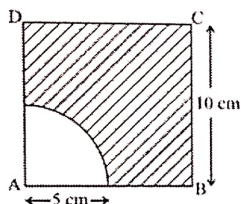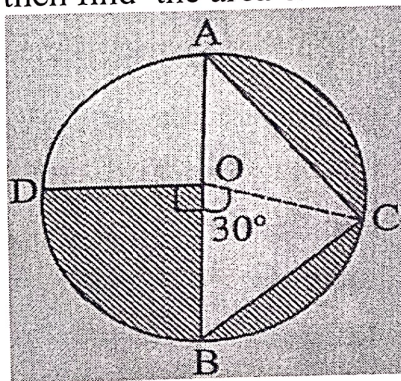1. The perimeter of a sector of a circle of radius 7 cm is 25 cm. Find the area of the sector.

2. In a circle of radius 35 cm, an arc subtends an angle of 90° at the centre. Find the area of the minor segment formed by the corresponding chord.

3. When degree measure of an angle subtended by an arc at the centre of a circle is 90°, the area of the corresponding sector of the circle of radius r, is :

(errors eraser)

4. If length of an arc of a circle subtending an angle q at the centre is numerically equal to the area of the sector formed by it, then the radius of the circle is :

(errors eraser)

5. In the given figure, ABCD is a square of side 10 cm. A sector of radius 5 cm is cut out from one of the corners. Find the area of the shaded region.

6. The perimeter of a sector of a circle of radius 6·5 cm is 31 cm. Find the area of the sector.

(errors eraser)

7. A chord of a circle of radius 21 cm subtends an angle of 60° at the centre. Find the area of the minor segment of the circle.

8. A chord of a circle of radius 14 cm subtends an angle of 90° at the centre. Find the area of the minor segment of the circle.

(errors eraser)

9. O is the centre of the circle. If AC = 28 cm, BC = 21 cm, ∠BOD = 90° and ∠BOC = 30° , then find the area of the shaded region given in the figure.
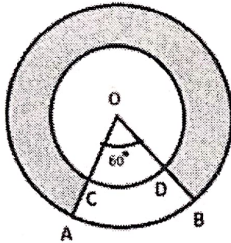

10. The difference of the areas of a minor sector of angle 120° and its corresponding major sector of a circle of radius 21 cm, is

(errors eraser)

11. A car has two wipers which do not overlap. Each wiper has a blade of length 21cm sweeping through an angle of 120°. Find the area cleaned at each sweep of the blades.

12. The difference of the areas of a minor sector of angle 120° and its corresponding major sector of a circle of radius 21cm, is

13. To warn ships for underwater rocks, a light house spreads a red coloured light over a sector of angle 80° to a distance of 16.5km. Find the area of the sea over which the ships are warned.
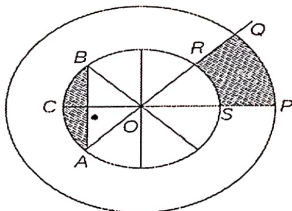
14. In the given figure, two concentric circles of radii 5 cm and 3 cm have their centre O. OAB is a sector of outer circle making an angle of 60° at the centre while OCD is the sector of smaller circle. The area of the shaded region is :

15. Observe the figure given above. The diameters of inner circle are equally placed. Given that OP = 21 cm, OS = 10 cm.
    Based on the above information, answer the following questions :
    (i) Find m∠ROS.
    (ii) Find the perimeter of sector OPQ.
    (iii) (a) Find the area of shaded region PQRS. OR
    (iv) (b) Find the area of shaded region ACB i.e. the segment ACB.

16. The region between a chord and either of the two arcs of a circle is called :

17. In a circle of radius 21 cm, if an arc subtends an angle of 60° at the centre of the circle, then the length of the arc is :

18. A chord of a circle of radius 10 cm subtends a right angle at the centre of the circle. Find the area of the corresponding (i) minor sector (ii) major sector. (Use p = 3·14)

19. Area of a sector of angle q (in degrees) of a circle with radius r is :

20. The area of the sector of a circle with radius 6 cm which subtends an angle of 60° at the centre of the circle is :

21. If the area of a sector of a circle is 1/8 of the area of the circle, then the central angle of the sector is :
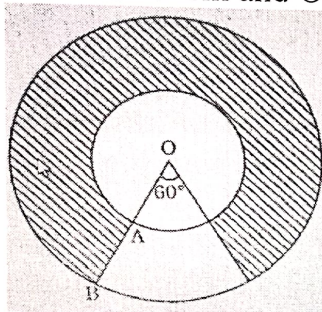
22. The length of an arc of a circle with radius 12 cm is 10p cm. The central angle subtended by this arc at the centre, is :

23. A horse is tied with a 14 m long rope at one corner of an equilateral triangular field having side 20 m. Find the area of the field where the horse cannot graze.
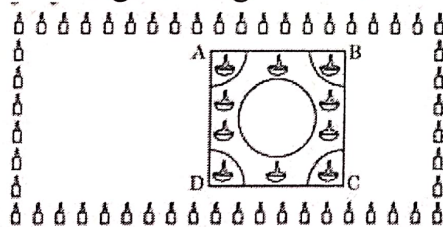
24. The length of the minute hand of a clock is 14 cm. Find the area swept by the minute hand between 8:00 am and 8:05 am

25. Area of a segment of a circle of radius r and central angle 90 is :

26. In the given figure, two concentric circles are shown, centred at O. The radii of the circles are OA = 3 cm and OB = 6 cm. Find perimeter of the shaded region.

27. Interschool Rangoli Competition was organized by one of the reputed schools of Odisha. The theme of the Rangoli Competition was Diwali celebrations where students were supposed to make mathematical designs. Students from various schools participated and made beautiful Rangoli designs. One such design is given below.

Rangoli is in the shape of a square marked as ABCD , side of the square being 40 cm . At each corner of a square, a quadrant of a circle of radius 10 cm is drawn (in which diyas are kept). Also, a circle of diameter 20 cm is drawn inside the square.
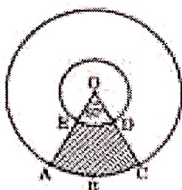   (i) What is the area of square ABCD ?
    (ii) Find the area of the circle.
    (iii) If the circle and the four quadrants are cut off from the square ABCD and removed, then find the area of remaining portion of square ABCD.
    OR (iii) Find the combined area of 4 quadrants and the circle, removed.

28. In the given figure, two concentric circles with centre O are shown. Radii of the circles are 2 cm and 5 cm respectively. Find the area of the shaded region. $\angle AOC = 60^0$
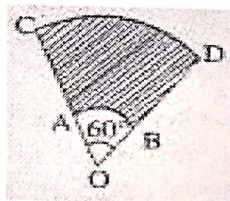
29. If the radius of a semi-circular protractor is 7cm, then its perimeter is :

30. The length of the arc of a circle of radius 14 cm which subtends an angle of 60^0 at the centre of the circle is :
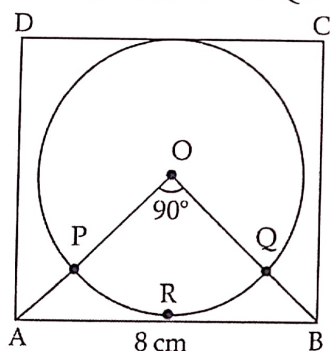
31. Find the area of the sector of a circle of radius 7 cm and of central angle 90^0. Also, find the area of corresponding major sector. Also, find length of minor arc .

32. If the perimeter and the area of a circle are numerically equal, then the radius of the circle is :

33. AB and CD are arcs of two concentric circles of radii 3·5 cm and 10·5 cm respectively and centred at O. Find the area of the shaded region if $\angle AOB = 60^0$. Also, find the length of arc CD.

34. For the inauguration of 'Earth day' week in a school, badges were given to volunteers. Organisers purchased these badges from an NGO, who made these badges in the form of a circle inscribed in a square of side 8 cm. O is the centre of the circle and $\angle AOB = 90^0$. find the area of the sector OPQRO and also find the area excluded to this.

35. People of a circular village Dharamkot want to construct a road nearest to it. The road cannot pass through the village. But the people want the road at a shortest distance from the centre of the village. Suppose the road starts from A which is outside the circular village (as shown in the figure) and touch the boundary of the circular village at B such that AB = 20 m. Also the distance of the point A from the centre O of the village is 25 m .
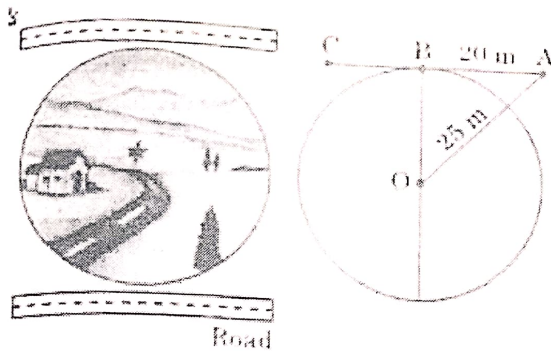
   Based on the above information, answer the following questions:
   (i) If B is the mid-point of AC , then find the distance AC .
   (ii) Find the shortest distance of the road from the centre of the village.
   (iii) Find the circumference of the village.
   OR (iii) Find the area of the village.

36. If the radii of two concentric circles are 15 m and 13 m, then the area of the circulating ring (in sq. m) is : *(errors · eraser)*

37. The length of an arc of a circle of radius 18 cm is 10 cm. Find the angle subtended by this arc at the centre of the circle.

38. The diameter of a wheel of a bus is 140 cm. Find the number of revolutions the wheel will make in one minute to keep the speed of the bus at 66 km/h.

(errors · eraser)

39. A race track is in the form of a ring enclosed by two concentric circles. The outer and inner circumferences are 616 m and 528 m respectively. Find the width and the area of the track.

40. The hour-hand of a clock is 6 cm long. The angle swept by it between 7:20 a.m. and 7:55 a.m. is : *(errors · eraser)*

41. A car has two wipers which do not overlap. Each wiper has a blade of length 21 cm sweeping through an angle of 120^0 . Find the total area cleaned at each sweep of the two blades.

42. In an annual day function of a school, the organizers wanted to give a cash prize along with a memento to their best students. Each memento is made as shown in the figure and its base ABCD is shown from the front side. The rate of silver plating is 20 per cm². *(errors · eraser)*
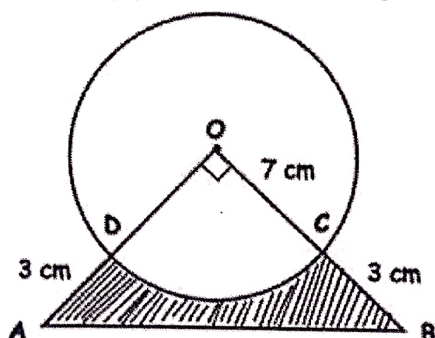   Based on the above, answer the following questions : *(errors · eraser)*
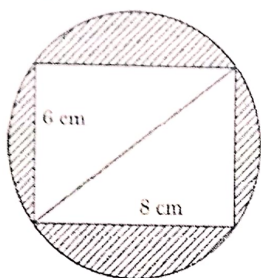   (i) What is the area of the quadrant ODCO ?
   (ii) find area of AOB .
   (iii) (a) What is the total cost of silver plating the shaded part ABCD ? OR
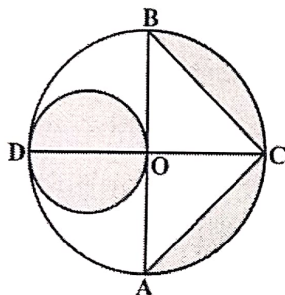   (b) What is the length of arc CD ? *(errors · eraser)*

43. Reeti prepares a Rakhi for her brother Ronit. The Rakhi consists of a rectangle of length 8 cm and breadth 6 cm inscribed in a circle as shown in the figure. Find the area of the shaded region. (errors . eraser)

44. A horse is tied to a peg at one corner of a square shaped grass field of side 15 m by means of a 5 m long rope. Find the area of that part of the field in which the horse can graze. Also, find the increase in grazing area if length of rope is increased to 10 m. (errors . eraser)

45. In the given figure, AB and CD are the diameters of a circle with centre O, perpendicular to each other. If OA = 7 cm , find the area of the shaded region.

46. The difference of the areas (in cm²) of two segments of a circle of radius 5 cm, formed by a chord subtending an angle of 90° at the centre is : (errors . eraser)

47. The area (in cm²) of a sector of a circle of radius 21 cm cut off by an arc of length 22 cm is :

48. The length of the minute-hand of a clock is 14 cm. Find the area swept by the minute-hand in 20 minutes.

49. If a bicycle wheel makes 5000 revolutions in moving 11 km, then the diameter of the wheel is : (errors . eraser)

50. A horse 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 lawn in which the horse can graze.

51. A horse, a cow and a goat are tied, each by ropes of length 14 m, at the corners A, B and C respectively, of a grassy triangular field ABC with sides of lengths 35 m, 40 m and 50 m. Find the total area of grass field that can be grazed by them. (errors . eraser)