MATHS

BOOKS - SUPER COMPANION MADE EASY

AREAS RELATED TO CIRCLES

Exercise 5 1

1. The radii of two circles are 19 cm and 9 respectively. Find the radius of the circle which

has circumference equal to the sum of the circumference of the two circles.

2. The radii of two circles are 8 cm and 6 cm respectively. Find the radius of the circle having area equal to the sum of the areas of the two circles.

3. Fig. 5.3 depicts an archery target marked with its five scoring regions from the centre outwards as Gold, Red, Blue, Black and White. The diameter of the region represent Gold scor is 21 cm and each of the other bands is 10.5 cm wide. Find the area of each of the five scoring regions.

4. The wheels of a car are of diameter 80 cmj each. How many complete revolutions does each wheel make in 10 minutes when the car is traveling at a speed of 66 km per hour ?

5. Tick the correct answer in the following and justify your choice : If the perimeter and the area of a circle are numerically equal, then the

area of a circle are numerically equal, then the radius of the circle is

(A) 2 units (B) π units (C) 4 units (D) 7 units

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Exercise 5 2

1. Find the area of a sector of a circle with radius 6 cm if angle of the sector is $60°$. use $\pi = \dfrac{22}{7}$

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2. Find the area of quadrant of a circle whose circumference is 22 cm.

3. The length of the minute hand of a clock is 14 cm. Find tdhe area swept by the minute hand in 5 minutes.

4. A chord of a circle of radius 10 cm subtends a right angle at the centre. Find the area of the corresponding :

minor segment

5. A chord of a circle of radius 10 cm subtends a right angle at the centre. Find the area of the corresponding :

major sector. (Use $\pi = 3.14$).

6. In a circle of radius 21 cm, an arc subtends an angle of $60°$ at the centre. Find the length of the arc

7. In a circle of radius 21 cm, an arc subtends an angle of $60°$ at the centre. Find area of the sector formed by the arc.

8. In a circle of radius 21 cm, an are subtends an angle of $60°$ at the centre. Find :

area of the segment formed by the corresponding chord.

9. A chord of a circle of radius 15 cm subtends an angle of $60°$ at the centre. Find the areas of the corresponding minor and mojor

segments of the circle. $\left(\text{Use } \pi = 3.14 \text{ and } \sqrt{3} = 1.73 \right).$

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10. A chord of a circle of radius 12cm subtends an angle of $120°$ at the centre. Find the area of the corresponding segments of the circle.
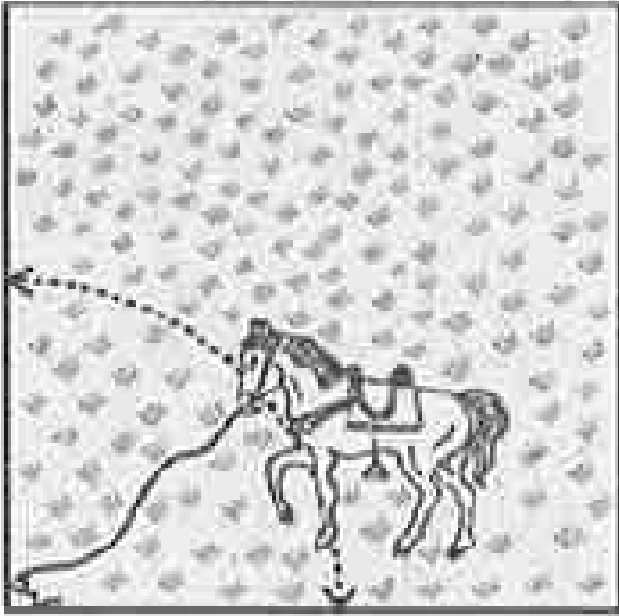
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11. A horse is tied to a peg at one corner of a square shaped grass field of side 15 m by means of a 5 m long rope (see 5.11). Find the area of that part of the field in which the horse can graze.
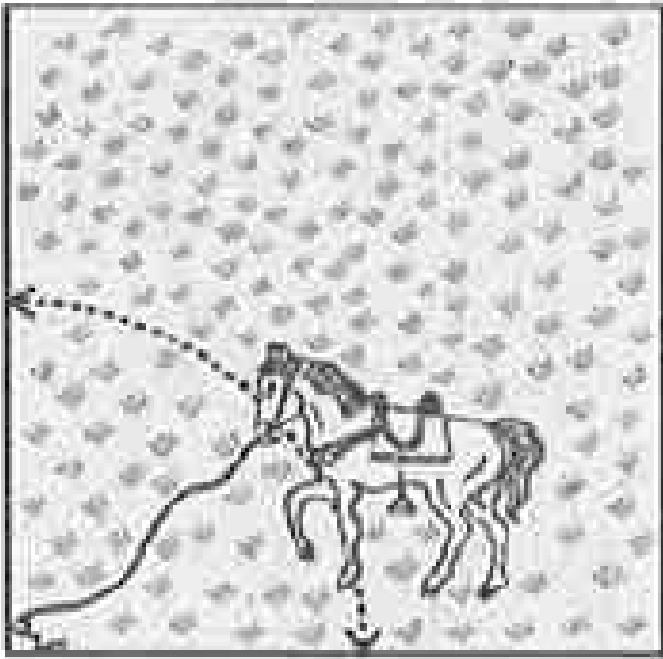
12. A horse is tied to a peg at one corner of a square shaped grass field of side 15 m by means of a 5 m long rope (see 5.11). Find the of the in the grazing area if the rope were
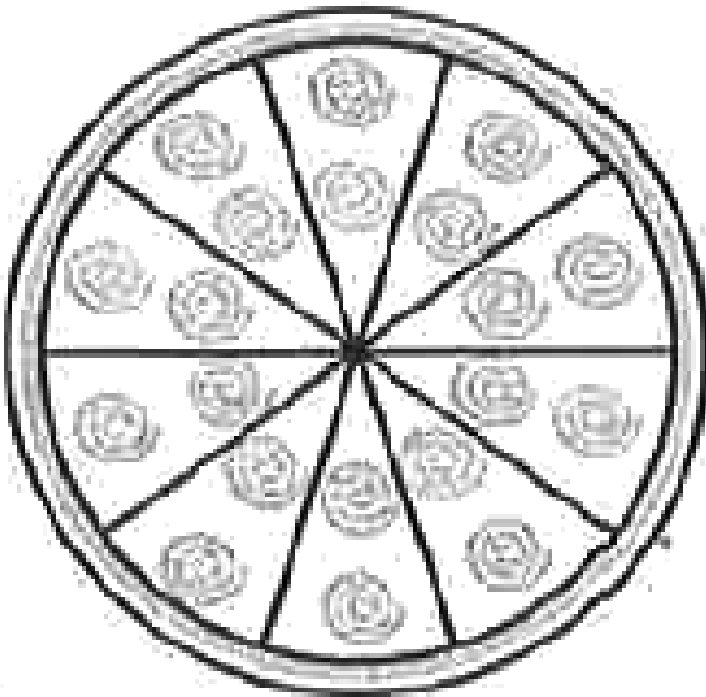
10 m long instead of 5 m. (Use $\pi = 3.14$).

13. A brooch is made with silver wire in the form of a circle with diameter 35 mm. The wire

is also used in making 5 diameters which divided the circle into 10 equal sectors as shown in Fig. 5.12. Find :
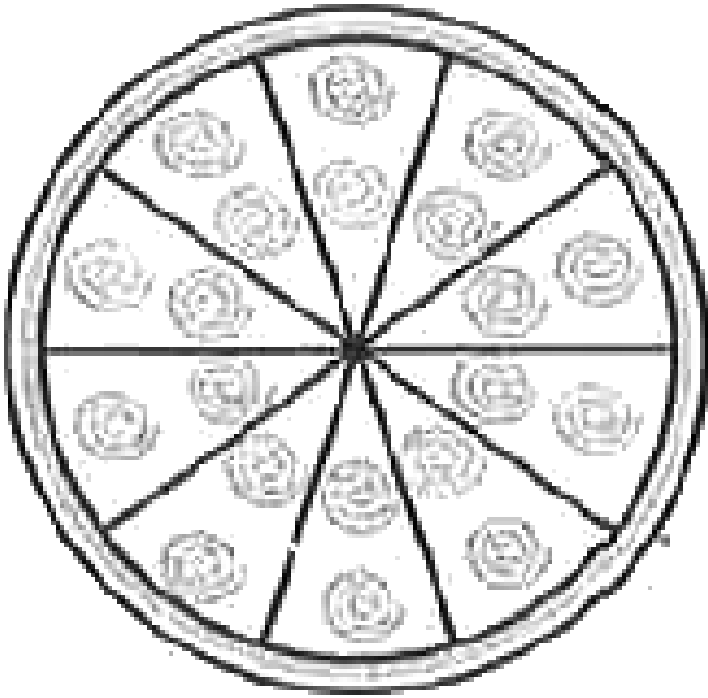
the total length of the silver wire required.

14. A brooch is made with silver wire in the form of a circle with diameter 35 mm. The wire is also used in making 5 diameters which divided the circle into 10 equal sectors as shown in Fig. 5.12. Find : area of each sector of
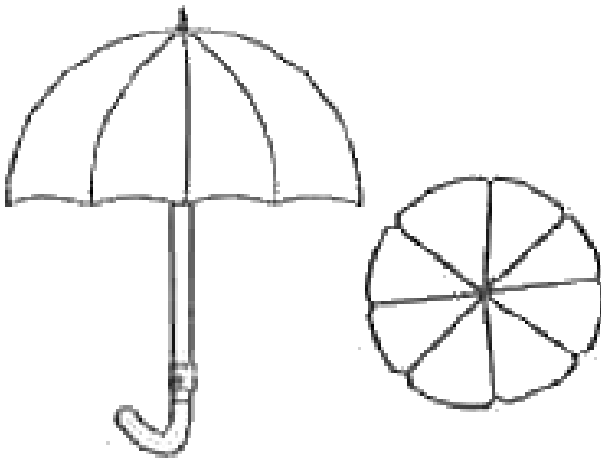
the brooch

15. An umbrella has 8 ribs which are equally spaced. Assuming umbrella to be a flat circle of radius 45 cm, find the area between the two consecutive ribs of the umbrella.

16. An car has two wippers do not overlap. Each wiper has a blade of length 25 cm sweeping through an angle of $115°$. Find the total area cleaned at each sweep of the blades.

17. To warn ships for underwater rocks, a lighthouse spreads a red coloured light over a sector of angle $80°$ to a distance of 16.5 km.
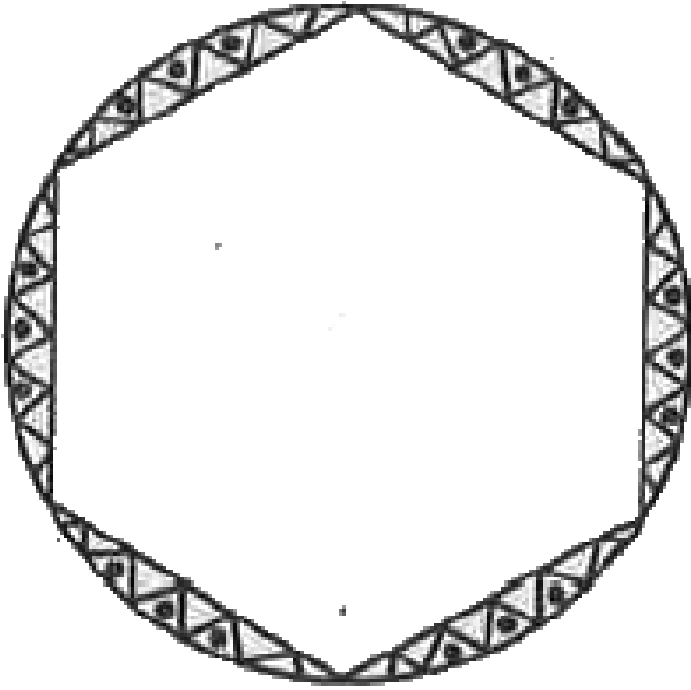
Find the area of the sea over which the ships
are warned. (Use $\pi = 3.14$).

18. A round table cover has six equa designs as
shown in Fig. 5.14. If the radius of the cover is
28 cm, find the cost of making the desingns at
the   rate   of   Rs   0.35   per cm^2.

(Use $\pi = 3.14$).

19. Area of a sector of angle p (in degrees) of a circle with radius R is

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

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

C. $\dfrac{P}{360} \times 2\pi R$
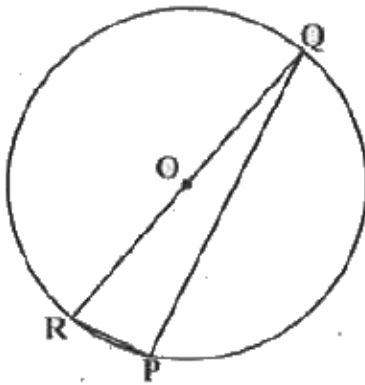
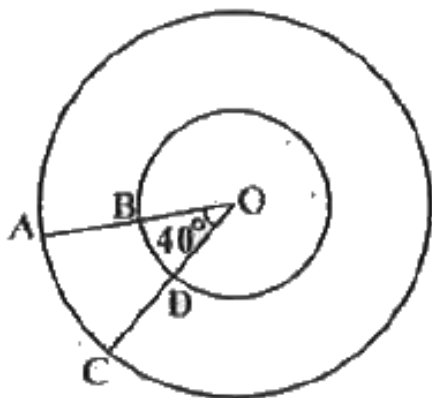D. $\dfrac{P}{720} \times 2\pi R^2$

Answer:

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1. Unless stated otherwise, use $\pi = \dfrac{22}{7}$.

Find the area of the shaded region in Fig. 5.19, if PQ = 24 cm, PR = 7 cm and O is the centre of the circle.

2. Find the area of the shaded region in Fig., if radii of the two conecntric circles with centrre O are 7 cm and 14 cm respectively and $\angle AOC = 40°$.

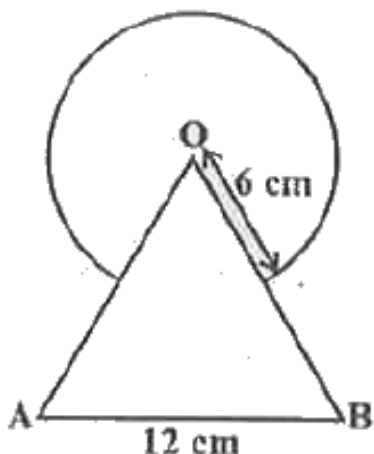**3.** Find the area of the shaded region in Fig, if ABCD is a square of side 14 cm and APD and BPC are semicircles.

4. Find the area of the shaded region in Fig. 5.22, where a circular arc of radius 6 cm has been drawn with vertex O of an equilateral
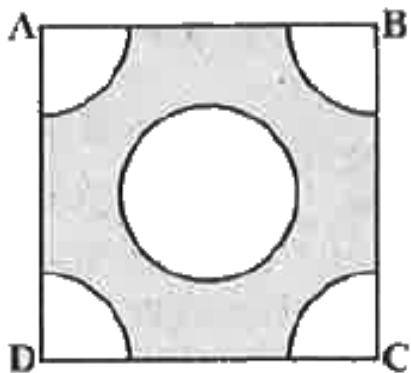
triangle OAB of side 12 cm as centre.

5. 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 Fig. 5.23. Find the area of the remaining
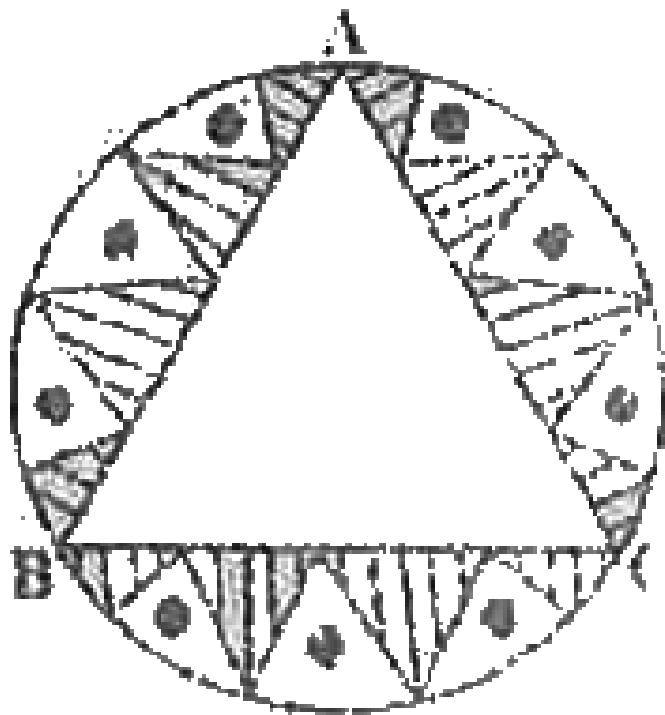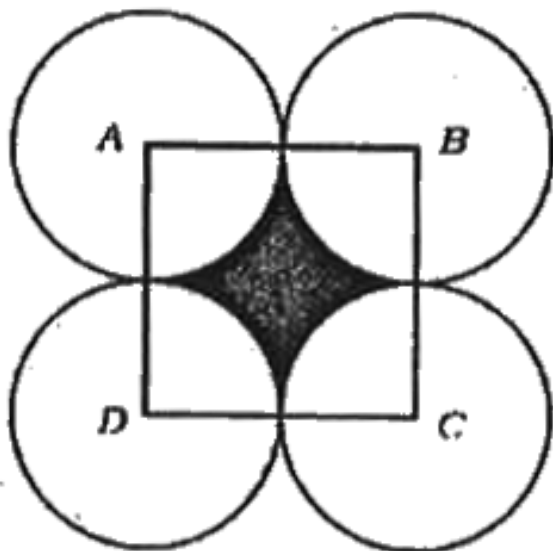
portion of the square.

6. In a circular table cover of radius 32 cm, a design is fromed leaving an equilateral triangle ABC in the middle as shown in Fig.

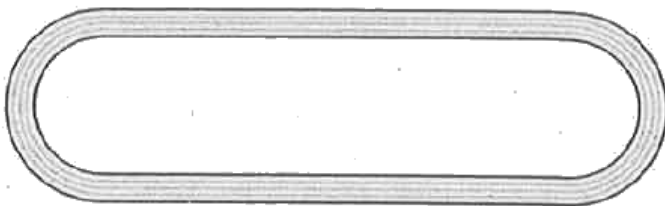## 5.24. Find the area of the design.

7. In the figure , ABCD is a square of side 14 cm. A, B, C and D are the centres of four congruent circle such that each circle touches externally two of the remaining three circles . Find the area of the shaded reginon.

8. Fig. 5.26 depicts a racing whose left and right ends are semicircular. The distance between the two inner parallel line segments is 60 m and they are each 106 m long. If the track is 10 m wide, find :

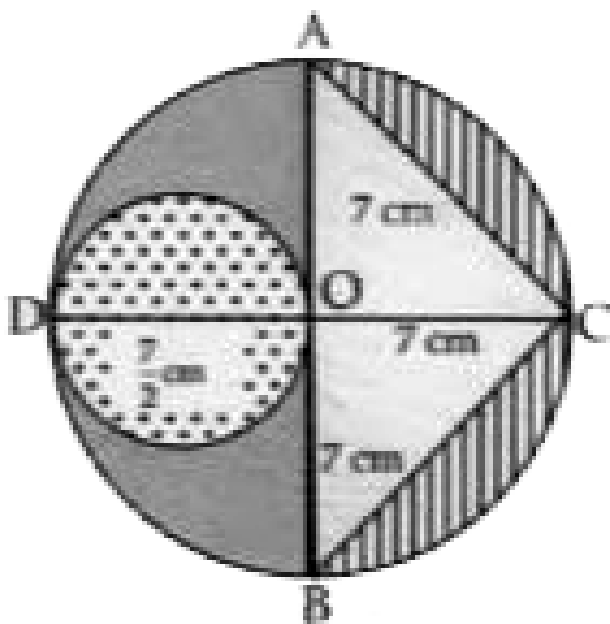the distance around the track along its inner edge

9. Fig. 5.26 depicts a racing whose left and right ends are semicircular. The distance between the two inner parallel line segments is 60 m and they are each 106 m long. If the track is 10 m wide, find :

the area of the track.

10. AB and CD are two diameters of a circle perpendicular to each other and OD is the diameter of the smaller circle. If OA = 7 cm, find the area of the shaded region.

11. The area of an equilateral triangle ABC is $17320.5cm^2$. With each vertex of the trianlge as centre, a circle is drawn with radius equal to half the length of the side of the triangle. Find the area of the shaded region .
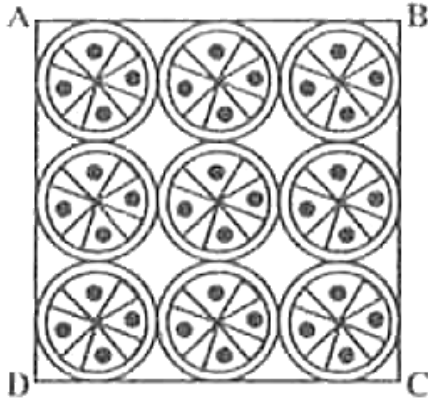
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12. On a square handkerchief, nine circular desins each of radius 7 cm are made (see Fig. 5.29). Find the area of the remaining portion

of the handkerchief.

13. In Fig, OACB is a quadrant of a circle with centre O and radius 3.5 cm. If OD = 2 cm, find the area of the

quadrant OACB

14. In Fig, OACB is a quadrant of a circle with centre O and radius 3.5 cm. If OD = 2 cm, find the area of the shaded region.

15. In Fig, a square OABC is incribed in a quadrant OPBQ. If OA = 20 cm, find the area of the shaded region $(\text{Use}\pi = 3.14)$

16. AB and CD are respectively arcs of two concentric circle of 21 cm and 7 cm radii and centre O (see Fig). If $\angle AOB = 30°$, find the area of the shaded region.

17. In the fig.ABC is a quadrant of a circle of radius 14cm and a semicircle is drawn with BC
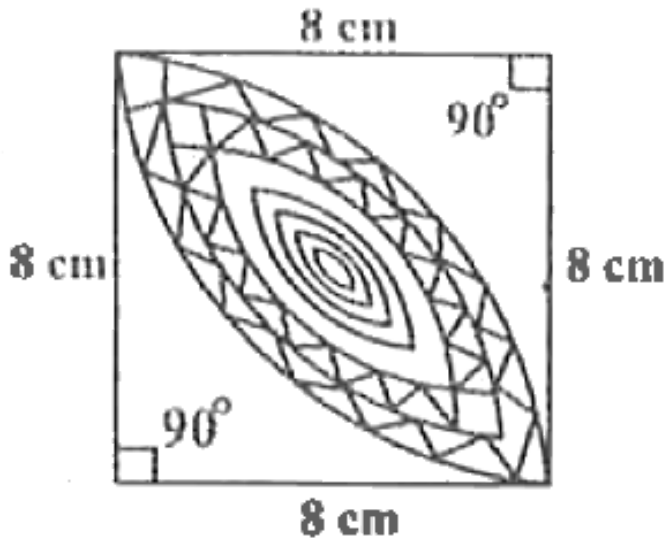
as a diameter. Find the area of the shaded region.

18. Calculate the area of the designed region in Fig. 5.34 common between the two

quadrants of circle of radius 8 cm each.

8 cm

90°

8 cm

8 cm

90°

8 cm