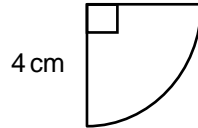
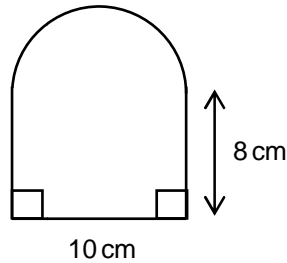


## Foundation Check In - 10.02 Perimeter calculations

1. Calculate the circumference of a circle of radius 6 cm.
2. Calculate the perimeter of the shape below.



3. Calculate the perimeter of the shape below.

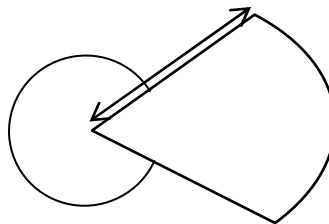


4. Calculate the length of the arc of a sector of  $260^\circ$  and diameter 18 cm.
5. Calculate the length of the arc of a sector of  $130^\circ$  and radius 12 cm.
6. Dawn calculates the arc length of this sector as 14.4 cm. Explain what she has done wrong.



7. Choi is calculating the arc length of this sector. Her working is shown below. Explain what she has done wrong.

$$\frac{200}{360} \times 30\pi = 52.4 \text{ cm}$$

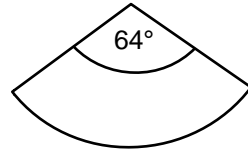


8. A sector has an arc length of  $4\pi$  cm. The arc is  $\frac{1}{5}$  of the circumference of the circle. Show that the length of the diameter of the circle is 20 cm.



# GCSE (9-1) MATHEMATICS

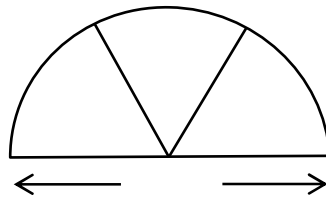
9. An earring is made from a sector of a circle with diameter 20 cm. The edge of the sector is trimmed with wire. Calculate the total length of wire needed to make a **pair** of earrings.



10. A sector of a circle of diameter 50 cm has an arc length of 13 cm. Calculate the angle of the sector to the nearest degree.

## Extension

The window above every classroom door in a school is in the shape of a semicircle. The window is made up of three glass sections of equal size, set in a wooden frame.



A number of the windows have loose glass sections. 12 windows require one section of glass to be secured, 5 windows require two sections of glass to be secured and 2 windows need all three sections of glass to be secured.

Sealing tape is used to fasten the glass sections by placing tape around the **total** edge of each glass section. Sealing tape is sold in one metre rolls, which cost £7.50 each.

Work out the cost of the sealing tape required to secure all of the loose glass sections.



## Answers

1. 37.7 cm (1 dp)
2. 14.3 cm (1 dp)
3. 41.7 cm (1 dp)
4. 40.8 cm (1 dp)
5. 27.2 cm (1 dp)
6. She has used the radius, not the diameter.
7. She has used the angle  $200^\circ$ , not  $160^\circ$ .
8.  $\frac{1}{5}\pi d = 4\pi$   
 $\pi d = 20\pi$   
 $d = 20$  cm
9. 62.3 cm (1 dp)
10.  $30^\circ$

## Extension

$$\text{Perimeter of one glass section} = \frac{1}{10}\pi + 0.3 + 0.3 = 0.914159 \text{ m}$$

$$12 + (5 \times 2) + (2 \times 3) = 28 \text{ sections of glass to be secured}$$

$$28 \times 0.914159 = 25.60 \text{ m}$$

$$26 \times \text{£}7.50 = \text{£}195$$

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Assessment Objective	Qu.	Topic	R	A	G
AO1	1	Calculate circumference of a circle			
AO1	2	Calculate perimeter of a quadrant			
AO1	3	Calculate perimeter of compound shape			
AO1	4	Calculate arc length given diameter			
AO1	5	Calculate arc length given radius			
AO2	6	Identify error in calculated arc length			
AO2	7	Identify error in calculated arc length			
AO2	8	Calculate diameter of sector			
AO3	9	Solve a problem involving perimeter			
AO3	10	Solve a problem involving angle of a sector			

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