Question	Answer	Marks	Guidance
9	$2\log_p y + \dfrac{10}{\log_p y} - 9 = 0$ or $\dfrac{2}{\log_y p} + 10\log_y p - 9 = 0$	**B1**	For a change of base
	$2\left(\log_p y\right)^2 - 9\log_p y + 10 = 0$ or $10\left(\log_y p\right)^2 - 9\log_y p + 2 = 0$	**M1**	For attempt to obtain a 3-term quadratic equation = 0, in either $\log_p y$ or $\log_y p$
	$\log_p y = \dfrac{5}{2}$, $\log_p y = 2$ or $\log_y p = \dfrac{2}{5}$, $\log_y p = \dfrac{1}{2}$	**M1**	**Dep M** mark for attempt to solve the quadratic to obtain 2 solutions
	$y = p^{\frac{5}{2}}$	**A1**	
	$y = p^2$	**A1**	
10	$\dfrac{65n!}{(n-5)!5!} = \dfrac{2(n-1)(n+1)!}{(n-5)!6!}$ $65 = \dfrac{n^2-1}{3}$	**2**	**B1** for simplifying numerical factorials to 3 **B1** for simplifying algebraic factorials to either $(n-1)(n+1)$ or n^2-1
	$n = 14$	**B1**	
11(a)	$\overrightarrow{AC} = \mathbf{c} - \mathbf{a}$	**B1**	
	$\overrightarrow{AB} = \dfrac{2}{5}(\mathbf{c} - \mathbf{a})$ or $\overrightarrow{BC} = \dfrac{3}{5}(\mathbf{c} - \mathbf{a})$	**B1**	
	$\dfrac{2}{5}(\mathbf{c} - \mathbf{a}) = \mathbf{b} - \mathbf{a}$ or $\dfrac{3}{5}(\mathbf{c} - \mathbf{a}) = \mathbf{c} - \mathbf{b}$	**M1**	For equating two different forms of $\overrightarrow{AB}$ or 2 different forms of $\overrightarrow{BC}$
	$5\mathbf{b} - 3\mathbf{a} = 2\mathbf{c}$	**A1**	Simplification to obtain the given answer
11(b)	$\overrightarrow{XC} = \mathbf{c} - \dfrac{3\mathbf{a}}{4}$	**B1**	
	$\overrightarrow{XC} = \dfrac{5\mathbf{b}}{2} - \dfrac{9\mathbf{a}}{4}$	**B1**	