Mark Scheme (Results)

Summer 2014

Pearson Edexcel GCSE
In Mathematics B (2MB01)
Unit 3: 5MB3F_01 (Foundation)

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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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

Guidance on the use of codes within this mark scheme
M1 – method mark for correct method 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: 5MB3F_01					
Question		Working	Answer	Mark	Notes
1			(Ann=) 23 (Ben=) 17	3	M1 for 20 – 5(=15) **and** 20 + 5(=25) or 20 – 8(=12) **and** 20 +8(=28) or 20 – 5 (=15) **and** 20 – 8 (=12) or 20 + 8 (=28) **and** 20 + 5 (=25) or 20 – 5 + 8 or 20 − 8 + 5 or 8 − 5 (=3) M1 for 20 − 5 + 8 **and** 20 − 8 + 5 or 20 − "3" **and** 20 + "3" or one answer correct or both answers reversed. A1 for 23 and 17 (SC B1 for (Ann =)13, (Ben =) 7
2	(a)		A and E	1	B1 cao
	(b)		D	1	B1 cao
3	(a)		pentagon	1	B1 for pentagon
	(b)		hexagon drawn	1	B1 for a sketch of an hexagon
	(c)		5cm by 3cm rectangle drawn	2	B2 for a rectangle with two perpendicular sides with correct lengths (B1 for a rectangle with one side of correct length or a quadrilateral with a pair of adjacent sides of correct lengths)

Paper: 5MB3F_01					
Question		Working	Answer	Mark	Notes
4			Sarah	2	M1 for 8.8 + 9.0 + 9.3 and 9.0 + 9.0 + 9.0 A1 for Sarah **and** 27.1 **and** 27 OR M1 for 9.0 − 8.8 (=0.2) and 9.3 − 9.0 (=0.3) A1 for Sarah **and** 0.1
5			5	2	M1 for 58 ÷ 12 (= 4.8...) or 58 – 12 – 12 – 12 …or adding at least 12 + 12 + 12 + ... or counting up multiples of 12 with at least 12, 24, 36… A1 cao
6	(a)		April	1	B1 cao
	(b)		June and August	1	B1 cao
	(c)		8	2	M1 for 14 – 6 or 6 – 14 A1 cao
7			4	3	M1 for 3 × 35 (=105) or 33 seen M1 for (138 – "105") ÷ 10 (= 3.3) or "33" – 10 – 10 (– 10) oe A1 cao
8	(a)		reflection	2	B2 cao (B1 for reflection with correct orientation)
	(b)		2	1	B1 for 2
9			11.45 (am)	3	M1 for 1.5 × 40 + 15 (=75) M1 (dep) for changing '75' to hours and minutes or subtraction of 60 minutes A1 for 11.45(am)

Question		Working	Answer	Mark	Notes
10	(a)		graph drawn	2	B2 for correct straight line from 0 to 8 gallons (B1 for at least 4 points plotted accurately or line through at least 4 of the points from the table)
	(b)		22 – 24	1	B1 for 22 – 24 or ft from graph in (a)
	(c)		7.0– 7.4	1	B1 for 7.0 – 7.4 or ft from graph in (a)
11	(a)		2	1	B1 for 2 (or +2)
	(b)		−9	1	B1 cao
	(c)		−3	1	B1 cao
12			14	2	M1 for $4 + 2 \times 5$ A1 cao
13	(a)		31.25	2	M1 for complete method eg $125 \div 4$ or $25 + 12.5 \div 2$ A1 cao
	*(b)		France with comparison	3	M1 for method to convert €100 to pounds eg 20×4 A1 for (£)80 C1 (dep M1) for correct comparison with correct units OR M1 for method to convert £90 to Euros eg (£90=)$125 − 12.5$ (=112.5) A1 for (€)112.5(0) C1 (dep M1) for correct comparison with correct units

Question		Working	Answer	Mark	Notes
14	(a)		4	1	B1 cao
	(b)		6	1	B1 cao
15			tessellation	2	B2 for at least 6 correct shapes, including initial shape, correctly tessellating. (B1 for at least 4 correct shapes, which may include initial shape, correctly tessellating, ignore the rest of the diagram)
16	(a)		118 - 122	1	B1 for 118 – 122
	(b)		17.5	2	M1 for $2.5 \times$ "7" where "7" is 6.8 – 7.2 A1 for 17 - 18
	(c)		Position marked	2	B1 for school marked due North of church B1 for distance of 6cm
17			No with reason	3	B1 for converting units, eg 5000 (cm) or 6.75 (m) M1 for $8 \times$ "675" (=5400) or 8×6.75 (=54) A1 for No with comparison of correct figures for thread per dress needed with consistent units eg 54(m) > 50(m) OR B1 for converting units, eg 5000 (cm) or 6.75 (m) M1 for $5000 \div 8$ (=625) or $50 \div 8$ (=6.25) A1 for No with comparison of correct figures for total thread needed with consistent units eg 625(cm) < 675(cm) OR B1 for converting units eg 5000 (cm) or 6.75 (m) M1 for $5000 \div 675$ (= 7 or 7.4…) or $50 \div 6.75$ (= 7 or 7.4…) A1 for No with reason and correct figure for number of dresses eg 7 or 7.4

Paper: 5MB3F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
*18		Investment A with working	5	M1 for 8×12(=96) **or** 8×3×12 (=288) M1 for 0.035×2400 (=84) **or** 0.035×2400×3 (=252) M1 for use of the same time period for both calculations eg 8×12(=96) **and** 0.035×2400 (=84) or 8×3×12 (=288) **and** 0.035×2400×3 (=252) A1 for correct answers for same time period eg 96 **and** 84 or 288 **and** 252 C1 (dep on M2) for correct decision based on their figures, supported by working OR M1 for 8×12(=96) **or** 8×3×12 (=288) M1 for $\frac{"96"}{2400} \times 100$ or for $\frac{"288"}{2400} \times 100$ (=12) M1 for use of the same time period for comparison eg $\frac{"96"}{2400} \times 100$ or "12"÷3 compared to 3.5% or $\frac{"288"}{2400} \times 100$ (=12) compared to 3.5 × 3 (=10.5) A1 for 4(%) or 12(%) **and** 10.5(%) C1 (dep on M2) for correct decision based on their figures, supported by working
19		3cm×6cm rectangle drawn	2	B2 cao (B1 for a rectangle with one correct side)
20		226.80	3	M1 for method to find 5% of 54 (= 2.7) or 5% of "54×4" (=10.8) or 105% of 54 (= 56.7) M1 for a complete method to find the total amount A1 for 226.8(0)

Question		Working	Answer	Mark	Notes
*21		**Examples** **£ per bag** 2.15÷50 = 0.043 (4.3) 3.29÷80 = 0.0411.. (4.11..) 5.17÷125 = 0.0413..(4.13..) **Bags per £ (or p)** 50÷2.15 = 23.2(5...) 80÷3.29 = 24. 3(1...) 125÷5.17 = 24.1(7...) **Price per 400 bags** S: 2.15×8 = 17.2 M: 3.29×5 = 16.45 **Price per 1000 bags** M: 3.29×12.5 = 41.125 L: 5.17×8 = 41.36	Medium	4	M1 for division of price by quantity for at least 2 boxes **or** division of quantity by price for at least 2 boxes **or** a complete method to find price of same quantity for at least 2 boxes **or** to find quantity of same price applied to at least 2 boxes M1 for a complete method to give values that can be used for comparison of all 3 boxes. A1 for correct values that can be used for comparison for all 3 boxes C1 ft (dep on M2) for comparison of their values with a correct conclusion.
22	(a)		$5x - 3 = 52$	3	M1 for $2x$ or $2x - 3$ seen M1 for x and $2x$ and $2x - 3$ A1 for $5x - 3 = 52$ from correct working
	(b)		11	2	M1 for intention to either add 3 to both sides or divide all terms by 5 as a first step A1 cao
23			enlargement scale factor 3 centre O	3	B1 for enlargement B1 for scale factor 3 B1 for (centre) O oe NB: B0 for any combination of transformations

Paper: 5MB3F_01				
Question	Working	Answer	Mark	Notes
24		77 – 77.2	4	M1 for $\pi \times 40^2 \times 90$ (= 452389. ..) M1 for "452389" – 65000 (= 387389. ….) M1 (dep on at least M1) for "387389. .." ÷ ($\pi \times 40^2$) A1 for answer in the range 77 to 77.2 OR M1 for $\pi \times 40^2$ (= 5026. ..) M1 for 65000 ÷ "5026. .." (= 12.93....) M1 (dep on at least M1) for 90 – "12.93" A1 for answer in the range 77 to 77.2
25		$h = \frac{x-8}{5}$	2	M1 for intention to either subtract 8 from both sides or divide each term by 5 as a first stage of working A1 for $h = \frac{x-8}{5}$ oe

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: 5MB3F_01			
Question		**Modification**	**Notes**
Q02		Shapes G, H and I removed	
Q03	(b)	six polygons with 3, 4, 5, 6, 7, 8 sides labelled A to F "Which polygon is a hexagon?"	
	(c)	5cm and 3cm changed to 10cm and 6cm. Base line given	
Q06		Bars: May up to 15, Jun and August up to 5, July up to 7.5 2cm squares	
Q08		2cm grids	
Q10	(c)	2cm grid 33 litres changed to 30	
Q15		5 shapes not 6 1 shape provided for all candidates last 2 columns removed from grid	