Version 1.0 1212

General Certificate of Secondary Education
November 2012

Mathematics 43602F

Unit 2 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 2 Foundation Tier

Q	Answer	Mark	Comments
1a	4820	B1	
1b	7000 or seven thousand	B1	Accept thousand(s) and 1000 in figures Do not accept thousandth(s)
1c	8300	B1	Accept in words
2	$7 \times 6 - 5 \times 4 = 22$	B2	B1 $7 \times 6 - 5 \times 4$ or B1 22
3a	37 and 63	B1	either order
3b	28 and 49	B1	either order
3c	40 and 56	B1	either order
4	2 6 1 150 10	B3	B2 for 3 or 4 correct B1 for 1 or 2 correct SC2 4, 12, 2, 300, 20 SC1 3 or 4 correct of 4, 12, 2, 300, 20
5a	4×36 or 4×0.36	M1	oe
	(£) 1.44	A1	144 is M1A0
5(b)	£2, £1, 50p, 5p, 1p (=£3.56)	B3ft	units required (condone 1 missing/slip) B3ft listing the smallest number of coins for £5 – their 1.44 (3 coins minimum) B2ft any other list of coins for £5 – their 1.44 (3 coins minimum) B2ft £5 – their 1.44 incorrect but seen; **and** listing the smallest number of coins for their value (3 coins minimum) B1ft correct evaluation of £5 – their 1.44 but this value not achieved with coins B1ft £5 – their 1.44 incorrect but seen; **and** any other list of coins for their value (3 coins minimum)

Q	Answer	Mark	Comments
6	A correct trial or pair of numbers meeting one of the two conditions	M1	
	9 and 16	A1	Either order
7a	$20 \times 2 + 30$	M1	oe eg 40 + 30
	70	A1	
7b	$(56 - 30) \div 2$	M1	oe
	13	A1	SC1 −2 or 43 or 52 or 41
8a	4	B1	
8b	$6x + 8y$ or $8y + 6x$	B2	B1 for (+) $6x$ or (+) $8y$ or B1 6 x x + 8 x y or B1 $6x + 8y = 14xy$ or similar further incorrect work
8c	5×3 (= 15) or (-)4×2 (= (-)8)	M1	
	7	A1	
9	2×12 or 24 seen	M1	or $12 \div 3$ (=4)
	their $24 \div 3$	M1dep	oe or their 4 x 2
	8	A1	
10a	(£) 8.90	Q1	strand (i) Do not accept 8.9 or 890 or 8.90p or 890p
10b	64p or £0.64	Q1	strand (i) Must have correct units Do not accept £0.64p or 64 or 0.64p or 0.64
11	10	B1	
	100	B1	

Q	Answer	Mark	Comments
12	3 × 6.5(0) (= 19.5(0))	M1	oe 6.50 + 6.50 + 6.50
	$\frac{10}{100} \times 16$ (= 1.6(0))	M1	oe 16 ÷ 10
	16 – their 1.6(0) (= 14.4(0))	M1	their 1.6(0) must be clearly their 10% of £16
	their 19.5(0) + their 14.4(0)	M1	35 – their 19.5(0) – their 14.4(0) their 19.5(0) and 14.4(0) must be linked to the T shirts and DVD respectively
	Yes **and** 33.9(0)	A1	oe Yes **and** £1.1(0) or 110p
	Alternative method 1		
	3 × 6.5(0) (= 19.5(0))	M1	oe
	35 – their 19.5(0)	M1	
	$\frac{10}{100} \times 16$ (= 1.6(0))	M1	oe
	16 – their 1.6(0) (= 14.4(0))	M1	
	Yes **and** 15.5(0) **and** 14.4(0)	A1	
	Alternative method 2		
	3 × 6.5(0) (= 19.5(0))	M1	oe
	100% - 10% (=90%)	M1	oe eg 1.00 - 0.90
	$\frac{90}{100} \times 16$ (= 14.4(0))	M1	oe eg 0.90 x 16
	their 19.5(0) + their 14.4(0)	M1	35 – their 19.5(0) – their 14.4(0) their 19.5(0) and 14.4(0) must be linked to the T shirts and DVD respectively
	Yes **and** 33.9(0)	A1	oe Yes **and** £1.1(0) or 110p
	Alternative method 3		
	3 × 6.5(0) (= 19.5(0))	M1	oe
	35 – their 19.5(0)	M1	
	100% - 10% (=90%)	M1	oe eg 1.00 - 0.90
	$\frac{90}{100} \times 16$ (= 14.4(0))	M1	oe eg 0.90 x 16
	Yes **and** 15.5(0) **and** 14.4(0)	A1	

Q	Answer	Mark	Comments
13a	$5 \times 5 \times 2 \times 2 \times 2$ Or 25 Or 8	M1	oe eg $10 \times 10 \times 2$
	200	A1	
13b	12	B1	Accept -12 Accept **twelve** or **minus twelve**
13c	4	B1	Accept **four**
14a	6 2 -2	B2	B1 for 1 or 2 correct
14b	Fully correct line drawn	B2	B1ft at least 3 points plotted correctly (using their table) or B1 part of the correct line drawn
15a	29	B1	
15b	Any 3 of $33 = 3 \times 11$ $34 = 2 \times 17$ $35 = 5 \times 7$ $38 = 2 \times 19$	B3	B2 for 2 correct B1 for 1 correct SC1 two or more correct but outside range 30 to 40
16	$\frac{30}{100} \times 250$ or 75	M1	oe eg 3×25
	(£) 175	A1	Electric Supplies
	$240 \div 3$ or 80	M1	Allow 0.33 or better as a multiplier
	(£) 160	A1	New Homes
	(£) 170	B1	Fridges for Us
	New Homes	Q1 ft	Strand (iii) Must have both method marks and three values to compare ft for a correct decision based on their answers

Q	Answer	Mark	Comments
17	280 ÷ 7 × 4 or 280 ÷ 7 × 3	M1	oe If a diagram is used - rectangle split into 7 sections with 3 or 4 shaded (or indicated in some way), at least one of which has a 40 in it
	160 (W) or 120 (M)	A1	
	180 ÷ 5 × 3 or 180 ÷ 5 × 2	M1	oe eg 180 – (180 ÷ 5 × 3) If a diagram is used – rectangle split into 5 sections with 3 or 2 shaded (or indicated in some way), at least one of which has a 36 in it.
	108 (B) or 72 (G)	A1	
	232 (F) and 228 (M) or 232 is more than 230 (half of 460) or 228 is less than 230 (half of 460)	A1 ft	oe allow ft if **either** M awarded **Must** add men and boys and/or women and girls otherwise A0ft.
18	$3x$ or $5x - 9$	M1	$\frac{3x+9}{5}$
	$5x - 9 = 3x$	M1	oe $\frac{3x+9}{5} = x$
	$5x - 3x = 9$ or $2x = 9$	M1dep	oe dep on M2
	4.5	A1	oe
	Alternative method		
	4.5	B4	oe B3 correct trial using 4.5 but 4.5 not explicitly given as answer B2 correct trials using 4 and 5 (11 and 16) B1 any correct trial

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