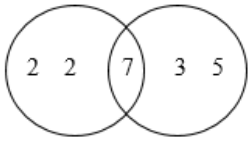
Question		Working	Answer	Mark	Notes
Apart from questions (where the mark scheme states otherwise) the correct answer, unless clearly obtained by an incorrect method, should be taken to imply a correct method					
1	(a)	$\frac{5+13}{2}$ or $\frac{-4+1}{2}$		2	M1 for a correct method to find one coordinate **or** for one coordinate correct **or** for (−1.5, 9)
			(9, −1.5)		A1 oe
	(b)		−3	1	B1
	(c)		No with reason	1	B1 No (oe) and e.g. line goes through (100, −298) or (101.3(3..), −302) or $\left(\frac{304}{3}, -302\right)$ or (3 × 100) – 302 = −2 not (+)2
					Total 4 marks

2		28, 56, 84, 112… **and** 105, 210, 315, 420… **or** 2, 2, 7 **and** 3, 5, 7 **or**  **or** $\frac{28\times105}{7}$ **or** 2, 2, 3, 5, 7 oe		2	M1for any correct valid method e.g. for starting to list at least **four** multiples of each number **or** 2, 2, 7 **and** 3, 5, 7 seen (may be in a factor tree and ignore 1) **or** a fully correct Venn diagram
			420		A1 cao
					Total 2 marks

3		E.g. 12×9 (=108) **or** $(9 - 6) \times x$ (= $3x$)		4	M1 for one correct relevant area
		E.g. 129 – '108' (= 21) **or** '108' + '$3x$' = 129			M1 (dep on M1) for 129 used correctly with another area **or** for a correct equation (ft) with bracket(s) expanded
		E.g. '21' ÷ (9 – 6) **or** $x = \frac{129 - '108'}{9 - 6}$			M1 for a complete method
			7		A1 Accept 7 cm
					Total 4 marks

4	(a)		$3 < w \leq 4$	1	B1
	(b)	$(12 \times 2.5) + (16 \times 3.5) + (9 \times 4.5) + (2 \times 5.5) + (1 \times 6.5)$ **or** 30 + 56 + 40.5 + 11 + 6.5 (= 144)		4	M2 for at least **4** correct products added (need not be evaluated) **or** If not M2 then award M1 for consistent use of value within interval (including end points) for at least **4** products which must be added **or** correct midpoints used for at least **4** products and not added
		$[(12 \times 2.5) + (16 \times 3.5) + (9 \times 4.5) + (2 \times 5.5) + (1 \times 6.5)] \div 40$ **or** '144' ÷ 40			M1 (dep on at least M1) Allow division by their Σf provided addition or total under column seen
			3.6		A1 oe
	(c)	$\frac{2}{40} + \frac{1}{40}$		2	M1 for $\frac{a}{40}$ where $0 < a < 40$ or $\frac{3}{b}$ where $b > 3$ where a and b are integers
			$\frac{3}{40}$		A1 0.075 oe
					Total 7 marks

5		120 ÷ (3 + 5) (= 15)		6	M1	M2 for $\frac{3}{8}\times 120$ (= 45) **or** $\frac{5}{8}\times 120$ (= 75) oe
		'15' × 3 (= 45) **or** '15' × 5 (= 75)			M1	
		'45' ÷ 3 (= 15) **or** '45' ÷ 3 × 2 (= 30)			M1	
		'75' × $\frac{16}{25}$ (= 48) **or** '75' × $\frac{9}{25}$ (= 27)			M1	
		E.g. ('45' ÷ 3 × 2) + ('75' × $\frac{9}{25}$) oe **or** '27' + '30' **or** ('75' – '48') + ('45' – '15')			M1 for a complete method	
			57		A1	
						Total 6 marks

6	(a)		0.000 78	1	B1	
	(b)	22 500 000 oe e.g. 22.5×10^6 **or** 2.25×10^n $n \neq 7$		2	M1	
			2.25×10^7		A1	
						Total 3 marks

7	(a)	$m^2 - 8m + 5m - 40$		2	M1 for any 3 correct terms **or** for 4 out of 4 correct terms ignoring signs for $m^2 - 3m \ldots$ **or** for $\ldots - 3m - 40$
			$m^2 - 3m - 40$		A1
	(b)		$5y(1 + 4y)$	2	B2 If not B2 then award B1 for $5(y + 4y^2)$ **or** $y\,(5 + 20y)$ **or** $5y(a + 4y)$ where a is an integer and $a \neq 0$ **or** $5y(1 + by)$ where b is an integer and $b \neq 0$
	(c)		1	1	B1
	(d)	E.g. $6x - 15$ or $12x - 30$ oe		4	M1 for expansion of a correct bracket
		$2 \times 3(2x - 5) = 9 - x$ oe **or** $2(\text{`}6x - 15\text{'}) = 9 - x$ oe **or** $3(2x - 5) = \frac{9}{2} - \frac{x}{2}$ oe			M1 for removal of fraction or separating fraction (RHS) in an equation
		$12x + x = 9 + 30$ oe **or** $6x + \frac{x}{2} = \frac{9}{2} + 15$ oe			M1 ft (dep on 4 terms) for terms in x on one side of equation; number terms on the other
			3		A1 dep on at least M2 awarded
					Total 9 marks

8			Trapezium with vertices at (6, 3) (8, 3) (8, 6) (4, 6)	2	B2 If not B2 then award B1 for shape of correct size and orientation **or** 3 or 4 points plotted correctly	
						Total 2 marks

9		$\cos 63 = \frac{24.3}{(PQ)}$ **or** $\sin 27 = \frac{24.3}{(PQ)}$ **or** $\frac{(PQ)}{\sin 90} = \frac{24.3}{\sin 27}$ **or** $\frac{\sin 90}{(PQ)} = \frac{\sin 27}{24.3}$ oe		3	M1 for a correct trigonometric ratio	M2 for $(RQ =) 24.3 \times \tan 63 (= 47.6914..)$ **and** $(PQ =) \sqrt{'47.6914'^2 + 24.3^2}$ oe
		$(PQ =) \frac{24.3}{\cos 63}$ **or** $(PQ =) \frac{24.3}{\sin 27}$ **or** $(PQ) = \frac{24.3}{\sin 27} \times \sin 90$			M1 for a correct rearrangement for *PQ*	
			53.5		A1 Accept 53.5 - 53.53	
						Total 3 marks

10			$x \geq -1$ oe $x + y \leq 4$ oe $y \geq \frac{1}{3}x - 2$ oe	3	B3 for all 3 correct inequalities (B2 for two correct inequalities B1 for one correct inequality) (SC B3 for $x \leq -1$, $x + y \geq 4$ and $y \leq \frac{1}{3}x - 2$ oe) (If no marks gained B1 for understanding of equation $x + y = 4$ e.g. $y > 4 - x$) Accept < for $\leq$ and > for $\geq$ throughout
					Total 3 marks

11		6000×1.015^2 (= 6181.35) **or** 6000 + (0.015 × 6000) + (0.015 × (6000 + '90')) (= 6181.35) **or** $(1.015)^2$ (= 1.030225) **or** $\frac{6311.16}{6000}\left(=1.05186\right)$		3	M1 for working out the total amount after **two** years **or** working out the compound interest multiplier after two years **or** working out the compound interest multiplier after three years
		6311.16 ÷ '6181.35' (= 1.021) (×100) **or** $\frac{6311.16 - '6181.35'}{'6181.35'}$ (= 1.021) (×100) **or** '1.05186' ÷ '1.030225' (= 1.021) (×100)			M1 (dep on M1) for a complete method to find the compound interest multiplier (×100)
			2.1		A1 awrt 2.1
					Total 3 marks

12	(a)	E.g. 56 – 38		2	M1 for subtracting readings from 60 and 20 oe
			18		A1 for answer in the range 17 – 19
	(b)	[40.5, 43]		3	B1
		'42' ÷ 0.6 oe			M1 for complete method to find the number of men
			70		A1
					Total 5 marks

13		$0.14 = \frac{56}{w^2}$ oe **or** 56 ÷ 0.14 (= 400)		4	M1 for using the given formula correctly
		$\sqrt{\frac{56}{0.14}}$ **or** $\sqrt{'400'}$ (=20)			M1 for a method to find *w*
		'20' × '20' × '20' oe			M1 (dep on M2) for a method to find the volume of the cube
			8000		A1
					Total 4 marks

14	(a)	(0.5 ×) 9.3 × 14.7 × sin106 **or** (9.3 × cos 16) × 14.7 **or** (9.3 × sin 74) × 14.7		2	M1 for applying the area of a triangle formula using correct values (to find half of the area of the parallelogram) **or** for a correct method to find the area of the parallelogram
			131		A1 awrt 131
	(b)	(GE^2 =) $9.3^2 + 14.7^2 – 2 \times 9.3 \times 14.7 \times \cos106$		3	M1 for the correct use of the cosine rule
		377(.9….) **or** 378 **or** 86.49 + 216.09 + 75.3… **or** 302.58 + 75.3….			M1 (dep on M1)for the correct order of operations
			19.4		A1 for 19.4 – 19.5
					Total 5 marks

15	(a)	$(2x + 5)(x + 1) = 2x^2 + 2x + 5x + 5$ $(= 2x^2 + 7x + 5)$ **or** $(x + 1)(3 – x) = –x^2 + 3x – x + 3$ $(= –x^2 + 2x + 3)$ **or** $(3 – x)\ (2x + 5) = –2x^2 + 6x – 5x + 15$ $(= –2x^2 + x + 15)$		3	M1 for multiplying out two brackets correctly at least 3 terms correct	M2 for at least 4 terms correct out of a maximum of 8 terms $6x^2 –2x^3 + 6x – 2x^2 + 15x – 5x^2 +15 – 5x$
		E.g. $[(2x^2 + 7x + 5)(3 – x) =]$ $–2x^3 – 7x^2 – 5x + 6x^2 + 21x + 15$ **or** $[(–x^2 + 2x + 3)(2x + 5) =]$ $–2x^3 – 5x^2 + 10x + 4x^2 + 6x + 15$ **or** $[(–2x^2 + x + 15)(x + 1) =]$ $–2x^3 – 2x^2 + 15x + x^2 + x + 15$			M1 for at least 3 terms correct out of a maximum of 6 terms **or** for at least 4 terms correct out of a maximum of 8 terms	
			Shown		A1	

15	(b)	$\left(\frac{dV}{dx}=\right)16-2x+\left(3\times-2x^2\right)$ oe		5	M1 for the correct differentiation of at least 2 correct terms from 16 **or** $-2x$ **or** $(3\times-2x^2)$
		$\left(\frac{dV}{dx}=\right)16-2x-6x^2$ oe			A1 for a correct differentiated expression
		$'16-2x-6x^2{}'=0$ oe			M1 (dep on M1) for equating their differentiated expression to zero
		E.g. $(x=)\ \frac{-2\pm\sqrt{2^2-4\times6\times-16}}{2\times6}$ oe (accept + in place of ±) or E.g. $6\left(\left(x+\frac{1}{6}\right)^2-\left(\frac{1}{6}\right)^2\right)-16(=0)$ oe			M1 (dep on M1) for a complete method to solve their 3-term quadratic equation (allow one sign error and some simplification – allow as far as $\frac{-2\pm\sqrt{4+384}}{12}$)
			1.47		A1 dep on M1 for answer in range 1.47 – 1.5 from correct working (Must reject −1.80 to −1.81 if calculated)
					Total 8 marks

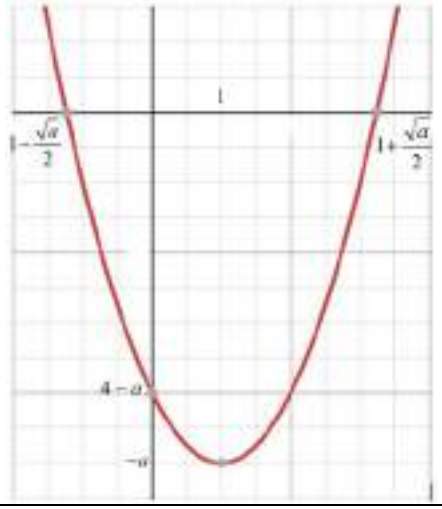
16		58.35 or 58.45 or 19.5 or 20.5 or 3.55 or 3.65		3	B1 for any correct bound Accept $58.44\dot{9}$ for 58.45 or $20.4\dot{9}$ for 20.5 or $3.64\dot{9}$ for 3.65
		$\frac{2\times 58.45-19.5}{3.55}$ (= 27.4366...)			M1 for correct substitution into $\frac{2\times a_{UB}-c_{LB}}{d_{LB}}$ where $58.4 < a_{UB} \leq 58.45$ **and** $19.5 \leq c_{LB} < 20$ **and** $3.55 \leq d_{LB} < 3.6$
			27.44		A1 from correct working allow 27.4 – 27.5
					Total 3 marks

17	(a)	$6\times6+6\times2\sqrt{12}+6\times2\sqrt{12}+\left(2\times\sqrt{12}\right)^2$ or $36+12\sqrt{12}+12\sqrt{12}+4\sqrt{12}\sqrt{12}$ or $36+12\sqrt{12}+12\sqrt{12}+\left(4\times12\right)$ or $36+24\sqrt{3}+24\sqrt{3}+48$ or $36+2\times24\sqrt{3}+48$ or $36+6\times2\times2\sqrt{12}+48$		3	M1 for correct expansion of brackets showing **four** terms (need not be simplified) **or** for the use of $(a + b)^2 = a^2 + 2ab + b^2$ **or** for showing or stating $\sqrt{12} = 2\sqrt{3}$ oe
		$84+48\sqrt{3}$			M1 (dep on M1)
			Shown		A1 for fully correct working leading to given expression

17	(b)	E.g. $\left(\frac{3a^4}{t^5}\right)^{-2}$ or $\left(\frac{t^{15}}{27a^{12}}\right)^{\frac{2}{3}}$ or $\left(\frac{729a^{24}}{t^{30}}\right)^{-\frac{1}{3}}$		3	M1 for **one** of cube rooting **or** inverting **or** squaring **or** $\frac{ka^{-8}}{t^{-10}}$ where k is an integer $\neq 0$
		E.g. $\left(\frac{9a^8}{t^{10}}\right)^{-1}$ or $\frac{3^{-2}a^{-8}}{t^{-10}}$ or $\frac{\frac{1}{9}a^{-8}}{t^{-10}}$ or $\left(\frac{t^5}{3a^4}\right)^2$ or $\left(\frac{t^{30}}{729a^{24}}\right)^{\frac{1}{3}}$ or $\frac{a^{-8}}{9t^{-10}}$			M1 for **two** of cube rooting **or** inverting **or** squaring **or** $\frac{t^{10}}{ka^8}$ where k is an integer $\neq 0$
			$\frac{t^{10}}{9a^8}$		A1 Allow $\frac{t^{10}a^{-8}}{9}$ or $\frac{1}{9}t^{10}a^{-8}$
					Total 6 marks

18	$\frac{4}{16}\times\frac{3}{15}\times\frac{2}{14}\left(=\frac{24}{3360}=\frac{1}{140}\right)$ oe **or** $\frac{7}{16}\times\frac{6}{15}\times\frac{5}{14}\left(=\frac{210}{3360}=\frac{1}{16}\right)$ oe **or** $\frac{5}{16}\times\frac{4}{15}\times\frac{3}{14}\left(=\frac{60}{3360}=\frac{1}{56}\right)$ oe		4	M1 for finding *BBB* **or** *OOO* **or** *LLL*	M3 for $\frac{11}{16}\times\frac{10}{15}\times\frac{9}{14}$ oe
	$\frac{4}{16}\times\frac{7}{15}\times\frac{6}{14}\left(=\frac{168}{3360}=\frac{1}{20}\right)$ oe **or** $\frac{4}{16}\times\frac{3}{15}\times\frac{7}{14}\left(=\frac{84}{3360}=\frac{1}{40}\right)$ oe **or** $\frac{5}{16}\times\frac{4}{15}\times\frac{4}{14}\left(=\frac{80}{3360}=\frac{1}{42}\right)$ oe **or** $\frac{5}{16}\times\frac{4}{15}\times\frac{7}{14}\left(=\frac{140}{3360}=\frac{1}{24}\right)$ oe **or** $\frac{5}{16}\times\frac{4}{15}\times\frac{3}{14}\left(=\frac{60}{3360}=\frac{1}{56}\right)$ oe **or** $\frac{5}{16}\times\frac{7}{15}\times\frac{6}{14}\left(=\frac{210}{3360}=\frac{1}{16}\right)$ oe **or** $\frac{5}{16}\times\frac{7}{15}\times\frac{4}{14}\left(=\frac{140}{3360}=\frac{1}{24}\right)$ oe **or** $\frac{5}{16}\times\frac{4}{15}\times\frac{11}{14}\left(=\frac{220}{3360}=\frac{11}{168}\right)$ oe or $\frac{5}{16}\times\frac{11}{15}\times\frac{10}{14}\left(=\frac{550}{3360}=\frac{55}{336}\right)$ oe			M1 for finding the following in any order *BOO* **or** *BBO* **or** *LLB* **or** *LLO* **or** *LBB* **or** *LOO* **or** *LOB* **or** *LLX* **or** *LXX* (*X* = not *L*)	
	$'\frac{24}{3360}'+3\times'\frac{84}{3360}'+'\frac{210}{3360}'+3\times'\frac{168}{3360}'$ oe **or** $1-\left('\frac{60}{3360}'+3\times'\frac{80}{3360}'+3\times'\frac{140}{3360}'+3\times'\frac{60}{3360}'3\times'\frac{210}{3360}'6\times'\frac{140}{3360}'\right)$ oe **or** $1-\left('\frac{60}{3360}'+3\times'\frac{220}{3360}'+3\times'\frac{550}{3360}'\right)$ oe			M1 for a complete method	
		$\frac{990}{3360}$		A1 for $\frac{990}{3360}$ oe e.g. $\frac{33}{112}$ or 0.29(464...)	
					Total 4 marks

19		$(AH =)\sqrt{6^2+5^2+9^2}$ $(=\sqrt{142})$ **or** $(FH = GE =)\ \sqrt{5^2+9^2}$ $(=\sqrt{106})$		4	M1 for working out *AH* or *FH* or *GE*
		E.g. $\sin AHF = \frac{6}{'\sqrt{142}'}$ **or** $\tan AHF = \frac{6}{'\sqrt{106}'}$ **or** $\cos AHF = \frac{'\sqrt{106}'}{'\sqrt{142}'}$ **or** $\sin FAH = \frac{'\sqrt{106}'}{'\sqrt{142}'}$ **or** $\cos FAH = \frac{6}{'\sqrt{142}'}$ **or** $\tan FAH = \frac{'\sqrt{106}'}{6}$			M1 for a correct method for finding angle *AHF* **or** finding angle *FAH* Allow $\cos AHF = \left(\frac{'\sqrt{142}'^2+'\sqrt{106}'^2-6^2}{2\times'\sqrt{142}'\times'\sqrt{106}'}\right)$ oe **or** $\sin AHF = \frac{\sin 90}{'\sqrt{142}'}\times 6$ oe
		E.g. $\sin^{-1}\left(\frac{6}{'\sqrt{142}'}\right)$ **or** $\tan^{-1}\left(\frac{6}{'\sqrt{106}'}\right)$ **or** $\cos^{-1}\left(\frac{'\sqrt{106}'}{'\sqrt{142}'}\right)$ **or** $90-\sin^{-1}\left(\frac{'\sqrt{106}'}{'\sqrt{142}'}\right)$ **or** $90-\cos^{-1}\left(\frac{6}{'\sqrt{142}'}\right)$ **or** $90-\tan^{-1}\left(\frac{'\sqrt{106}'}{6}\right)$			M1 for a complete method Allow $\cos^{-1}\left(\frac{'\sqrt{142}'^2+'\sqrt{106}'^2-6^2}{2\times'\sqrt{142}'\times'\sqrt{106}'}\right)$ oe **or** $\sin^{-1}\left(\frac{\sin 90}{'\sqrt{142}'}\times 6\right)$ oe
			30.2		A1 for 30.2 – 30.3
					Total 4 marks

20		graph drawn in shape of a quadratic with a minimum in any quadrant		4	M1 for a quadratic with a minimum
		$x = 1$, $y = 4\ (1 - 1)^2 - a$			M1 for finding the turning point (may be seen marked on the graph as $(1, -a)$)
		$x = 1 \pm \sqrt{\frac{a}{4}}$ oe **or** $y = 4 - a$			M1 for finding one of the intercepts (or award for any one correct coordinate shown on graph) $(0, 4 - a)$ or $(1 + \frac{\sqrt{a}}{2}, 0)$ or $(1 - \frac{\sqrt{a}}{2}, 0)$ Note: The 0's can be ignored (as shown in the diagram)
			Correct graph		A1 for a fully correct graph • quadratic shape with minimum in the fourth quadrant and marked as $(1, -a)$ oe • x-axis intercepts marked as $(1 + \frac{\sqrt{a}}{2}, 0)$ oe on the positive x-axis **and** $(1 - \frac{\sqrt{a}}{2}, 0)$ oe on the negative x-axis • y-axis intercept marked as $(0, 4 - a)$ oe Note: The 0's can be ignored (as shown in the diagram)
					Total 4 marks

21		(fg(x) =) $(x + 3)^2 - 2(x + 3)$ oe		5	M1 for substituting g(x) into f(x)
		(fg(x) =) $x^2 + 4x + 3$			A1 Allow $y^2 + 4y + 3$
		$(x + 2)^2 - 4 + 3$ **or** $(x + 2)^2 - 1$ **or** $x^2 + 4x + (3 - y) = 0$ **or** $y^2 + 4y + (3 - x) = 0$			M1 ft (dep on M1) for correctly completing the square on their 3 term quadratic **or** Correctly setting up an equation
		$(x + 2)^2 = y + 1$ **or** $(y + 2)^2 = x + 1$ **or** $x = \frac{-4 \pm \sqrt{16 - 4(3 - y)}}{2}$ or $x = -2 \pm \sqrt{1 + y}$			M1 ft (dep on M2) for a correct rearrangement for their completed the square quadratic **or** correctly substituting into the quadratic formula Allow same equations with x and y swapped
			$-2 + \sqrt{x + 1}$		A1 oe
					Total 5 marks

22	gradient of $JK = -0.5$ **or** $m \times 2 = -1$		6	M1 for finding the gradient of JK using $m_1 \times m_2 = -1$
	$\frac{k-15}{6-j} = -\frac{1}{2}$ **or** $2k - j = 24$ **or** $j = 2k - 24$ **or** $k = \frac{j+24}{2}$ oe			M1 for expressing the gradient of JK in terms of j and k or a correct equivalent equation
	$(j-6)^2 + (k-15)^2 = 80$ oe **or** $\left(\frac{j+6}{2}, \frac{k+15}{2}\right)$ oe **or** $(j+4)^2 + 196 = 100 + (k-1)^2$ oe			M1 for finding equation of JK in terms of j and k **or** for finding the midpoint of M **or** for equating length HJ with length HK
	eg $3k^2 - 78k + 495 = 0$ oe **or** $5j^2 - 60j - 140 = 0$ oe **or** $5k^2 - 150k + 1045 = 0$ oe **or** $3j^2 - 12j - 36 = 0$ **oe** **or** gradient HM: eg $\frac{\frac{k+15}{2}-1}{\frac{j+6}{2}+4} = 2$ **or** $k = 2j + 15$ **or** $j = \frac{k-15}{2}$ oe			M1 (dep on M3) writing a correct quadratic expression in the form $ax^2 + bx + c$ $(= 0)$ (allow $ax^2 + bx = c$) **or** A correct equation for the gradient of HM in terms of j and k or a correct equivalent equation
	eg $(k-15)(k-11)(=0)$ **or** $\frac{78 \pm \sqrt{(-78)^2 - 4\times3\times495}}{2\times3}$ **or** $(k-13)^2 - 169 + 165 (= 0)$	eg $(j-6)(j+2)(=0)$ **or** $\frac{12 \pm \sqrt{(-12)^2 - 4\times3\times-36}}{2\times3}$ **or** $(j-2)^2 - 4 - 12 (= 0)$		M1 (dep on M3) for a complete method to solve their 3-term quadratic equation (allow one sign error in the use of the quadratic formula) **or** a correct method to eliminate either j or k eg $2k - 24 = \frac{k-15}{2}$ oe **or** $\frac{j+24}{2} = 2j + 15$ oe
	$j = -2, k = 11$			A1
				Total 6 marks

22		$\left(\frac{j+6}{2}, \frac{k+15}{2}\right)$ oe		6	M1 for finding the midpoint of M
ALT		$\frac{\frac{k+15}{2}-1}{\frac{j+6}{2}+4} = 2$ **or** $k - 2j = 15$ **or** $k = 2j + 15$ **or** $j = \frac{k-15}{2}$ oe			M1 for expressing the gradient of JK in terms of j and k or a correct equivalent equation
		$(j - 6)^2 + (k - 15)^2 = 80$ oe **or** $(j+4)^2 + 196 = 100 + (k-1)^2$ oe			M1 for finding the length of JK in terms of j and k **or** for equating length HJ with length HK
		E.g. $5j^2 - 12j - 44 = 0$ **or** $3j^2 + 48j + 84 = 0$ oe	E.g. $5k^2 - 174k + 1309 = 0$ **or** $3k^2 + 6k - 429 = 0$ oe		M1 (dep on M3) writing the correct quadratic expression in form $ax^2 + bx + c$ (= 0) allow $ax^2 + bx = c$
		E.g. $(5j - 22)(j + 2)(= 0)$ **or** $\frac{12 \pm \sqrt{(-12)^2 - 4 \times 5 \times -44}}{2 \times 5}$ **or** $(j+8)^2 - 64 + 28 (= 0)$	E.g. $(5k - 119)(k - 11)(= 0)$ **or** $\frac{174 \pm \sqrt{(-174)^2 - 4 \times 5 \times 1309}}{2 \times 5}$ **or** $(k+1)^2 - 1 - 143 (= 0)$		M1 (dep on M3) for a complete method to solve their 3-term quadratic equation (allow one sign error in the use of the quadratic formula)
		$j = -2, k = 11$			A1
					Total 6 marks