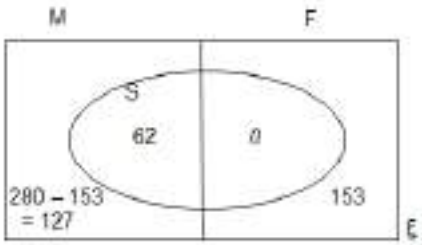
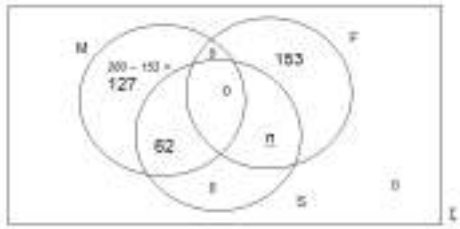
Question			Answer	Marks	Part marks and guidance	
1	(a)		93 ÷ 3 or 31 or 100 ÷ 3 or 33.3.. or 55 ÷ 1.55 or 3300 ÷ 93 or 35.5 or 35.48… or 55 ÷ 93 or 0.6 or 0.59…	1	accept any correct method	e.g. 106.45 lengths in 55 mins
			*their*31 × 100 or 3100 or *their*33.3... × 93 or *their*35.5 × 3	1		
			*their*3100 ÷ 60 soi by 51.6[6..] or 51.7 or 52 or 51[min] 40[sec] or 55 × 60 soi 3300 or 106[.5] or 106.45…	1		
			106.45 or 106[.5] > 100 or 51.6[6]….or 51.7 or 52 or 51[min] 40[sec] < 55 or 31[00] < 33[00] or So he can swim that distance	1	Conclusion or comparison of correct values required	
	(b)		he swims at the same rate	1	accept any correct statement e.g. he does not slow down, no breaks	See appendices
	(c)		he will get tired/he will slow down/not take breaks	1	accept any correct statement	See appendices
2	(a)	(i)	a^4	1		
		(ii)	b^{15}	1		
	(b)		$x(6 - x)$	1		

Question			Answer	Marks	Part marks and guidance	
3	(a)		accurate perpendicular bisector at least from AB passing within 3 cm of C with two pairs of correct arcs	2	**B1** for accurate perpendicular bisector	tolerance ± 2 mm
			arc centre C, at least from BC to CD, with radius 3 cm	2	**B1** for any arc centre C	
			two points marked intersecting the arc and line	1	**Dep** on **B1**(bisector) and **B2**(arc) scored above	
	(b)		One of the points is not in his garden or only one is in his garden	1	accept any correct reason e.g. one point is behind the CD fence	
4	(a)		4 points correctly plotted	2	**B1** for 2 or 3 points correctly plotted	tolerance ± 1 mm
	(b)		strong/good positive	1 1		
	(c)		71[.42…] to 71.4[3] nfww	4	**B1** for 21 **B1** for 15 **M1** for (*their*15)÷21×100 oe If **0** scored **SC1** for line '$y = x$' drawn or if no points plotted in (a) **SC1** for $\frac{12}{17}$	21 from 17 + 4 **FT** their diagram
5	(a)		8 ⁻2 ⁻2 8	2	**B1** for any 2 correct	

Question			Answer	Marks	Part marks and guidance	
	(b)		correct curve which dips below the line $y = -4$	**3**	**B2** for 6 or 7 points correctly plotted **FT** *their* table or **B1** for 4 or 5 points correctly plotted **FT** *their* table	tolerance ± 2 mm for plotting and the curve through the correct points
	(c)		$^{-}2.7$ to $^{-}2.5$ 1.5 to 1.7	**2**	**B1** for each Correct answer or **FT** their graph	tolerance ± 2 mm
	(d)		correct ruled line	**3**	**M2** for a correct unruled line or a line of gradient $^{-}2$ or a line going through $(0, ^{-}1)$ or two further correct points in the table or plotted or **M1** for one point correctly plotted or one further correct point in the table	points are *x* -3 -2 -1 0 1 2 3 *y* 5 3 1 -1 -3 -5 -7 tolerance ± 2 mm
	(e)		$^{-}3.9$ to $^{-}3.7$ [0].7 to [0].9	**2**	**B1** for each Correct answer or **FT** *their* straight line	tolerance ± 1 mm
6			21	**4**	**B1** for 6 and 9 **M1** for *their* (6 × 5) **M1** for *their* (6×5) – *their* 9	implied by 6:30

Question			Answer	Marks	Part marks and guidance	
7			8	5	**B3** for 20 and 36 **M1** for (36 – 20) ÷ 2 **OR** **M2** for 180 – (360 ÷18) soi by 160 or **M1** for 360 ÷ 18 soi 20 and **M2** for 180 – (360 ÷10) soi by 144 or **M1** for 360 ÷ 10 soi 36	accept any correct method
8	(a)		$\frac{12}{15}$ oe	3	**M1** for 15 [options] or indicating 15 **M1** for 12 or indicating 12	this could be the product rule, table, listing or implied by answer of $\frac{n}{15}$ or $\frac{12}{m}$
	(b)		90	2FT	**FT** *their*(a) for 2 marks **M1** for *their*(3 × 5) × 6	ie *their* total number of options × 6

Question			Answer	Marks	Part marks and guidance	
9			Finding the number in each category e.g. Venn diagram  and n = 437 – *their*127 – 62 – 153 or 95 or two-way table S S' M 62 127 189 F 95 153 248 157 280 437 and a common representation to compare e.g. percentages $\frac{95}{248}$×100 = 38.3..% and 38[.3…] or 0.38[3…] [so No]	6	**B3** for 95 or **B2** for 157 or **B1** for 127 and **M2** for $\frac{their\ 95}{their\ 95+153}$ [×100] or [0].4×248 soi by 99.2 or **M1** for $\frac{their\ 95}{n}$ (n > *their*95) or **B1** for 248 **A1** for 38[.3…] or 0.38[3…] to a maximum of 5 marks OR **B3** for a complete and correct Venn diagram or table or **B2** for a correct Venn diagram or table with n not calculated and **M1** for a correct method to calculate n or **B1** for Venn diagram or table with two correct values in the correct places and **M1** for choosing a common representation to compare the statement with the comment e.g. decimals or percentages and **A1** for one of the two numbers correct e.g. with percentages 38.3…. or 40	Note : $\frac{95}{248}$ scores 5 marks accept any correct method e.g 

Question			Answer	Marks	Part marks and guidance	
10	(a)		$\frac{17}{30}$	4	**B2** for $\frac{1.7}{3}$ OR **M2** for 30×0.1+20×0.5+10×0.8+ 10×0.3+30×0.2 soi by 30 or **M1** for three correct frequencies from 3, 10, 8, 3 and 6. and **M1** for 3 + 10 + 4 or 17	It can be done with probabilities
	(b)		They were evenly spread out in the 40 – 50 class	1	accept any correct statement e.g. half the people in the 40 – 50 got over 45	
11			$y = \frac{80}{x^2}$ oe	3	**M1** for $y = \frac{k}{x^2}$ oe **B1** for k = 80	implied by $5 = \frac{k}{4^2}$ oe
12			24	4	**B3** for 24.7 or 24.6[6…] OR **B1** for 18.5 or 1850 **B1** for 0.75 or 75 **M1** for *their*1850 ÷ *their*75 oe soi by 24.7 or 24.6[6…]	condone 18.49 or 1849 in this question 1750 ≤ *their*1850 ≤ 1850 and 70 ≤ *their*75 ≤ 90 allow work in metres e.g. use of 1.75,1.85, .7, .9

Question			Answer	Marks	Part marks and guidance	
13	(a)		4 5	4	**B2** for one correct solution OR **B1** for $x^2 - 9x + 20 = 0$ **M2** for $(x - 4)(x - 5) = 0$ or use of the formula with at most one error or **M1** for two factors which when expanded give two terms correctly or use of the formula with at most two errors if **0** scored **SC1** for correctly factorising *their* quadratic expression	
	(b)		$6x^3 + 23x^2 - 33x + 10$	4	**M3** for a fully correct method with at most one error e.g.$(2x^2 + 9x - 5)(3x - 2) = 6x^3 + 27x^2 - 15x - 4x^2 - 18x + 10$ or better or **M2** for a correct method to multiply two brackets e.g. $2x^2 + 10x - x - 5$ or $3x^2 + 15x - 2x - 10$ or better or **M1** for a correct method with at most two errors or a correct method to multiply two brackets with at most one error	

Question			Answer	Marks	Part marks and guidance	
14			32.6 or 32.56 or 32.556…	5	**M2** for $\sqrt{(11^2 + 6^2)}$ soi by 12.52 to 12.53 or **M1** for $[\ldots]^2 = 11^2 + 6^2$ and **M2** for tan […. =] 8 ÷ *their* 12.52 or **M1** for 8 ÷ *their* 12.52	accept any correct and full method note: HB = 14.866…
15			$\frac{(4+2\sqrt{5})(\sqrt{5}+1)}{(\sqrt{5}-1)(\sqrt{5}+1)}$ $(4\sqrt{5} + 4 + 10 + 2\sqrt{5})$ oe or better $(5 - \sqrt{5} + \sqrt{5} - 1)$ oe or better $\frac{6\sqrt{5}+14}{4} = \frac{3\sqrt{5}+7}{2}$	**M1** **M1** **M1** **A1**	 condone one error soi by 5 -1 or 4 condone one error	 bracket expansion could be in a table i.e. dividing by 2
16	**(a)**		$(x – 3)^2 + 11$ final answer	3	**B1** for $(x – 3)^2$ **B2** for +11 or **FT** *their* $(x – 3)^2$	
	(b)		(3, 11)	2	**B1FT** for each part	**FT** *their* $(x – a)^2 + b$ e.g. (a, b)

Question			Answer	Marks	Part marks and guidance	
17	(a)		Attempt to use the cosine formula $[\ldots]^2 =$ $14^2 + 18^2 - 2 \times 14 \times 18 \cos 46$ oe or cosine formula with at most 2 errors or correct cosine formula starting cos $[\ldots] = \frac{14^2+18^2-[\ldots]^2}{2\times18\times14}$ 13.03…	M1 M2 or M1 A1		Evidenced by the formula e.g. $a^2 = b^2 + c^2 - 2bc \cos A$ or better
	(b)		35.48 to 35.6	3	**B1** for $180 - 78 - 81$ or 21 **M1** for $\frac{13.0\ldots}{\sin their 21} = \frac{[\ldots]}{\sin 78}$ oe or better	could be on diagram accept any correct method
18			−1.85 [0].18	4	**M2** for $\frac{-5 \pm \sqrt{5^2 - 4\times3\times-1}}{2\times3}$ or better and condone one error or **M1** for the formula with at most two errors and **A1** for −1.85 or [0].18 or for both answers correct but to more than 2dp. e.g. 0.180... and -1.847…	Accept any correct algebraic method e.g. completing the square $3[x^2+\frac{5}{3}x+\frac{1}{3}]=0$ $3[(x+\frac{5}{6})^2-\frac{13}{36}] = 0$