

Mark Scheme (Results)

March 2013

GCSE Mathematics (2MB01) Higher
5MB1H (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 labelling 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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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 cancelling 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

5MB1H_01					
Question		Working	Answer	Mark	Notes
1		$105 \div 7 \times 4$	60	2	M1 $105 \div (4+3)$ or a complete build up method A1 cao
2		0.93×800	744	2	M1 0.93×800 oe or 744 A1 cao
3	(a)		Two different reasons	2	B2 for TWO aspects from No time frame given Non-exhaustive responses Responses not specific (B1 ONE correct aspect)
	(b)		Question	2	B1 for a question with a time frame for frequency of use B1 for at least 3 correctly labelled response boxes (non-overlapping, need not be exhaustive) OR for a set of response boxes that are exhaustive (could be overlapping) [Do not allow inequalities in response boxes]
	(c)		Two different reasons	2	B2 for TWO different aspects (B1 for ONE aspect) Too small a sample, time of day, specific day, place, same type of people, not random

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Question	Working					Answer	Mark	Notes
4		TT	D	S		11	4	<p>M1 for a 2-way table or diagram showing at least 3 pieces of information correctly placed M1 17 girls or 4 boys with slalom skis M1 12 boys with downhill skis or 4 girls with twin tips A1 cao</p> <p>OR</p> <p>M1 for 40-23 (=17) M1 for one part subtraction ie '17'-8 or '17'-5 M1 for ('17'-8) -5 or ('17' - 5) - 8 A1 cao</p>
		B	7	12	4	23		
		G	4	8	5	17		
			11	20	9	40		
*5						Yes and £1562	6	<p>B1 283 or 285 M1 for working out the total cost of 2 adults 1 way or 1 adult both ways M1 for a correct method for calculating 75% of an adult fare for 1 journey or for 1 journey there and back. M1 for working out the total cost of 2 adults and 1 child A1 1562 or 38 C1 Dep on a previous M1, correct conclusion ft for their total cost (identified) providing it is written with a £ sign</p>

5MB1H_01				
Question	Working	Answer	Mark	Notes
6	<pre> 2 6 7 9 3 0 4 4 2 2 4 7 7 5 3 6 7 8 8 6 3 4 6 </pre>	<p>Stem and leaf 2 6 means 26</p> <p>Key</p>	3	<p>B2 for a fully correct ordered diagram (B1 for a correct unordered diagram or ordered with at most two errors or omissions) B1 for a correct key Accept stem written as 20,30 etc but key only acceptable if consistent with this.</p>
7	(a)	64.5	1	B1 cao
	(b)	65.5 or 65.49	1	B1 for 65.5 or 65.49 or 65.499 oe
8		Box plot drawn	3	<p>B3 for fully correct box plot (B2 for 3 correctly plotted values including box <u>and</u> tails) (B1 for 2 correctly plotted values including box <u>or</u> tails)</p>
*9	<p>Ranges 50 and 46 IQR s 19 -21 and 19-21 Medians 47 and 44</p>	Comparison of data	4	<p>B1 Correct calculation of the median B1 Correct calculation of the ranges or the IQRs C1 for a correct comparison (ft) of medians C1 for a correct comparison of ranges or IQRs (ft) with interpretation or B1 Correct calculation of the median (47) B1 Correct calculation of the ranges or the IQRs C1 for a correct comparison of ranges or IQRs (ft) C1 for a correct comparison of medians (ft) with interpretation</p>

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Question	Working	Answer	Mark	Notes	
10	(a) $20 \times 12 + 30 \times 27 + 40 \times 18 + 50 \times 23 + 60 \times 10$ $3520 \div 90$	39(.11111)	4	M1 for finding at least 4 products fx consistently within interval (including end points) M1 (dep) for use of at least 4 correct midpoints M1 for $\sum fx \div 90$ A1 39.(1...)	
	(b)	12,39,57,80,90	1	B1 cao	
	(c)		2	B1 for at least 4 of "5 points" plotted correctly ± 0.5 full square B1 (dep) for points joined by curve or line segments providing no gradient is negative. (SC: B1 if 4 or 5 points plotted not at end but consistent within each interval and joined)	
	(d)(i)	36-39	3	B1 answer within the range 36-39 or ft of graph	
	(ii)	19-23		B2 answer within 19-23 Or M1 for reading off from 50 on a cf graph A1 ft (± 0.5 square)	
11		1200×0.8^4	4	3	M1 0.8 or 960 or 2160 seen M1 for 0.8^n where n is 2 or greater or for 768 or 614.40 A1 cao and supported by working

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Question		Working	Answer	Mark	Notes
12		$\frac{140}{420} \times 135$	45	2	M1 $\frac{140}{420} \times 135$ oe A1 cao
13	(a)		10 and 18	2	B2 Two correct values (B1 one correct value)
	(b)		Bars at heights 3cm and 2cm	2	B2 for two correct bars (B1 for one correct bar)
14			A and $y = x^2 + 4$ B and $y = x^3$ C and $y = 2^x$	3	B3 for all correct (B2 for 2 correct) (B1 for 1 correct)

5MB1H_01					
Question		Working	Answer	Mark	Notes
15	(a)	Tree diagram Or $1 - 0.6 = 0.4$ $1 - 0.8 = 0.2$ 0.4×0.2	0.08	3	B1 for 0.4 or 0.2 seen oe M1 Indication of correct branch formed on tree diagram (or otherwise) leading to 0.4×0.2 or “0.4” \times “0.2” A1 0.08 oe
	(b)	$0.4 \times 0.2 + 0.6 \times 0.8$	0.56	3	M1 0.6×0.8 or “0.4” \times “0.2” M1 $0.6 \times 0.8 + “0.4” \times “0.2”$ or “0.08” + “0.48” A1 0.56 oe

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