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Mark Scheme (Results)

November 2013

Pearson Edexcel GCSE
In Mathematics Modular (2MB01)
Unit 1: (5MB1H_01) Higher (Calculator)

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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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

PAPER: 5MB1H_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		question + response boxes	2	B1 for appropriate question with time period B1 for at least 3 boxes that are either non-overlapping but not necessarily exhaustive, or exhaustive but not necessarily non-overlapping **NB** time period and/or unit of time may appear in either the question or with the response boxes; but award a maximum of B1 if no units are given.
	(b)		two correct reasons	2	B2 for 2 correct reasons from, eg only girls, (all about) the same age, same year group, same school (B1 for 1 correct reason)
2	(a)		$0.75 - x$	2	M1 for or $1 - 0.25 + x$ or $0.25 + x$ A1 for $0.75 - x$ oe
	(b)		60	2	M1 for 0.25×240 oe A1 cao
3	(a)		14 | 8 9 15 | 0 2 4 6 8 16 | 1 3 5 6 7 17 | 0 1 4	3	B2 for fully correct diagram (The order of the numbers in the stem may be reversed) (B1 for ordered or unordered leaves with one error or omission) B1 for correct key (units may be omitted)
	(b)		15	2	M1 for 167 – 152 or 167 or 152 identified A1 for 15 or ft their stem and leaf diagram

5MB1H_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*4			Jack with comparison	3	M1 for per gallon cost: 52÷8 (=6.50) or 58÷8.8 (=6.59) A1 for 6.50 and 6.59 C1 (dep on M1) for correct decision from their figures if comparable OR M1 for per litre cost: 8÷40 (=1.45) or 52÷36 (=1.44) A1 for 1.45 and 1.40−1.44 C1 (dep on M1) for correct decision from their figures if comparable NB accept equivalent methods
5	(a)		Positive correlation	1	B1 for positive correlation or the greater the rainfall the more umbrellas sold oe
	(b)		52 – 60	2	M1 for a single straight line segment with positive gradient that could be used as a line of best fit or an indication on the diagram from 28 on the *x*-axis (point or line) A1 for an answer in the range of 52 – 60
*6		2×462+251 =1175, 0.95×1175 = £1116.25 2×485+218 =1188, 1188 – 75 = £1113.00	Jetstream	5	M1 for identifying correct costs for either Highway Airlines or Jetstream Airlines M1 for attempt to calculate the costs for the family eg 2×"462"+"251" or 2×"485"+"218" M1 for a correct method to work out the discount for one company eg 0.95 × "1175" or 0.05 × "1175" or "1188" – 75 oe A1 for (£)1116.25 and (£)1113.00 C1 (dep on M1) calculations clearly identified with each airline and correct decision from their figures

5MB1H_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
7	(a)		167.5	1	B1 cao
	(b)		168.5	1	B1 cao accept 168.499...
8		425× 9 475×15 525×12 575×4 19 550 ÷ 40	488 - 489	4	M1 for *fx* with *x* consistent within intervals (including the end points) allow one error M1 (dep) for use of all correct mid-interval values M1 (dep on first M1) for $\sum fx \div 40$ A1 for 488 – 489
9	(a)(i)		11, 22	3	B3 for all of: median 11 drawn, greatest number 22 drawn, smallest number 3 in table, upper quartile 17 in table
	(ii)		3, 17		(B2 for 3 correct, B1 for 2 correct)
	(b)		45	2	M1 for 0.75×60 or 60 – 0.25×60 oe or 15 seen (may be seen in diagram) A1 cao
10			30	3	M1 for 32.4×32 (=1036.8) or 28.4×48 (=1363.2) M1 for (1036.8+1363.2)÷80 A1 cao OR M1 for $\frac{32}{80} \times (32.4 - 28.4)$ or for $\frac{48}{80} \times (32.4 - 28.4)$ M1 for $28.4 + \frac{32}{80} \times (32.4 - 28.4)$ or for $32.4 - \frac{48}{80} \times (32.4 - 28.4)$ A1 cao
11			two comparisons	2	B1 for one correct complex comparison which summaries the data, with supporting correct numerical values B1 for a different correct complex comparison which summarises the data, with supporting correct numerical values and given in context

5MB1H_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
12	(a)		0.28	2	M1 for method shown to work out the gradient for car A A1 for 0.27 – 0.29
	(b)		35.5	1	B1 for 35.1 – 35.9
13	(a)		0.7, 0.4, 0.6 0.4	2	B2 for fully correct tree diagram (B1 for 0.7 or 0.4 in correct position)
	(b)		0.54	2	M1 for 0.3×0.4 or 0.7×0.6 A1 for 0.54 oe or ft their tree diagram
14			7	2	M1 for $\frac{35}{156}\times 30$ (=6.7….) A1 for 6 or 7
15			55 - 56	3	M1 for attempt to find 0.25×total area, eg 0.25×(3.6+14+5.6+7.2+1.4) (=7.95) condone one error M1 for (‘7.95’ – ‘3.6’) ÷ 7 (=0.621…) A1 for 55 – 56 OR M1 for for attempt to find 0.25×total squares, eg 0.25×(90+350+140+180+35) (=198.75) condone one error M1 for (‘198.75 – ‘90’) ÷ 35 (=3.107…) A1 for 55 – 56

5MB1H_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
16			$\frac{83}{171}$	4	M1 for use of 18 as denominator of second probability M1 for $\frac{11}{19}\times\frac{10}{18}$ or $\frac{8}{19}\times\frac{7}{18}$ M1 for $\frac{11}{19}\times\frac{10}{18}+\frac{8}{19}\times\frac{7}{18}$ A1 for $\frac{83}{171}$ oe Special cases (with replacement) M1 for $\frac{11}{19}\times\frac{10}{19}$ or $\frac{8}{19}\times\frac{7}{19}$ M1 for $\frac{11}{19}\times\frac{10}{19}+\frac{8}{19}\times\frac{7}{19}$ OR M1 for $\frac{11}{19}\times\frac{11}{18}$ or $\frac{8}{19}\times\frac{8}{18}$ M1 for $\frac{11}{19}\times\frac{11}{18}+\frac{8}{19}\times\frac{8}{18}$ OR B2 for $\frac{185}{361}$ oe
17	(i)		250	4	M1 for 50/8 (=6.25) or 8/50 (=0.16) or 40/8 (=5) or 8/40 (=0.2) or $\frac{50}{n}=\frac{8}{40}$ oe M1 for 50×40÷8 or 50×5 or 6.25×40 or 50÷0.2 oe A1 cao
	(ii)		assumption		B1 for correct mathematical assumption, eg fixed population, takes random sample

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: ±5°
Measurements of length: ±5 mm

PAPER: 5MB1H_01			
Question		**Modification**	**Notes**
Q4		*x* axis 2cm for 5, *y* axis 2cm for 2. Right axis labelled.	Standard mark scheme
Q5	(a)	*x* axis 2cm for 5, *y* axis 2cm for 10. *x* changed to filled in circles on scatter graph.	Standard mark scheme
	(b)	28mm changed to 30mm. Right axis labelled.	M1 for a single straight line segment with positive gradient that could be used as a line of best fit or an indication on the diagram from 30 on the *x*-axis (point or line) A1 for an answer in the range of 52 – 605
Q6		Tables – top 2 rows and bottom 2 rows removed from both tables.	Standard mark scheme
Q8		Frequency column widened to allow for working.	Standard mark scheme

PAPER: 5MB1H_01			
Question		**Modification**	**Notes**
Q9	(a)	60 lemon trees changed to 90. In table Lower Quartile changed to 10, Median changed to 20 and Greatest number changed to 30. Box plot is changed accordingly and extended to 35. 2cm squares.	B3 for all of: median 20 drawn, greatest number 22 drawn, smallest number 3 in table, upper quartile 17 in table (B2 for 3 correct, B1 for 2 correct)
	(b)	60 lemon trees changed to 90. 8 lemons changed to 10.	M1 for 0.75×90 or $90 - 0.25\times90$ oe or 22.5 (22-23) seen (may be seen in diagram) A1 67.7, which could be rounded to 67 or 68
Q11		*x* axis 2cm for 2.5, *y* axis 2cm for 10. Right axis labelled.	Standard mark scheme
Q12		*x* axis 2cm for 5, *y* axis 2cm for 2½.	Standard mark scheme
Q13		Probability tree diagram size × 1½.	Standard mark scheme
Q15		Width and height of bars modified.	Standard mark scheme

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