Question	Answer	Marks	Guidance
5(c)	$2p+2q=-5p+5$ or $p+4q=5p+5q$	**M1**	For equating like vectors to obtain at least one equation
	$p=-5,\ q=20$	**2**	**Dep M** mark for attempt to solve *their* equations to obtain both *p* and *q* **A1** for both
6	1144	**3**	**B1** With the brothers: 220 or ${}^{12}C_3$ **B1** Without the brothers: 924 or ${}^{12}C_6$
7(a)	2.8 oe	**B1**	
7(b)	$(BC=AC=)\ 10\tan 1.4$ or $\frac{10\sin 1.4}{\sin 0.1708}$	**M1**	
	Perimeter = $10(\textit{their}\ 2.8)+2(\textit{their}\ AC \text{ or } BC)$	**M1**	
	144	**A1**	
7(c)	Area of triangle *AOC* or *BOC* = $\frac{1}{2}\textit{their}(AC \text{ or } BC)\times 10$ or $\frac{1}{2}\textit{their}\ OC\times 10\sin 1.4$ soi	**M1**	Allow premature approximation for *OC*
	Area of minor sector *AOB* = 140	**B1**	**FT** on 50 × *their* 2.8
	Shaded area = 439 to 440	**A1**	Must have 579 ⩽ kite area ⩽ 580
8(a)	–1.5	**B1**	
8(b)	$f\in\mathbb{R}$	**B1**	Allow $y\in\mathbb{R}$, $\mathbb{R}$, $-\infty<f(x)<\infty$ oe, $f(x)\in\mathbb{R}$