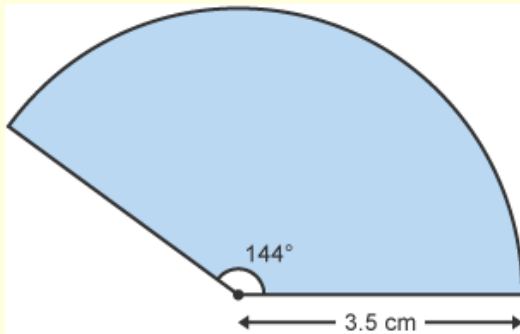


### Starter

1) Calculate the area of the sector.



2) Factorise

$$x^2 + 9x + 18 = ( \quad ) ( \quad )$$

### Length of an Arc

**Today we are learning...**

How to calculate the length of an arc of a sector.

**I will know if I have been successful if...**

I can recall the formula to calculate the circumference of a circle.

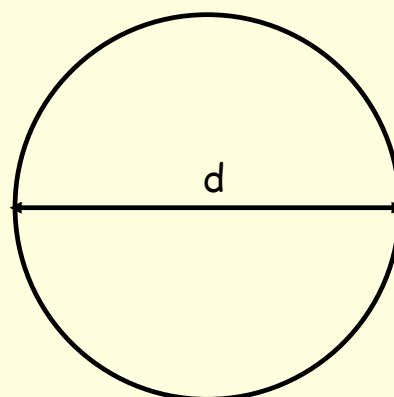
I know the formula to calculate arc length.

I can use the formula to solve problems.



### Circumference of a Circle

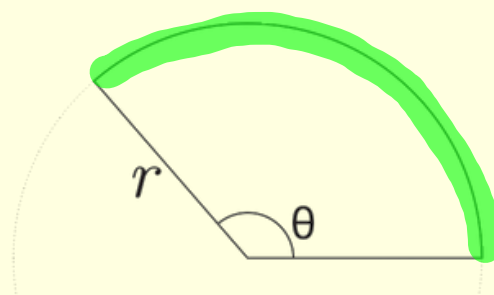
$$C = \pi d$$



### Length of an Arc

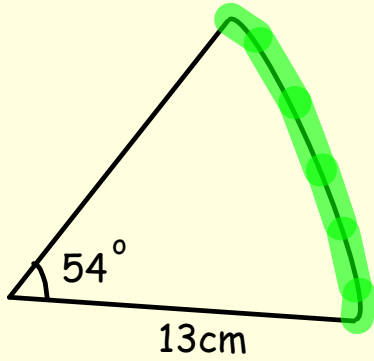
$$L = \pi d \times \frac{\theta}{360}$$

where  $d = 2r$



Example 1

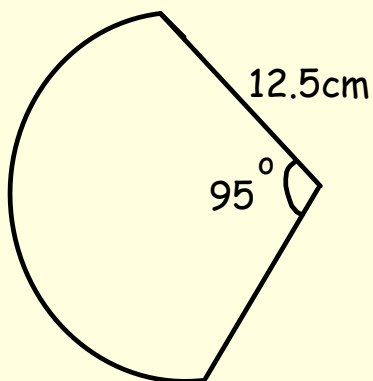
Calculate the arc length of the sector.



$$L = \pi d \times \frac{\theta}{360}$$

Example 2

Calculate the arc length of the sector.



$$L = \pi d \times \frac{\theta}{360}$$

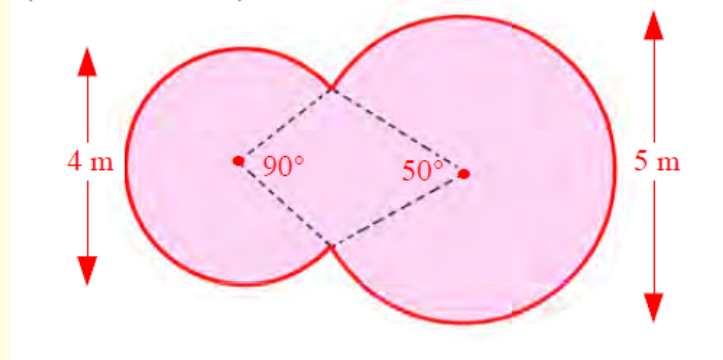
### Answers

#### Exercise 13·1 page 126

1. 5·5 cm
2. a 12·56 cm    b 11·78 cm  
c 6·98 cm    d 18·84 cm
3. a 25·12 cm    b 19·63  
c 18·14    d 37·68 cm
4. a 18·84 mm    b 54·95 cm  
c 39·08 m    d 52·33 cm
5. a 41·8 cm    b 74·89 mm
6. 13·14 cm

### Challenge Question

Find the perimeter of the shape below.  
(Shown in red).



Answer

## Angle of a Sector

Today we are learning...

How to find the angle at the centre of a sector.

I will know if I have been successful if...

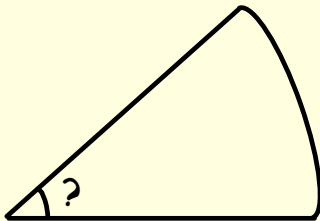
I know the formula to find the angle given the area.

I know the formula to find the angle given the circumference.

I can answer exam style questions on sectors.



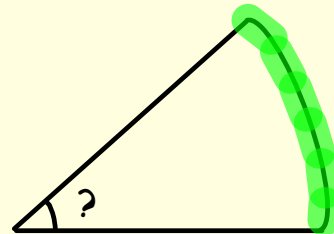
## Finding the Angle of the Sector



12.5cm

Area =  $65.45\text{cm}^2$

$$\text{Angle} = \frac{\text{area of sector}}{\text{area of circle}} \times 360^\circ$$



12.5cm

Arc Length = 10.47cm

$$\text{Angle } (x^\circ) = \frac{\text{arc length}}{\text{circumference}} \times 360^\circ$$

## Finding the Angle of the Sector

Given the Area

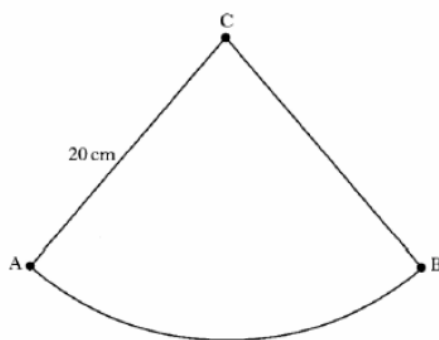
$$\text{Angle} = \frac{\text{area of sector}}{\text{area of circle}} \times 360^\circ$$

Given the Arc Length

$$\text{Angle } (x^\circ) = \frac{\text{arc length}}{\text{circumference}} \times 360^\circ$$

### Exam Style Question

5. A pendulum travels along an arc of a circle, centre C.



81.93°

Answer

The length of the pendulum is 20 centimetres.

The pendulum swings from A to B.

The length of the arc AB is 28.6 centimetres.

Find the angle through which the pendulum swings from A to B.

(4 marks)