



Self-assessment answers: 10 Geometry of triangles and circles

Comment [K1]: AQ: I have added the marks allocated for Q1-3 on the question sheet, but do they need dividing for subparts or working out?

1. (a) $96 = \frac{1}{2}r^2 \times 0.7$

$$\Rightarrow r = \sqrt{\frac{2 \times 96}{0.7}} = 16.6 \text{ cm (3SF)}$$

(b) Perimeter = $2r + 0.7r = 44.7 \text{ cm (3SF)}$

[7 marks]

2. (a) By cosine rule, $AC = \sqrt{BC^2 + AB^2 - 2AB \times BC \times \cos \hat{B}}$
 = 14.9 cm

\Rightarrow Perimeter = 30.9 cm (3SF)

(b) By sine rule, $\hat{A} = \arcsin\left(\frac{BC \sin \hat{B}}{AC}\right) = 24.9^\circ$ (3SF).

(This is not a case of ambiguity, since \hat{B} is already known to be obtuse.)

[9 marks]

3. (a) Segment perimeter = $8\theta + 16\sin\frac{\theta}{2} = 9.5$

$\Rightarrow \theta = 0.598$ (3SF)

(b) Shaded region = $2 \times$ segment area

= $r^2(\theta - \sin \theta)$

= 2.24 cm² (3SF)

[14 marks]

Comment [K2]: AQ: It is not clear to me how you would go from the first to the second step of this answer without a calculator. Some explanation may be helpful.