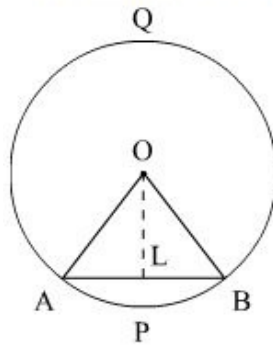




Areas Related to Circles Ex 15.2 Q10

**Answer :**

We have to find the area of the sector AOB formed by the chord AB.



We have  $OA = 4 \text{ cm}$  and  $AB = 4 \text{ cm}$ . So,

$$\begin{aligned} AL &= \frac{AB}{2} \text{ cm} \\ &= \frac{4}{2} \text{ cm} \\ &= 2 \text{ cm} \end{aligned}$$

Let  $\angle AOB = 2\theta$ . Then,  
 $\angle AOL = \angle BOL$   
 $= \theta$

In  $\triangle OLA$ , we have

$$\begin{aligned} \sin \theta &= \frac{AL}{OA} \\ &= \frac{2}{4} \\ &= \frac{1}{2} \end{aligned}$$

$$\begin{aligned} \theta &= \sin^{-1} \frac{1}{2} \\ &= 30^\circ \end{aligned}$$

Hence,  $\angle AOB = 60^\circ$

Now, using the value of  $\angle AOB$  and  $r$  we will find the area of sector AOB,

$$\begin{aligned} A &= \frac{\theta}{360^\circ} \times \pi r^2 \\ &= \frac{60^\circ}{360^\circ} \times \pi \times 4 \times 4 \text{ cm}^2 \\ &= \boxed{\frac{8\pi}{3} \text{ cm}^2} \end{aligned}$$

Areas Related to Circles Ex 15.2 Q11

**Answer :**

We know that the arc length  $l$  and area  $A$  of a sector of an angle  $\theta$  in the circle of radius  $r$  is given by

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

It is given that,  $r = 35 \text{ cm}$  and  $\theta = 72^\circ$ .

We will calculate the arc length using the value of  $r$  and  $\theta$ ,

$$\begin{aligned} l &= \frac{72^\circ}{360^\circ} \times 2\pi \times 35 \text{ cm} \\ &= \frac{72^\circ}{360^\circ} \times 2 \times \frac{22}{7} \times 35 \text{ cm} \\ &= \boxed{44 \text{ cm}} \end{aligned}$$

Now, we will find the value of area  $A$  of the sector

$$\begin{aligned} A &= \frac{72^\circ}{360^\circ} \times \pi \times 35 \times 35 \text{ cm}^2 \\ &= \boxed{770 \text{ cm}^2} \end{aligned}$$

#### Areas Related to Circles Ex 15.2 Q12

**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,

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

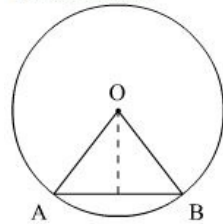
$$OA + OB + \text{arc } AB = 27.2 \text{ cm}$$

$$5.7 + 5.7 + \text{arc } AB = 27.2 \text{ cm}$$

$$11.4 + \text{arc } AB = 27.2 \text{ cm}$$

$$\text{arc } AB = 15.8 \text{ cm}$$

$$\text{So, } l = 15.8 \text{ cm}$$



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

$$\begin{aligned} A &= \frac{1}{2} \times 15.8 \times 5.7 \\ &= \boxed{45.03 \text{ cm}^2} \end{aligned}$$

\*\*\*\*\* END \*\*\*\*\*