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General Certificate of Secondary Education
November 2010

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 meeting attended by all examiners and is the scheme which was used by them in this examination. The standardisation meeting 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 the standardisation meeting each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed at the meeting and legislated for. If, after this meeting, examiners encounter unusual answers which have not been discussed at the meeting 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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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.

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1a	10, 18, 4, 8	B2	B1 two or three correct
1b	$\frac{1}{4}$	B2 ft	B1 ft $\frac{10}{40}$ oe ft from their sun frequency
			B1 correct cancelling to simplest form of their unsimplified fraction, $\frac{n}{40}$ SC1 0.25 or 25%
1ci	Sunny = 16 and Snow = 0	B1	16, 20, 0, 4 SC2 Tallies worth B3 SC1 Tallies worth B2
	Rain = 20	B1	
	Fog = 40 – their 20 – their 16 – their 0	B1 ft	
1cii	Impossible	B1 ft	oe Word(s) eg no chance, never
	Evens	B1 ft	oe Word(s) eg even, even chance SC1 2 correct numerical probabilities for both marks ft from table

2a	20	B1	
2b	Mathematics	B1	
2ci	Attempts a dual bar chart	B1	Allow errors if intention clear
	Structure correct	B1	Bars paired, vertical scale numbered, horizontal scale labelled, key/labels for Nick and Jen
	Heights all correct	B2	Using their scale, linear between 40 and 90 B1 all but one or two heights correct
	Alternative method 1		
	Turns Nick's pictogram into a bar chart, scales structure and heights correct	Max B3	Vertical scale and horizontal labels Structure including equal gaps Heights B2 for two correct B1 for one correct
	Alternative method 2		
	Turns Jen's bar chart into a pictogram, structure, number of symbols, key	Max B3	B2 two of structure, number of symbols and key B1 one of structure, number of symbols and key
2cii	3 correct comparisons	B2 ft	B1 ft 2 correct comparisons eg English was Jen's best score but Mathematics was Nick's best score ft their diagram
	A comparative statement for Nick and Jen for one subject or totals or means or ranges	Q1	Strand (iii)

3ai	51	B1	
3aii	Orders the values	M1	Either way Allow one error or omission
	51	A1	Must come from all 11 numbers correctly ordered
	Alternative method		
	Orders only first 6 or last 6 numbers correctly	M1	
	51	A1	
3aiii	Attempts to add values	M1	At least 51 + 50 + … seen (= 550)
	their 550 ÷ 11	M1 dep	
	50	A1	SC3 working and correct answers to 3aii and 3aiii swapped over
3bi	Mean/mode/median are 50 or above	B1 ft	oe All but one are 50 or more
3bii	One bag is 43	B1 ft	oe Sample size too small One (or some) bag(s) have less than 50
3c	Take a larger sample	B1	oe Need more data
	Spread the sample out over days	B1	oe Sample at random

4a	0.7 × 986 (= 690.2)	M1	oe
	690.20(p)	Q1	Strand (i) 690.20 seen ignore further working SC1 295.80 Do not accept 690.2
4b	Circles C and E only	B2	B1 both correct and one other B1 one correct, 0 or 1 wrong

5a	$\frac{2}{13}$	B1	
5b	5.4 minutes	M1	oe 60 ÷ 5 (= 12)
	5 (minutes) 24 (seconds)	A1	SC1 any other non-integer time correctly converted to minutes and seconds SC1 5 min 4 secs or 5 min 40 secs or in range 5 min 12 secs to 5 min 36 secs
5c	There is some (weak or moderate) support for the hypothesis	B1	oe Do not allow strong support oe
5d	At least 5 points with all in a strong positive correlation	B1	

6a	$\frac{8}{16}$	B2	oe B1 $\frac{n}{16}$ where $1 \leq n \leq 15$ and n an integer B1 $\frac{8}{n}$ where $n > 8$ and n an integer SC1 evens, even chance, even, 8 out of 16, 8 in 16
6b	Any two multiples of 3	B2	3, 6, 9, 12, … (not 0) B1 one multiple of 3 SC1 two or more correct lists of counters with no totals SC1 two different fractions both equivalent to $\frac{1}{3}$
6c	Any two multiples of 4 greater than 10	B2	12, 16, 20, 24, … B1 one multiple of 4 greater than 10 SC1 4 **and** 8 SC1 two or more correct lists of counters with no totals

7a	Rows or columns for old and new menu	B1	oe Tally chart for old menu (oe)
	Row(s) or column(s) for responses	B1	oe Tally chart for old menu (oe) SC1 if headings all phrased as questions SC1 Data Collection Sheet for students without reference to food/menu
7b	0.25×78	M1	oe Including complete build-up
	19.5 or 19 or 20	A1	Condone 19.5% (but Q0 if then compared to 25%)
	Valid comparison with "13" (with M1 awarded)	Q1	"13" = their (91 – 78)
	Alternative method 1		
	$\frac{91-78}{78}$ ($\times 100$)	M1	oe or 0.17 or 0.167 or 0.166… or $\frac{1}{6}$
	16.6… or 16.7 or 17	A1	
	Valid comparison with 25 (with M1 awarded)	Q1	25 may be implied by answer
	Alternative method 2		
	1.25×78	M1	oe
	97.5 or 97 or 98	A1	
	Valid comparison with 91 (with M1 awarded)	Q1	91 may be implied by answer
	Alternative method 3		
	$\frac{91}{78}$ ($\times 100$)	M1	
	116.6… or 116.7 or 117 or 16.6… or 16.7 or 17	A1	
	Valid comparison (with M1 awarded)	Q1	Either with 25 (may be implied) or with 125 as appropriate

8	$224 \div 4$ (= 56)	M1	
	their 56×3	M1 dep	M2 224×0.75 (oe)
	168	A1	

9	$\frac{20}{5} \times 1.5$ (= 6) or 20×0.5 (= 10) or 20×50 (= 1000)	M1	
	their 6 – their 10 or their 10 – their 6	M1 dep	
	4	A1	SC2 £2 (from 16×50p – $4 \times$ £1.50)