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Mark Scheme (Results)

Summer 2015

Pearson Edexcel GCSE
In Mathematics B (2MB01)
Foundation (Calculator) Unit 3

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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.

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. Note that in some cases a correct answer alone will not score marks unless supported by working; these situations are made clear in the mark scheme. Examiners should 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 award marks for the quality of written communication (QWC).
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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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.

Partial answers shown (usually indicated in the ms by brackets) can be awarded the method mark associated with it (implied).

Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks; transcription errors may also gain some credit. Send any such responses to review for the Team Leader to consider.

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.

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 (embedded answers).

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)

14 The detailed notes in the mark scheme, and in practice/training material for examiners, should be taken as precedents over the above notes.

Guidance on the use of codes within this mark scheme
M1 – method mark for appropriate method in the context of the question 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

5MB3F/01 June 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		4.42	1	B1 cao
	(b)		70	1	B1 cao
	(c)		2.5	1	B1
	(d)		3.375	1	B1 cao
2	(a)		B and F	1	B1
	(b)		A	1	B1 cao
3	(a)		Reflection	1	B1 cao
	(b)		Reflection	2	B2 for correct shape in correct position (B1 for shape in correct orientation)
4	(a)		3.10	2	M1 for 50(p) + (£)1.40 + (£)1.20 (=3.1(0) oe or 310) A1 for 3.10 cao
	(b)		Coffee and (baked) potato	2	M1 for 3 – 0.8 (=2.2) or 300 – 80 (=220) or for a pair of items, a snack and a drink, with total cost A1 for Coffee and (Baked) potato

5MB3F/01 June 2015				
Question	**Working**	**Answer**	**Mark**	**Notes**
5 (a)		0.25	1	B1 cao
(b)		$\frac{15}{100}$	1	B1 for $\frac{15}{100}$ oe
(c)		$\frac{17}{40}$	1	B1 for $\frac{17}{40}$ oe
6		6	3	M1 for a correct inverse operation M1 for correct order of operations eg +10 then ÷4 A1 cao OR M1 for forming the equation $4x-10=14$ M1 for a correct first step at rearrangement A1 cao

5MB3F/01 June 2015				
Question	**Working**	**Answer**	**Mark**	**Notes**
7		34	4	M1 for 116 − (12×8) (=20) M1 for "20" + 86 (=106) M1 "106" − (9 × 8) A1 cao OR M1 for 116 − (12 × 8) (=20) M1 for 86 − (9 × 8) (=14) M1 for "20" + "14" A1 cao OR M1 for 116 + 86 (=202) M1 for (9 + 12) × 8 (=168) M1 for "202" – "168" A1 cao OR M1 for 116 ÷8 (=14.5) and 86 ÷ 8 (=10.75) M1 for "14.5"+ "10.75" –12–9 (=3.75)oe M1 for "3.75" × 8 oe A1 cao
8		31	3	M1 for 6 × 2 (=12) or 5 × 3 (=15) M1 for 4 + "12" + "15" A1 cao OR M1 for method to find total number of drivers 4+ 6 + 5 (=15) or total number of passengers (0 +) 6 + 5×2 (=16) M1 for method for total people eg "15" + 6 + 5 + 5 A1 cao

5MB3F/01 June 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
9			No (supported)	4	M1 for conversion of times to a common format M1 for method to add all required times A1 for 3.5 hours oe or a figure to compare with 180 minutes in one step C1 (dep on M1) for correct conclusion from and supported by their figures
10	(i)		3 L, 1S or 1 L, 4S (supported)	4	B1 for 3 and 1 or 1 and 4
	(ii)		Diagram		M1 for correct length of 150 cm unit on plan M1 for correct length of 100 cm unit on plan A1 for fully correct plan
11	(a)		Pentagon	1	B1 cao
	(b)		Diagram	2	B2 for correct enlarged shape anywhere on grid (B1 for any 2 lines of correct length or correct enlargement scale factor n, $n \neq 2$)
12	(a)		18	1	B1 cao
	(b)		2.5	1	B1
	(c)		70	1	B1 cao
	(d)		2.4	2	M1 for intent to -6 from both sides or $\div 5$ both sides as first step A1 for 2.4 oe

5MB3F/01 June 2015				
Question	**Working**	**Answer**	**Mark**	**Notes**
13		Diagram	2	B2 for at least 8 correct shapes, including initial shape with no incorrectly drawn shapes or gaps. (B1 for at least 5 correct shapes, including initial shape, correctly tessellating; ignore any additional sections attempted, gaps or incorrect shapes)
14		Greenway (supported)	4	M1 for 60 ÷ 6 (= 10) and 60 ÷ 15 (= 4) M1 (dep) for "10"÷2 × 2.95 (= 14.75) M1 (dep) for "4" × 3.90 (= 15.6) C1 for Greenway and with comparison of two correct figures for total cost eg 14.75 < 15.6(0)
15		95	3	M1 for method to find amount left to pay 820 - 250(=570) M1 for completing method for monthly payments "570" ÷ 6 A1 cao

5MB3F/01 June 2015				
Question	**Working**	**Answer**	**Mark**	**Notes**
16		1.50	4	M1 for 11.4 ÷ 3 (=3.8) M1 for 0.53 × 10 (=5.3) M1 for "5.3" – "3.8" A1 for 1.5(0) cao OR M1 for 11.4 ÷ 30 (=0.38) M1 for 0.53 – "0.38" (=0.15) oe M1 for "0.15" ×100 oe A1 for 1.5(0) cao OR M1 for 0.53 × 10 × 3 (=15.90) M1 for "15.90" − 11.40 (=4.50) M1 for "4.50" ÷ 3 A1 for 1.5(0) cao Accept consistent work in £ or pence, 100g or 1kg units
17 (a)		057	1	B1 for (0)55 to (0)59
(b)		65	2	M1 for 6.5±2mm or "6.5" × 10 A1 ft for 65
18		Drawing	3	M1 Line of 6cm drawn M1 for either angle drawn A1 for fully correct drawing

<table>
<tr><th colspan="5">5MB3F/01 June 2015</th></tr>
<tr><th>Question</th><th>Working</th><th>Answer</th><th>Mark</th><th>Notes</th></tr>
<tr><td>19</td><td><table>
<tr><td>4</td><td>80</td></tr>
<tr><td>4.1</td><td>85.(321)</td></tr>
<tr><td>4.2</td><td>90.(888)</td></tr>
<tr><td>4.3</td><td>96.(707)</td></tr>
<tr><td>4.4</td><td>102.(784)</td></tr>
<tr><td>4.5</td><td>109.(125)</td></tr>
<tr><td>4.6</td><td>115.(736)</td></tr>
<tr><td>4.7</td><td>122.(623)</td></tr>
<tr><td>4.8</td><td>129.(792)</td></tr>
<tr><td>4.9</td><td>137.(249)</td></tr>
<tr><td>5</td><td>145</td></tr>
<tr><td>4.75</td><td>126.1(719)</td></tr>
<tr><td>4.76</td><td>126.8(902)</td></tr>
<tr><td>4.77</td><td>127.6(113)</td></tr>
<tr><td>4.78</td><td>128.3(354)</td></tr>
<tr><td>4.79</td><td>129.0(622)</td></tr>
</table></td><td>4.8</td><td>4</td><td>B2 for a trial $4.7 \le x \le 4.8$ evaluated correctly
(B1 for a trial evaluated correctly for $4 \le x \le 5$)
B1 for a different trial evaluated correctly for $4.75 \le x < 4.8$
B1 (dep on at least one previous B1) for 4.8

[Trials should be evaluated to at least accuracy shown in the table, truncated or rounded]

No working scores 0 marks</td></tr>
<tr><td>20 (a)</td><td></td><td>7, -2, -1</td><td>2</td><td>B2 for all three correct values 7, -2, -1
(B1 for 2 correct values 7, -2 or -1)</td></tr>
<tr><td>(b)</td><td></td><td>Correct curve</td><td>2</td><td>B2 for fully correct curve
(B1 ft for at least 5 points plotted correctly)</td></tr>
<tr><td>21</td><td></td><td>4</td><td>3</td><td>M1 $\frac{4.5}{100} \times 300$ (=13.5) or $\frac{104.5}{100} \times 300$ (=313.5) oe
M1 $50 \div$ “13.5” (=3.7) or at least 3 repeated addition of “13.5”
A1 cao

SCB1 for $1.045^n \times 300$</td></tr>
</table>

5MB3F/01 June 2015				
Question	**Working**	**Answer**	**Mark**	**Notes**
22		6	4	M1 for $7x + 22$ or $(5x+2)$ or $7b + 22p$ or $5b + 2p$ M1 for forming equation $7x + 22 = 2(5x + 2)$ M1 for correct intent to isolate x on one side A1 cao
23		29.6	4	M1 for $8^2 + 5^2$ or $64 + 25$ or 89 M1 (dep) $\sqrt{"8^2" + "5^2"}$ (= 9.4..) M1 for "9.4.." × π A1 for 29.5 – 29.65

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: ±5º
Measurements of length: ±5 mm

PAPER: 5MB3F_01			
Question		**Modification**	**Notes**
Q2	(a)	In question description the word centimetre has been removed. The labels for the shapes have been moved above the shapes. Shapes are on a 2 cm grid. Shapes have been given dotty shading. Shape F has been rotated 90°clockwise.	B1
Q3	(a)	Grid has been enlarged. Wording 'mirror line' is repeated on the left. 1 column removed from the left and from the right of the grid. Shape shading changed to dotty shading.	B1 cao
Q3	(b)	Grid has been enlarged. Wording 'mirror line' is repeated at top right. Shape shading changed to dotty shading	B2 for correct shape in correct position (B1 for shape in correct orientation)
Q4	(a)	Information has been put in table format.	M1 for 50(p) + (£)1.40 + (£)1.20 (=3.1(0) oe or 310) A1 for 3.10 cao

PAPER: 5MB3F_01			
Question		**Modification**	**Notes**
Q9		Table has been put in the Diagram Book.	M1 for conversion of times to a common format M1 for method to add all required times A1 for 3.5 hours oe or a figure to compare with 180 minutes in one step C1 (dep on M1) for correct conclusion from and supported by their figures
Q10	(i)	Diagram has been enlarged. In line 1 of the question description the word 'scale' has been removed. Wording added: On the diagram, one square represents 50 cm.	B1 for 3 and 1 or 1 and 4
Q10	(ii)	Diagram has been enlarged. In line 1 of the question description the word 'scale' has been removed. Wording added: On the diagram, one square represents 50 cm.	M1 for correct length of 150 cm unit on plan M1 for correct length of 100 cm unit on plan A1 for fully correct plan
Q11	(a)	Diagram has been enlarged.	B1 cao
Q11	(b)	Grid has been enlarged. The diagram has been modified so that the image is labelled polygon X. The enlargement is also drawn on the grid and labelled polygon Y. The wording of the question has been changed to: "Two polygons are drawn on the grid, polygon X and polygon Y. Describe the single transformation that maps polygon X onto polygon Y." Shapes have been given dotty shading.	B1 for enlargement B1 for scale factor 2 oe

PAPER: 5MB3F_01			
Question		**Modification**	**Notes**
Q13		Grid has been enlarged. 2 columns from the right have been removed. Candidates are provided with a cut out-shape. Number of shapes to draw changed to 6.	B2 for at least 6 correct shapes, including initial shape with no incorrectly drawn shapes or gaps. (B1 for at least 3 correct shapes, including initial shape, correctly tessellating; ignore any additional sections attempted, gaps or incorrect shapes)
Q14		Information has been put in the Diagram Book.	M1 for 60 ÷ 6 (= 10) and 60 ÷ 15 (= 4) M1 (dep) for "10"÷2 × 2.95 (= 14.75) M1 (dep) for "4" × 3.90 (= 15.6) C1 for Greenway and with comparison of two correct figures for total cost eg 14.75 < 15.6(0)
Q17	(a)	Angle at point A = 55° Line AB = 9.5 cm North lines made longer.	B1 for (0)55 ± 5°
Q17	(b)	Angle at point A = 55° Line AB = 9.5 cm North lines made longer.	M1 9.5 ± 5mm or "9.5" × 10 A1 ft for 95
Q18		Diagram has been enlarged.	M1 Line of correct length drawn M1 for either angle drawn A1 for fully correct drawing

PAPER: 5MB3F_01			
Question		**Modification**	**Notes**
Q20	(a)	Table layout is changed to vertical. Wording added: 'There are three spaces to fill' A 1.5 cm grid is provided.	B2 for all three correct values 7, -2, -1 (B1 for 2 correct values 7, -2 or -1)
Q20	(b)	A 1.5 cm grid is provided.	B2 for fully correct curve (B1 ft for at least 5 points plotted correctly)
Q23		Diagram has been enlarged.	M1 for $8^2 + 5^2$ or $64 + 25$ or 89 M1 (dep) $\sqrt{"8^2" + "5^2"}$ (= 9.4..) M1 for "9.4.." × π A1 for 29.5 – 29.65

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