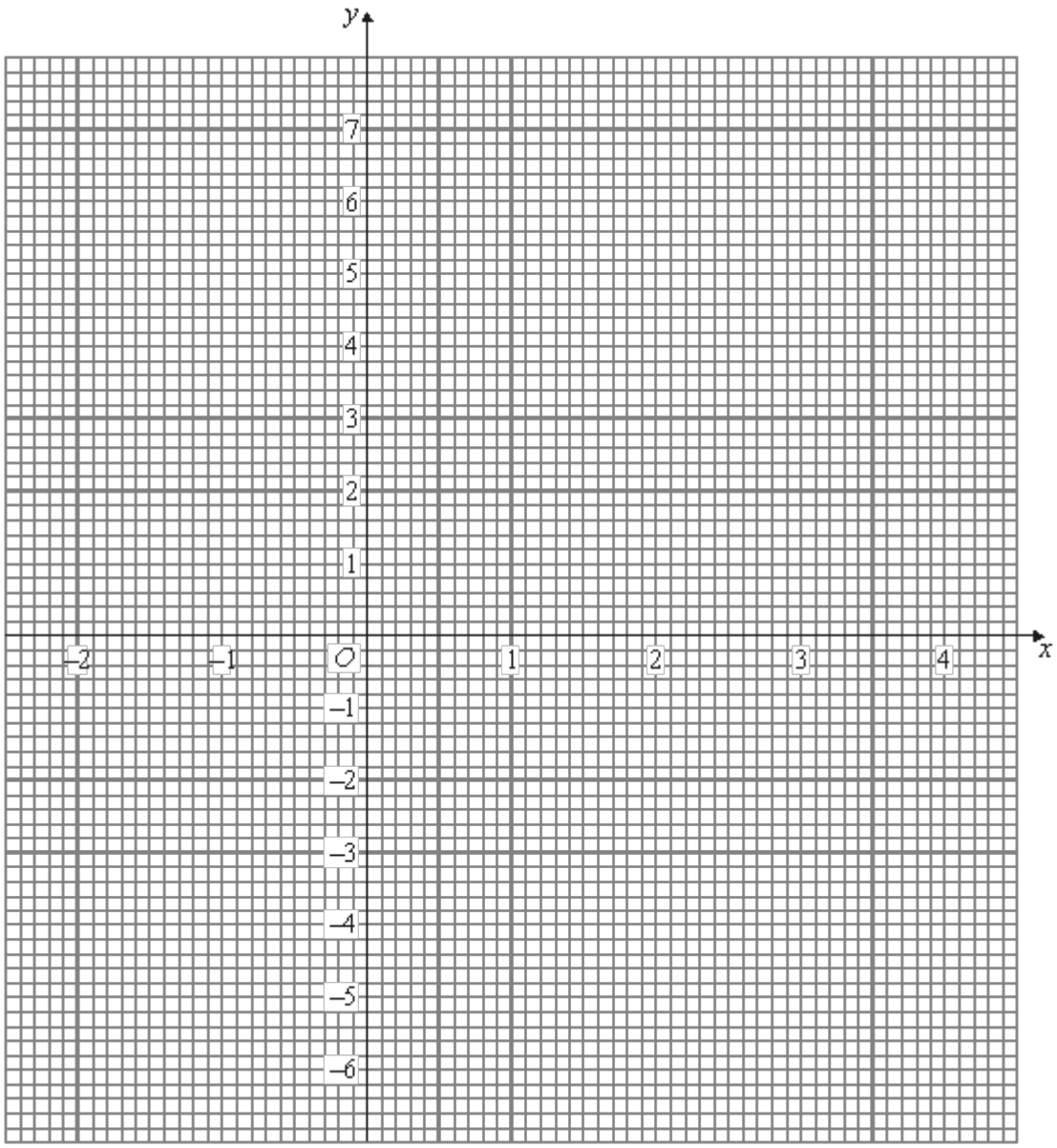
Q1. (a) Complete the table for $y = x^2 - 2x - 4$.

x	–2	–1	0	1	2	3	4
y	4		–4	–5		–1	

(2)

(b) On the grid, draw the graph of $y = x^2 - 2x - 4$.



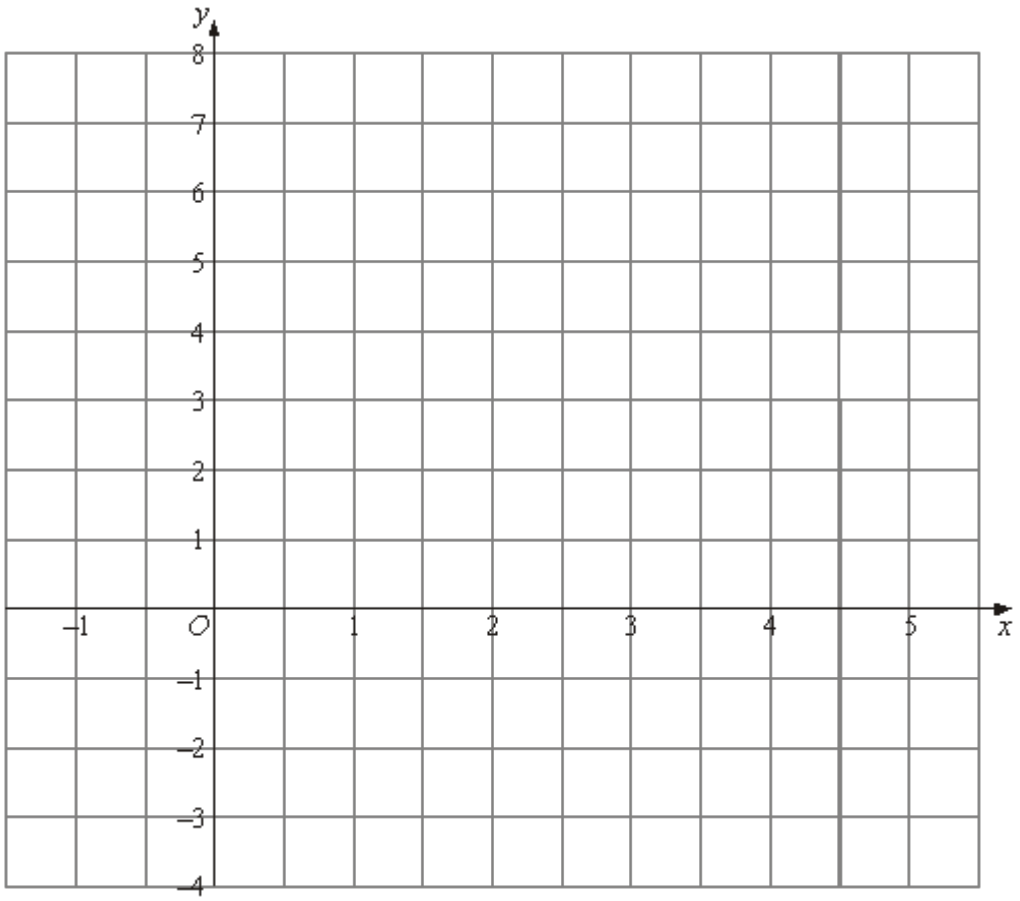
(2)
(Total 4 marks)

Q2. (a) Complete the table of values for $y = x^2 - 4x + 2$

x	–1	0	1	2	3	4	5
y		2	–1		–1		7

(2)

(b) On the grid, draw the graph of $y = x^2 - 4x + 2$



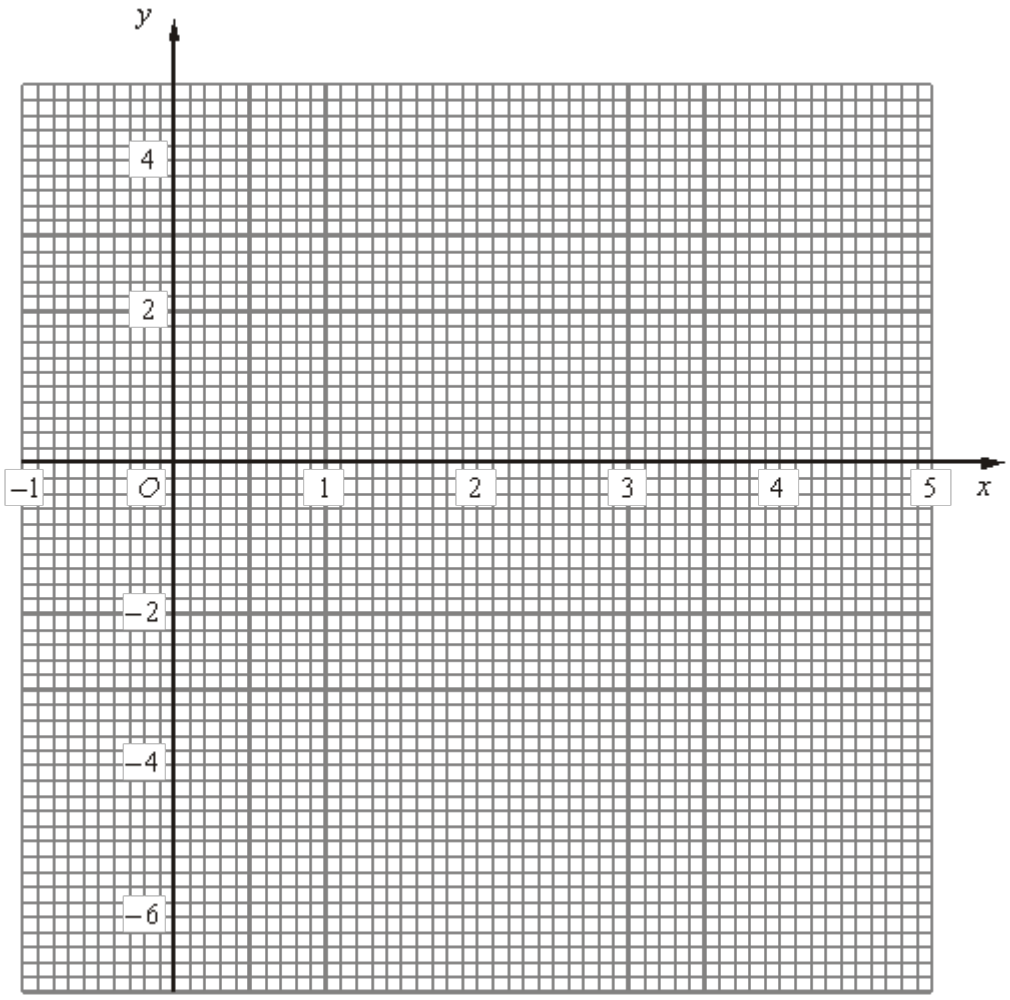
(2)
(Total 4 marks)

Q3. (a) Complete the table of values for $y = x^2 - 4x - 2$

x	–1	0	1	2	3	4	5
y		–2	–5			–2	3

(2)

(b) On the grid, draw the graph of $y = x^2 - 4x - 2$



(2)

(c) Use your graph to estimate the values of x when $y = –3$

x = ...

y = ...

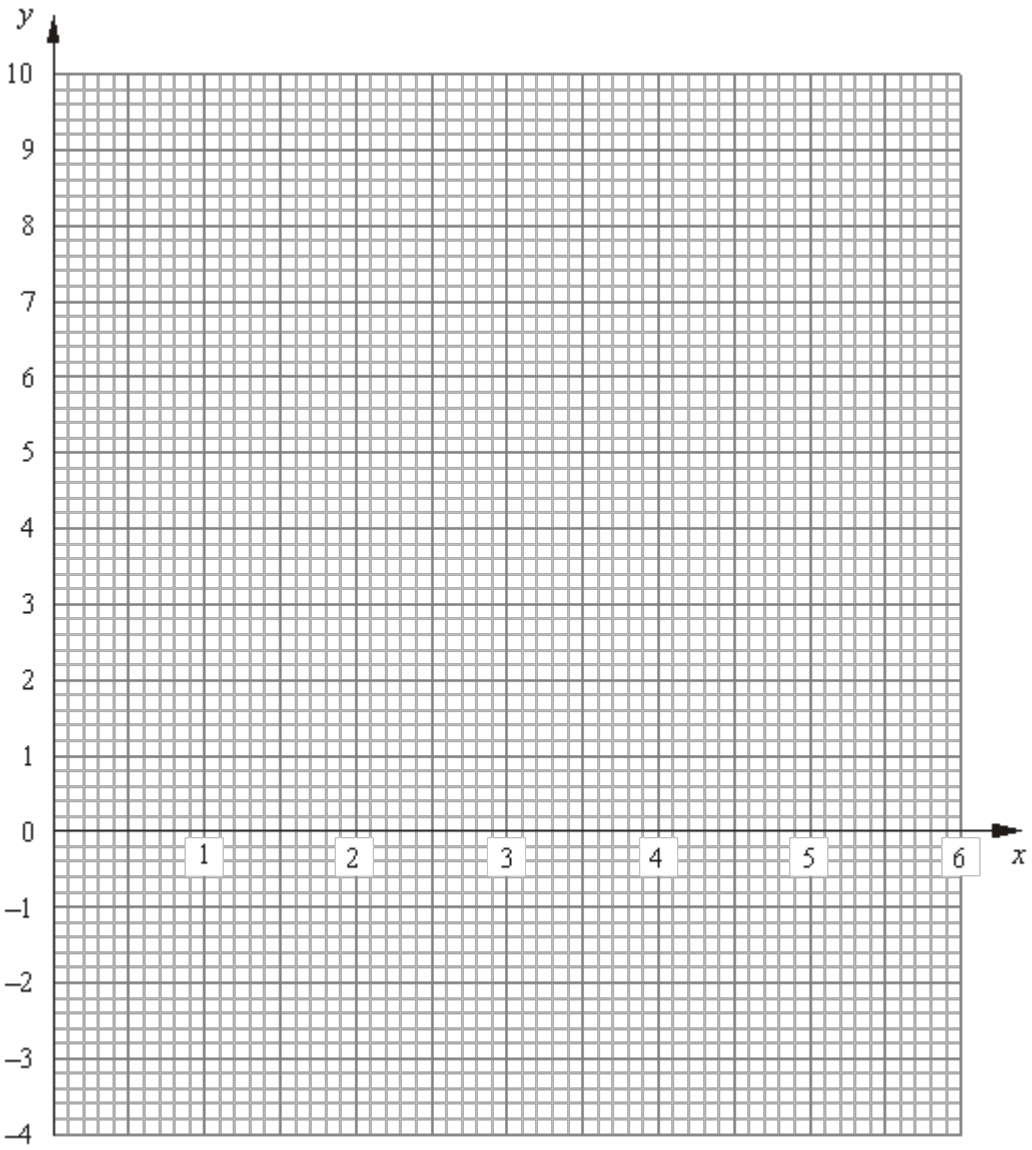
(2)
(Total 6 marks)

Q4. (a) Complete the table of values for $y = x(x - 3)$ for values of x from 0 to 5.

x	0	1	2	3	4	5
y	0	−2		0	4	

(1)

(b) On the grid draw the graph of $y = x^2 - 3x$



(2)

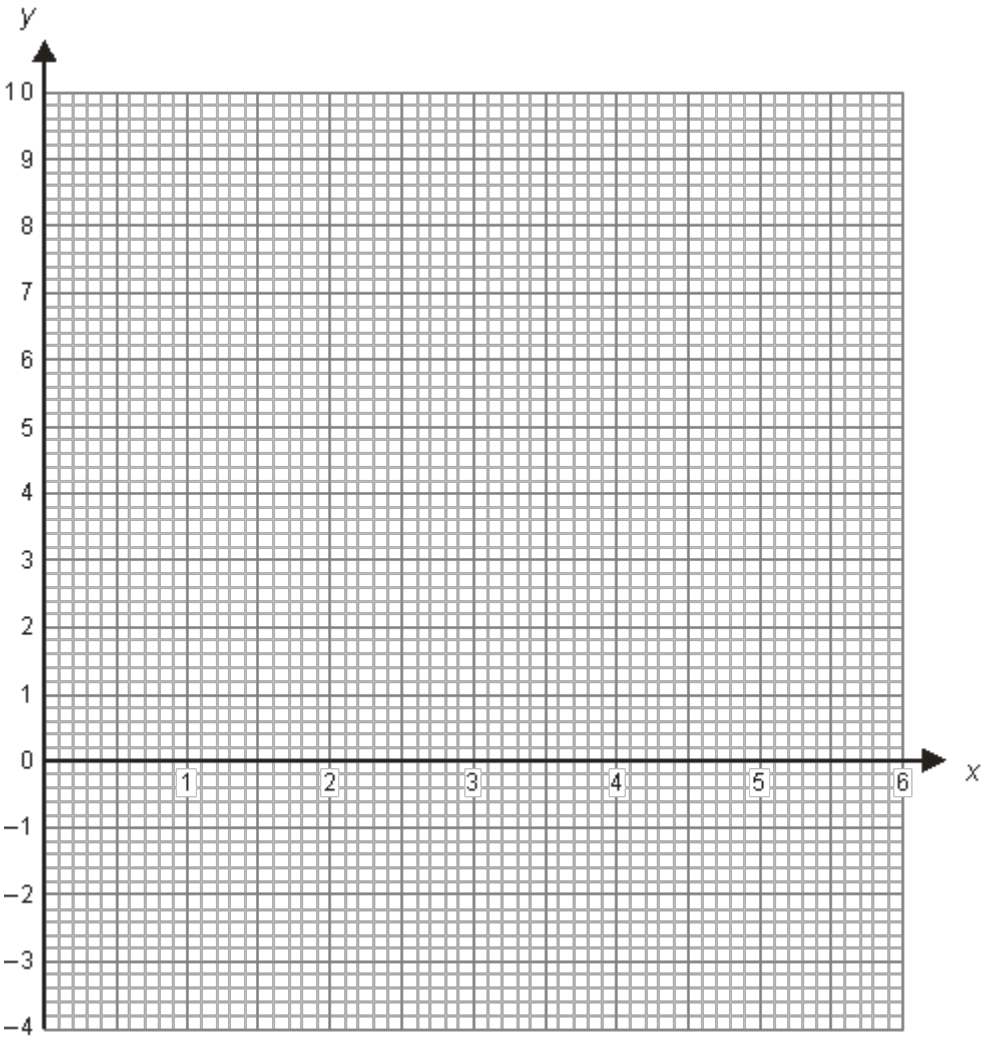
The length of a rectangle is 3 m less than the width. The area of the rectangle is 7 m^2

(c) Find an estimate for the width of the rectangle.

..... m

(2)
(Total 5 marks)

Q5. (a) On the grid draw the graph of $y = x(x - 3)$



(2)

(b) Using your result for (a), or otherwise, solve the simultaneous equations

$$y = x(x - 3)$$

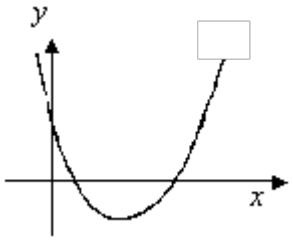
$$x^2 + y^2 = 9$$

(3)
(Total 5 marks)

M1.

	Answer	Mark	Additional Guidance
(a)	–1, –4, 4	2	**B2** for all 3 values correct (**B1** for 1 or 2 values correct)
(b)		2	**B1** ft for all 7 of their points correctly plotted **B1** ft (dep on at least **B1** in (a)) for smooth curve through all 7 of their points
			Total for Question: 4 marks

M2.

	Answer	Mark	Additional Guidance
(a)	7, –2, 2	2	**B2** all three correct (**B1** for any one or two correct)
(b)		2	**B2** fully correct graph **OR** **B1** ft for 7 points plotted correctly ± 2 mm **B1** for smooth curve drawn through their points provided **B1** awarded in (a).
			Total for Question: 4 marks

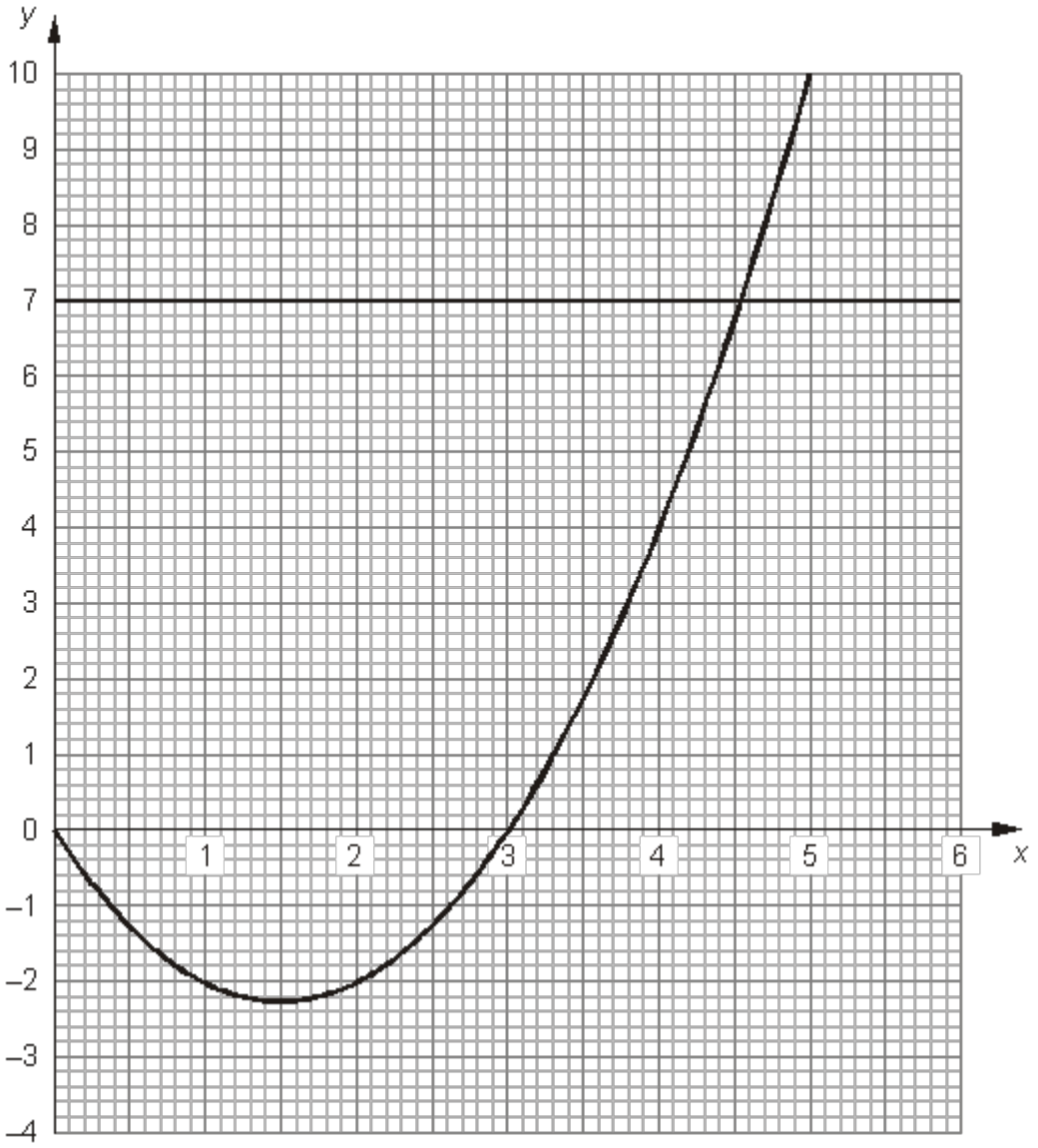
M3.

	Working								Answer	Mark	Additional Guidance
(a)	x	–1	0	1	2	3	4	5	3, –6, –5	2	**B2** cao for all 3 (**B1** for any 1 or 2 correct)
	y	**3**	–2	–5	**–6**	**–5**	–2	3			
(b)									Quadratic graph	2	**B2** for a fully correct graph **OR** **B1** for all 7 points ft on (a) plotted correctly ± 1 sq **B1** for a smooth curve through all 7 of their plotted points depending on at least **B1** in (a)
(c)	Draw $y = -3$								0.3, 3.7	2	**B1** for 0.2 – 0.4 or ft from graph ± 1 square **B1** for 3.6 – 3.8 or ft from graph ± 1square (SC: If no marks earned then **B1** for line $y = -3$ drawn)
											Total for Question: 6 marks

M4.

	Working	Answer	Mark	Additional Guidance
(a)	0, –2, –2, 0, 4, 10	–2, 10	1	**B1**, B1 for each cao
(b)		Smooth curve	2	**B1** correct plot of their values **B1** smooth curve through their points providing at least 1 mark earned in (a)

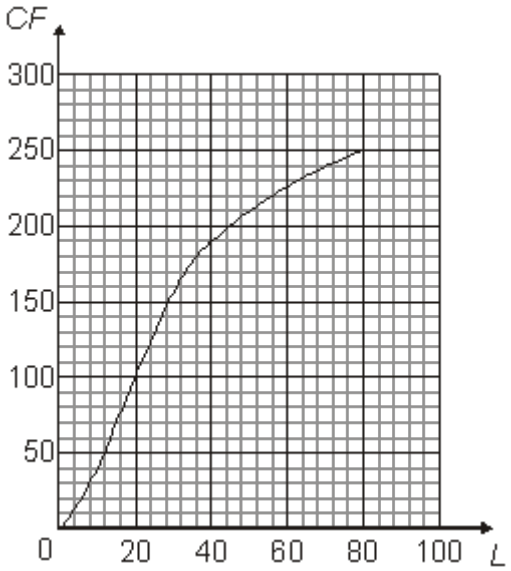
(c)	Draws $y = 7$ **OR** T&I Width / Area 4 / 4 4.1 / 4.51 4.2 / 5.04 4.3 / 5.59 4.4 / 6.16 4.5 / 6.75 4.6 / 7.36 4.7 / 7.99 4.8 / 8.64 4.9 / 9.31 5 / 10 4.55 / 7.0525	4.5	2	**M1** draw $y = 7$ **A1** 4.5 – 4.6 ft from graph **OR** Uses T&I **B2** 4.5 with $x^2 - 3x$ evaluated correctly at 4.5 and 4.6 (B1 Locates 'root' between 4 and 5 at least 2 evaluations or refers to table)
				Total for Question: 5 marks



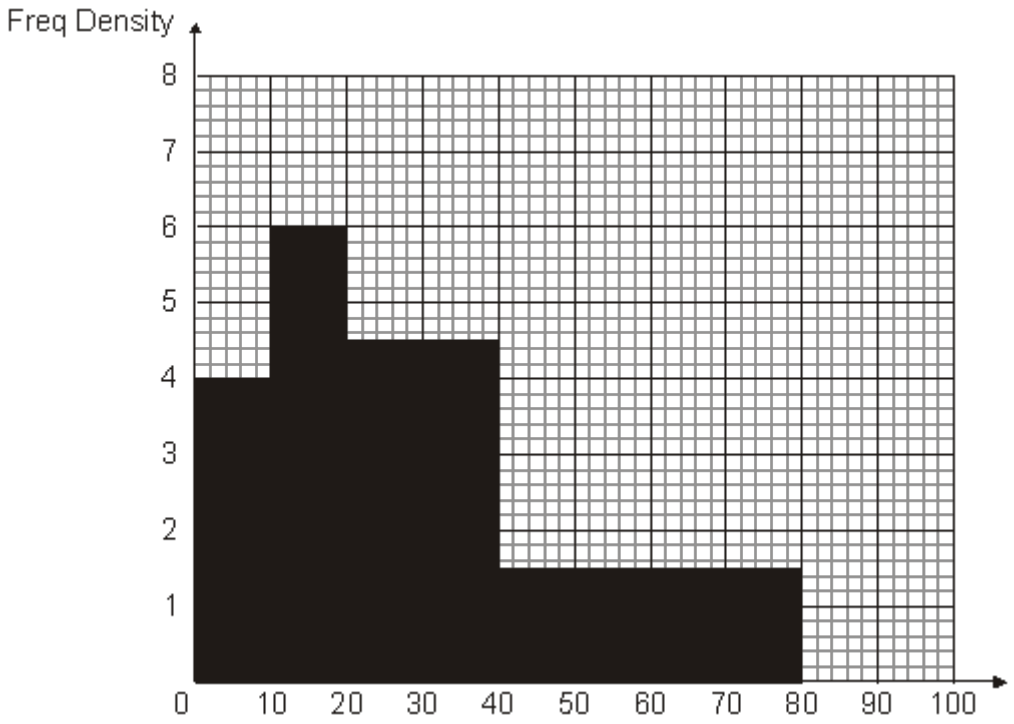
M5.

	Working	Answer	Mark	Additional Guidance
(a)		Smooth curve	2	**B1** correct plot of their values **B1** smooth curve through their points
(b)		$x = 3$ $y = 0$	3	**M1** attempts to draw circle at origin **M1** uses radius 3 cm (using graph scale correctly)

				A1 cao **OR** **B1** for substituting a value of x into $y = x(x - 3)$ and $x^2 + y = r^2$ **B1** for substituting y into $x = 3$ into $x(x - 3)$ and $x^2 + y = r^2$ **B1** cao
Total for Question: 5 marks				



OR


Freq Density
8
7
6
5
4
3
2
1
0
10
20
30
40
50
60
70
80
90
100

E1. The table in part (a) usually yielded at least 1 mark. As anticipated, the major error was with dealing with $x = -1$, where the answer –5 often appeared, presumably from 1 – (2 + 4). Other incorrect values looked as if they came from squaring –1 and getting –1.

Candidates were generally successful in transferring the table values onto the graph and most drew a smooth curve through their points to pick up the final two marks, although there were still some who joined their points with straight line segments.

E2. This question was generally done well. In part (a), most candidates were able to gain at least 1 mark for a correct value in the table. A common error here was to find the value of y at $x = -1$ as 6 or 5 or –7. Despite possibly having made an error in the table, many candidates were able score 2 marks in part (b) for plotting their points correctly and drawing a smooth curve through their points. A very common error here was to join the points with straight lines. A surprising number of candidates, having drawn a completely correct graph but having made an error in the table, did not go back and correct the value in the table.

E3. **Foundation**

Part (a) contained many errors, mostly from the inability of candidates to cope with the negative value of x, even with the aid of a calculator. 1 or –5 were common incorrect values of y from $x = -1$.
In part (b) the plotting of their points was generally well done although few went on to provide a smooth curve joining the points. Unfortunately some candidates are still joining their points with straight lines although more often than not, their points were not joined at all.
Few understood what was required in part (c) with 0.5 and 3.5 being common incorrect answers when any answer was provided, with candidates just using their table to provide vales of x between 0 and 1 and between 3 and 4. It was rare to see the line between 0 and 1 and between 3 and 4. It was rare to see the line $y = -3$ drawn.
45% of candidates failed to score any marks at all on this question.

Higher

(a) Most candidates scored at least 1 mark for the table. The most common error was to give $y = 1$ when $x = -1$, arising from $(-1)^2 = -1$. Presumably candidates using their calculator omitted the brackets.

(b) The points were usually plotted correctly but a surprising number did not join the points.

(c) Those candidates who had drawn a graph tended to get this correct. 0.3 was seen more often than 3.7, in which case the second answer given was –0.3. It was rare for the line $y = -3$ to be drawn.