- 6 Given that $\frac{a + \sqrt{5}}{\sqrt{5} 2} = 11 + 5\sqrt{5}$
 - (a) without using a calculator, find the value of *a* Show your working clearly.

(2)

Triangle PQR is such that

$$PR = (x + 3) \text{ cm}$$
 $QR = x \text{ cm}$ angle $QPR = 30^{\circ}$ angle $PQR = 45^{\circ}$

(b) Show that $x = 3 + 3\sqrt{2}$

(3)

Given that $\sin 105^\circ = \frac{\sqrt{6} + \sqrt{2}}{4}$ and that the area of triangle *PQR* is $A \text{ cm}^2$

(c) find the exact value of *A* in the form $\frac{9}{8} (p\sqrt{6} + q\sqrt{2} + r\sqrt{3} + s)$ where *p*, *q*, *r* and *s* are integers.

(3)



Question 6 continued		



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Question 6 continued	

Question 6 continued	
	(Total for Question 6 is 8 marks)

