Q.	Scheme	Marks
6	(a) $8\theta = 6 \quad \theta = \frac{3}{4}$ (accept 0.75) oe	M1A1
	(b) $\frac{1}{2}r^2\theta = \frac{1}{2}\times 8^2 \times \frac{3}{4} = 24 \text{ cm}^2$	M1A1
	(c) Area of $\Delta ABC = \frac{1}{2}\times 8^2 \times \sin AOB = 21.81...$	M1A1
	Area of segment $= 24 - 21.81... = 2.187 = 2.19 \text{ cm}^2$	A1ft (7)
7.	(a) $V = 3x^2h = 30$	B1
	$S = 3x^2 + 2xh + 2\times 3xh$	B1
	$xh = \frac{10}{x} \Rightarrow S = 3x^2 + 2\times\frac{10}{x} + 6\times\frac{10}{x}$	M1
	$S = 3x^2 + \frac{80}{x}$*	A1
	(b) $\frac{\mathrm{d}S}{\mathrm{d}x} = 6x - \frac{80}{x^2}$	M1
	$\frac{\mathrm{d}S}{\mathrm{d}x} = 0 \quad 6x^3 = 80 \quad x = \sqrt[3]{\frac{40}{3}} \quad (= 2.371...)$	M1A1
	$S_{\min} = 3\left(\sqrt[3]{\frac{40}{3}}\right)^2 + \frac{80}{\sqrt[3]{\frac{40}{3}}} = 50.60... = 50.6 \text{ cm}^3$	M1A1
	(c) $\frac{\mathrm{d}^2S}{\mathrm{d}x^2} = 6 + \frac{160}{x^3} > 0$ for $x > 0$	M1
	$\therefore$ minimum	A1ft (11)