1a) $\cos A = \dfrac{b^2 + c^2 - a^2}{2bc}$

$\cos A = \dfrac{(6)^2 + (6)^2 - (8)^2}{2(6)(6)}$

$\cos A = \frac{1}{9}$

$A = \cos^{-1}\left(\frac{1}{9}\right)$

$= 1.459^\circ$ (3dp)

b) Sector Area $= \dfrac{\theta}{2} r^2$

$= \dfrac{1.459}{2} (6)^2$

$= 26.3 \text{ cm}^2$ (3sf)

c) Triangle Area $= \frac{1}{2} a b \sin C$

$= \frac{1}{2}(6)(6) \sin(1.459)$

$= 17.9 \text{ cm}^2$ (3sf)

Shaded Area = "26.3" − "17.9"

$= 8.38 \text{ cm}^2$ (3sf) [using ~~whole number~~ all digits in calculator]

2a) Arc Length $= \theta \times r$

$= 0.5 \times 5$

$= \underline{\underline{2.5\text{m}}}$

b/ Sector Area $= \frac{\theta}{2} r^2$

$= \frac{25}{4} \text{m}^2$

c/ Length BM

$BM^2 = (5)^2 + (2.5)^2 - 2(5)(2.5)\cos(0.5)$

$BM^2 = 9.3104...$

$BM = 3.05 \text{ m} \quad (3sf)$

Perimeter $= 2.5 + 2.5 + 3.05$

$= 8.05 \text{ m} \quad (3sf)$

d/ Shaded region = Sector Area − Triangle Area

Triangle Area $= \frac{1}{2}(2.5)(5)\sin(0.5)$

$= 2.996 \text{ m}^2$

Shaded Area $= \frac{25}{4} - 2.996$

$= \underline{\underline{3.25 \text{ m}^2 \quad (3sf)}}$

3a) Arc Length $= r\theta$

$= 7(0.6)$

$= 4.2\text{ cm}$

b) Sector Area $= \frac{\theta}{2} r^2$

$= \frac{0.6}{2}(7)^2$

$= 14.7\text{cm}^2$

c) $\frac{\pi}{2} - 0.6 = \underline{\underline{0.971^c}}$ (3sf)

d) Triangle Area $= \frac{1}{2}(5)(7)\sin(0.971)$

$= 14.4\text{ cm}^2$ (3sf)

Total Area $= 14.7 + 14.4$

$= \underline{\underline{29.1\text{ cm}^2}}$ (3sf)