



SET Y

Level 3 Certificate
MATHEMATICAL STUDIES

Paper 1

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.

M	Method marks: awarded for evidence of a correct method which could lead to a correct answer.
A	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	Marks that are awarded independently of any method.
ft	Follow through: marks awarded for an answer that uses correct working following a mistake in an earlier step.

Mark scheme Paper 1

Question	Answer	Mark								
1 (a)	Survey the customers of a random sample of shops.	B1								
	Advantages – economical and easy to carry out since it only involves a few areas.	B1								
	Disadvantages – can be unreliable since results from different shops can differ widely.									
1 (b)	Decide on quotas of (for example) men, women, male children, female children.	B1								
	Advantages – extremely cheap and easy to carry out.	B1								
	Disadvantages – the selection of people to fill the quotas may introduce bias.									
2 (a)	This is the multiplying factor, $1 + \frac{0.5}{100}$, for 0.5%.	B1								
2 (b)	201.50	B1								
	202.01	B1								
	405.03	B1								
2 (c)	$1.005^{12} \approx 1.0617$	M1 A1								
	6.2%	A1								
3	Income Tax									
	<table border="1"> <thead> <tr> <th></th> <th>£</th> </tr> </thead> <tbody> <tr> <td>Taxable salary</td> <td>14 400</td> </tr> <tr> <td>Tax</td> <td>2 880</td> </tr> <tr> <td>Monthly</td> <td>240</td> </tr> </tbody> </table>		£	Taxable salary	14 400	Tax	2 880	Monthly	240	B1 M1 A1 A1
		£								
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	£									
Monthly salary	2083.33									
0% on	672 = 0									
12% on	1411.33 = 169.36									
Total = £409.36	B1									
4	For cyclists, assume that the youngest age is 2 and that the oldest age is 90	B1 B1								
	The lower quartile, median and upper quartile are roughly 23, 34 and 46.	B1 × 3								
	The interquartile range is then 23 as compared to 35 for pedestrians. The ages of cyclists are much more tightly grouped than for pedestrians even though the ranges are similar.	M1 A1								
	The median is 34 for cyclists as opposed to 28 for pedestrians.	B1								
	The cyclists are therefore, on this measure of average, significantly older.	M1 A1								
5 (a)	The APR. It compares loans over the same period of time, ie 1 year.	B1 B1								
5 (b)	$26 \times £26.15 = £679.90$	M1 A1								
5 (c)	$C = £400$	B1								
	$m = 26$	B1								
	$i = 8.45$	B1								
	$A_k = £26.15$	B1								

6 (a)	$\frac{12}{20} \times 643 + 421 + 184 + \frac{18}{40} \times 97$	M2
	= 1034	A1
	$\frac{1034}{1977} \times 100 \approx 52\%$	M1 A1
6 (b)	5 days 10 million pupils 0.15 kg per apple	B1 × 2
	$5 \times 10 \times 0.15$ million kg \approx 7500 tonnes.	M1 A1
6 (c)	$\frac{147.4}{137.6} \times 100 \approx 1.07$ ie 7% increase.	M1 A1
7 (a)	£15 million $\times 1.0395^{122} =$ £1.693 billion	M1 A1
7 (b)	Dimensions:	
	Depth (15 m)	B1
	Width (50 m)	B1
	Length (64 km suggested by article)	B1
	Volume of earth calculated (48 million m ³)	M1 A1
	Volume of earth per man (3000 m ³)	M1 A1
	Estimate (1 m ³ per day)	B1
Number of years $\left(\frac{3000}{365} = 8.2 \text{ years}\right)$ [The canal actually took 6 years to complete.]	M1 A1	