

Solutions

Marking: **M1** a correct method, **A1** the correct answer.

Each answer shows the steps, then the **result**.

2.1

- fraction = $\frac{72}{360} = \frac{1}{5}$
- arc = $\frac{1}{5} \times 2 \times \pi \times 10$
 $= 12.566 \dots = \mathbf{12.6 \text{ cm}}$

2.2

- area = $\frac{1}{5} \times \pi \times 10^2$
 $= 62.83 \dots = \mathbf{62.8 \text{ cm}^2}$

2.3

- rectangle = $10 \times 6 = 60 \text{ cm}^2$
 - semicircle of RADIUS 3: $\frac{1}{2} \times \pi \times 3^2 = 14.137 \dots$
 $60 + 14.137 = \mathbf{74.1 \text{ cm}^2}$
- the diameter is 6, so the radius is 3 — halving it is the step most often missed

3.1

(a)

- the two semicircles make one whole circle of diameter 70 m
- circle circumference = $\pi \times 70 = 219.91 \dots \text{ m}$
- the two straight sides are 84 m each; the ends are curved, so the 70 m widths are NOT part of the perimeter

$$2 \times 84 + 219.91 = 387.9 \dots = \mathbf{388 \text{ m}}$$

(b)

- rectangle = $84 \times 70 = 5880 \text{ m}^2$
- the two semicircles make a circle of radius 35 m
- circle area = $\pi \times 35^2 = 3848.45 \dots \text{ m}^2$

$$5880 + 3848.45 = 9728.4 \dots = \mathbf{9730 \text{ m}^2}$$

3.2

- $33.5 = \frac{\theta}{360} \times \pi \times 8^2$
- $\theta = \frac{33.5 \times 360}{\pi \times 64}$
 $= 59.98 \dots = \mathbf{60^\circ}$