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General Certificate of Secondary Education
June 2012

Mathematics 43601F

Foundation

Unit 1

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

The following abbreviations are used on the mark scheme:

M	Method marks awarded for a correct method.
M dep	A method mark which is dependent on a previous method mark being awarded.
A	Accuracy marks awarded when following on from a correct method. It is not necessary always to 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 for a common misinterpretation which has some mathematical worth.
oe	Or equivalent.
[*a*, *b*]	Accept values between a and b inclusive.

UNIT 1 FOUNDATION TIER 43601F

1a	50	B1	

1b	Bicycle	B1	

1c	35 and 25 **chosen** or 35 – their 25 or their 35 – 25	M1	$3\frac{1}{2}$ and $2\frac{1}{2}$ **chosen** or $3\frac{1}{2}$ – their $2\frac{1}{2}$ or their $3\frac{1}{2} - 2\frac{1}{2}$ or 1 symbol
	10	A1	

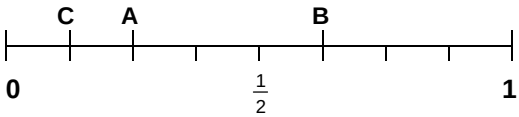
1d	Attempts a suitable graph with 3 or 4 bars	M1	Condone vertical line graph
	Heights correct 50, 35, 20, 25	A2ft	ft their part (a) A1 one error ± ½ small square
	Numerical axis correctly scaled	B1	Linear between 0 and their tallest bar, ignore scaling beyond that
	Bar chart with labels **and** equal width bars **and** equal gaps	Q1	Strand (ii) Labels may be eg frequency or number of people and car, bus, bicycle, tram Must have gaps

2a	There are more 14s than others or 14 is the most common	B1	oe two 14s, one of everything else

2b	28	B1	

2c	At least 5 values correctly rounded to nearest 10	M1	10, 10, 20, 20, 20, 20
	20	A1	

3a	Impossible Unlikely	B2	B1 one correct in correct position SC1 0 and $\frac{1}{6}$

3b		B3	Accept clear indication of C at $\frac{1}{8}$, A at $\frac{2}{8}$ and B at $\frac{5}{8}$ B2 any two correct B1 any one correct

4a	2005	B1	Condone 05 but not 205

4b	2009	B1	Condone 09 but not 209

4c	110 (billion) **chosen**	B1	Ignore any attempt to use zeros for billion i.e. accept digits 110
	$\frac{9}{20}$ × their 110 (billion)	M1	oe eg their 110 × 0.45 or 5.5 × 9 or their 110 ÷ 2.2(...) Ignore any attempt to use zeros for billion their 110 must be in the interval [88, 122] but not 100
	49.5	A1 ft	oe Condone 49 500 000 000 or 49 500 000 000 000 for full marks ft their 110 in the interval [88, 122] but not 100 Must have appropriate place value SC2 Digits 495

5a	(0).421875	B1	

5b	(0).422	B1 ft	ft any value 4 decimal places or more

6a	5	B1	

6b	94 and 60 **chosen** or 94 – their 60 or their 94 – 60	M1	
	34	A1	

7a	$\frac{3}{10}$	B2	B1 equivalent fraction to $\frac{3}{10}$ eg $\frac{15}{50}$ or B1 $\frac{n}{50}$ with its correct simplest form

7b	At least one product attempted or one correct value (not 0 or 8)	M1	0 × 13 1 × 8 2 × 6 (= 12) 3 × 8 (= 24) 4 × 15 (= 60)
	5 products attempted and added	M1 dep	Allow 4 products if 0 not shown
	104	A1	oe eg 4 more SC2 117

8a	44 + 38 + 48 + 55 + 60 (= 245)	M1	Allow one error or omission
	their total ÷ 5	M1	Condone 44 + 38 + 48 + 55 + 60 ÷ 5
	49	A1	SC2 197

8b	41 × 40 (= 1640) or 41 × 0.4(0) (= 16.4(0))	M1	oe
	60 – 41(= 19) **and** their 19 × 10 (= 190) or their 19 × 0.1 (= 1.9(0))	M1	oe
	their 16.40 – their 1.90 or their 1640 – their 190	M1dep	dependent on M2
	14.50	Q1	Strand (i) Do not accept 14.5 SC2 19.90 SC1 19.9 or 1990 SC2 22.10 SC1 22.1 or 2210

9a	Interview or questionnaire or (phone / internet / postal) survey or suitable voting method (e.g. everyone presses buttons or uses ballot boxes)	B1	oe

9b	Which (of the routes) do you prefer?	B1	oe eg accept better for prefer
	Option A, Option B, don't know	B1	oe

9c	0.27 × 200	M1	oe
	54	A1	SC1 146

10	0.8	B2	oe B1 0.2 oe B1 4 out of 5 oe B1 ratio 4:1 oe seen Condone ratio 1:4 oe seen if clearly shown as not oversleep : oversleep

11	Continuous **and** sample **and** primary (and none incorrect)	B2	B1 any two correct and up to one incorrect

12	5 – 2 (= 3)	M1	oe
	$\frac{210}{\text{their } 3}$ (× 5) or 70 seen	M1dep	70 seen is M2 but not from 50 + 20
	350	A1	SC2 490 or 140
	Alternative method		
	50 : 20	M1	Or equivalent ratio with a bigger difference
	350 : 140	M1dep	
	350	A1	SC2 490 or 140

13	Plotted at midpoints 700, 900, 1100 and 1300	B1	± ½ small square
	Correct heights 10, 46, 32 and 12 within class boundaries **and** correctly joined with straight lines	B1	± ½ small square Ignore any lines before first and after last plot SC1 Histogram with correct heights in correct class boundaries