Version : 1.0: 11.11

General Certificate of Secondary Education
November 2011

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.

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

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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.
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.

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1a	100 – 70 – 24 or 70 + 24 (= 94) and 100 – their 94 or 200 – 56 – 32 – 12 – 70 – 24	M1	oe Accept sight of 94 or 194
	6	A1	
1b	Structure (equal widths)	B1	If gaps present, must be equal
	Heights correct $\pm\frac{1}{2}$ square (70, 24 and their 6)	B2 ft	B1 ft two correct heights ft their 6
1c	Holidays abroad or Cannot tell with valid reason	B1	Ticks Holidays abroad - more had a holiday abroad in 2011 Ticks Can't Tell - there is only one year's data Ticks Can't Tell - references recession or weather oe
1d	(Easier) for comparison	B1	oe

2a	1.99 × 6 or 199 × 6 (= 1194)	M1	
	11.94	A1	SC1 119.40 SC1 12 (.00)
2b	$\frac{1}{2}$	B2	B1 equivalent fraction to $\frac{1}{2}$ eg $\frac{30}{60}$ or B1 $\frac{n}{60}$ seen with its correct simplest form SC1 50% SC1 0.5
2c	10% circled	B1	Any clear indication
2d	Questionnaire/survey/interview	B1	oe telephone everyone

3a	Never true	B1	Ticks or any clear indication
	Never true	B1	
	Always true	B1	
3b	0.3 or 30(%)	B2	B1 one value in correct position
	33(%) or 0.33		
	$\frac{1}{3}$ or $0.\dot{3}$ or 0.333(…) or $33\frac{1}{3}$(%) or 33.3(…)(%)		

4a	One correct method eg 0.3 × 360 (= 108 degrees)	M1	
	All correct angles drawn ±2°	A2	108, 72, 180 A1 one correct angle calculated or drawn
	Structure correct	Q1	Strand (iii) 3 sector pie chart with labels in correct order of size
4b	5 + 3 + 2 (= 10 (cups))	M1	1 cup = 8
	80 ÷ their 10 × 5	M1	oe their 8 × 5 Award M2 for 80 ÷ 2
	40	A1	If 40 seen with cola, ignore further work
4ci	Any correct comment	B1	eg orange most in morning If quantified must be correct
4cii	Lemonade	B1	

5	One correct pair	B1	oe
	HH HT TH TT	Q1	Strand (ii) oe SC1 all four possible single toss outcomes (10p H, 10p T, 2p H, 2p T)

<table>
<tr><td>6a</td><td>0, 7, 12
or 0, 7, 29
or 3, 7, 12
or 3, 7, 29
or 5, 7, 12
or 5, 7, 29</td><td>B1</td><td>Any order</td></tr>
<tr><td>6b</td><td>0, 3, 7
or 0, 5, 7
or 5, 7, 12</td><td>B1</td><td>Any order</td></tr>
<tr><td rowspan="2">6c</td><td>Correct method for the mean of any three numbers</td><td>M1</td><td></td></tr>
<tr><td>0, 3, 12
or 0, 5, 7
or 0, 7, 29
or 3, 5, 7
or 3, 7, 29
or 5, 7, 12
or 7, 12, 29</td><td>A1</td><td>Any order</td></tr>
<tr><td rowspan="3">6d</td><td>5, 12, 29 (any order)
Range 24 median 12</td><td>B3</td><td>B2 correct values, median and/or range wrong or missing
B1 incorrect values but median and range correct for them
SC1 any student who gives 29 as range and 6 as median</td></tr>
<tr><td colspan="3">Alternative method
for students using all 6 numbers for the range (29) or median (6)</td></tr>
<tr><td>Also award B3 for any of these sets

<table>
<tr><th>Numbers (any order)</th><th>Range</th><th>Median</th></tr>
<tr><td>0, 3, 12</td><td>12</td><td>6</td></tr>
<tr><td>0, 3, 12</td><td>29</td><td>6</td></tr>
<tr><td>0, 3, 12</td><td>12</td><td>3</td></tr>
<tr><td>0, 5, 12</td><td>12</td><td>6</td></tr>
<tr><td>0, 5, 12</td><td>29</td><td>6</td></tr>
<tr><td>0, 5, 12</td><td>12</td><td>5</td></tr>
<tr><td>0, 7, 12</td><td>12</td><td>6</td></tr>
<tr><td>0, 7, 12</td><td>29</td><td>6</td></tr>
<tr><td>0, 7, 12</td><td>12</td><td>7</td></tr>
<tr><td>5, 12, 29</td><td>29</td><td>6</td></tr>
<tr><td>5, 12, 29</td><td>24</td><td>6</td></tr>
<tr><td>5, 12, 29</td><td>29</td><td>12</td></tr>
</table>
</td><td>B3</td><td>SC1 any student who gives 29 as range and 6 as median</td></tr>
</table>

7	7224	B1		
	$\frac{2}{3} \times 11\,100$ or $\frac{3}{4} \times 9600$	M1	oe 11 100 ÷ 3 = 3700 11 100 – their 3700 **or** 9600 ÷ 4 = 2400 9600 – their 2400	Allow 0.33 or better or [0.66, 0.67] for decimals
	7400	A1		
	7200	A1		
	Offer 3	A1 ft	Correct ft decision if M1 awarded	

8a	34	B1	
8b	(5.10+) 2 hours 1 minute	M1	Accept sight of 2 hours 1 minute or 2.01
	7.11	A1	
8c	4 correct plots	B2 ft	B1 ft 2 or 3 correct plots ft their part a
8d	Draws a suitable line of best fit	M1	
	(5.10+) their read off value at 5.10	M1 dep	
	Correct answer for their 5.10 + read off value	A1 ft	Must have M2 SC1 M0 but answer [5.40, 5.45]

9a	1 – (0.41 + 0.24 + 0.22 + 0.04)	M1	1 – 0.91 oe Allow 100 – 91
	0.09	A1	Accept 9% or $\frac{9}{100}$
9b	0.41 × 8000 (= 3280)	M1	(1 – 0.41) × 8000 (= 4720) oe
	15 000 – their 3280	M1 dep	their 4720 + (15 000 – 8000)
	11 720	A1	11 720 SC2 13 080 or 13 240 or 14 280 or 14 680