Solutions

Marking: **M1** a correct method, **A1** the correct answer, **B1** an independent mark.

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

2.1

- $135 \times \dfrac{\pi}{180} = \dfrac{\mathbf{3}\pi}{\mathbf{4}}$

2.2

- $5 \times 0.8 = \mathbf{4}$ cm

2.3

- $\frac{1}{2} \times 64 \times \frac{2\pi}{3}$
- $= \dfrac{\mathbf{64}\pi}{\mathbf{3}}$ cm^2

2.4

- $6 + 6 + 6\theta = 20$
- $\theta = \frac{\mathbf{4}}{\mathbf{3}}$

2.5

- $2.5 \times \dfrac{180}{\pi} = \mathbf{143.2}^\circ$

3.1

(a)

- $\frac{1}{2}(25)(2 - \sin 2)$
- $= 12.5(2 - 0.9093) = \mathbf{13.6}$ cm^2

(b)

- arc $= 5 \times 2 = 10$
- chord $= 2 \times 5 \sin 1 = 8.415$
- perimeter $= \mathbf{18.4}$ cm

3.2

(a) $\frac{1}{2}r^2 \cdot \frac{\pi}{6} = 3\pi \Rightarrow r^2 = 36$; $\mathbf{r = 6}$

(b) $12 + 6 \cdot \frac{\pi}{6} = \mathbf{12} + \pi$ cm

3.3

(a) $OC = 10\cos 1.4 = \mathbf{1.70}$ cm; $AC = 10 \sin 1.4 = \mathbf{9.85}$ cm

(b)

- $CB = 10 - 1.70 = 8.30$
- arc $AB = 10 \times 1.4 = 14$
- perimeter $= 9.85 + 8.30 + 14 = \mathbf{32.2}$ cm

(c)

- sector $= \frac{1}{2}(100)(1.4) = 70$
- triangle $OAC = \frac{1}{2}(1.700)(9.854) = 8.38$
- shaded $= 70 - 8.38 = \mathbf{61.6}$ cm^2