



**SET Y**

**Level 3 Certificate**  
**MATHEMATICAL STUDIES**

**Paper 2A**

**Mark scheme**

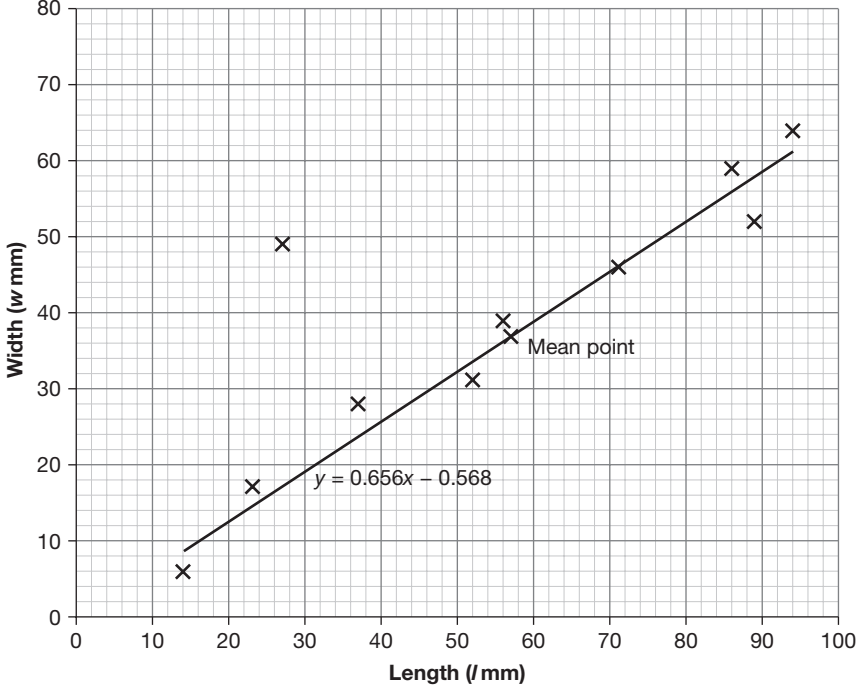
# Glossary

The marking scheme is given to indicate roughly where marks are likely to be awarded. The scheme does not necessarily reflect the precise allocation of marks that would be used by AQA Examining teams.

<b>M</b>	Method marks: awarded for evidence of a correct method which could lead to a correct answer.
<b>A</b>	Accuracy marks: awarded for a correct answer that follows from a correct method. To get these marks a correct method must be explicitly or implicitly shown; a correct answer alone gets no marks.
<b>B</b>	Marks that are awarded independently of any method.
<b>ft</b>	Follow through: marks awarded for an answer that uses correct working following a mistake in an earlier step.

# Mark scheme Paper 2A

Question	Answer	Mark																
1 (a)	The graph shows a cumulative total, which is certain to rise.	B1																
	The headline confuses this with the rate of bankruptcies, which is actually falling.	B1																
1 (b)	We have successfully reduced the bankruptcy rate to 21 000 per year.	M1 A1																
2	She is correct that her gross salary is roughly £400 per week.	B1																
	However, this will be used up as follows (for example).	M1 A1 A1																
	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th style="text-align: center;">£</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Income tax</td> <td style="text-align: center;">40</td> </tr> <tr> <td style="text-align: center;">NI</td> <td style="text-align: center;">30</td> </tr> <tr> <td style="text-align: center;">Student loan repayment</td> <td style="text-align: center;">0</td> </tr> <tr> <td style="text-align: center;">Rail fare</td> <td style="text-align: center;">80</td> </tr> <tr> <td style="text-align: center;">Board and lodging</td> <td style="text-align: center;">120</td> </tr> <tr> <td style="text-align: center;">Saving</td> <td style="text-align: center;">100</td> </tr> <tr> <td style="text-align: center;"><b>Total</b></td> <td style="text-align: center;"><b>370</b></td> </tr> </tbody> </table>			£	Income tax	40	NI	30	Student loan repayment	0	Rail fare	80	Board and lodging	120	Saving	100	<b>Total</b>	<b>370</b>
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With these figures, she is left only £30 per week for other expenses/entertainment.	A1																	
3 (a)	For example, “cheats taxpayer”, “sparked fury”, “flogged on the cheap”, “out of pocket”.	B1																
3 (b)	$45.8 - 32.4 - 6.2 = 7.2$ (£ billion)	M1 A1																
3 (c)	It will be the best deal for taxpayers. It will support the British economy. It is the judgement of the Bank of England. It is the conclusion of Rothschilds.	B1 × 2																
3 (d)	The Daily Mirror can justifiably claim that the first tranche of stock had been sold too cheaply.	M1 A1																
	However, George Osborne would be able to say that it was only the fact that the sale had taken place which had “improved the marketability” of the stock, as he had predicted. He would then be able to get better terms for the taxpayer in the future.	M1 A1																
3 (e)	$\left(\frac{32.4}{0.81}\right) = 40$ (£ billion)	M1 A1																
4 (a)	$z = \frac{28\,000 - 25\,000}{2000} = 1.5$	M1 A1																
	$P(z > 1.5) = 1 - 0.9332 = 0.0668$	M1 A1																
	$0.0668 \times 1000 \approx 67$	M1 A1																
4 (b)	$N(25\,000, 1000^2)$	B1 B1																
4 (c)	No. The wear on each of the four tyres of one particular car is likely to be similar. The four tyres will certainly not be a random selection of four tyres.	B1																
5 (a)	Gradient = $-\frac{50}{4.2} = -11.9$ (or $-11.8$ from calculator regression line)	M1 A1																
	Oliver’s pulse rate reduces by 11.9 beats per minute for each minute after exercise.	A1																
5 (b)	Sam’s pulse rate reduces by 10.9 beats per minute for each minute after exercise.	M1																
	Sam is not correct – his pulse rate is reducing more slowly, so he is less fit.	A1																
5 (c)	Yes – the graph indicates that a curve would be better than a straight line.	B1																

6 (a)	$z = \frac{22 - 15}{2} = 3.5$	M1
	$P(z > 3.5) = 0.0002$	A1
	None $(0.0002 \times 365 \times \frac{6}{7} \approx 0.06)$	A1
6 (b)	$z = \frac{12 - 15}{2} = -1.5$	M1
	$P(z < -1.5) = 0.0668$	M1 A1
	$0.0668 \times 365 \times \frac{6}{7} \approx 21$	A1
7 (a)	Amelia has plotted the point (27, 49) instead of (49, 27).	M1 A1
7 (b)	$w = 0.656l - 0.569$ (3sf) <p style="text-align: center;"><b>Beech leaves</b> Scatter graph of width against length</p>  <p style="text-align: center;">Drawing of line</p>	M1 A1 A1
7 (c)	Yes, $l = 10$ in the equation gives $w = 0.656 \times 10 - 0.569 = 5.99$ ; approximately 6 [Allow: No, extrapolation beyond the given data does not give reliable predictions.]	B1 M1 A1
8 (a)	The standard deviation of the mean values of samples $\frac{\sigma}{\sqrt{n}}$ .	B1 B1
8 (b)	Mean = 0.742, $z = 1.64$ , s.e. = $\frac{0.06}{\sqrt{6}}$	B1 × 3
	$0.742 \pm 1.64 \times \frac{0.06}{\sqrt{6}} = [0.70, 0.78]$	M1 A1 A1