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Mark Scheme (Results)

November 2016

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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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

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: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		Line drawn	1	B1
	(b)		Circle drawn	1	B1
2			4.50 1.40 3.90	3	B1 cao B1 cao B1 ft sum of stated profit figures
*3			Belinda with working	3	M1 adding the scores for Ami (=59.2) and for Belinda (=59.7) A1 for 59.2 and 59.7 C1 ft (dep on M1) for conclusion OR M1 for method to find four differences A1 for final difference of 0.5 C1 ft (dep on M1) for conclusion
4	(a)		6	1	B1 cao
	(b)		4	1	B1 cao
	(c)		6	1	B1 cao
	(d)		3.25	2	M1 for method to isolate the q term or division by 8 through as the first step A1 oe
	(e)		19	2	M1 for substitution eg 4+5×3 A1 cao

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
5	(a)		octagon	1	B1 cao
	(b)		reflection	1	B1 cao
	(c)		B & F	1	B1 cao
	(d)		G	1	B1 cao
6	(a)		174	2	M1 for substitution eg 36×4+30 A1 cao
	(b)		4.5	3	M1 for algebraic statement eg 192=36*x*+30 oe or one inverse operation shown or 192 – "174" = 18 extra units M1 for correct inverse statement or rearrangement of equation eg (192−30) ÷ 36 or "18" ÷ 36 as an extra ½ kg A1 cao
7			9	3	M1 any appropriate inverse operation eg 22 +5, 27 ÷ 3 M1 complete method eg 22 + 5 ÷ 3 A1 cao
8	(a)		10	2	M1 for 8 ÷ 0.75 oe (= 10.6666..) A1 cao
	(b)		$\frac{40}{200}$	1	B1 oe
9			11	3	M1 for measurement of a single side eg 8 (cm), 3 (cm) or method to find total length M1 for use of scale with a length eg 4 (m), 1.5 (cm) A1 answers in the range 10.8 to 11.2 SC B1 for 44

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*10			246 Conclusion Eg yes	4	M1 for 45 × 3 (=135) or 37 × 3 (=111) M1 for 45×3+37×3 (=135+111) A1 cao C1 (dep on at least M1) for conclusion OR M1 for 45 + 37 (=82) M1 for 3 × "82" A1 cao C1 (dep on at least M1) for conclusion
11			1.64	4	M1 for 3 × 48 (=144) M1 for totalling the amounts eg 1.79+1.20+3.53+"1.44" (=7.96) M1 subtraction from 9.60 eg 9.60 – "7.96" A1 cao
12			Correct triangle	2	M1 for one side correct and a triangle or a correct enlargement with a scale factor of 3 A1 correct triangle (any orientation)

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Question		**Working**	**Answer**	**Mark**	**Notes**
13			42	3	M1 for any attempt to find how many 46s make 180 or 180÷46 (=3.9….) M1 for complete method eg 180 – (46×no.of tickets) A1 cao
14	(i)		−11	4	B1 cao
	(ii)		1.69		B1 cao
	(iii)		3.5		B1 cao
	(iv)		512		B1 cao
15	(a)		Tessellation	2	B2 for at least 6 shapes tessellating correctly (no gaps) (B1 for at least 3 shapes tessellating)
	(b)		Triangle drawn	1	B1 cao
16			600	3	M1 0.04 × 5000 (=200) M1 3 × "200" or sight of 5600 A1 cao
17			$h = \frac{G+5}{3}$	2	M1 for intention to isolate the 3*h* or divide all terms by 3 as the first step A1 oe

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*18			Tymes shop	3	M1 for 80 – 18 (= 62) or for method to reduce 80 by 20% oe (= 80 − 16 = 64) A1 for 62 and 64 C1 for comparison using 62 and 64 OR M1 for method to find 20% of 80 (=16) A1 for 16 C1 for comparison using 16 and given 18 OR M1 for writing £18 as a % of £80 (= 22.5%) A1 for 22.5% C1 for comparison using 22.5% and 20%
19	(i)		$N = 3x + 7$	5	M1 for $x + x + 3 + x + 4$ (=N) A1 cao
	(ii)		21		M1 ft for 61 = "$3x + 7$" M1 for isolating the x A1 ft "18" + 3 OR M1 for choosing a value of x and stating x, x+3, x+4 M1 for adding their values A1 ft
20	(a)		3.5	1	B1 cao
	(b)		3000	1	B1 cao
	(c)		30000	2	M1 for 3 × 100 × 100 oe A1 cao

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
21	(a)		Triangle	2	B1 for triangle translated B1 for triangle at (−2,2),(−2,0),(−1,0)
	(b)		Rotation 90° anticlockwise centre (0,0)	3	B1 Rotation B1 90° anticlockwise oe B1 centre (0,0) Note Award no marks if more than one transformation is given
*22			Flow pumps	5	M1 for a correct first step, eg 4 × 35 (= 140 galls in 1 min or 8400 galls in 1 hour) or 1000000 ÷ 2100 (= 476 hours for 1 speedy pump) or 35 × 60 (= 2100 gallons in 1 hour) M1 for a correct method to find a time taken for one type of pump, eg 1000000 ÷ 8400 (= 119 hours) M1 for a correct method to find a time taken for the other type of pump (consistent), eg 500 ÷ 5 (= 100 hours) A1 for two correct comparable values, eg 119 (hours) and 100 (hours) C1 ft (dep M3) for conclusion of Flow pumps with correct figures for comparison OR M1 for a correct first step, eg 4 × 35 (= 140 galls in 1 min) M1 for a correct method to find the number of gallons pumped out by one type of pump in a certain time period, eg 1000000 ÷ 100 (= 10000 gall in 1 hour) M1 for a correct method to find the number of gallons pumped out by the other type of pump in a certain time period (consistent), eg for two correct comparable values, eg 10000 ÷ 60 (= 166 gallons in 1 min) A1 for 140 (galls in 1 min) and 166 (galls in 1 min) oe C1 ft (dep M3) for conclusion of Flow pumps with correct figures for comparison

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