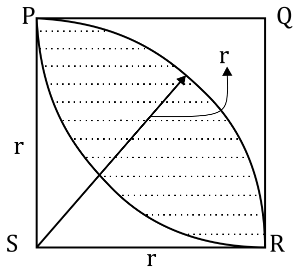
GEOMETRY

1.



In the figure shown above, PQRS is a square. The shaded portion is formed by the intersection of sectors of circles with radius equal to the side of the square and centers at S and Q.

The probability that any point picked randomly within the square falls in the shaded area is _____.

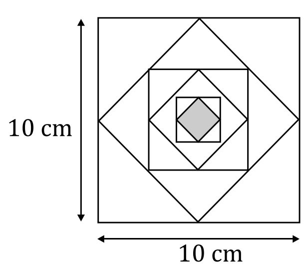
(A) $4-\frac{\pi}{2}$ (C) $\frac{\pi}{2}-1$
(B) $\frac{1}{2}$ (D) $\frac{\pi}{4}$

2. In an equilateral triangle PQR, side PQ is divided into four equal parts, side QR is divided into six equal parts and side PR is divided into eight equal parts. The length of each subdivided part in cm is an integer.

The minimum area of the triangle PQR possible, in cm^2, is

(A) 18 (C) $48\sqrt{3}$
(B) 24 (D) $144\sqrt{3}$

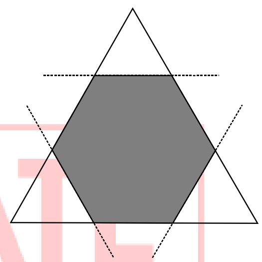
3.



In the figure shown above, each inside square is formed by joining the midpoints of the sides of the next larger square. The area of the smallest square (shaded)as shown in cm^2 is:

(A) 12.50 (C) 3.125
(B) 6.25 (D) 1.5625

4.

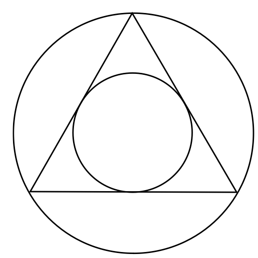


Corners are cut from an equilateral triangle to produce a regular convex hexagon as shown in the figure above.

The ratio of the area of the regular convex hexagon to the area of the original equilateral triangle is

(A) 2: 3 (C) 4: 5
(B) 3: 4 (D) 5: 6

5.



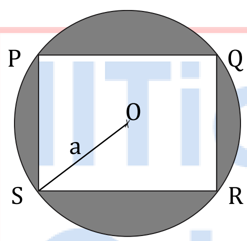
The ratio of the area of the inscribed circle to the area of the circumscribed circle of an equilateral triangle is ________.

(A) 1/8 (C) 1/4
(B) 1/6 (D) 1/2

6. 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______

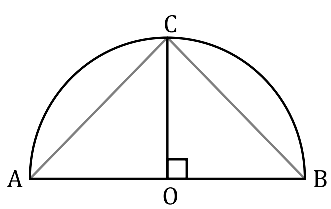
(A) 1/4 (C) 1/16
(B) 1/8 (D) 1/32

7. A circle with centre O is shown in the figure. A rectangle PQRS of maximum possible area is inscribed in the circle. If the radius of the circle is a, then the area of the shaded portion is _______.



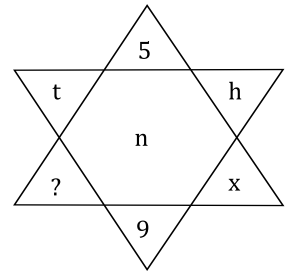
(A) $\pi a^2 - a^2$ (C) $\pi a^2 - 2a^2$
(B) $\pi a^2 - \sqrt{2}a^2$ (D) $\pi a^2 - 3a^2$

8. Given a semicircle with O as the centre, as shown in the figure, the ratio $\frac{\overline{AC}+\overline{CB}}{\overline{AB}}$ is _____, when $\overline{AC}$, $\overline{CB}$ and $\overline{AB}$ are chords.



(A) $\sqrt{2}$ (C) 2
(B) $\sqrt{3}$ (D) 3

9. Find the missing element in the following figure.



(A) d (C) w
(B) e (D) y

10. On a horizontal ground, the base of a straight ladder is 6 m away from the base of a vertical pole. The ladder makes an angle of 45° to the horizontal. If the ladder is resting at a point located at one-fifth of the height of the pole from the bottom, the height of the pole is _____ meters.

(A) 15 (C) 30
(B) 25 (D) 35

Answer Key:

1	C
2	D
3	C
4	A
5	C
6	B
7	C
8	A
9	D
10	C