

Area and Arc Length of Sector

$\theta = \text{theta}$



$$\text{Area of sector} = \pi r^2 \times \frac{\theta}{360}$$

$$\text{Arc length of sector} = 2\pi r \times \frac{\theta}{360}$$

$$\text{Perimeter of sector} = 2\pi r \times \frac{\theta}{360} + 2r$$

Examples



Find area of sector
arc length and perimeter

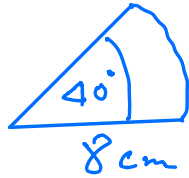
$$\begin{aligned}\text{Area} &= \pi r^2 \times \frac{\theta}{360} = \pi \times 8^2 \times \frac{70}{360} \\ &= 39.1 \text{ cm}^2\end{aligned}$$

$$\begin{aligned}\text{Arc length} &= 2\pi r \times \frac{\theta}{360} \\ &= 2 \times \pi \times 8 \times \frac{70}{360} \\ &= 9.77 \text{ cm}\end{aligned}$$

$$\begin{aligned}\text{Perimeter of sector} \\ &= 9.77 + 8 + 8 \\ &= 25.8 \text{ cm}\end{aligned}$$

Exercise 4C

1 a)

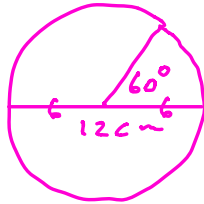


$$\begin{aligned} \text{Area} &= \pi r^2 \times \frac{40}{360} \\ &= \pi \times 8^2 \times \frac{40}{360} = 22.3 \text{ cm}^2 \end{aligned}$$

$$\text{Arc length} = 2\pi r \times \frac{40}{360}$$

$$\begin{aligned} &= 2 \times \pi \times 8 \times \frac{40}{360} \\ &= 5.59 \text{ cm} \end{aligned}$$

2)



$$\begin{aligned} \text{Area of sector} &= \pi r^2 \times \frac{60}{360} \end{aligned}$$

$$= \pi \times 6^2 \times \frac{60}{360}$$

$$= \pi \times \cancel{36} \times \frac{6}{\cancel{36}}$$

$$= 6\pi$$

$$\text{Arc length} = 2\pi r \times \frac{60}{360}$$

$$= 2 \times \pi \times \cancel{6} \times \frac{\cancel{6}}{\cancel{36}}$$

$$= 2\pi$$