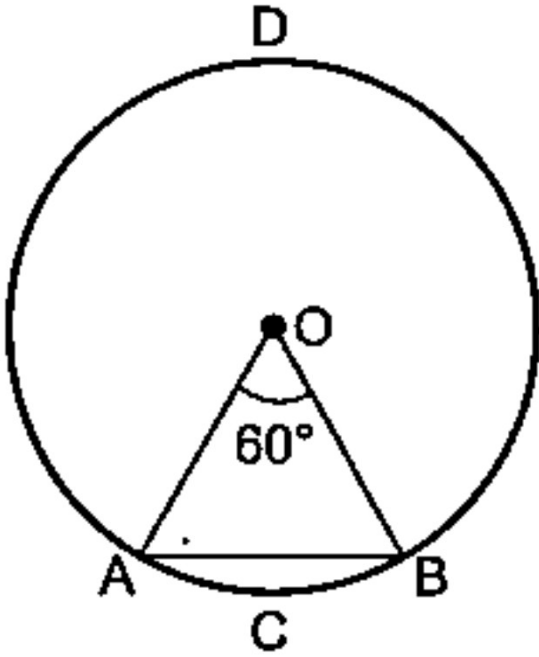# MATHS

BOOKS - KALYANI MATHS (ASSAMESE ENGLISH)

AREAS RELATED TO CIRCLES

Example

1. A chord of a circle of radius 15 cm, subtends an angle $60°$ at the centre. Find the area of

the sector. $[\pi = 3.14$ and $\sqrt{3} = 1.75]$.

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2. A chord of a circle of radius 15 cm, subtends an angle $60°$ at the centre. Find the area of

minor segment. $[\pi = 3.14$ and $\sqrt{3} = 1.75]$.

3. A chord of a circle of radius 15 cm, subtends an angle $60°$ at the centre. Find the area of minor segment. $[\pi = 3.14$ and $\sqrt{3} = 1.75]$.

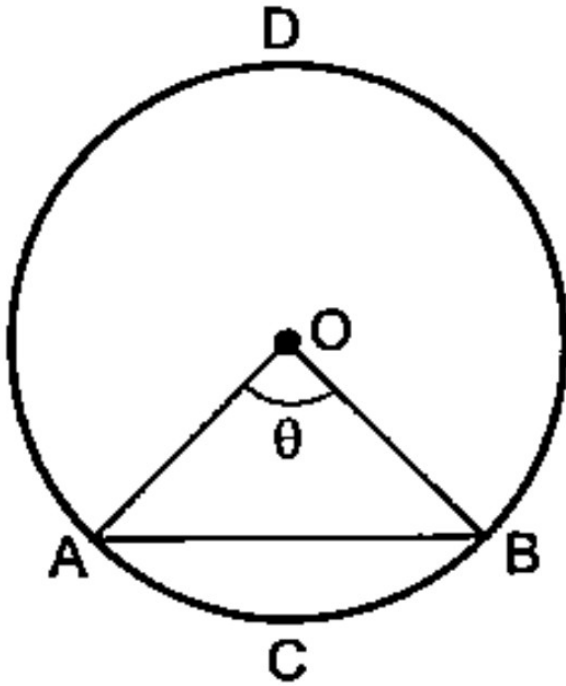**4.** The minute hand of a clock is of length 14 cm. Find the area of the face of clock swept by
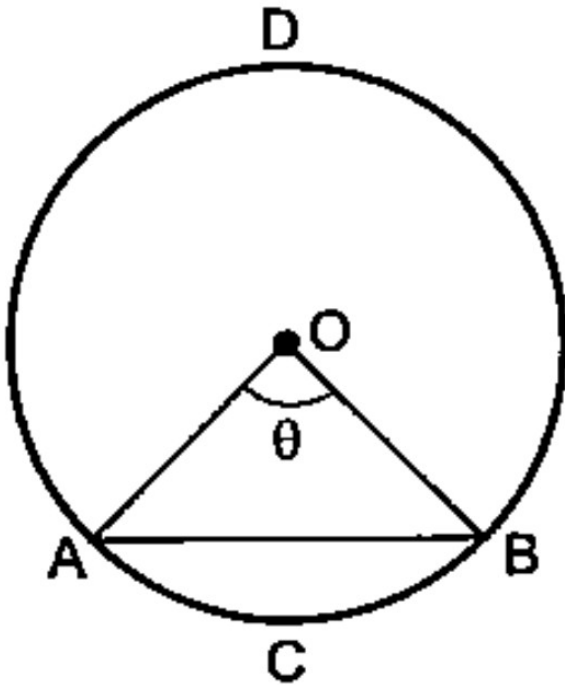
minute hand in 5 minutes. $(\pi = \dfrac{22}{7})$

5. The area of a sector upon a minor arc AB of

length 22 cm is 154 sq.cm. Find the angle
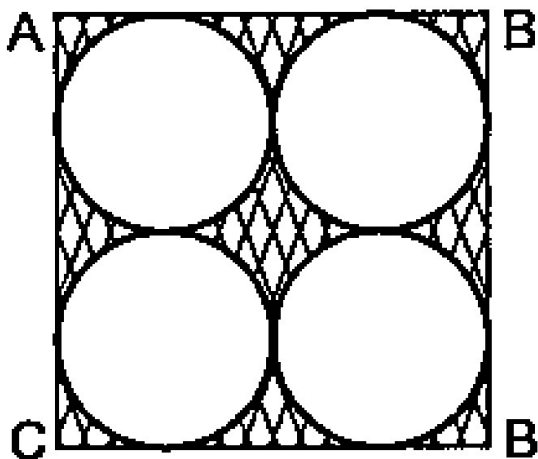
subtended at the centre. $(\pi = \dfrac{22}{7})$.

6. The area of a sector upon a minor arc AB of length 22 cm is 154 sq.cm. Find the angle subtended at the centre. $\left(\pi = \dfrac{22}{7}\right)$.

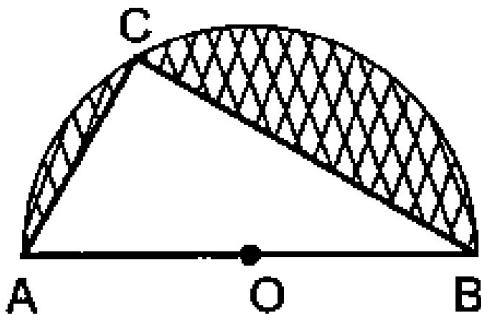**7.** Find the area of shaded region in the adjacent figure, where ABCD is a square of side $14cm.$ $(\pi = \dfrac{22}{7})$

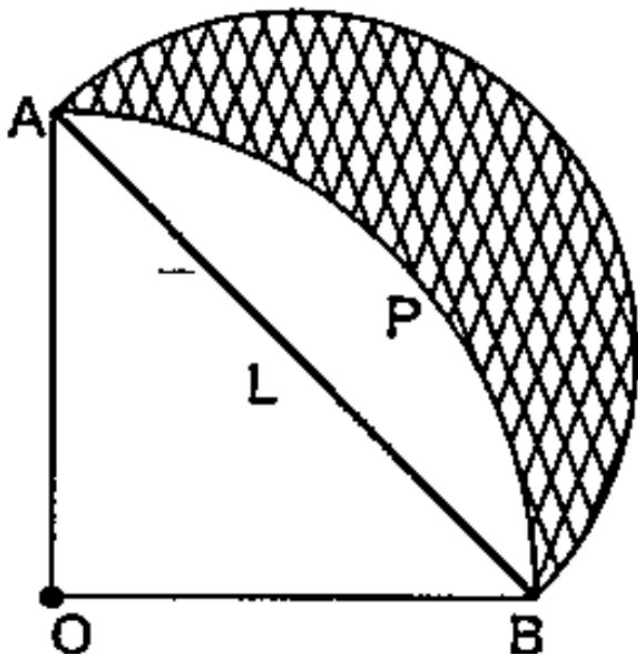**8.** In the given figure AB is a diameter of a semi-circular are AOBC and ABC is a right angled triangle where $\angle C = 90°$ and $AC = 12cm$, $BC = 16cm$. Find the area of the shaded portion. $(\pi = 3.14)$
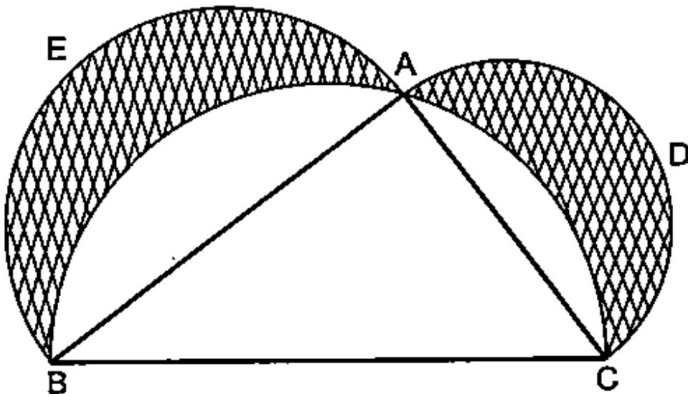
9. AOBPA is a quadrant of a circle of radius 14cm. A semi-circle with AB as diameter is drawn. Find the area of the shaded point. ($\pi = \dfrac{22}{7}$)

10. In the given figure ABC is a right angled triangle where $\angle A = 90°$. $AB = 21cm$ and $AC = 28cm$. Semicircles are described on AB, BC and CA as diameter. Find the area of the shaded portion. $(\pi = \dfrac{22}{7})$

11. Find the perimeter and area of shaded region where ADC, AEB and BFC are semi-circles on the diameter AC, AB and BC respectively. $(\pi = \dfrac{22}{7})$
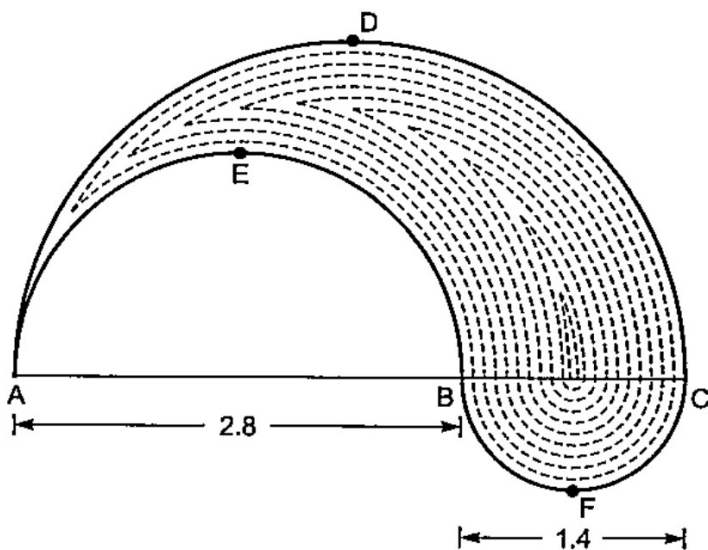
12. In the figure APB and AQB are semi-circles and $AO = BO$. If the perimeter of the figure is $40cm$, find the area of the shaded region.
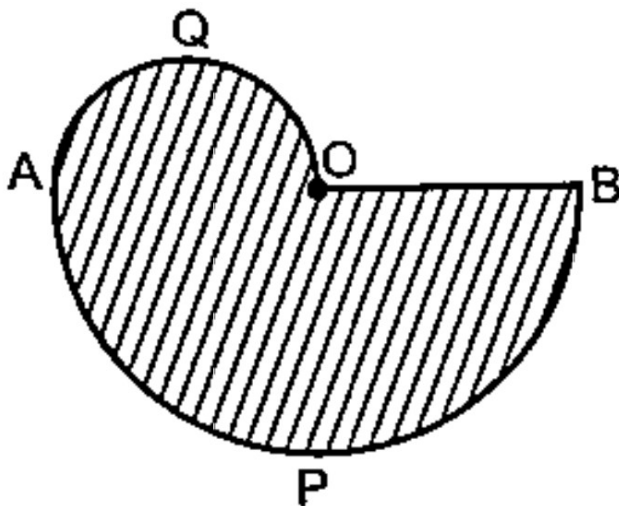
13. In the figure ABC is a right angled triangle, right angled at A. Find the shaded region if $AB = 6cm$, $BC = 10cm$ and O is the centre of the in circle of ABC. $(\pi = 3.14)$
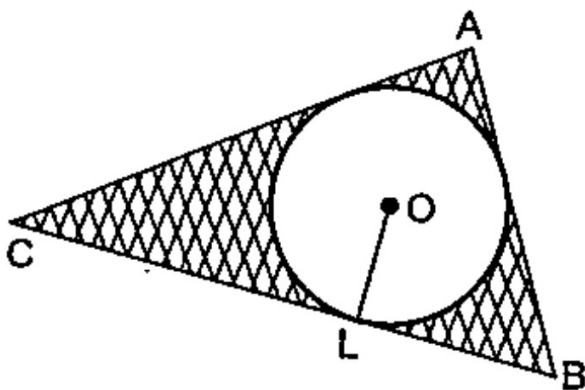
14. The inside perimeter of a running track shown in the figure is $400m$. The length of each of the straight portion is $90m$ and the ends are semi-circles. If the track is $14m$ wide everywhere, find the length of outer boundary of the track. $(\pi = \dfrac{22}{7})$

90 m

14 m
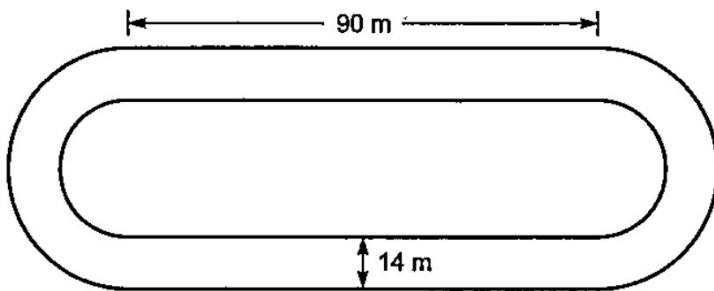
1. The inner circumference of a circular track is 220 m. The track is 7 m everywhere. Calculate the cost of putting a fence along the outer boundary at rupees 20per metre.

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2. The radius of two circles are in the ratio $3:4$ and sum of their areas is equal to the area of a

circle whose radius is 35cm. Find the ratio of the diameters.

3. The radius of two circles are in the ratio$3:4$ and sum of their areas is equal to the area of a circle whose radius is 35cm. Find the ratio of the circumference.

4. The radius of two circles are in the ratio $3:4$ and sum of their areas is equal to the area of a circle whose radius is 35cm. Find the ratio of the areas.

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5. The radius of two circles are in the ratio $3:4$ and sum of their areas is equal to the area of a circle whose radius is 35cm. Find the radius of these two circles.

6. How many times will the wheel of a car rotate in a journey of 24.2km if the diameter of the wheel is 77 cm.

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7. A bicycle wheel makes $5,000$ revolution in moving 11km. Find the diameter of the wheel.
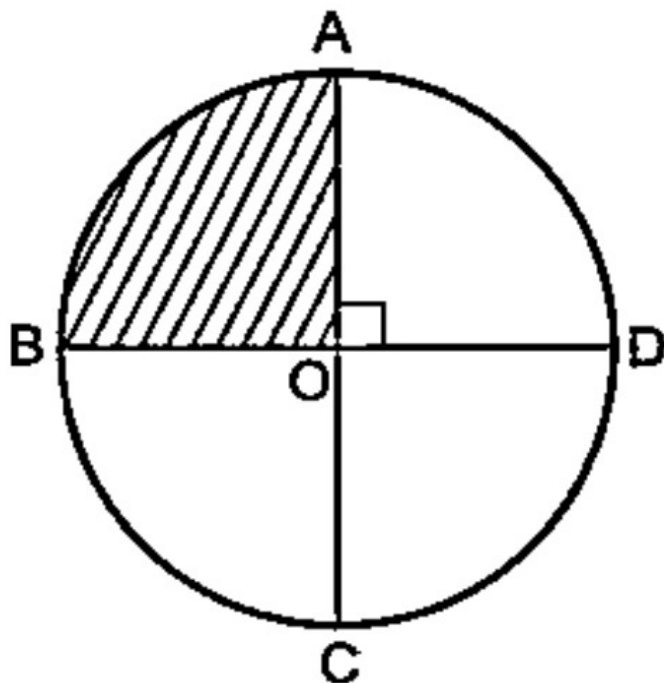
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8. The wheels of a car of diameter 80cm each. How many complete revolutions does each wheel make in 10 minutes when the car is travelling at a speed of 66 km per hour?

9. AC and BD are two perpendicular diameters of a circle ABCD. If $AC = 16$ cm calculate the

area and the perimeter of the shaded part.

10. A chord of a circle of radius 10cm substends a right angle at the centre O. Find the areas of the sector. ($\pi = 3.14$).

11. A chord of a circle of radius 10cm substends a right angle at the centre O. Find the areas of the minor segment. ($\pi = 3.14$).

12. A chord of a circle of radius 10cm substends a right angle at the centre O. Find the areas of major segment. ($\pi = 3.14$).

13. Find the area of the sector of a circle with radius 5cm and angle $30°$. Also find the area of the corresponding major sector ($\pi = 3.14$).
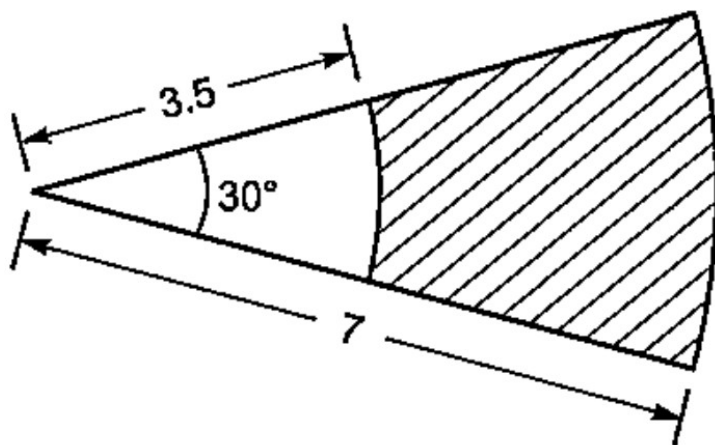
14. Find the area of the segment of a circle of radius 14cm if the length of the corresponding arc APB is 22 cm.[use $\pi = \dfrac{22}{7}$]

15. In given figure sectors of two concentric circles of radius 7 cm and 3.5 cm are shown.

Find the area of the shaded region.

16. The length of minute hand of a clock is 14 cm. Find the area swept by the minute hand in 10 minutes.

17. The minute hand of a clock is 12cm long. Find the area of the face of the clock described by the minute hand in 35 minutes.

18. The minute hand of a clock is $\sqrt{21}$cm long . Find the area described by the minute hand between 7 am and 7.05 am.

19. A horse is tied to a peg at one corner of a square shaped grass field of side 15m by means of a 5m long rope. Find the area of that part of the field in which the horse can graze and the increase in the grazing area if the rope were 10m long instead of 5m.
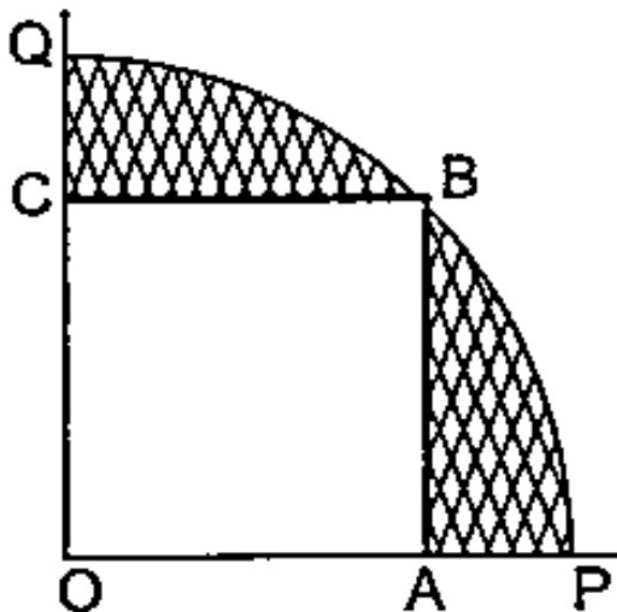
20. A horse is tied to one corner of a field which is if the shape of an equilateral triangle of side 12 m . If the length of the rope is 7m, find the area of the field which the horse cannot graze. ($\pi = 3.14, \sqrt{3} = 1.732$)

21. A square OABC is inscribed in a quadrant OPBQ of a circle. If $OA = 14$ cm, find the area

of the shaded region.

22. The area of a sector of a circle of radius 17.5 cm is $192.5cm^2$. Find the central angle of the sector.

23. The area of a sector upon a mino are AB of length 22 is 132 sq.cm. Find the angle substended at the centre.

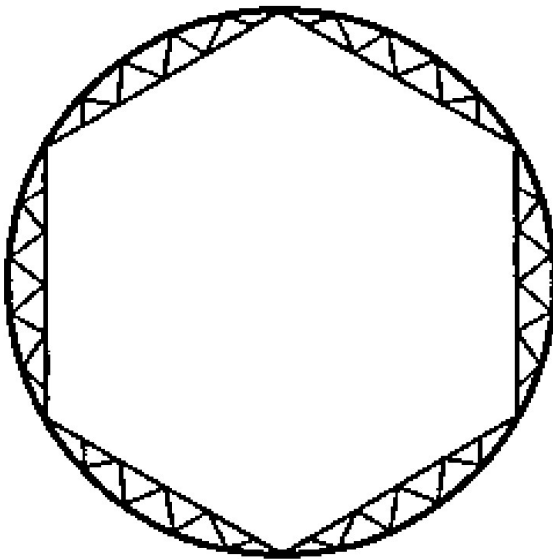**24.** A sector of a circle has an are length 22 cm. The angle at the centre is $90°$. Find the radius of the circle.

25. The perimeter of a sector of a circle of radius 5.6 is 27.2 cm. Find the area of the sector.

26. A round table cover has six equal designs as shown in the figure. If the radius of the cover is $28cm$. Find the cost making the design at the rate of 3.50 per cm^2.
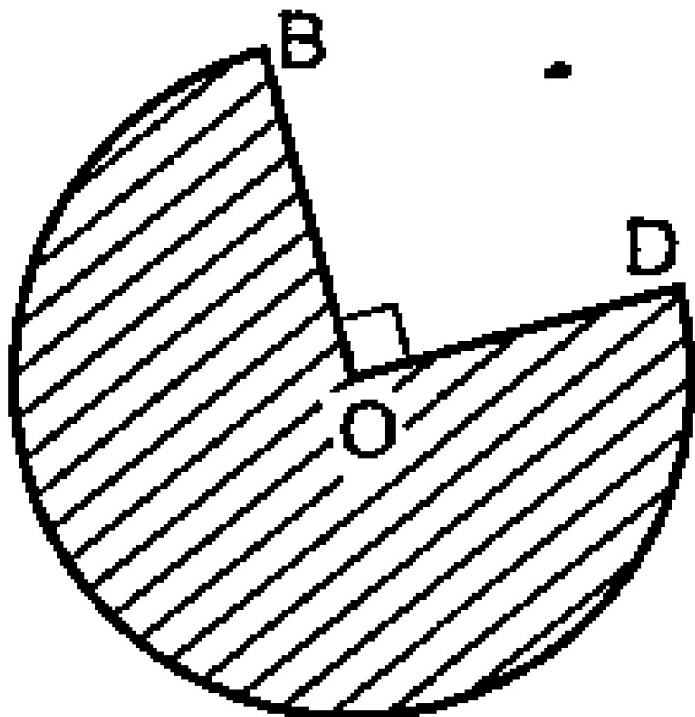
27. A car has two wipes which do not overlap.Each wiper has a blade of length 25 cm seeping through an angle of $115°$.Find the total area cleaned at each sweep of the blades.

28. In the figure BMD is a segment of a circle with centre O and $\angle BOD = 90°$, $BO = OD = 40cm.$ Find the area and

perimeter of the shaded region. (Use $\pi = 3.14$

)

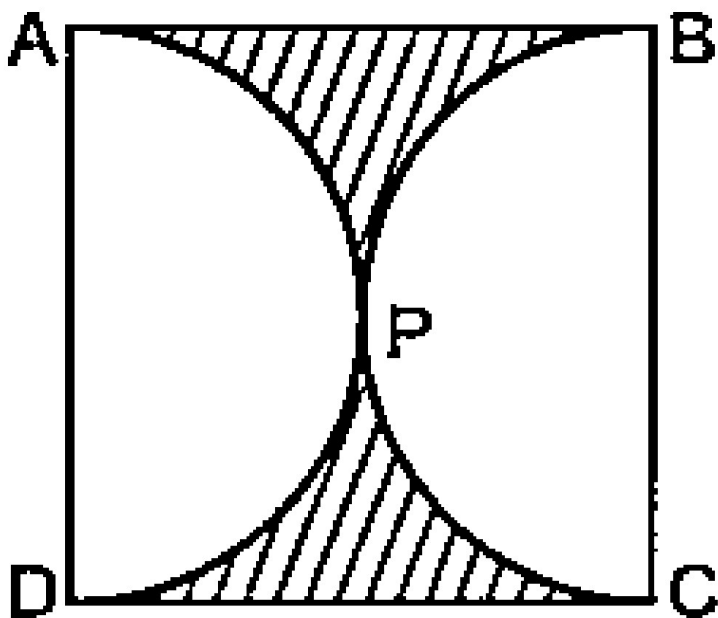**29.** Find the area of a circle that can be inscribed in a square of side $14cm$.

30. A circular plot has a perimeter of $660m$. A plot in the shape of a square havinng its vertices on the circumference of the field. Calculate the area of the square field.
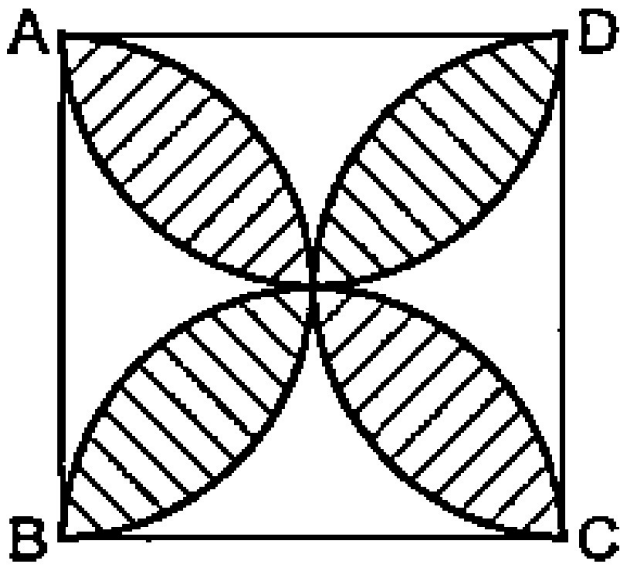
31. In the given figure ABCD is a square whose each side is $14cm$. APD and BPC are semi-circles. Find the area of the shaded region.

32. Find the area of the shaded region in the given figure, where ABCD is a square of side $10cm$ and semi-circles are drawn with each side of the square as diameter.

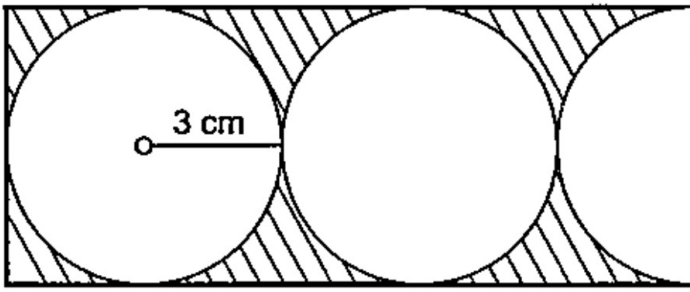**33.** A square park has each side equal to $144m$. At each corner of the park there is a flower bed in the form of a quadrant of radius $28m$. Find the area of the reamining park.
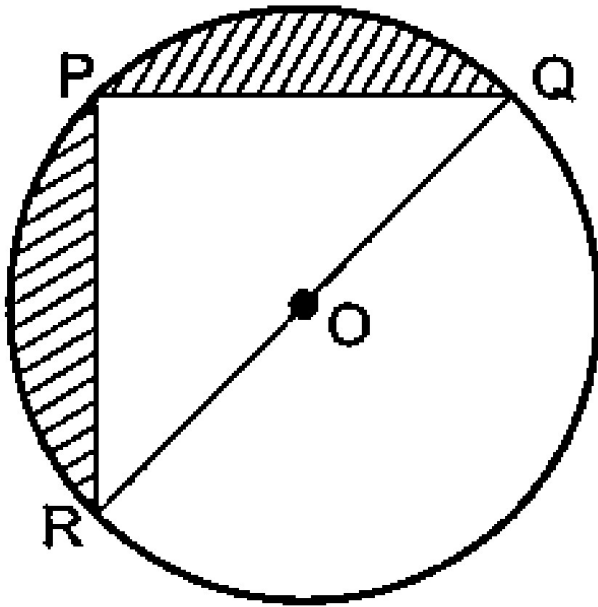
34. Find the area of the shaded portion within the rectangle.

3 cm

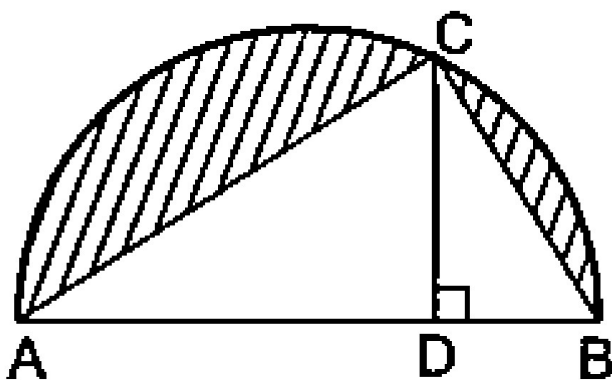**35.** Find the area of the shaded region in the given figure. If $PR = 24cm$, $PQ = 7cm$ and O

is the centre of the circle.

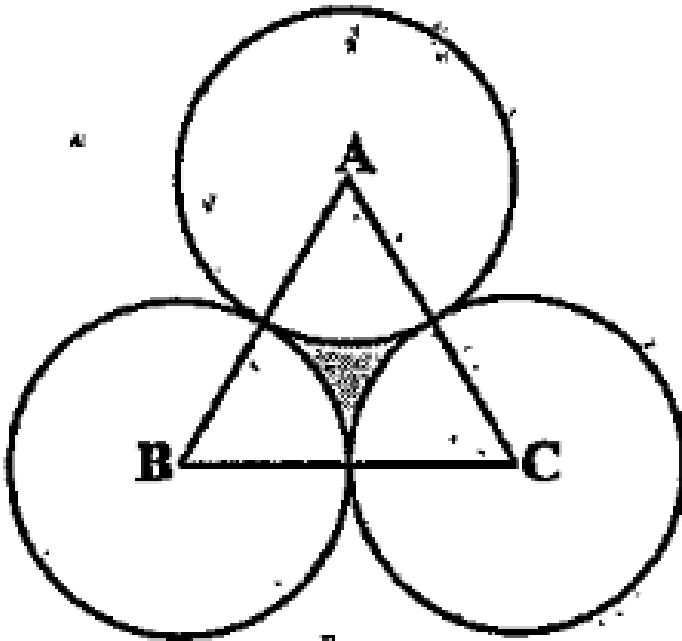**36.** Area of $\triangle ABC = 70cm^2$ and $CD = 5cm$. Find the area of the shaded region.

37. The area of an equilateral triangle ABC is $17320.5cm^2$.With each vertex of the triangle as center,a circle is drawn with radius equal to

half the length of the side of the triangle(seeFig.12.28).Find the area of the shaded region.(use $\pi = 3.14$ and $\sqrt{3} = 1.73205$)

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38. In figure 12 PS is a diameter of a circle whose radius is $6cm$. Two pint Q and R are taken on PS such that PQ= QR = RS . Two Semi-circles are drawn with PQ and QS as their respective diameters as shown in the figure. find the perimeter and the area of the shaded

region shown in figure. (Take $\pi = 3.14$)
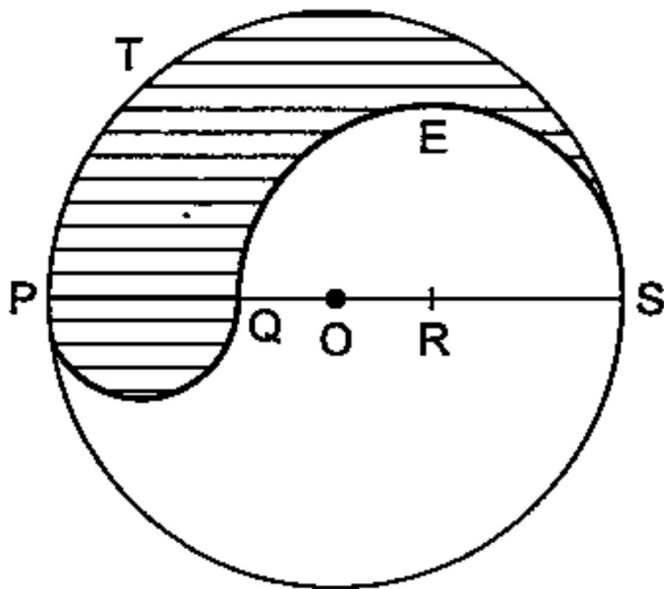
39. In the given figure PQRS is a diameter of a circle $6cm$. The length PQ, QR and RS are

equal. Semi-circle are drawn on PQ and RS as diameter. If $PS = 12cm$, find the area of the shaded region. (Take $\pi = 3.14$)
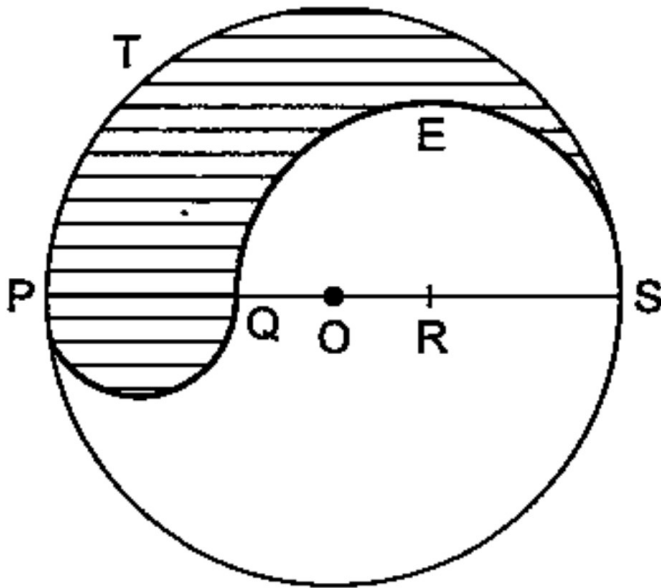
40. Show that the area of the circumcircle of any square is twice the area of its in circle.

41. A path of $7m$ width runs around a circular park whose radius is $18m$. Find the area of the path.

42. In the adjoining figure the boundary of the shaded region consist of four semi-circular are, two smallest being equal. If diameter of the largest is $14cm$ and that of the smallest is $3.5cm$. Calculate the area of the shaded region. (Use $\pi = \dfrac{22}{7}$)
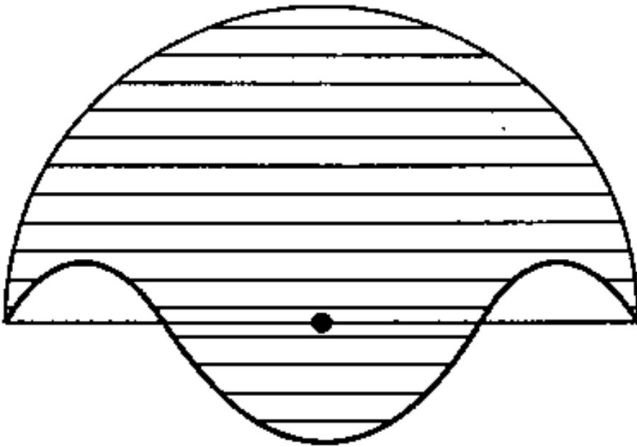
43. The area of incircle of an equilateral triangle is $154cm^2$ then the perimeter of the triangle is

44. The inside perimeter of a running track as shown in the adjoining figure is $340m$. The length of each straight portion is $60m$ and the curved portion are semi-circles. If the track is

$7m$ wide, find area of te track. (Use $\pi = \dfrac{22}{7}$)

|← ——— 60 m ———— →|
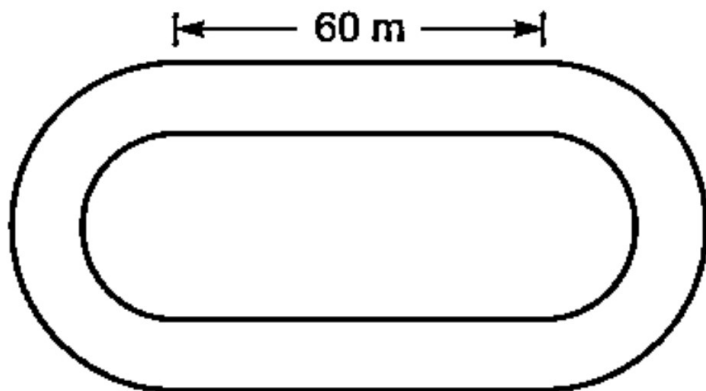
45. The inside perimeter of a running track as shown in the adjoining figure is $340m$. The length of each straight portion is $60m$ and the

curved portion are semi-circles. If the track is

$7m$ wide, find the outer perimeter of the track.

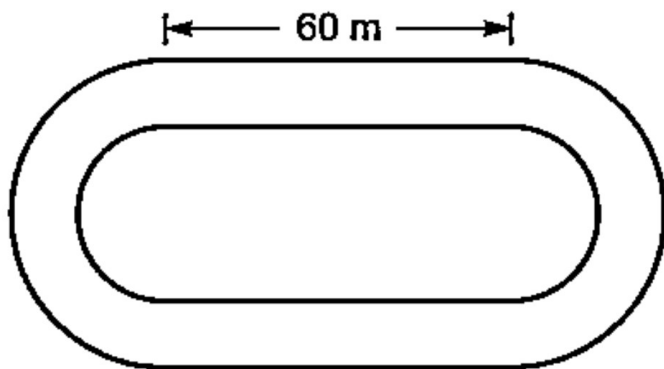(Use $\pi = \dfrac{22}{7}$)

|←———— 60 m ————→|

46. A chord of a circle of radius 14cm

substends a right angle at the centre. Find the

area of minor sector .

47. If the area of the sector is $\dfrac{5}{8}$ times, the area of the circle, find the central angle formed by the sector.

48. If OABC is a quadrant of a circle whose centre is O and radius r, find the perimeter of

the circle.

49. What is the angle substended at the centre of a circle of radius 4cm by an arc of length 2π

50. If arc length of a sector is l and radius of the circle is r. Write the relation among area of

the sector A, radius (r) and arc length (l).

51. Area of the circle is _____ .

52. The perimeter of a circle is known as _____.

53. Area of an arc of a sector angle θ is _____.

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54. If the area of a circle and the circumference of it is numerically equal, the diameter of the circle is _____.

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55. If the altitude of an equilateral triangle be h and the circle inscribed in it of radius r, the altitude h is _____ times that of r.

56. The ratio of areas of two circle is $4 : 1$, then the ratio of their radius is

  A. $4 : 1$

  B. $2 : 1$

C. $1:2$

D. $1:4$

Answer:

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57. Area of a quadrant of circle whose circumference is $22cm$.

A. $2.5cm^2$

B. $17.5cm^2$

C. $9.625cm^2$

D. $4.5cm^2$

Answer:

58. Area of a sector of angle $p°$ of a circle with radius R is

A. $\dfrac{P}{180} \times 2\pi R$

B. $\dfrac{P}{360} \times \pi R^2$

C. $\dfrac{P}{100} \times 2\pi R$

D. $\dfrac{P}{100} \times 2\pi R^2$

Answer:

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59. A wheel has diameter $84cm$. Then the nuumber of complete revolutions made to cover 792 meter is

A. 200

B. 300

C. 250

D. 350

Answer:

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60. The area of a circle that can be inscribed in

a square of side $6cm$ is

A. $36\pi cm^2$

B. $20\pi cm^2$

C. $9\pi cm^2$

D. $15\pi cm^2$

Answer:

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