

Mark Scheme (Results)

Summer 2013

GCSE Mathematics (2MB01) Foundation
5MB1F (Calculator) Paper 01

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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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

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Question		Working	Answer	Mark	Notes
1	(a)		2	1	B1 cao
	(b)		8	1	B1 cao
2	(a)		3.5	1	B1 oe
	(b)		2400	1	B1 cao
3	(a)		08 23	1	B1 oe e.g.8 23 am/pm or 20 23 or in words
	(b)	0845 to 09 00 is 15 mins 09 00 to 10 00 is 1 hour 10 00 to 10 20 is 20 mins	1h 35 min	2	M1 for attempt to subtract the two times with evidence of 60 minutes in an hour or for attempt to add on from 8 45 to 10 20 or 1h 35 min incorrectly stated A1 for 1 hour 35 minutes oe
4	(a)(i)		20	2	B1 cao
	(ii)		45		B1 cao
	(b)	10+20+40+45+75+80+40 Or 14 × 20 + 10 +5 + 15	310	2	M1 for attempt to find the total by adding individual days ft from (a) or 14 × 20 A1 ft from their readings in (a)

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Question		Working	Answer	Mark	Notes
5	(a)		33	2	M1 for 45 – 12 or 12 to 45 or 24 – 20 A1 cao
	(b)	12, 15, 15, 18, 20, 20, 22, 24, 25, 32, 36, 45	21	2	M1 for arranging the numbers in order or stating 28.5 A1 for 21 cao
	(c)	$(12+15+15+18+20+20+22+24+25+32+40+45) \div 12$	24	2	M1 for attempt to add and divide by 12
6		1r, 1b, 1g, 2r, 2b,2g,3r,3b,3g 4r, 4b, 4g, 5r, 5b, 5g or r1, r2, r,3 r4, r5 g1, g2, g3, g4, g5 b1, b2, b3, b4, b5	List outcomes	2	B2 for all 15 outcomes, ignore duplicates (B1 for at least 6 outcomes ignoring duplicates or omissions)
*7			Appropriate diagram or chart	4	B1 for a key or suitable labels to identify boys and girls. The key may be ignored if unclear provided the graph is clear, i.e if different colours or shading is used on the graph. B1 for five correct labels for days clearly shown in appropriate places B1 for diagram(s) or chart(s) (combined or separate) set up for comparison, showing data for at least three days e.g. dual bar chart, back to back stem and leaf, pie charts, pictograms etc. C1 for fully correct diagram or chart to include all axes labelled (or appropriate keys)

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Question		Working	Answer	Mark	Notes
*8		$3546 - 3298 = 248$ $248 \times 12 = 2976$ Or $3546 \times 12 = 42552$ $3298 \times 12 = 39576$ $42552 - 39576 = 2976$	£29.76 or 2976 p	4	M1 for subtracting to find units used M1 for “248” \times 12 A1 for digits 2976 seen C1ft (dep on at least M1) for £29.76 or 2976p Or M1 for 3546×12 or 3298×12 M1 for “42552” – “39576” A1 for digits 2976 seen C1ft (dep on at least M1) for £29.76 or 2976p NB: $\times 0.12$ acceptable in place of $\times 12$
9			£267	2	M1 for selecting one correct item from the table i.e. £122 or £145 (may be circled in the table or written in the workspace) A1 for £267
10	(a)		$4d$	1	B1 oe
	(b)		$4x + 12y$	2	B2 for $4x + 12y$ oe (B1 for $4x$ oe or $12y$ oe seen as part of an expression in terms of x and/or y)

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Question	Working	Answer	Mark	Notes
11		Suitable data collection sheet	3	B1 for data grouped in intervals that are not overlapping B1 for tally column or frequency columns labelled B1 for suitable data collection sheet appropriate to the task e.g. with exactly 3 columns and which are correctly labelled NB do not accept questionnaires or graphs
12	(a)(i)	46-50	2	B1 for 46 – 50
	(ii)	$\frac{48}{360}$		B1 ft from their part (i) for their $\frac{48}{360}$, $\frac{8}{60}$, $\frac{2}{15}$ oe; do not accept decimals.
	(b)	23	3	M1 ft for $360 - (90 + "48" + "84")$ [=136-140] M1 ft for $360 \div 60 = 6^\circ$ or " 138 " $\div 6$ A1 cao Or M1 ft for $360 - (90 + "48" + "84")$ [=136-140] M1ft for using their 138 in $\frac{138}{360} \times 60$ (=22.5 – 23.5) A1 cao
13	(a)	$\frac{15}{100}$	5	M1 for fraction with 15 as the numerator or 100 as the denominator A1 for $\frac{15}{100}$ oe or 0.15 or 15%
	(b)	0	1	B1 oe Accept $\frac{0}{100}$, 0%, 0 out of 100 but not 0:100
	(c)	$\frac{1}{10}$		M1 for $100 - (50 + 25 + 15)$ A1 oe

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Question		Working	Answer	Mark	Notes
14	(a)		68	1	B1 cao
	(b)		37	1	B1 cao
	(c)		41	2	M1 for an attempt to find the middle number or circling the 1 in the diagram or writing 1 or 4 1 A1 cao
15	(a)		Two reasons	2	B1 for no time scale e.g. day, week etc B1 for vague times e.g don't know how long a little is, no units
	(b)		Better question	2	B1 for stem which must include a time scale B1 for at least 3 non overlapping response boxes (not necessarily exhaustive) or at least 3 boxes that are exhaustive (but could be overlapping) NB Units must be included in either stem or response boxes to score full marks
	(c)		Biased sample	1	B1 for biased or not representative sample eg could all be too similar

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Question		Working	Answer	Mark	Notes
16			Points plotted at (5, 6), (15, 9), (25, 8), (35, 7), (45,5) and joined with line segments	2	B2 for correct plotting of 5 points and joining with line segments (B1 for points plotted correctly at midpoints of intervals OR joining points with line segments at the correct heights and consistent within the class interval (including end values) OR correct frequency polygon with one point incorrect OR correct frequency polygon with first and last point joined) NB Ignore any histogram drawn and any part of frequency polygon outside range of first and last points plotted
17			29	4	M1 for complete correct method to find the total number of girls eg $120 - 30 (=90)$ M1 for a complete correct method to find the number of girls who play Football and hockey eg $26 + 35 (=61)$ M1 for "90" – "61" A1 for identifying 29 as the answer OR M1 for a complete correct method to find the total number playing tennis M1 for a complete correct method to find the number of boys playing tennis M1 for "total for tennis" <input type="checkbox"/> "boys playing tennis" A1 for identifying 29 as the answer

Example diagram for Question 11:

Heights	Tally	Freq
$120 \leq h < 130$		
$130 \leq h < 140$		
$140 \leq h < 150$		
$150 \leq h < 160$		
etc		

Example diagram for Question 11:

Heights	Tally	Freq
120 - 129		
130 - 139		
140 - 149		
150 - 159		
etc		

Question 17 possible 2-way table:

	B	G	Tot
F	10	35	45
H	12	26	38
T	8	29	37
Tot	30	90	120

Question 17 possible 2-way table:

	F	H	T	Tot
B	10	12	8	30
G	35	26	29	90
Tot	45	38	37	120

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:

Angles: $\pm 5^\circ$

Measurements of length: ± 5 mm

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Question	Modification	Notes
1	Just number given-no cards- wording	Standard mark scheme
4	Boxes in diagram –enlarged	Standard mark scheme
7	10.5 cm grid.	Standard mark scheme
9	Table moved around so that fridges are together with freezers underneath	Standard mark scheme
12	(a)(i) Angles for Thai is 60degrees .Angle for Chinese is 150degrees (a)(ii) (b)	B1 for 58 – 62 B1 ft from their part (i) for their $\frac{60}{360}$ oe; do not accept decimals M1 ft for subtraction from 360° [=148-152] M1 ft for $360 \div 60 = 6^\circ$ or “150” $\div 6$ A1 cao Or M1 ft for subtraction from 360° [=148-152] M1ft for using their 150 in $\frac{150}{360} \times 60$ A1 cao

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Question	Modification	Notes
14	Stem and leaf diagram: horizontal lines inserted	Standard mark scheme
16	x-axis 2cm for 5. y- axis 2cm for 1	Standard mark scheme

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