

Mark Scheme (Results)

November 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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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 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 (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 November 2015					
Question		Working	Answer	Mark	Notes
1	(a)		0.2	1	B1 cao
	(b)		$\frac{37}{100}$	1	B1 cao
	(c)		4	1	B1 cao
	(d)		6	1	B1 for 6 or +6
2	(a)		A and G	1	B1 cao
	(b)		F	1	B1 cao
3			70	2	M1 for 20+25+25 (=70) or 15+35+25 (=75) or 20+60 (=80) A1 cao
4	(a)		300	1	B1 cao
	(b)		4	1	B1 cao
	(c)		0.7	1	B1 cao

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Question		Working	Answer	Mark	Notes
5			3	3	M1 for $4200 \div 25 (=168)$ M1 for “168” $\div 60 (=2.8)$ or “160” $- 60 - 60 (=40)$ A1 cao OR M1 for $25 \times 60 (=1500)$ M1 for $4200 \div “1500” (=2.8)$ or $4200 - “1500” - “1500” (=1200)$ A1 cao
6			16.75	2	M1 for 6.5 – 6.9 (cm) or “measurement” $\times 2.5$ A1 for 16.25 – 17.25
7			41.50	3	M1 for (7=) $3+3+1$ or $n \times 8.3$, where $1 < n < 7$ oe M1 for complete method to find total cost using both vouchers eg $8.3(0) \times 5$ A1 for 41.5(0)
8	(a)		decagon	1	B1 cao
	(b)		1440	1	B1 cao

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Question	Working	Answer	Mark	Notes
*9		yes + reason	3	<p>M1 for $3 \times 18 (=54)$ or $2 \times 25 (=50)$ M1 for $3 \times 18 (=54)$ and $2 \times 25 (=50)$ C1 for yes and 54 and 50 oe (eg 4 slices left over) OR M1 for $18 \div 2 (=9)$ M1 for “9”+”9”+”9” (=27) C1 for yes and 27 oe (eg 2 sandwiches more) OR M1 for $2 \times 25 (=50)$ M1 for “50”\div18 (=2.77...) C1 for yes and 2.7 – 2.8 packs</p>
10	(a)	parallel line	1	B1 cao
	(b)	correct net	1	B1 for one correct square drawn
11		1.08	3	<p>M1 for $3 \times 1 + 4 \times 2 + 2 \times 5 (=21)$ or $4 \times 1 + 3 \times 2 + 2 \times 10 (=30)$ or $1 \times 2 + 3 \times 5 + 4 \times 10 (=57)$ M1 for “21”+”30”+”57” (=108) A1 cao OR M1 $(3+4) \times 1 (=7)$ or $(4+3+1) \times 2 (=16)$ or $(2+3) \times 5 (=25)$ or $(2+4) \times 10 (=60)$ M1 for “7”+”16”+”25”+”60” (=108) A1 cao</p>
12	(a)	mirror line	1	B1 cao
	(b)	rectangle	2	<p>B2 for an accurate rectangle (B1 for a rectangle with an accurate line or an accurate right angle)</p>

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Question	Working	Answer	Mark	Notes
13		4.35	2	M1 for $1.85 + 1.25 + 1.25$ A1 cao (SC B1 for 3.1(0))
14	(a)	29	2	M1 for 7.25×4 A1 cao
	(b)	7	2	M1 for $50.75 \div 7.25$ A1 cao
15	(a)	10	1	B1 cao
	(b)	13	1	B1 cao
	(c)	8	1	B1 cao
	(d)	5	2	M1 for $7 \times -1 (= -7)$ and $4 \times 3 (=12)$ A1 cao
16	(a)	correct enlargement	1	B1 for a 4 by 6 rectangle
	(b)	correct rotation	2	B2 cao (B1 for rotation, direction and angle correct but wrong centre OR rotation, direction and centre correct but wrong angle)

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Question	Working	Answer	Mark	Notes
*17		Yes with comparison	4	<p>M1 for $5.5 \times 60 (=330)$ or $0.75 \times 5.5 (=4.125)$ M1 for “330” $\times 0.75 (=247.5)$ or “4.125” $\times 60$ A1 for 247.5 C1 (dep on M1) for yes and correct comparison including unit, eg 247.5 litres < 250 litres oe</p> <p>OR</p> <p>M1 for $5.5 \times 60 (=330)$ M1 for $250 \div 0.75 (=333.33\dots)$ A1 for 330 and 333.33 oe C1 (dep on M1) for yes and correct comparison including unit, eg 330 hrs < 333 hrs</p> <p>OR</p> <p>M1 for $5.5 \times 60 (=330)$ M1 for $250 \div “330” (=0.757\dots)$ A1 for 0.757 – 0.76 C1 (dep on M1) for yes and correct comparison including unit, eg 0.757... litres per hour > 0.75 litres per hour</p> <p>OR</p> <p>M1 for $250 \div 0.75 (=333.33\dots)$ M1 for “333.33...” $\div 5.5 (=60.6\dots)$ A1 for 60.6 – 60.61 C1 (dep on M1) for yes and correct comparison including unit, eg 60.6 days > 60 days</p>

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Question		Working	Answer	Mark	Notes
18	(a)		correct line	2	M1 for plotting points condone one error A1 cao
	(b)		1582 grams or 54.4 ounces	3	M1 for changing to consistent units; condone misreading scales eg 1.6 ounces = 46 grams or 64 grams = 2.2 ounces M1 for complete method for total weight Eg $24 \times 64 + "46"$ (=1582) or $24 \times "2.2" + 1.6$ (=54.4) A1 for 1580 – 1584 grams or 52 – 56.8 ounces
19			Correct tessellation	2	M1 for at least 5 correct shapes drawn A1 for 7 or more correct shapes drawn in a pattern that can be replicated
20			Correct reason	3	M1 for $\frac{2.5}{100} \times 1000$ (=25) oe M1 (dep) for "25" $\times 2$ A1 for £50 (or £10 more) or states 1050 & 1060 OR M1 for $\frac{60}{1000} \times 100$ (=6) oe M1 (dep) for "6" $\div 2$ A1 for 3% (or 0.5% more) OR M1 for $\frac{60}{1000} \times 100$ (=6) oe or 2×2.5 (=5) M1 for $\frac{60}{1000} \times 100$ oe and 2×2.5 A1 for 6% and 5%

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Question	Working	Answer	Mark	Notes
21		Correct point marked	3	M1 for showing line bearing 300° M1 for showing line bearing 40° A1 cao
*22		Bottle with reason	5	Cans M1 for $30 \times 0.28 - 10 \times 0.25 (=5.9)$ oe Bottles M1 $0.15 \times 1.60 (=£0.24)$ oe or $0.15 \times 6.40 (=0.96)$ oe M1 (dep) for $1.60 - 0.24 (=£1.36)$ per bottle, or $£5.44$ for 4 bottles) oe Best value M1 for " 1.36 " $\div 2.5 (=0.544 \text{ £/litre})$ and " 5.9 " $\div 9.9 (=0.595... \text{ £/litre})$ oe C1 (dep on M1) for 0.544 and 0.595... and bottle identified OR M1 for $2.5 \div "1.36 (=1.83... \text{ litres/£})$ and $9.9 \div "5.9" (=1.67... \text{ litres/£})$ C1 (dep on M1) for 1.67... and 1.83... and bottle identified
23		31	4	M1 for $x + (2x+7) + (3x-4) (=75)$ M1 for complete method to isolate x condone one error or $(x =) 12$ M1 (dep on M2) for $2 \times "12" + 7 (=31)$ A1 cao OR M1 for $x + (2x+7) + (3x-4) (=75)$ M1 for " $6x + 3$ " + " 18 " = 75 + " 18 " (=93) M1 for $3(2x + 7) = 93$ or " 93 " $\div 3 (=31)$ A1 cao

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Question		Working	Answer	Mark	Notes
24	(a)		0, 4, 3, -5	2	M1 for one correct value, could be taken from graph A1 cao
	(b)		correct curve	2	M1 for at least 4 points plotted correctly from table A1 for correct curve drawn
25		$\pi \times 25^2 \times 90 = 176000 - 177000$ $\div 10\ 000$	18	4	M1 for correct use of $\pi \times r^2 \times h$ or $\pi \times 25^2$ (=1963.....) M1 for $\pi \times 25^2 \times 90$ (=176714) M1 (dep on M1) for "176714" $\div 10\ 000$ (=176714) A1 for 17 or 18

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

PAPER: 5MB3F_01			
Question		Modification	Notes
Q02		2cm grid. Shape F is turned vertical. Text: Line 1 “centimetre” removed.	
Q03		Diagram enlarged.	
Q06		White Tor to Gilly Tor = 6.5 cm. Joined by a dashed line.	
Q08		Diagram enlarged.	
Q10	(a)	Grid enlarged. Text: Line 1 “centimetre” removed.	
Q10	(b)	3 cm squares.	
Q12	(a)	Grid enlarged.	
Q12	(b)	4 cm changed to 8 cm. 3 cm changed to 6 cm. Sketch of rectangle given.	

PAPER: 5MB3F_01			
Question		Modification	Notes
Q15	(a)	MLP only: x changed to y.	
Q15	(d)	MLP only: x and y changed to e and f.	
Q16	(b)	Given shape labelled A. Transformation, labelled B, put on diagram. Question reversed and candidates asked to describe the transformation.	
Q18	(a)	Grid enlarged.	
Q18	(b)	64 grams changed to 60 grams.	
Q21		Harbour to Lighthouse = 10 cm. Harbour and Lighthouse are joined with a dashed line. North line extended.	
Q22		Drawings removed. Text kept.	
Q23		MLP only : x changed to y.	
Q24		Grid enlarged.	
Q25		Model provided for all candidates. MLP also has an enlarged diagram. Wording added : “The height of the cylinder is 90 cm. The diameter of the base is 50 cm.	

