Version 1.0 1212

General Certificate of Secondary Education
November 2012

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.

Further copies of this Mark Scheme are available from: aqa.org.uk

Set and published by the Assessment and Qualifications Alliance.

The Assessment and Qualifications Alliance (AQA) is a company limited by guarantee registered in England and Wales (company number 3644723) and a registered charity (registered charity number 1073334).
Registered address: AQA, Devas Street, Manchester M15 6EX.

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 marks are awarded for a correct method which could lead to a correct answer.
A	Accuracy marks are awarded when following on from a correct method. It is not necessary to always see the method. This can be implied.
B	Marks awarded independent of method.
Q	Marks awarded for Quality of Written Communication
ft	Follow through marks. Marks 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.
M dep	A method mark dependent on a previous method mark being awarded.
B dep	A mark that can only be awarded if a previous independent mark has been awarded.
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.
3.14 …	Allow answers which begin 3.14 eg 3.14, 3.142, 3.149.
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
1	E D A	B2	B1 for 2 correct Condone 1 instead of E and 0 instead of A
2	50 (p) **and** 20 (p), 10 (p) and 2 (p)	B2	B1 for a lower row sum which is 18 less than the top number. Condone missing £ and/or p signs.
3a	Attempt at tally **and** frequency	M1	At least one row complete and correct (five bar gate not required)
	Tallies and frequencies correct ie. 7, 9, 4	A1	All three rows correct (five bar gates not required)
	Five bar gate used correctly throughout	Q1	Strand (i) – Correct notation SC1 for correct frequencies (in either column) but no tallies
3b	their 7 + their 9 + their 4 + 10 (=30)	M1	
	their 30 ÷ 2 (=15)	M1 dep	
	6	A1 ft	ft from (a) Non-integer answers should be rounded or truncated
	Alternative method		
	their 7 + their 9 + their 4 (=20)	M1	
	their 20 ÷ 2 + 10 ÷ 2 (=15)	M1 dep	
	6	A1 ft	ft from (a) Non-integer answers should be rounded or truncated

Q	Answer	Mark	Comments
4a	20 ÷ 3.99 or 2000 ÷ 399 or 20 ÷ 4 or 2000 ÷ 400	M1	or 5.0 … seen
	5	A1	
	Alternative method		
	3.99 × 5 (=19.95)	M1	oe or 399 × 5 (=1995)
	5	A1	
4bi	Sport	B1	Accept any unambiguous representation of sport eg s
4bii	10+5 or 35 seen or 1½ seen	M1	
	15	A1	
5a	27 seen or implied by a correct bar	B1	
	their 27 – 2 – 16 (= 9)	M1	oe
	Bar drawn to 9 (±½sq)	A1 ft	ft their 27 SC1 for a bar drawn to 25 or 11
5b	their 27 × 10 (= 270) or their 27 × 2.5(0) (= 67.5(0)	M1	10 – 2.5(0) (= 7.5(0))
	their 270 – their 67.5(0)	M1 dep	their 7.5(0) × their 27
	202.50	A1	Condone £202.50p but 202.5 scores M2A0

Q	Answer	Mark	Comments
6a	12	B1	
6b	67 + 65 + 59 + 65 + 70 + 66 + 62 + 58 + 63 + 65 (= 640)	M1	allow one error or omission
	their total ÷ 10	M1	67 + 65 + 59 + 65 + 70 + 66 + 62 + 58 + 63 + 65 ÷ 10
	64	A1	SC2 581.5 for incorrect use of brackets
6c	Seema ticked **and** a correct comparative reference to the average or total in context eg Seema is faster on average than Jack or a correct comparative interpretation of range as a measure of consistency. eg Seema is more consistent	B2 ft	For B2 condone failure to select a box if the candidate's choice is clear. B1ft for the correct choice of Seema or Jack **and** any other correct and relevant comparative statement. eg 'Seema has a higher mean' 'Seema has a lower range' 'Her test was done better'
7	One correct method eg $\frac{300}{600} \times 360$	M1	Seen or implied oe
	One correct angle calculated or drawn (±2°)	A1	cinema = 180(°) food = 90(°) walk = 60(°) other = 30(°)
	All angles correctly drawn (±2°)	A1	
	A four sector pie-chart correctly and unambiguously labelled.	Q1	Accept c, f, w and o as labels. Stand (ii) Logical organised working

Q	Answer	Mark	Comments
8a	$\frac{2}{3} \times 40$	M1	oe $\frac{1}{3} \times 40$
	26.(…) or 26 or 27	A1	13.(…) or 13
	their 27 **and** No or their 13 **and** No	Q1 ft	Strand (iii) Supporting answers with explanation and evidence Must have scored M1
	Alternative method		
	Can swim:		Cannot swim:
	$\frac{24}{40}$ oe or 60% or 0.6	M1	$\frac{16}{40}$ oe or 40% or 0.4
	Proportions in the same format eg 60% **and** 66.(…)% or 67% or 0.6 **and** 0.66(…) or 0.67 or two comparable fractions equivalent to $\frac{24}{40}$ **and** $\frac{2}{3}$ eg $\frac{72}{120}$ **and** $\frac{80}{120}$ or $\frac{9}{15}$ **and** $\frac{10}{15}$	A1	Proportions in the same format eg 40% **and** 33.(…)% or 0.4 **and** 0.33(…) or two comparable fractions equivalent to $\frac{16}{40}$ **and** $\frac{1}{3}$ eg $\frac{48}{120}$ **and** $\frac{40}{120}$ or $\frac{6}{15}$ **and** $\frac{5}{15}$
	their two comparable proportions **and** No	Q1 ft	Strand (iii) Supporting answers with explanation and evidence
8b	A valid suggestion for improvement eg ask people not at leisure centre	B1	oe Condone ask more / bigger sample

Q	Answer	Mark	Comments
9a	Lists at least 4 correct combinations from (SC), SB, SP CJ, CF, BJ, BF, PJ, PF	M1	$1 \times 3 + 3 \times 2$ or $3 + 6$ oe
	9 or 8 (more)	A1	
9b	$\frac{3}{9}$	B1 ft	oe ft their 3 and their 9 if probability > 0 and < 1
9c	$270 \times$ their $\frac{3}{9}$	M1	oe
	90	A1 ft	ft their part (b) but must be > 0 and < 1 Must give integer answer
10a	31	B1	
10b	$84 + 72 + 51 + 60 + 47 - 53 - 74 - 79 - 53 - 47$	M1	oe $84 + 72 + 51 + 60 + 47$ **and** $53 + 74 + 79 + 53 + 47$
	8 (left) and No	A1	314 and 306 and No
	Alternative method		
	their $31 + (72-74) + (51-79) + (60-53)$	M1	their $31 + (-2) + (-28) + 7$ oe
	8 (left) and No	A1ft	
10c	$1430 - 1250$ (= 180)	M1	$\frac{1430}{1250}$ ($\times$ 100)
	$\frac{\text{their}180}{1250} \times 100$ or 0.144	M1 dep	oe 1.144 or 114.4
	14.4	A1	

Q	Answer	Mark	Comments
11a	Suitable key	B1	
	2 4 8 1 2 5 6 9 9 0 2 4 6	B2	B1 complete but unordered leaves or B1 one correct row (only award for first row if single digit values used throughout)
11b	26 – 25 or 2 + 25	M1	oe
	1, 27	A1	either answer implies M1 SC1 (Range for 13 days =) 24 seen or 26 – 2 = 24 seen
12a	$\frac{28}{40}$ or 70% or 0.7	B1	oe
12b	their $\frac{28}{40} \times 10$ (= 7) or $\frac{9}{40} \times 10$ (= 2(.25) or 2) or $\frac{3}{40} \times 10$ (= 0.75 or 1)	M1	ft their $\frac{28}{40}$ from part (a) $\times$ 10 for red oe 28 ÷ 4 or 9 ÷ 4 or 3 ÷ 4
	7 and 2 and 1	A1	Must give integer answers

UMS conversion calculator www.aqa.org.uk/umsconversion