Mark Scheme (Results)

June 2011

Modular Mathematics (GCSE)
Unit 1: 5MB1F_01 (Foundation)

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NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labeling conventions.

ii*) select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.

If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.

If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.

If there is no answer on the answer line then check the working for an obvious answer.

Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.

If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.

Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect canceling of a fraction that would otherwise be correct

It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).

Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.

If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.

If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

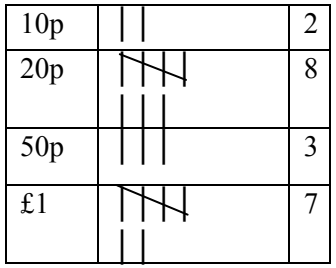
12 Parts of questions

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

5MB1F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
1 (a)			3	B3 for a fully correct table showing all tallies and frequencies (B2 for 2 or 3 correct tally and related frequency entries or for 4 correct tallies or for 4 correct frequency totals) (B1 for 1 correct tally or 1 correct frequency)
(b)	$10 \times 2 + 20 \times 8 + 50 \times 3 + 100 \times 7$ $20 + 160 + 150 + 700$	10.3**0**	2	M1 for $10 \times$ "2" or $20 \times$ "8" or 160 or 1.6(0) or $50 \times$ "3" or 150 or 1.50 or $100 \times$ "7" or 700 or evidence of adding all 20 original coin values A1 ft from table shown using correct money notation.
2 (a)		E	1	B1 cao
(b)		A	1	B1 cao
(c)		16	1	B1 cao
(d)		28	1	B1 cao
(e)		1 and a half cameras	1	B1 cao

5MB1F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
3 (a)		Monday and Friday	2	B1 for Monday B1 for Friday
(b)	Alfie $6 + 8.5 + 8 + 4.5 + 4.5$ $= 31.5$ Viv $7 + 8.5 + 6 + 3 + 5 = 29.5$ $31.5 - 29.5$ or $-1 + 0 + 2 + 1.5 - 0.5$	2 hours	3	M1 for Alfie = $6 + 8.5 + 8 + 4.5 + 4.5$ ($= 31.5$ or 31.30) or Viv = $7 + 8.5 + 6 + 3 + 5$ (29.5 or 29.3) Allow one error reading 5 values M1 (dep) for "31.5" – "29.5" (If incorrect values used must be Alfie's total – Viv's total) A1 cao or M1 for at least two of - 1 or 0 or 2 or 1.5 or – 0.5 seen, may be on diagram (ignore signs) M1 for - 1 + 0 + 2 + 1.5 – 0.5 A1 cao

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Question		**Working**	**Answer**	**Mark**	**Notes**
4	(a)(i)		Impossible	1	B1 cao
	(ii)		Certain	1	B1 cao
	(b)		1A 1B 1C 2A 2B 2C 3A 3B 3C	2	B2 for all 9 correct outcomes, with no extras, ignoring repeats. Note: these could be in a table (B1 for at least 6 correct outcomes) (SC B1 for 6 correct combinations for spinning Steve's spinner twice: AA AB AC BB BC CC ignoring repeats)
5	(a)	18 – 10	8	2	M1 for 18 – 10 A1 cao [SC: B1 for 10 to 18, 10 – 18, 18 to 10 oe, if M0 scored]
	(b)		13	1	B1 cao
	(c)	(13+14+12+10+13+16+14+13+18+16) ÷ 10 = 139 ÷ 10	13.9	2	M1 for (13+14+12+10+13+16+14+13+18+16) ÷ 10 allow one error, omission or extra in 10 temperatures, condone missing brackets. A1 cao

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Question		**Working**	**Answer**	**Mark**	**Notes**
6	(a)	$\frac{90}{360}$	$\frac{1}{4}$	1	B1 for $\frac{1}{4}$ oe or 25% or 0.25 or quarter
	(b)	360 – (42 + 90 + 108) = 360 – 240 = 120 Followed by 120 ÷ 20 = $6°$ /person 90 ÷6 OR $\frac{90}{120} = \frac{3}{4}$ $\frac{3}{4}$ of 20 OR 120 = $\frac{1}{3}$ of the whole Total number = 20×3=60 $\frac{1}{4}$ of 60	15	4	M1 for 360 – (42 + 90 + 108) A1 for 120 M1 for 90 ÷ (“120” ÷ 20) A1 cao or M1 for 360 – (42 + 90 + 108) A1 for 120 M1 for $\frac{3}{4}$ of 20 A1 cao or M1 for 360 - (42+90+108) A1 for 120 M1 $\frac{1}{4}$ of 60 A1 cao

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Question	**Working**	**Answer**	**Mark**	**Notes**
7	(15 15 – 15 05 + 15 55 – 15 35)	30	2	M1 for ((15) 15 – (15) 05) and 15 55 – 15 35) OR "10" and "20" seen as durations of CB and J. At least one must be correct and any incorrect value must be associated with correct start and finish times. A1 for 30 cao
8		$\frac{5}{24}$ oe	3	B3 for $\frac{5}{24}$ oe [B2 for $\frac{'5'}{24}$ where "5" is in the table or clearly identified as the number of boys who walk. (Accept final answer of 0 if accompanied by 0 in the table or indication that no boys walk)] [B1 for $\frac{a}{24}$, where $a \leq 13$ or 5 seen or 0 alone or $\frac{0}{24}$ given only as final answer.]

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Question	**Working**	**Answer**	**Mark**	**Notes**
9 (a)		6.40 to 6.80	1	B1 for answer in the range 6.40 to 6.80
(b)		3.40 to 3.80	1	B1 for answer in the range 3.40 to 3.80
(c)	Using an initial value of $n $n = €(n÷1.4) converts $ to € €(n÷1.4) = £((n÷1.4)÷1.1) converts € to £ $65 = £((n÷1.4)÷1.1) x (65÷n) scales to £65	40 to 44 inc	4	M1 for method to find 2 matching figures for dollars and euros. May be calculated or from graph. (To check accuracy if values read from graph, apply exchange rate of 1€ : $1.4 and accept correct value in euros ± 1€) M1 for method to find 2 matching figures for euros and pounds. May be calculated or from graph. (To check accuracy if values read from graph, apply exchange rate of £1:1.1€ and accept correct value in pounds ± £1) M1 (dep on award of at least one other M1) for using 65 ÷n where n is initial value in dollars used. A1 for answer in range 40 to 44 inclusive
10	14 × 3 + 10 × 3 = 72 43 + 14 × 1+ 10 × 1 = 67 43 + 14 × 2 = 71	67	5	B1 for identifying 3 adults, 3 children and 1 infant (may be implied by correct working) M3 for 14 × 3 + 10 × 3 (= 72) or 43 + 14 × 2 (= 71) or 43 + 14 × 1 + 10 × 1 (= 67) (M2 for 3 × 14 (=42) or 3 ×10 (=30) or 2 × 14(=28)) (M1 for 14 or 10 or 43 or 12 seen) A1 for 67 identified as final answer

5MB1F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
11 (a)		14 | 8 15 | 2 4 16 | 0 2 4 4 8 17 | 0 3 4 9 14 | 8 = 148 cm	3	B2 for a fully correct ordered diagram (B1 for correct unordered diagram or ordered with at most two errors) B1 for a correct key eg 14 | 8 = 148 cm (cm not required)
*(b)	Boy's Median = 170 Girl's Median = 164 Boy's Mean = 170(.38) Girl's Mean= 164 Boy's Range = 27 Girl's Range = 31 15 | 7 9 16 | 2 6 8 9 17 | 0 3 4 6 6 18 | 1 4	Compares: medians/means + Range + Spread	3	A maximum 2B marks from: B1 for a correct mean or median for either the boys or the girls. B1 for a correct range for either the boys or the girls. B1 for a correct stem and leaf diagram drawn for the boys (no need for a key) C1 for any correct comparison, which includes the boys and the girls, of either 2 correct (ft) medians or 2 correct (ft) means or 2 correct(ft) ranges or a correct statement following from comparing the correct stem and leaf diagrams, which includes the boys and the girls.

5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
12	(a)	See scatter graph	(12, 14) and (17,20) plotted	1	B1 for correct plotting of both points
	(b)			1	B1 Positive
	(c)		16 to 18	2	B2 16-18 or M1 for a single line segment from m=11 to m=16 within overlay A1 ft their line of best fit (±) 2mm
13	(a)	$1 - 0.3 - 0.1 - x$	$0.6 - x$	2	M1 for $0.3 + 0.1 + x + P(2) = 1$ oe A1 $0.6 - x$ or $\frac{6}{10} - x$ or $1 - (0.4 + x)$ Or $1 - 0.3 - 0.1 - x$
	(b)		$300x$	1	B1 for $300x, x \times 300$ oe
14			Overlapping response boxes Leading/biased question Age too personal Missing units	2	B2 for any two of: overlapping response boxes, too personal to ask person's age, a leading or biased question, missing units (B1 – just one of the above)

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