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Mark Scheme (Results)

November 2013

Pearson Edexcel GCSE
In Mathematics Modular (2MB01)
Unit 3: (5MB3F_01) Foundation (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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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.

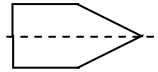
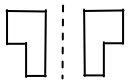
12 Parts of questions

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: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		Correct reflection	1	B1 cao
	(b)		Correct reflection	1	B1 cao
2	(a)		54	2	M1 for 12 + 19 + 23 A1 cao
	(b)		11	2	M1 for 12 + 19 (= 31) or 19 + 23 (= 42) or 23 – 12 or 12 – 23 A1 for 11 (accept – 11) **SC:** Award B2 for 31 **and** 42 seen with no answer. or 23 – 12 (or 12 – 23) with no answer
3	(a)		hexagon	1	B1 for (regular) hexagon
	(b)		D, E	1	B1 cao
	(c)		A	1	B1 cao
	(d)		108	2	M1 for 540 ÷ 5 A1 cao

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
4			8	3	M1 for 23 – 7 (= 16) or 23 ÷ 2 (= 12.5) M1 for correct order of operations –7 then ÷ 2 A1 cao OR M1 for forming the equation $2x + 7 = 23$ M1 for attempt to isolate the number terms or divide all terms by 2 as the first step A1 cao
5	(a)		1.7	1	B1 cao
	(b)		56.96	1	B1 cao
	(c)		19.683	1	B1 cao

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
6			127	3	M1 for 6 × 24 (= 144) M1 for '144' – 17 A1 cao OR M1 for 5 × 24 (= 120) M1 for '120' + 7 (= 127) A1 cao
7	(a)		0.75	1	B1 cao
	(b)		$\frac{3}{10}$	1	B1 for $\frac{3}{10}$ oe fraction
8	(a)		320	2	M1 for 80 × 4 A1 cao
	(b)		65	2	M1 for 130 ÷ 2 A1 cao

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)		Graph drawn	2	B2 for correct straight line from (0,0) to (10,25) (B1 for at least 3 points plotted correctly or a line through at least 3 of the points from the table)
	*(b)		Kate with comparison	3	M1 for an attempt to convert 62 inches to cm (eg 15×10 + 5) or convert 150 cm into inches (eg 10 × 6) A1 for 60 (inches) or 155 (cm) C1 (dep M1) for Kate with comparison eg '62' > 60 or '155' > 150 ft from a straight line segment
10	(a)		9	1	B1 cao
	(b)		28	1	B1 cao
	(c)		35	1	B1 cao
	(d)		12.5	2	M1 for attempt to isolate the number term or divide all the terms by 4 as the first step. A1 for 12.5 oe

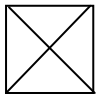
PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*11			No as 33 > 26 or 50 > 48.6	5	M1 for finding the sale price of either books eg 46 × 0.50 (= 23) or 68 × 0.30 (= 20.4) M1 for finding the total sale price of all the books eg 23 + 20.4 (= 43.4) M1 for finding the change (eg 50 – '23' – '20.4' (= 6.6)) or the sale price of the magazines (eg 26 × 0.20 (= 5.2)) A1 for 33 or 48 or 6.6(0) **and** 5.2(0) or 48.6(0) C1 (dep on at least M1) for No and comparison of their values (Accept working throughout in £ or pence)

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
12	(a)		145	1	B1 accept 143 – 147
	(b)		7 – 9	4	M1 for carrying out a correct measurement of one of the lines eg (AC as) 10.3 – 10.7 or (BC as) 7.8 – 8.2 or (AB as) 6.3 − 6.7 M1 for scaling at any stage (by ×2) M1 for complete process of lengths AC – (AB + BC) ; scaled or unscaled A1 for answer in range 7 – 9
13			Tessellation	2	B2 for at least 6 correct shapes (including initial shape) correctly tessellating (B1 for at least 4 correct shapes (including initial shape) correctly tessellating)

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
14	(a)		$\frac{75}{200}$	1	B1 for $\frac{75}{200}$ or equivalent fraction
	(b)		6	2	M1 for $\frac{81}{1350} \times 100$ oe A1 cao
15			Correct enlargement	2	M1 for enlarging 2 adjacent sides correctly or correct enlargement using incorrect scale factor ($\neq 1$) A1 cao

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*16			Office Deals with reason	4	M1 for 60 ÷ 20 (= 3) or 60 = 20 × 3 **and** 60 ÷ 15 (= 4) or 60 = 15 × 4 M1 for '3' × 10.80 (= 32.4) M1 for '4' × 8.40 (= 33.6) C1 for Office Deals and with comparison of two correct figures for total cost with correct money notation eg £32.40 < £33.60 eg £1.20 less OR M1 for 10.8 ÷ 20 (= 0.54) M1 for 8.40 ÷ 15 (= 0.56) M1 for showing 60 is multiple of 15 and of 30 eg 60 ÷ 20 = 3 or 3 × 20 = 60 C1 for Office Deals and with comparison of two correct figures for cost per folder £0.54 < £0.56 with correct money notation and evidence that 60 is common multiple of both 15 and 20

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
17			27	4	B1 for correct conversion of units eg 0.76(0) eg 25 000 eg 4300 M1 for taking the weight if 1 empty box into account eg 25 – 4.3 or a complete method to find number of plates, ignoring the box, and rounding down M1 for a complete correct method (before rounding down) eg 27.2(368...) A1 cao
18			34	2	M1 for 4 × 6 (=24) or 2 × 5 (=10) A1 cao

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
19			58.05	4	B1 for identifying 19.5(0) and 15(.00) M1 for a correct method to find the total cost of their identified tickets for the family, or for a correct method to find the discounted cost of at least one of the identified tickets M1 (dep) for a correct method to find the total discounted cost of their 1 adult and 3 child tickets A1 cao
20	(a)			2	B2 for correct full size plan (B1 for square with 6cm side length or complete plan not full size)
	(b)		Correct diagram	3	M1 for one correct side length (tolerance ± 2mm) M1 for another correct side length (tolerance ± 2mm) A1 for fully correct diagram **SC:** B1 for a fully correct sloping face in a 3D sketch

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
21		65% is 5473 $\frac{1}{5}$ is1684 85% is 7157 15% is 1263	1263	4	M1 for a correct method to find 65% (= 5473) of the customers M1 for a correct method to find $\frac{1}{5}$ (= 1684) of the customers M1 (dep on M2) for a correct method to find the remaining number of customers A1 cao OR M1 for a correct method of adding 65% and $\frac{1}{5}$ when both correctly written as percentages (= 85%) or decimals (= 0.85) or fractions (= $\frac{85}{100}$ oe) M1 ft for a correct method to find the percentage or decimal or fraction of the customers (= 7157) M1 (dep on M2) for a correct method to find the remaining number of customers A1 cao

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
21 (cont)					OR M1 for a correct method of adding 65% and $\frac{1}{5}$ when both correct percentages (= 85%) or decimals (= 0.85) or fractions (= $\frac{85}{100}$ oe) M1 ft for a correct method to find the remaining percentage (= 15%) or decimal (= 0.15) or fraction ($\frac{15}{100}$ oe) of the customers M1 (dep on M2) for a correct method to find the remaining number of customers A1 cao

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
22		$x = 3$ gives 39 $x = 4$ gives 80 $x = 3.1$ gives 42.(191) $x = 3.2$ gives 45.(568) $x = 3.3$ gives 49.(137) $x = 3.4$ gives 52.(904) $x = 3.5$ gives 56.(875) $x = 3.6$ gives 61.(056) $x = 3.7$ gives 65.(453) $x = 3.8$ gives 70.(072) $x = 3.9$ gives 74.(919) $x = 3.55$ gives 58.9(38) $x = 3.56$ gives 59.3(58) $x = 3.57$ gives 59.7(79)	3.6	4	B2 for a correct trial in the range $3.5 \leq x \leq 3.6$ evaluated (B1 for a correct trial in the range $3 \leq x \leq 4$ evaluated) B1 for a different correct trial in the range $3.55 \leq x < 3.58$ evaluated B1 (dep on at least one previous B1) for 3.6 Accept trials correct to the nearest whole number (rounded or truncated) if the value of x is to 1 dp but to 1 dp (rounded or truncated) if the value of x is to 2 dp **NB:** If no working shown, no marks can be awarded, even if the answer is correct.

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**
Q1	(a)	2cm grid. 'Mirror line' written at each side.	Standard mark scheme
	(b)	2cm grid. 'Mirror line' written at top and bottom.	Standard mark scheme
Q3		Shape H removed.	Standard mark scheme
Q9		*x* axis 2cm for 1. *y* axis is 2cm for 2 ½ . Right axis labelled.	Standard mark scheme
Q12		Frame and shading removed. N line extended to 10cm. Same size kept. Leeway needed for measurement of the angle in part (a).	Standard mark scheme Angles: ±5º
Q13		Five shapes asked for instead of 6. 1½ cm grid. 2 end columns removed. MLP 18pt and 24pt: 1 shape given. BRL and larger print additional shapes given.	B2 for at least 5 correct shapes (including initial shape) correctly tessellating (B1 for at least 3 correct shapes (including initial shape) correctly tessellating)

PAPER: 5MB3F_01			
Question		**Modification**	**Notes**
Q15		Shape A given and also shape B (the enlargement). Wording changed: "Shape A has been mapped to Shape B." Describe the single transformation. 1 ½ cm grid.	Standard mark scheme
Q18		MLP *a* changed to *e*, *b* changed to *f*.	Standard mark scheme
Q19		Table format for July dates modified, information is the same.	Standard mark scheme
Q20	(a)	Model and diagram given. Side 6.5cm changed to 7.5cm. 2cm grid wording changed: "Draw…..on the square grid. Each square on the grid represents a one centimetre square."	Standard mark scheme
	(b)	Base line given, other 2 sides will be 7.5cm not 6.5cm.	

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