# AREA RELATED TO CIRCLES
CLASS X   2025-26

SUJITHKUMAR KP 30 /09/25

1   A chord of a circle of radius 14 cm subtends a right angle at the centre. What is the area of the minor sector? $(use\ \pi = \frac{22}{7})$
A) $144\ cm^2$ B) $154\ cm^2$ C) $256\ cm^2$ D) $145\ cm^2$

2   A bicycle wheel makes 5000 revolutions in moving 11 km. Find the diameter of the wheel $(use\ \pi = \frac{22}{7})$
A) $35\ cm$ B) $100\ cm$ C) $70\ cm$ D) $140 cm$

3   The radii of two circles are 4 cm and 3 cm respectively. The diameter of the circle having area equal to the sum of the areas of the two circles (in cm) is _____
A) 5   B) 7   C) 10   D) 14

4   The perimeter (in cm) of a square circumscribing a circle of radius a cm, is _____
 A) 8 a   B) 4 a   C) 2 a   D) 16 a

5   If the area of a circle is numerically equal to twice its circumference, then the diameter of the circle is __
A) 4 units   B) π units   C) 8 units   D) 2 units

6   If the circumference of a circle is 352 metres, then its area in square metres is____
A) 5986   B) 6589   C) 7952   D) 9856

7   The diameter of a wheel is 1.26 m. The distance travelled in 500 revolutions is
A) 2670 m   B) 2880 m   C) 1980 m   D) 1596 m

8   If the circumference of a circle and the perimeter of a square are equal, then
(A) area of the circle = area of the square
(B) area of the circle > area of the square
(C) area of the circle < area of the square
(D) nothing definite can be said about the relation between the areas of the circle and square.

9   In the given figure, three sectors of a circle of radius 7 cm,
making angles of 60°, 80° and 40° at the centre are shaded.
The area of the shaded region (in cm^2) is _____
A) 77   B) 154   C) 44   D) 22
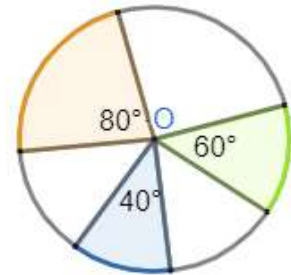
10   If the difference between the circumference and the radius of of a circle is 37 cm, then using $\pi = \frac{22}{7}$ the circumference (in cm) of the circle is:
A) 154   B) 44   C) 14   D) 7

11   If π is taken as $\frac{22}{7}$, the distance (in metres) covered by a wheel of diameter 35 cm, in one revolution, is
A) 2.2   B) 1.1   C) 9.625   D) 96.25

12   If the circumferences of two circles are in the ratio 4 : 9, then the ratio in their area is __
A) 9 : 4   B) 4 : 9   C) 2 : 3   D) 16 : 81

13   A circular wire of radius 42 cm is cut and bent into the form of a rectangle whose sides are in the ratio of 6 : 5. The smaller side of the rectangle is _____
A) 30 cm   B) 60 cm   C) 70 cm   D) 80 cm

14   If the wheel of an engine of a train is $4\frac{2}{7}$ m in circumference makes seven revolutions in 4 seconds, then the speed of the train is _____ km/h.
A) 30 km/h   B) 27 km/h   C) 50 km/h   D) 20 km/h

15   The area of the largest possible square inscribed in a circle of unit radius (in sq. units) is _____.
A) 2 sq. units   B) 3 sq. units   C) $\sqrt{2}$ sq. units   D) $\sqrt{3}$ units

16 A pendulum swings through an angle of 30° and describes an
    arc 8.8 cm in length. Find the length of pendulum.
    $(use \ \pi = \frac{22}{7})$
    A) 15.8   B) 8.8
   C) 16   D) 16.8

                                                                    8.8 cm
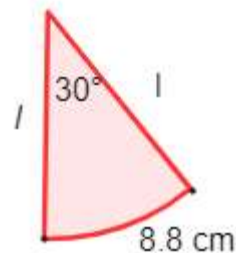
17 In the figure, PQRS is a square and O is centre of the
    circle. If RS $= 10\sqrt{2}$, then area of shaded region is____

    A) 90 π – 90   B) 80π – 80
    C) 50 π – 100   D) 100 π – 100
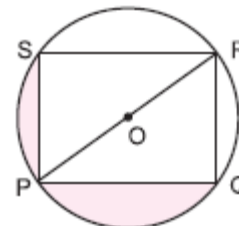
18 The area of a quadrant of a circle whose circumference is 44 cm is _____.
    A) $77 \ cm^2$ B) $\frac{77}{2} \ cm^2$ C) $35 \ cm^2$ D) $24cm^2$
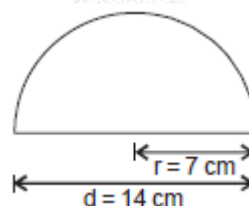
19 An arc of a circle is of length 5π cm and the sector it bounds has an area of 20π cm². Find the radius of
    the circle.
    A) 8 cm   B) 16 cm   C)   10 cm   D) 12 cm

20 What is the perimeter of a sector of angle 45° of a circle with
    radius 7 cm. $(use \ \pi = \frac{22}{7})$
    A) 39 cm   B)   19.5 cm
    C)   20 cm   D) 38 cm
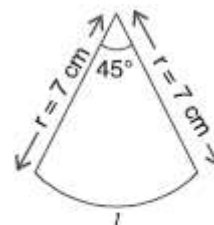
                                                                    Perimeter of
                                                                    the sector

21 If the diameter of a semicircular protractor is 14 cm, then find
    its perimeter. [Use $\pi = \frac{22}{7}$]
    A)   39 cm   B)   36 cm
    C)   22 cm   D)   14 cm

                                                                    r = 7 cm
                                                                    d = 14 cm

22 Find the area of a sector of angle P (in degrees) of a circle with radius R
    A) $\frac{\pi \ RP}{360}$ B) $\frac{\pi \ R^2P}{180}$ C) $\frac{\pi \ R^2P}{360}$ D) $\frac{\pi \ RP}{180}$

23 Find the area of a sector of a circle with radius 6 cm if angle of sector is 60°.
    A) $\frac{132}{7} \ cm^2$ B) $132 \ cm^2$ C) $\frac{142}{7} \ cm^2$ D) $\frac{152}{7} \ cm^2$

24 If the perimeter of a semicircular protractor is 66 cm, find the radius of the protractor
    A) $\frac{77}{3} \ cm$ B) 88 cm   C)   77 cm   D) $\frac{77}{6} \ cm$

25 What is the ratio of the areas of a circle and an equilateral triangle whose diameter and a side are
    respectively equal?
    A) $\frac{2\pi}{\sqrt{3}}$ B) $\frac{1}{\sqrt{3}}$ C) $\frac{\pi}{\sqrt{3}}$ D) $\frac{2}{\sqrt{3}}$

26 The minute hand of a clock is $\sqrt{21}$ cm long. Find the area described by the minute hand on the face of
    the clock between 7.00 and 7.05 am
   A) $5.5 \ cm^2$ B) $11 \ cm^2$ C) $5 \ cm^2$ D) $12 \ cm^2$

27 A plot is in the form of a rectangle ABCD having semicircle on BC as shown in the figure. The
    semicircle portion is grassy while the remaining plot is without grass. Find the area of the plot without
    grass where AB = 60 m and BC = 28 m. [Use $\pi = \frac{22}{7}$]

A) $1572m^2$ B) $1370m^2$ C) $1472m^2$ D) $1372m^2$
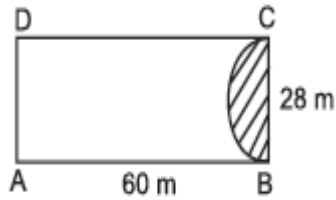
28   What is the angle subtended at the centre of a circle of radius 6 cm by an arc of length 6 π cm
      A) 60°   B) 90°   C) 180°   D) 45°

29   If the circumference is numerically equal to 3 times the area of a circle, then find the radius of the circle.
      A) $\frac{3}{2}$ units   B) $\frac{2}{3}$ units   C) 3 units   D) 2 units

30   In the given figure, the shape of the top of a table is that a sector of
      a circle with centre O and ∠ AOB = 90°. If AO = OB = 42 cm,
      then find the perimeter of the top of the table . (use π = $\frac{22}{7}$)

      A) 198 cm   B) 84 cm   C) 284 cm   D) 42 cm

31   In the given figure, the area of the shaded region between two
      concentric circles is 286 cm². If the difference of the radii of the two
      circles is 7 cm, find the sum of their radii . (use π = $\frac{22}{7}$)

      A) 12 cm   B) 13 cm   C) 10 cm   D) 14 cm

32   A wire is looped in the form of a circle of radius 28 cm. It is reverted into a square form. Determine the
      side of the square.
      A) 22 cm   B) 30 cm   C) 44 cm   D) 176 cm

33   In the given figure, sectors of two concentric circles of radii 7 cm
      and 3.5 cm are given. Find the area of the shaded region.
      A) $\frac{77}{8}$ cm²   B) $\frac{77}{16}$ cm²   C) $\frac{77}{2}$ cm²   D) $\frac{77}{4}$ cm²

34   OABC is a rhombus whose three vertices A, B and C lie on a
      circle with centre O. If the radius of the circle is 10 cm, find the
      area of the rhombus.

      A) 50 $\sqrt{2}$ cm²   B) 50 cm²
      C) 25 $\sqrt{3}$ cm²   D) 50 $\sqrt{3}$ cm²

35   A horse is placed for grazing inside a rectangular field 70 m by 52
      m and is tethered to one corner by a rope 21 m long. On how much
      area can it graze?

      A) 356.5m^2 B) 346.5m^2 C) 300.5m^2 D) 446.5m^2

36   The diameter of a wheel of a bus is 90 cm which makes 315 revolutions per minute. Determine its speed
      in km/h. [Use π = $\frac{22}{7}$]
      A) 53.46 km/h   B) 50.46 km/h   C) 63.46 km/h   D) 73.46 km/h

37   Circumferences of two circles are in the ratio 4:5. the ratio of their radius ____
      A) 16: 25   B) 4: 5   C) 4: 7   D) 1: 2
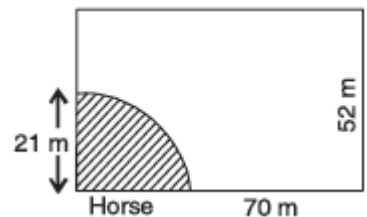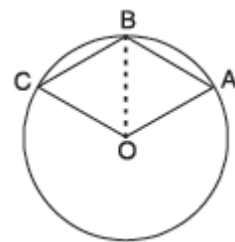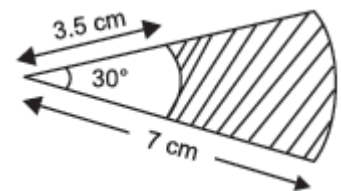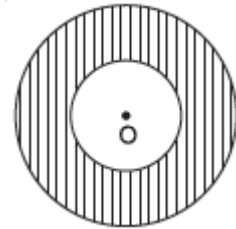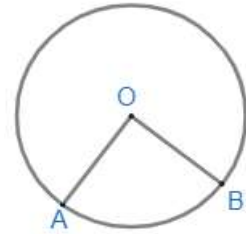
38 Find the perimeter of the shaded region in figure, if ABCD is a
    square of side 14 cm and APB and CPD are semicircles.
    [Use $\pi = \frac{22}{7}$]
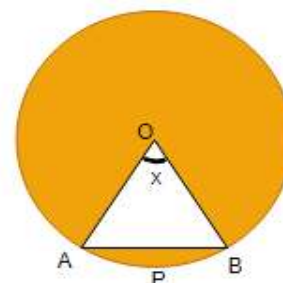   A) 70 cm B) 72cm C) 62cm D) 42cm
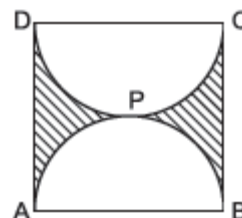
39 In given figure, a semicircle is drawn with O as centre and
    AB as diameter. Semicircles are drawn with AO and OB as
    diameters. If AB = 28 m, find the perimeter of the shaded
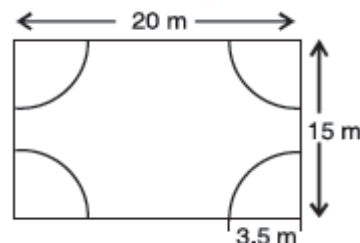   region. [Use $\pi = \frac{22}{7}$]
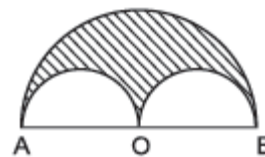
    A) 88 m B) 77 m C)   66 m D) 80 m

40 In the figure, O is the centre of the circle. If the area of the
    sector OAPB is $\frac{5}{36}$ times the area of the circle, then the value of
    $x =$ _____

    (A) 55°   (B) 50 °
    (C) 60°   (D) 40 °

41 A rectangular piece is 20 m long and 15 m wide. From its
    four corners, quadrants of radii 3.5 m have been cut. Find the
    area of the remaining part.

    A) 38.5 m^2 B) 261.5 m^2 C) 300 m^2 D) 251.5 m^2

42 Three circles are placed on a plane in such a way that each
    circle just touches the other two, each having a radius of 10
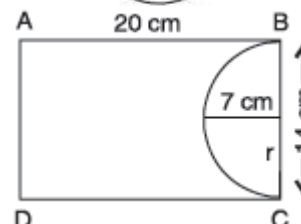   cm. Find the area of the region enclosed by them.

   A) 32 cm^2 B) 10 cm^2 C) 26 cm^2 D) 16 cm^2
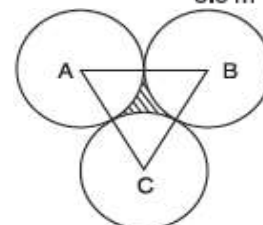
43 A paper is in the form of a rectangle ABCD in which AB = 20
    cm and BC = 14 cm. A semicircular portion with BC as
    diameter is cut off. Find the area of the remaining part.
    [Use $\pi = \frac{22}{7}$
    A) 103 cm^2 B) 200 cm^2 C)   303 cm^2 D) 203 cm^2

44 In the given figure, OPQR is a rhombus, three of whose
    vertices lie on a circle with centre O. If the area of the
    rhombus is $32\sqrt{3}$ cm², find the radius of the circle
   A) 11 cm   B) 8 cm   C)   64 cm   D) 8 $\sqrt{3}$ cm
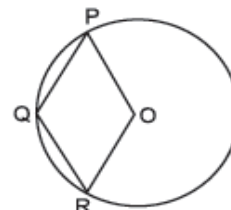
45 The diameter of the wheel of a bus is 140 cm. How many revolutions per minute must the wheel make in
    order to keep a speed of 66 km/h?
46 The measure of the minor arc of a circle is 1/5 of the measure of the corresponding major arc. If the
   radius of the circle is 10.5 cm, find the area of the sector corresponding to the major arc.
    [Use $\pi = \frac{22}{7}$]

47   In given figure, ABC is a triangle right-angled at B, with AB = 14 cm and BC = 24 cm. With the vertices A, B and C as centres, arcs are drawn each of radius 7 cm. Find the area of the shaded region.
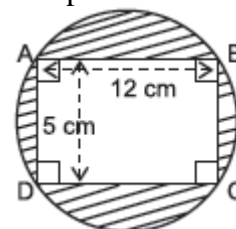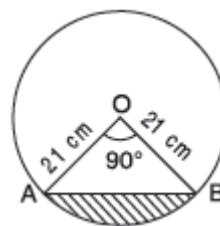[Use $\pi = \frac{22}{7}$]
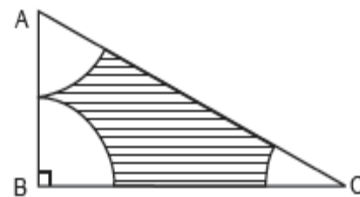
48   The perimeter of a sector of a circle of radius 5.2 cm is 16.4 cm. Find the area of the sector.

49   If the area of a circle is 154 cm^2 , then its perimeter is _____
(A) 11 cm   (B) 22 cm   (C) 44 cm   (D) 55 cm

50   A race track is in the form of a ring whose inner circumference is 352 m and the outer circumference is 396 m. Find the width of the track.

51   A steel wire when bent in the form of a square encloses an area of 121 sq. cm. If the same wire is bent into the form of a circle, find the area of the circle

52   In figure arcs have been drawn with radii 14 cm each and with centres P, Q and R. Find the area of the shaded region
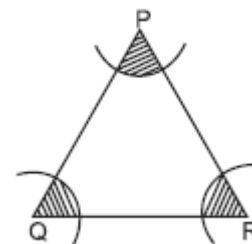

53   On a square cardboard sheet of area 784 cm², four congruent circular plates of maximum size are placed such that each circular plate touches the other two plates and each side of the square sheet is tangent to two circular plates. Find the area of the square sheet not covered by the circular plates.

54   In the given figure, find the area of the shaded region.
[Use $\pi = 3.14$]

55   Find the area of the segment of a circle, if angle of the sector is 90° and the radius of the circle is 21 cm.

56   Find the area of the shaded region in figure, if AC = 24 cm, BC = 10 cm and O is the centre of the circle.
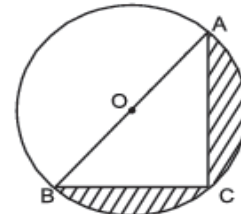

57   A square park has each side of 100 m. At each corner of the park, there is a flower bed in the form of a quadrant of radius 14 m as shown in the given figure. Find the area of the remaining part of the park. (use $\pi = \frac{22}{7}$)
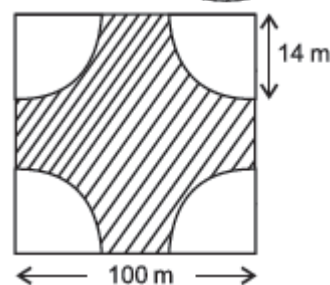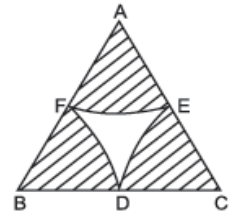

58   The perimeter of a sector of a circle of radius 5.2 cm is 16.4 cm. Find the area of the sector.

59   Find the area of the segment of a circle of radius 14 cm, if the length of the corresponding arc APB is 22 cm . Use $\pi = \frac{22}{7}$
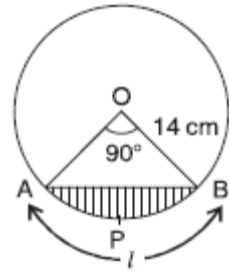
60   In figure, arcs are drawn by taking vertices A, B and C of an equilateral triangle of side 10 cm. To intersect the sides BC, CA and AB at their respective mid-points D, E and F. Find the area of the shaded region. [Use $\pi = 3.14$].

$$\text{ANS: } 39.25 \text{ cm}^2$$

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