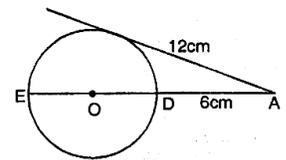


CLASS X SAMPLE PAPER MATHS

SECTION - A [1 mark each]

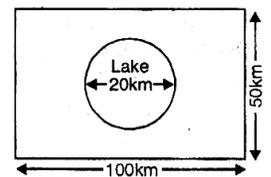
1. In fig., if $AD = 6$ cm, tangent $AF = 12$ cm, then length of AE is

- (a) 18 cm
(b) 24 cm
(c) 144 cm
(d) 12 cm.



2. An army helicopter crashed in a $(100 \text{ km} \times 50 \text{ km})$ dimension rectangular jungle in which there is a circular lake of diameter 20 km. The probability that it crashed in lake is

- (a) $\frac{\pi}{100}$ (b) $\frac{5}{2\pi}$ (c) $\frac{\pi}{50}$ (d) $\frac{\pi}{10}$

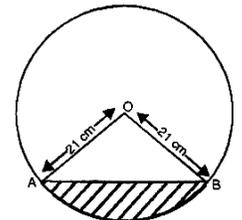


3. In an A.P. $\{a_n\}$, if $\frac{a_4}{a_7} = \frac{2}{3}$, then value of $\frac{a_6}{a_8}$ is:

- (a) $\frac{5}{4}$ (b) $\frac{4}{5}$ (c) $\frac{1}{4}$ (d) $\frac{2}{5}$

4. The area of the segment $A \times B$ in figure is:-

- (a) 577 cm^2
(b) 220.5 cm^2
(c) 126 m^2
(d) None of these.



5. The value of k for which $k - 1, 2k, 7 + k$ are in A.P. is

- (a) 6 (b) 3 (c) -1 (d) 12.

6. The ratio of volume of a cone and a cylinder of equal diameter and equal height is:

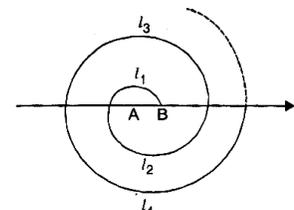
- (a) 3 : 1 (b) 1 : 3 (c) 1 : 2 (d) 2 : 1.

SECTION - B [2 mark each]

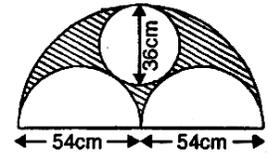
7. Find the volume of the largest right circular cone that can be carved out of a wooden cubical log of edge 4.2 cm. [Write answer correct to two decimal places].

8. For an arithmetic progression $S_n = 20$ and $S_m = 10$ and $n - m = 1$. Prove that $n = \frac{10}{a}$ when $a = d$.

9. The difference of squares of two numbers is 180. The square of the smaller number is 8 times the larger number. Find the two numbers.

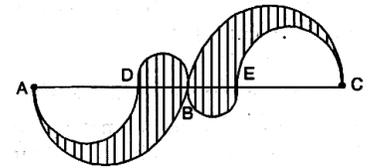


10. A spiral is made up of successive semi-circles, with centers alternatively at A and B, starting with centre at A, of radii 0.5 cm, 1.0 cm, 2.0 cm,as shown in the figure. What is the total length of such a spiral made up of thirteen consecutive semicircles.
11. (i) Find the value of k so that $(k + 4)x^2 + (k + 1)x + 1 = 0$ has equal roots.
 (ii) Three cubes each of side 5 cm are joined end to end. Find the surface area of resulting cuboid.
12. A cable tied to the top of an electric pole affixed at a point on the ground a metres away from the pole to keep the pole upright. If the cable makes an angle θ with the ground, prove that the height of the pole is $a \tan \theta$ and length of the cable is $a \sec \theta$.
13. In the fig. given alongside find the area of the shaded region. 54 cm is radius of the biggest semi-circle and 18 cm is the radius of the smallest circle.

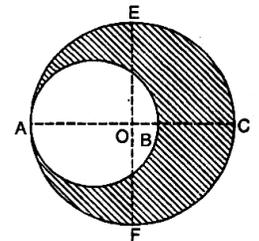


SECTION - C [3 mark each]

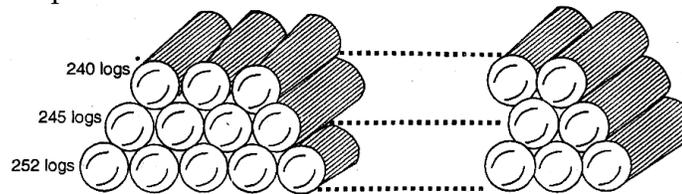
14. The given figure, consists of three pairs of semi-circles, where each semicircle of a pair has equal radius. Find the area and the perimeter of the shaded region. It is given that $AB = BC$, $DB = BE$, $AD = EC$ and $AC = 42$ cm.



15. In the adjoining fig., O is centre of the bigger circle and AC is its diameter. Another circle with AB as diameter is drawn. If $AC = 54$ cm and $BC = 10$ cm, find area of shaded region in terms of π .



16. Draw a circle of radius 3.5 cm. Draw two tangents to the circle such that they include an angle of 130° .
17. 5412 logs are stacked in the following manner:- 252 logs in the bottom row, 246 logs in the row next to it, 240 logs in the next row and so on. In how many rows the 5412 logs are placed and how many logs are in top row ?

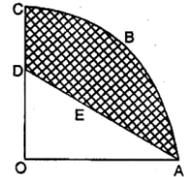


18. (i) Solve for x :- $5 + 13 + 21 + \dots + x = 2139$.
 (ii) A boy is standing on the ground and flying a kite with 120 m of string at an elevation of 30° . Another boy is standing on the roof of a 14 m high building and is flying his kite at an elevation of 45° . Both the boys are on opposite sides of both the kites. Find the length of the string that the second boy must have so that the two kites meet.

19. The area of a triangle is 5 units. Two of its vertices are $(2, 1)$ and $(3, -2)$. The third vertex lies on $y = x + 3$. Find the coordinates of third vertex of the triangle.

SECTION - D [4 mark each]

20. (i) In adjoining fig. OABCO represents a quadrant of a circle of radius 7 cm with centre at O. If $OD = 5$ cm, find area of shaded region.
 (ii) Prove that the points $(2, -2)$, $(-2, 1)$ and $(5, 1)$ are the vertices of a right angled triangle. Also, find the area of the triangle.



21. (i) Show that the equation :- $x^2 (a^2 + b^2) + 2x (ac + bd) + (c^2 + d^2) = 0$ has no real roots.
 (ii) A gulab jamun when fully ready for eating contains sugar syrup upto about 30% of its volume. Find approximately how much syrup would be found in 45 gulab jamuns shaped like a cylinder with two hemispherical ends, if the complete length of each of them is 5 cm and its diameter is 2.8 cm.
22. (i) The centre of a circle is $(2x - 1, 3x + 1)$. Find x if the circle passes through $(-3, -1)$ and the length of the diameter is 20 units.
 (ii) The speed of a boat in still water is 11 km/hour. It can go 12 km upstream and return downstream to the original point in 2 hours 45 minutes. Find the speed of the stream.

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