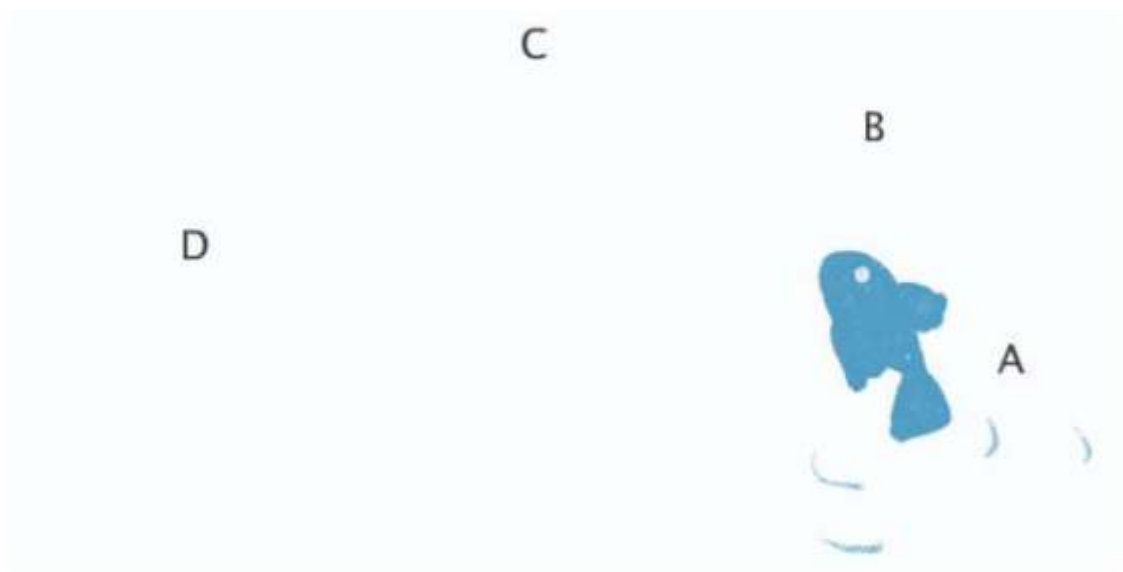
- A. Rattan cane
 - B. Jute plant stem
 - C. Pine wood
 - D. Mango wood
- Q.26** What is the internal mechanism for producing the wobbling head movement in the toy shown below? Assume that the toy needs to be mass manufactured.



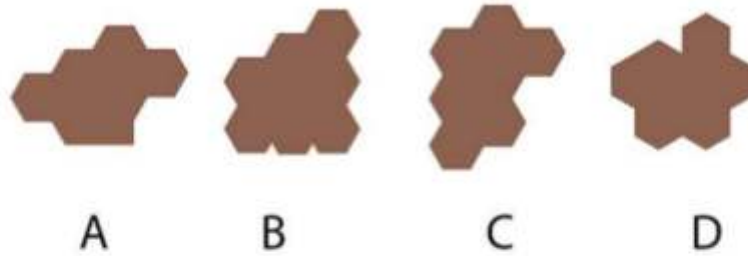
Q.27 A sequence of a man sleep walking is shown below. Which frame is incorrect?



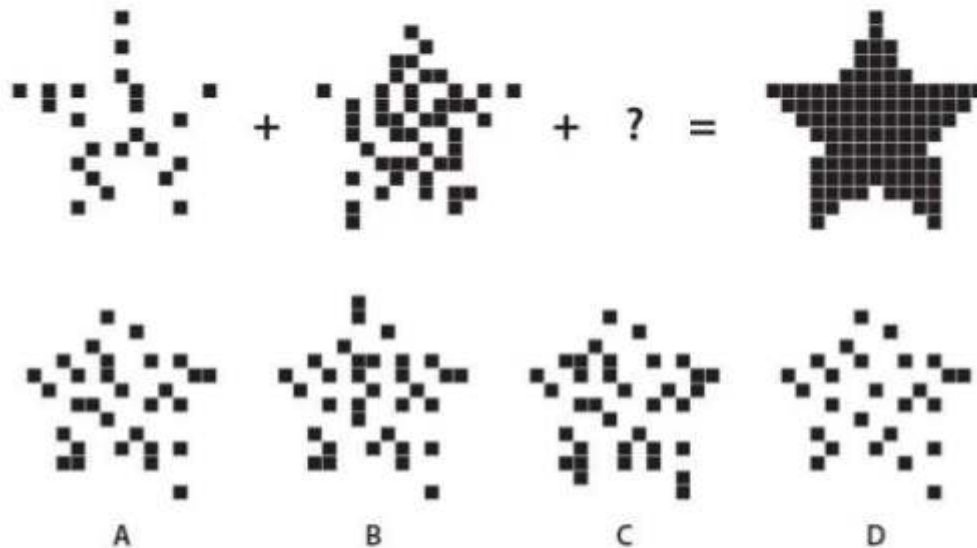
Q.28 Shown below is an animation of a fish jumping. At which point, we need to draw maximum number of frames?



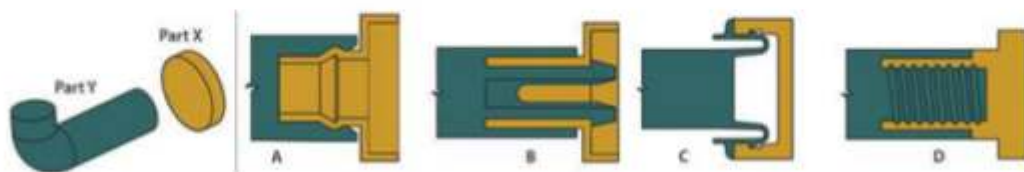
Q.29 Which among the following shapes has the largest area?



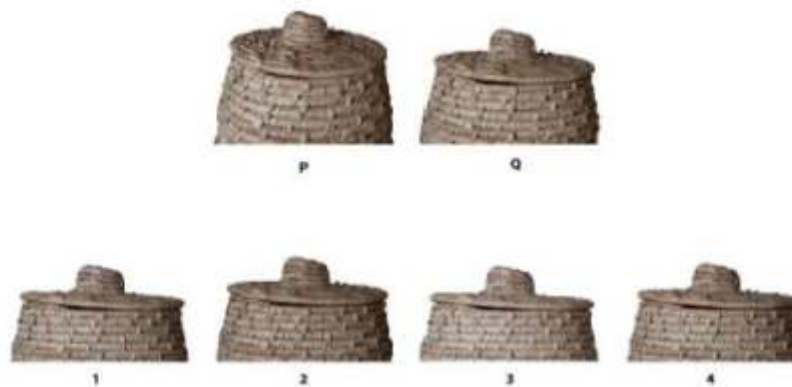
Q.30 Which option will replace the question mark?



Q.31 Part X and part Y are to be assembled together to make a hanger in such a way that it can be disassembled, if required. Which of the following is not an appropriate option to join part X and part Y?

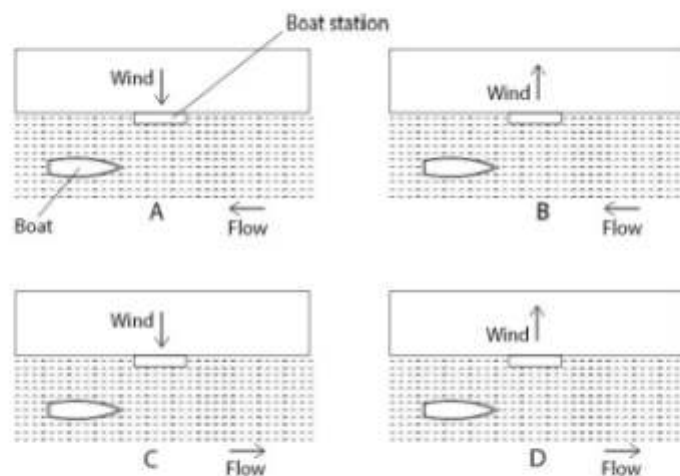


Q.32 Q is shot with higher focal length than P. Arrange 1, 2, 3, 4 in the ascending order of the focal length they are shot with.

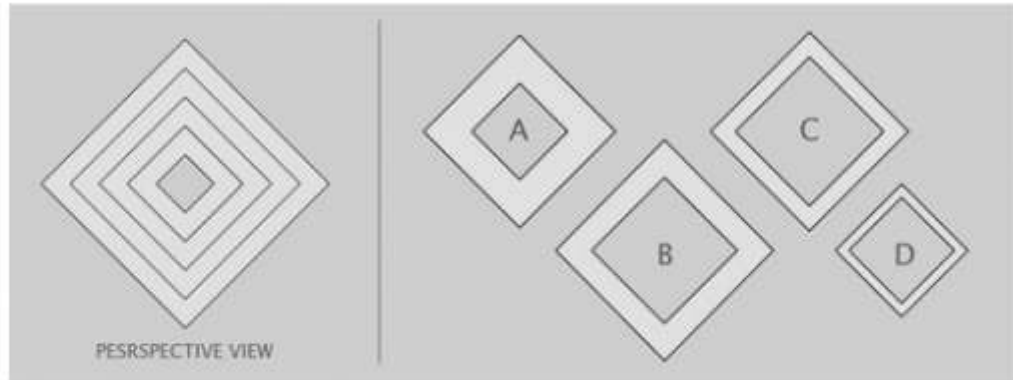


- A. 4, 1, 3, 2
- B. 2, 1, 4, 3
- C. 4, 3, 1, 2
- D. 2, 4, 1, 3

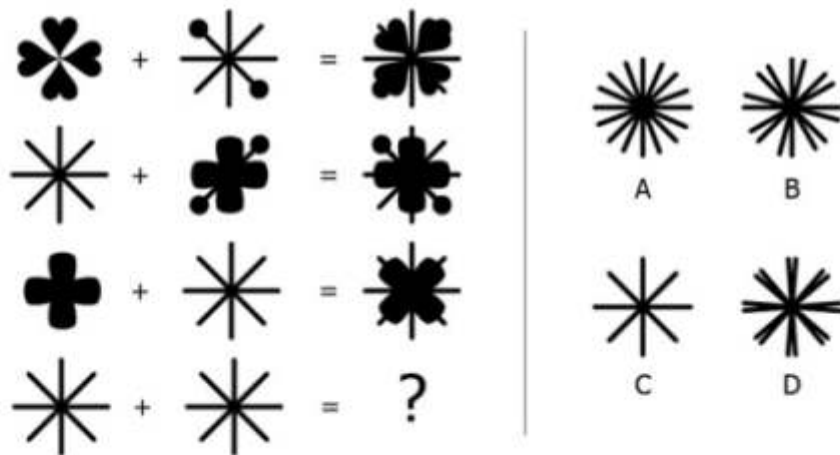
Q.33 Identify the most ideal condition for the boat to approach the station.



Q.34 A perspective view of four frames spaced from near to far at equal intervals, is seen on the left. The frames perfectly align without any overlaps in this view. The options show the same frames arranged side by side on a single plane. Which of the frames in the options is the farthest from the viewer in the perspective view?



Q.35 Which option will replace the question mark?

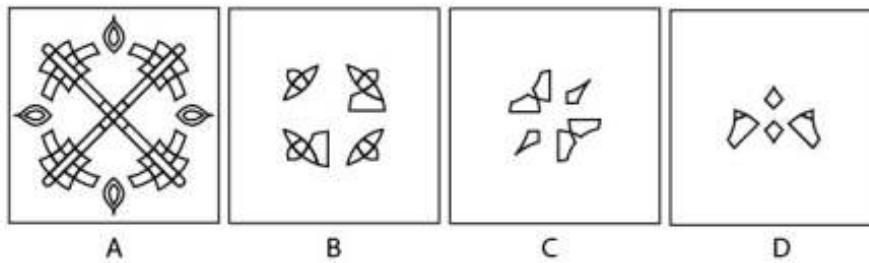


Q.36 Which option is correct for all the signs given below (from left to right)?

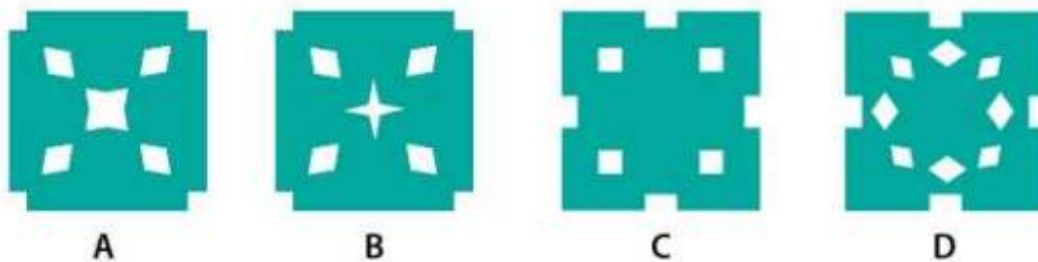
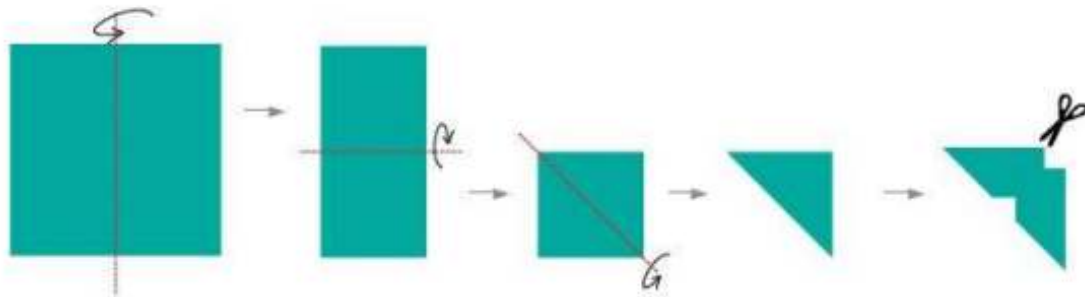


- A. No Entry; Stop; Height limit; Keep left and straight; Prohibited road
- B. Give a way; No entry; Height limit; No overtaking; No stopping
- C. Give a way; No entry; Keep Distance; No overtaking; Prohibited road
- D. No entry; Give a way; Width limit; Keep left and straight; No stopping

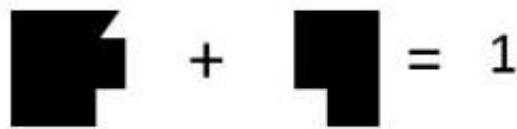
Q.37 Which option cannot be used to create the given image below? The options may be rotated.



Q.38 A piece of paper is folded and cut as shown below. Which is the correct option, when the paper is unfolded?

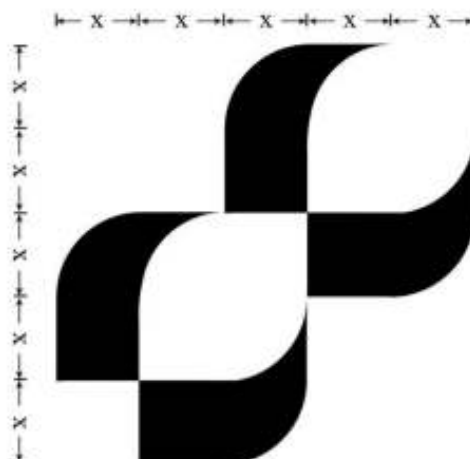


Q.39 Which option will replace the question mark?



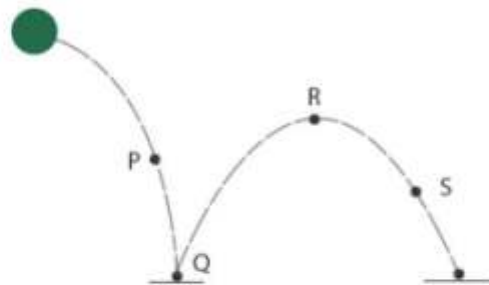
- A. 4
- B. 7
- C. 8
- D. 5

Q.40 What is the total area of the black image below?



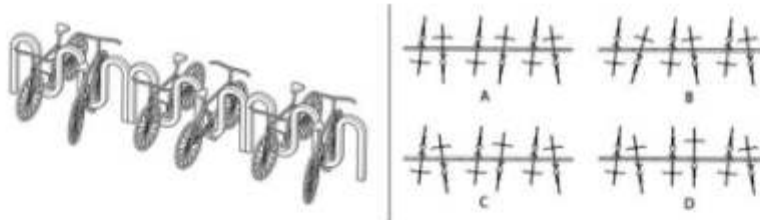
- A. $16X$
- B. $4X^2$
- C. $2X^4$
- D. $8X^2$

Q.41 An animator is animating a bouncing ball along the dotted path as shown below. Which option is FALSE?

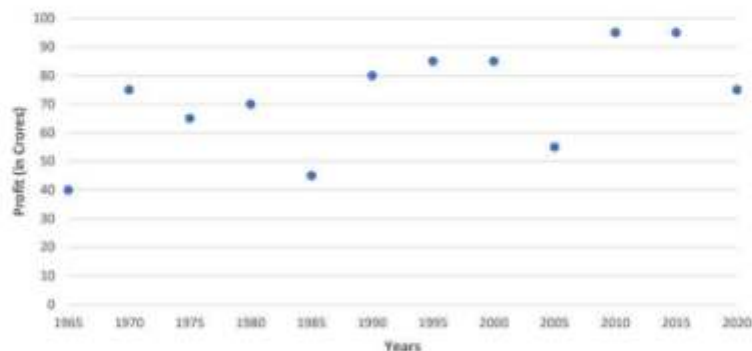


- A. In position P, the ball will stretch vertically.
- B. In position R, the ball will remain the same.
- C. In position Q, ball will stretch horizontally.
- D. In position S, the ball will remain the same.

Q.42 Which among the following options is the correct top view?



Q.43 The annual profit chart of a company is given below. Which option is the correct statement?



- A. The percentage increase between 1965 and 1970 is more than 75%
- B. The percentage decrease between 1985 and 1990 is lesser than 27%
- C. The percentage increase between 2005 and 2010 is more than 100%
- D. The percentage decrease between 2015 and 2020 is lesser than 10%

Q.44 The image on the left is rotated 90 degrees clockwise and then flipped along the vertical axis. Which option represents the resulting image?

