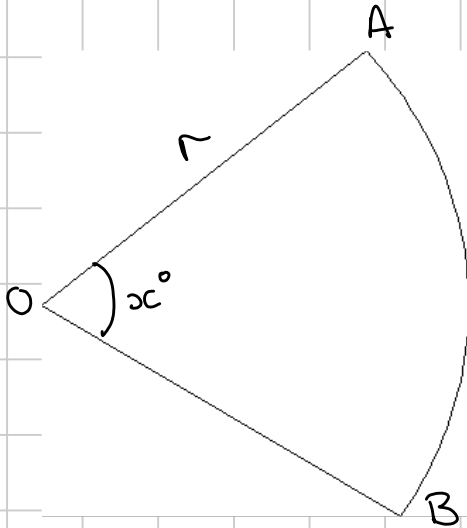


# SECTORS, ARCS, SEGMENTS

Note Title

05/01/2010

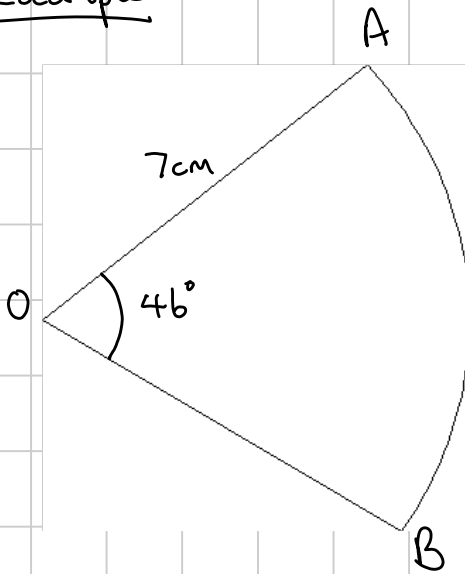
## Sectors and Arcs



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

$$\text{length of arc AB} = \frac{x}{360} \times \pi d$$

## Example



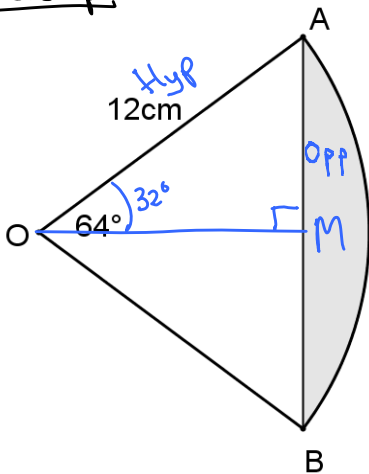
$$\text{Area of sector} = \frac{46}{360} \times \pi \times 7^2 = 19.67\text{cm}^2$$

$$\text{length of Arc AB} = \frac{46}{360} \times \pi \times 14 = 5.62\text{cm}$$

$$\begin{aligned} \text{Perimeter of sector} &= 5.62 + 7 + 7 \\ &= 19.62\text{cm} \end{aligned}$$

## Segments and Chords

### Example



(a) Find the area of the shaded segment

(b) Find the length of the chord AB.

$$\begin{aligned} \text{(a) Area of segment} &= \text{area of sector OAB} - \text{area of triangle OAB} \\ &= \frac{64}{360} \times \pi \times 12^2 - \frac{1}{2} \times 12 \times 12 \times \sin 64^\circ \\ &= \underline{15.71 \text{ cm}^2} \end{aligned}$$

$$\begin{aligned} \text{(b)} \quad \frac{AM}{12} &= \sin 32^\circ \\ (\times 12) \quad (\times 12) \\ AM &= 12 \times \sin 32^\circ \\ &= 6.36 \text{ cm} \end{aligned}$$

$$AB = AM \times 2 = \underline{\underline{12.72 \text{ cm}}}$$

## Working backwards (solving equations)

### Examples

① The area of a circle is  $100\text{cm}^2$ . Find the radius.

$$\pi r^2 = 100$$

$$(\div \pi)$$

$$r^2 = \frac{100}{\pi}$$

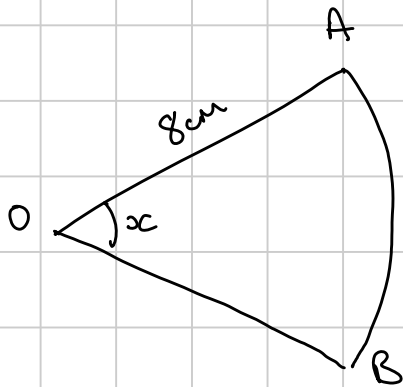
$$r^2 = 31.8309$$

$$(\sqrt{\quad})$$

$$r = \sqrt{31.8309}$$

$$= \underline{\underline{5.64\text{ cm}}} \quad (2\text{ dp})$$

②



The area of this sector is  $50\text{cm}^2$ .  
Find the angle  $x$ .

$$\frac{x}{360} \times \pi 8^2 = 50$$

$$\frac{x}{360} \times 201.0619 = 50$$

$$(\div 201.0619)$$

$$(\div 201.0619)$$

$$\frac{x}{360}$$

$$= 0.24867$$

$$(\times 360)$$

$$x$$

$$(\times 360)$$

$$= \underline{\underline{89.5^\circ}} \quad (1\text{ dp})$$