

Class :X

Question bank

Subject :Mathematics

Chapter :Areas Related to Circles

1. Arcs are drawn by taking vertices A, B and C of an equilateral triangle of side 10 cm to intersect the sides BC, CA and AB at their respective mid-points D, E and F. Find the area of the shaded region. [use $\pi = 3.14$]

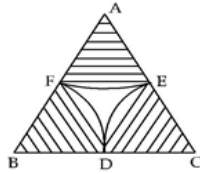
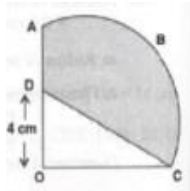


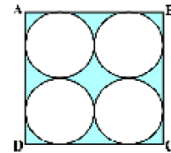
Fig. 3

2. In figure OABC is a quadrant of a circle of radius 7 cm. If OD = 4 cm, find the area of the shaded region. (Use $\pi = 22/7$)



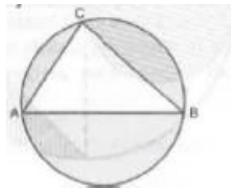
3. A chord of a circle of radius 20 cm subtends an angle of 90° at the centre. Find the area of the corresponding major segment of the circle.

4. Find the area of the shaded region in the given figure where ABCD is a square of side 14 cm.



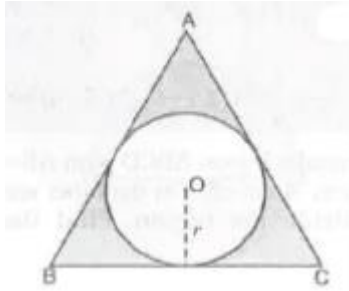
5. Area of a sector of a circle of radius 36 cm is $54\pi \text{ cm}^2$. Find the length of the corresponding arc of the sector.

6. In the figure, AB is a diameter of the circle, AC = 6 cm and BC = 8 cm. Find the area of the shaded region. [Use $\pi = 3.14$]



7. A calf is tied with a rope of length 6 m at the corner of a square grassy lawn of side 20 m. If the length of the rope is increased by 5.5 m, find the increase in area of the grassy lawn in which the calf can graze.

8. In the figure, a circle is inscribed in an equilateral triangle ABC of side 12 cm. Find the radius of the inscribed circle and the area of the shaded region. [Use $\pi = 3.14$ and $\sqrt{3} = 1.73$]



9. In Figure, two circular flower beds have been shown on two sides of a square lawn ABCD of side 56 m. If the centre of each circular flower bed is the point of intersection O of the diagonals of the square lawn, find the sum of the areas of the lawn and flower beds

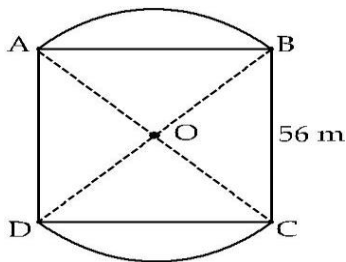


Fig. 8

10. Find the area of the shaded region in figure if $BC=BD=8$ cm, $AC=AD=15$ cm and O is the centre of the circle. (Take $\pi=3.14$)

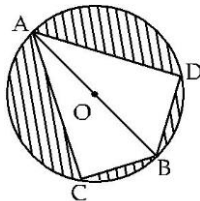
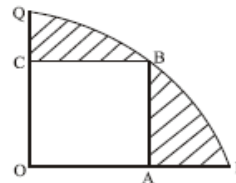
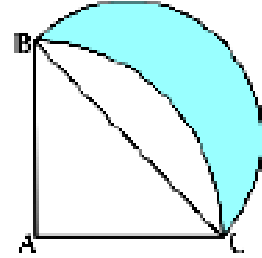


Fig. 7

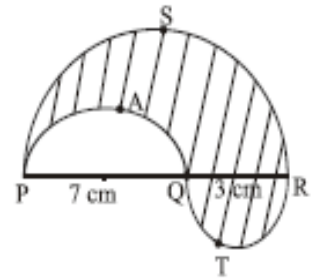
11. In the figure, a square OABC is inscribed in a quadrant OPBQ of a circle. If $OA = 20$ cm, find the area of the shaded region. (Use $\pi = 3.14$)



12. In the given figure, ABCD is a quadrant of a circle of radius 14 cm. With AC as diameter, a semi circle is drawn. Find the area of the shaded region.

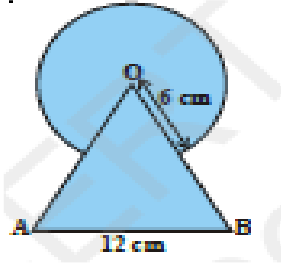


13. In the figure, PSR, RTQ and PAQ are three semicircles of diameters 10cm, 3cm and 7cm respectively. Find the area of the shaded region. (Use $\pi=3.14$)

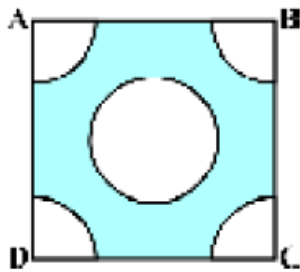


14. A square ABCD is inscribed in a circle of radius r . Find the area of the square.
15. A path of 7 m width runs around outside a circular park whose radius is 18 m. Find the area of the path.
16. A sector is cut from a circle of radius 42 cm. The central angle of the sector is 150° . Find the length of the arc.
17. In a circle of radius 21 cm, an arc subtends an angle of 60° at the centre. Find the
 (i) length of arc (ii) area of the sector formed by the arc (iii) area of the segment formed by the corresponding chord of the arc.
18. Find the difference between the area of a regular hexagonal plot whose side is 72 m and the area of the circular swimming pool inscribed in it.
19. The perimeter of a sector of a circle of radius 5.6 cm is 27.2 cm. Find the area of the sector.
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21. Two circles touch internally. The sum of their areas is 116π sq. cm. and the distance between their centers is 6 cm. Find the radii of the two given circles.
22. A park is in the form a rectangle of dimensions 120m x 100m. At the centre of the park there is a circular lawn. The area of the park excluding the circular lawn is 8700 sq m. Find the radius of the circular lawn.
23. A chord PQ of a circle of radius 10 cm makes a right angle at the centre of the circle. Find the area of the major and the minor segments. (Take $\pi= 3.14$)

24. Find the area of the shaded region in the figure, where a circular arc of radius 6 cm has been drawn with vertex O of an equilateral triangle OAB of side 12 cm as centre.



25. From each corner of a square of side 4 cm a quadrant of a circle of radius 1 cm is cut and also a circle of diameter 2 cm is cut as shown in the figure. Find the area of the remaining portion of the square.



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