Question Number	Scheme	Marks
6(a)	$\cos C = \dfrac{20^2 + 14^2 - 22^2}{2 \times 20 \times 14}$	M1
	$C = 78.46304... = 78.463°$	A1
	$\dfrac{\sin A}{20} = \dfrac{\sin 78.46}{22}$	M1
	$A = 62.9643... = 62.964°$	A1
	$B = 180 - (78.463 + 62.964) = 38.573°$	A1ft (5)
(b)	$\angle APC = 180 - (31.48 + 78.46) = 70.06$	M1
	$\dfrac{AP}{\sin 78.46} = \dfrac{14}{\sin 70.06}$	M1
	$AP = 14.59... = 14.6$	A1 (3)
(c)	$\text{Area} = \dfrac{1}{2} \times 22 \times 14 \sin 62.96$	M1
	$\text{Area} = 137.1... = 137 \text{ cm}^2$	A1 (2) **[10]**
	ALT: Use Heron's formula	

Notes

(a)

M1 uses a correct COS rule formula for **any** angle of the triangle. If there are errors in substitution, the correct formula must be seen first.

A1 for one of awrt $C = 78.5$, or $B = 38.6$, or $A = 63.0$

M1 uses COS rule again, or SIN rule. If SIN rule is used ft their first angle for this mark. If there are errors in substitution, the correct formula must be seen first.

A1 for one of awrt $C = 78.5$, or $B = 38.6$, or $A = 63.0$

A1ft uses 180 – the two angles already found. Follow through their angles for this mark. If they use trigonometry, their angles **must** add to **exactly** 180.

Both M marks must be scored for this A mark to be awarded.

Working in radians is acceptable and correct, but angles must be to awrt 3 sf.

Angle $A = 1.099^c$ Angle $B = 0.673^c$ Angle $C = 1.369^c$

(b)

M1 for $APC = 180 - (\text{their } A \div 2 + \text{their } B)$ $ABP = 180 - (\text{their } A \div 2 + \text{their } C)$

M1 for using either SIN or COS rule to find the length of AP. {**Note** $PB \neq 10$ cm}

A1 for the answer as shown correctly rounded.

(c)

M1 uses correct formula for Area of a triangle = $\frac{1}{2}ab\sin C$

A1 for answer as shown 137 (cm^2).

ALT

M1 using Heron's formula,

$$s = \frac{22+20+14}{2} = 28 \Rightarrow \text{Area} = \sqrt{28(28-22)(28-20)(28-14)}$$

A1 Area = 137.171…= 137 (cm^2)