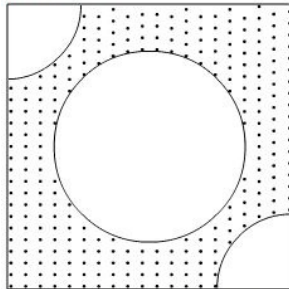




Areas Related to Circles Ex 15.4 Q16

Answer :

It is given that a circle of diameter 4.2 cm and two quadrants of radius 1.4 cm are cut from a square of side 8 cm.



Let the side of square be a . Then,

$$\begin{aligned}\text{Area of square} &= a^2 \\ &= 8 \times 8 \\ &= 64 \text{ cm}^2\end{aligned}$$

Since the diameter of circle is 4.2 cm. So, radius r is

$$\begin{aligned}r &= \frac{4.2}{2} \\ r &= 2.1 \text{ cm}\end{aligned}$$

$$\begin{aligned}\text{Area of circle} &= \pi r^2 \\ &= \frac{22}{7} \times 2.1 \times 2.1 \\ &= 13.86 \text{ cm}^2\end{aligned}$$

Now area of quadrant of circle of radius 1.4 cm is,

$$\begin{aligned}\text{Area of quadrant} &= \frac{1}{4} \pi r^2 \\ &= \frac{1}{4} \times \frac{22}{7} \times 1.4 \times 1.4 \\ &= 1.54 \text{ cm}^2\end{aligned}$$

$$\begin{aligned}\text{Area of shaded region} &= \text{Area of square} - \text{Area of circle} - 2 \times \text{Area of quadrant} \\ &= 64 - 13.86 - 2 \times 1.54 \\ &= 64 - 16.94 \text{ cm}^2 \\ &= \boxed{47.06 \text{ cm}^2}\end{aligned}$$

Areas Related to Circles Ex 15.4 Q17

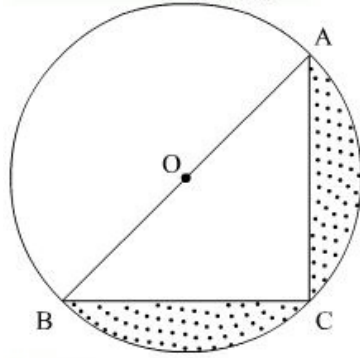
Answer :

It is given a triangle ABC is cut from a circle.

$$AC = 24 \text{ cm}$$

$$BC = 10 \text{ cm}$$

$$\begin{aligned}\text{Area of } \triangle ABC &= \frac{1}{2} AC \times BC \\ &= \frac{1}{2} \times 24 \times 10 \\ &= 120 \text{ cm}^2\end{aligned}$$



In $\triangle ABC$,

$\angle ACB = 90^\circ$, Since any angle inscribed in semicircle is always right angle.

By applying Pythagoras theorem,

$$AB^2 = AC^2 + BC^2$$

Areas Related to Circles Ex 15.4 Q18

Answer :

Area of shaded region = Area of square OABC – Area of quadrant OAPC

$$\begin{aligned}&= (\text{Side})^2 - \frac{1}{4} \pi r^2 \\ &= (7)^2 - \frac{1}{4} \times \frac{22}{7} \times 7 \times 7 \\ &= 49 - 38.5 \\ &= 10.5 \text{ cm}^2\end{aligned}$$

Hence, the area of the shaded region is 10.5 cm^2

***** END *****