

Solutions

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

2.1

- $120 \times \frac{\pi}{180} = \frac{2\pi}{3}$

2.2

- $s = r\theta = 5 \times 0.8 = 4 \text{ cm}$

3.1 B

- $A = \frac{1}{2}(16)\frac{\pi}{6} = \frac{4\pi}{3}$

3.2

(a)

- $\text{arc} = 10 \times 1.2 = 12$; perimeter $= 12 + 10 + 10 = 32 \text{ cm}$

(b)

- $\text{segment} = \frac{1}{2}(10^2)(1.2 - \sin 1.2) = 50(1.2 - 0.9320) = 50(0.2680) = 13.4 \text{ cm}^2$

3.3

- perimeter: $2r + r\theta = 20$; area: $\frac{1}{2}r^2\theta = 16 \Rightarrow r\theta = \frac{32}{r}$. Substitute: $2r + \frac{32}{r} = 20 \Rightarrow 2r^2 - 20r + 32 = 0 \Rightarrow r^2 - 10r + 16 = 0$. Factorise $(r - 2)(r - 8) = 0 \Rightarrow r = 2$ or $r = 8$