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General Certificate of Secondary Education
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Mathematics 43601F

Unit 1 Foundation tier

Final

Mark Scheme

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation events which all examiners participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for standardisation each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, examiners encounter unusual answers which have not been raised they are required to refer these to the Principal Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of candidates' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

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Glossary for Mark Schemes

GCSE examinations are marked in such a way as to award positive achievement wherever possible. Thus, for GCSE Mathematics papers, marks are awarded under various categories.

M	Method mark awarded for a correct method which could lead to a correct answer.
M dep	Method mark dependent on a previous method mark being awarded.
A	Accuracy mark awarded when following on from a correct method. It is not necessary to always see the method. This can be implied.
B	Mark awarded independent of method.
B dep	Mark that can only be awarded if a previous independent mark has been awarded.
Q	Mark awarded for quality of written communication
ft	Follow through mark awarded for correct working following a mistake in an earlier step.
SC	Special case. Marks awarded within the scheme for a common misinterpretation which has some mathematical worth.
oe	Or equivalent. Accept answers that are equivalent. eg, accept 0.5 as well as $\frac{1}{2}$
[a, b]	Accept values between a and b inclusive.
25.3 …	Accept answers which begin 25.3 eg 25.3, 25.31, 25.378.
Use of brackets	It is not necessary to see the bracketed work to award the marks.

Examiners should consistently apply the following principles

Diagrams

Diagrams that have working on them should be treated like normal responses. If a diagram has been written on but the correct response is within the answer space, the work within the answer space should be marked. Working on diagrams that contradicts work within the answer space is not to be considered as choice but as working, and is not, therefore, penalised.

Responses which appear to come from incorrect methods

Whenever there is doubt as to whether a candidate has used an incorrect method to obtain an answer, as a general principle, the benefit of doubt must be given to the candidate. In cases where there is no doubt that the answer has come from incorrect working then the candidate should be penalised.

Questions which ask candidates to show working

Instructions on marking will be given but usually marks are not awarded to candidates who show no working.

Questions which do not ask candidates to show working

As a general principle, a correct response is awarded full marks.

Misread or miscopy

Candidates often copy values from a question incorrectly. If the examiner thinks that the candidate has made a genuine misread, then only the accuracy marks (A or B marks), up to a maximum of 2 marks are penalised. The method marks can still be awarded.

Further work

Once the correct answer has been seen, further working may be ignored unless it goes on to contradict the correct answer.

Choice

When a choice of answers and/or methods is given, mark each attempt. If both methods are valid then M marks can be awarded but any incorrect answer or method would result in marks being lost.

Work not replaced

Erased or crossed out work that is still legible should be marked.

Work replaced

Erased or crossed out work that has been replaced is not awarded marks.

Premature approximation

Rounding off too early can lead to inaccuracy in the final answer. This should be penalised by 1 mark unless instructed otherwise.

Unit 1 Foundation Tier

Q	Answer	Mark	Comments
1a	26 367	B1	Accept in words.
1b	26 400	B1 ft	Correct or ft (a) rounded to nearest 100
1c	7421 (+) 7489 (+) 10 659	M1	Allow one error for a misread or a miscopy.
	25 569	A1	SC1 for complete total 55 174
2a	B=4 **and** E=10 **and** C= 𝍸 𝍸 | | |	B2	B1 for one or two correct
2b	60 ÷ 4 (= 15)	M1	oe eg 15 × 4 (= 60) or $\frac{15}{60}$
	D	A1	
3a	8	B1	
3b	6 (–) 4 or 4 ÷ 2	M1	$1\frac{1}{2}$ – 1 (symbols) or $\frac{1}{2}$ symbol chosen
	2	A1	
3c	Football	B1	
4a	2.25 × 6 (+ 2.95) or 13.5(0)	M1	oe
	16.45	A1	
4b	2.95 × 2 + 2.25 × 2 (= 10.4(0))	M1	(2.95 + 2.25) × 2
	Their 10.4(0) – 9(.00)	M1	
	1.40	A1	1.4 scores M2 A0
5	No and 2 × 60 ≠ 80 oe or No, as the bar sizes cannot be compared since the vertical axis is broken oe	B2	B1 60 and 80 seen or 60 × 2 (= 120) or 80 ÷ 2 (= 40) or vertical scale is broken or '20 more' oe

Q	Answer	Mark	Comments
6a	$\frac{125}{250}$	M1	oe
	$\frac{1}{2}$	A1	Must be a fraction
6b	$\frac{6}{100} \times 250$	M1	oe
	15	A1	SC1 235
7a	3 000 000 ÷ 2	M1	oe
	1 500 000	A1	SC1 digits 15
7b	800 000 + their 1 500 000 (= 2 300 000)	M1	Ignore any working for Dan
	3 000 000 ÷ 3 + 1 450 000 (= 2 450 000)	M1	oe
	Sally **and** 2 450 000 **and** 2 300 000	A1ft	Accept 245 if clearly compared with 230 Only ft their part (a)
8a	Appropriate key	B1	
	All leaves correct and ordered: 3 4 5 5 6 8 0 3 3 5 5 6 7 9 4 6 8 8 0 1	B1	
	Appropriate alignment of leaves	Q1ft	ft their single digit leaves Strand (ii) Logical organised working so row lengths show distribution
8b	$\frac{1}{5} \times 20$ (= 4)	M1	oe
	26	A1 ft	Correct, or ft an ordered stem-and-leaf diagram SC1 46

Q	Answer	Mark	Comments
9	2 6 8 8 (in any order)	B3	B2 for any two of: four numbers with a total of 24; four numbers with a median of 7; four numbers with **one** mode of 8. B1 for one of the above. SC1 for 24 seen in the working space.
10a	30	B1	
10b	4	B1	
10c	5×4 (= 20) or 6×2 (= 12) or 7×8 (= 56) or 8×10 (= 80) or 9×6 (= 54)	M1	oe
	$5 \times 4 + 6 \times 2 + 7 \times 8 + 8 \times 10 + 9 \times 6$ (= 222)	M1dep	oe Allow one error or omission
	$222 \div 30$	A1	oe 222 must be evaluated and correct
10d	Marks for Class B are more spread out	B1 ft	Accept B range > A range (ft their part b)
	On average Class A marks higher than Class B	B1	Accept A mean > B mean

Q	Answer	Mark	Comments
11a	Any four correct plots	M1	$\pm \frac{1}{2}$ square
	All seven correct plots	A1	
11b	Continuous line within limits	B1	Straight line, negative gradient, at least 3 large squares wide that passes / would pass through gate at (2, 8) and (2, 11) and gate at (5, 1) and (5, 5)
11c	Negative (correlation)	Q1	Strand (i) Correct vocabulary Must use the word 'negative' Ignore extra words eg strong, weak, ...
11d	Reads across from 5 on the vertical axis	M1	Must have a straight line of best fit
	Answer appropriate to their straight line of best fit with negative gradient	A1 ft	ft their line of best fit $\pm \frac{1}{2}$ square SC1 Answer [3.9, 4.3]
12	Plotted at midpoints	B1	$\pm \frac{1}{2}$ square
	Correct heights (40, 70, 86, 78, 54) and joined with straight lines	B1	$\pm \frac{1}{2}$ square SC1 4 out of 5 completely correct points and joined with straight lines SC1 Correct histogram drawn at heights 40, 70, 86, 78, 54.

Q	Answer	Mark	Comments
13	$\frac{3}{4} - \frac{1}{4} \left(= \frac{1}{2}\right)$	M1	
	$6 \div 2 \times 3$	M1	3 and 9 chosen
	9	A1	SC2 blue = 3 or red + blue = 12
	Alternative method 1		
	Pair of integers with a difference of 6 eg 2 and 8 or Pair of integers with P(blue) = $\frac{1}{4}$ eg 1 and 3, 2 and 6, $\frac{2}{8}$, $\frac{3}{12}$	M1	1 : 3 or 3 : 1
	3 and 9 chosen	M1	3 : 9 or 9 : 3 chosen
	9	A1	SC2 blue = 3 or red + blue = 12
	Algebraic methods are not expected on Unit 1 but, if seen, apply the following schemes		
	Alternative method 2		
	$b + 6 = 3b$	M1	$r - 6 = \frac{r}{3}$
	$2b = 6$ or $b = 3$	M1	$3r - 18 = r$ or $2r = 18$
	9	A1	SC2 blue = 3 or red + blue = 12
	Alternative method 3		
	x red, $(x - 6)$ blue, $\frac{x - 6}{x + x - 6} = \frac{1}{4}$	M1	oe
	$4x - 24 = 2x - 6$	M1	Expanding and eliminating fractions
	9	A1	SC2 blue = 3 or red + blue = 12