



Areas Related to Circles Ex 15.2 Q13

Answer :

We know that the area A of a sector of circle of radius r and arc length l is given by

$$A = \frac{1}{2}lr$$

Let OAB is the given sector. Then,

$$\text{Perimeter of sector } OAB = 27.2 \text{ cm}$$

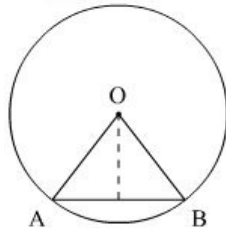
$$OA + OB + \text{arc } AB = 27.2 \text{ cm}$$

$$5.6 + 5.6 + \text{arc } AB = 27.2 \text{ cm}$$

$$11.2 + \text{arc } AB = 27.2 \text{ cm}$$

$$\text{arc } AB = 16 \text{ cm}$$

So, $l = 16 \text{ cm}$



Now substituting the value of r and l in above formula,

$$\begin{aligned} A &= \frac{1}{2} \times 16 \times 5.6 \\ &= \boxed{44.8 \text{ cm}^2} \end{aligned}$$

Areas Related to Circles Ex 15.2 Q14

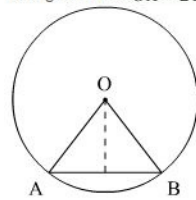
Answer :

We know that the arc length l and area A of a sector of circle at an angle θ of radius r is given by

$$l = \frac{\theta}{360^\circ} \times 2\pi r \text{ and area } A = \frac{\theta}{360^\circ} \pi r^2.$$

Let OAB is the given sector.

It is given that $OA = 21 \text{ cm}$ and angle $\angle AOB = 120^\circ$.



Now using the value of r and θ , we will find the value of l and A ,

Arc length,

$$\begin{aligned} l &= \frac{120^\circ}{360^\circ} \times 2 \times \frac{22}{7} \times 21 \text{ cm} \\ &= \boxed{44 \text{ cm}} \end{aligned}$$

Area of sector,

$$\begin{aligned} A &= \frac{120^\circ}{360^\circ} \times \frac{22}{7} \times 21 \times 21 \\ &= \boxed{462 \text{ cm}^2} \end{aligned}$$

Areas Related to Circles Ex 15.2 Q15

Answer :

We know that the area A of a sector of circle at an angle θ of radius r is given by

$$A = \frac{\theta}{360^\circ} \pi r^2$$

We have,

Angle described by the minute hand in one minute = 6°

So, angle described by the minute hand in five minute = $6^\circ \times 5 = 30^\circ$

Thus,

Area swept by the minute hand in 5 minute

= Area of a sector of angle 30° in the circle of radius $\sqrt{21}$ cm

$$= \frac{30^\circ}{360^\circ} \times \frac{22}{7} \times \sqrt{21} \times \sqrt{21} \text{ cm}^2$$

$$= \boxed{5.5 \text{ cm}^2}$$

Areas Related to Circles Ex 15.2 Q16

Answer :

We know that the area A of a sector of circle at an angle θ of radius r is given by

$$A = \frac{\theta}{360^\circ} \pi r^2$$

We have,

Angle described by the minute hand in one minute = 6°

So, Angle described by the minute hand in 25 minute = $6^\circ \times 25 = 150^\circ$

\therefore Required area

$$= \frac{150^\circ}{360^\circ} \times \frac{22}{7} \times (10)^2$$

$$= 130.95 \text{ cm}^2$$

***** END *****