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Mark Scheme (Results)

Summer 2013

GCSE Mathematics (2MB01) Foundation
5MB3F (Calculator) Paper 01

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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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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)		44.89	1	B1 cao
	(b)		3.7	1	B1 accept -3.7 or ± 3.7
2			8.32 8 51.22	3	B1 cao B1 cao B1 ft from '8.32'
3	(a)		Octagon	1	B1 cao
	(b)		Pentagon drawn	1	B1 cao
	(c)		121	3	M1 for attempted sum of given angles (=779), or subtraction of all given angles from a number > 900 M1 for 900 – '779' or subtraction of all given angles from 900 A1 cao

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
4	(a)		0.5	1	B1 cao
	(b)		$\frac{3}{4}$	1	B1 for $\frac{3}{4}$ oe eg. $\frac{75}{100}$
	(c)		$\frac{19}{30}$	1	B1 for $\frac{19}{30}$
5			240	3	M1 for 67.5 × 8 (=540) or 75 × 8 ÷ 2 (=300) M1(dep) for '540' – '300' A1 cao **OR** M1 for 67.5 × 2 – 75 (= 60) M1 (dep) for '60' × 8 ÷ 2 A1 cao

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*6			AECBDA 149 km	4	M1 for any route starting and ending at A going through B, C, D and E (could be implied by addition eg. 20 + 26 + 30 + 45 + 28) Condone missing last section back to A M1 for a valid route for which their total is shown A1 for 149 C1 (dep on M1) ft for communicating the shortest route with 149 km seen in the working
7			Reflection	1	B1 cao
8			31	2	M1 for 60 ÷ 2 (= 30) or for starting to position cones on a line 2m apart with distances shown or for $2(n - 1) = 60$ A1 cao

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)		175.14	3	M1 for 135.70 + 85 (= 220.70) **or** 135.70 – 45.56 (= 90.14) **or** 85 – 45.56 (= 39.44) **or** 45.56 – 85 (= 39.44) M1 for correct complete method, eg. 135.70 + 85 – 45.56 A1 cao
	(b)		700	1	B1 cao
	(c)		November	1	B1 for Nov oe
	(d)		April , August	1	B1 for April and August oe
10	(a)		B, D	1	B1 cao
	(b)		F	1	B1 cao
11			417	3	M1 for 24 × 18 (= 432) M1 for '432' – 15 A1 cao **or** M1 for 24 – 15 or 24 × 17 (= 408) M1 for '24 – 15' + 24 × 17 A1 cao

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
12	(a)		6	1	B1 cao
	(b)		7	1	B1 cao
	(c)		2.6	2	M1 for clear intention to add 4 to both sides **or** clear intention to divide all terms by 5 A1 for $\frac{13}{5}$ oe
13			correct triangle	2	M1 for *BC* 6.4cm ± 2mm (within guidelines on overlay) or angle *B* $40^o \pm 2^o$ (within guidelines on overlay) A1 correct triangle within guidelines on overlay

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
14	(a)		29	2	M1 for substituting 20 into the word formula e.g. 20 × 1.25 + 4 (= 25 + 4) A1 cao
	(b)		35	3	M1 for 47.75 = x × 1.25 + 4 **or** 47.45 – 4 (= 43.75) M1 for "43.75" ÷ 1.25 A1 cao or M1 for 47.75 – "29" (=18.75) M1 for 20 + '18.75'÷1.25 A1 cao NB. Accept reverse flow chart
15	(a)		8	1	B1 for 7.8 – 8.2
	(b)		155	2	M1 for correct bearing clearly identified on diagram A1 for 153 – 157 **SC** B1 for answer of 333 -337 given

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*16			£109.20	4	M1 for 24 × 130 (=3120) M1 for 13 × (730 – 130) (=7800) M1 for "3120" + "7800" **or** 10920 **or** 109.2 **or** 109.20 C1 (dep on M1) for £109.20 or 10920p with correct money notation clearly identified **NB** candidates can work in pounds or pence
17	(a)			2	B1 for any 2 lines of correct length **or** correct enlargement with scale factor n, n≠3 B1 for correct enlarged shape drawn anywhere on grid
	(b)		Reflection in *y* axis	2	B1 for Reflection B1 for *y* axis or $x = 0$ NB: If more than one transformation indicated then no marks
18			41.968	2	B2 for 41.968 (B1 for $\frac{5246}{125}$ **or** 32.768 **or** 9.2)
19			Correct net	3	B3 for correct net (B2 for 5 faces drawn all correct **or** 6 faces drawn with 4 or 5 correct) (B1 for any net of a cuboid)

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
20		$x + 2x + 15 = 63$ $3x = 48$	16	3	M1 for $x + 2x + 15 = 63$ M1 for attempt to subtract 15 from each side of their equation A1 cao **or** M1 for 63 – 15 (=48) M1 for '48'÷3 A1 cao **or** M2 for16 and 32 seen (M1 for strategy for finding at least two pairs of marbles that meet the criteria x, $2x$) A1 cao
21			550	5	M1 for a correct method to find 20% of an amount eg 3500×0.2 oe (=700) M1 for a correct method to increase an amount by 20% eg 3500×1.2 oe (=4200) M1 for subtracting 900 M1 for division by 6 A1 for 550 NB : Operations may occur in any order as long as they could lead to the correct answer. Award marks until a breakdown of method occurs

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
22		342 ÷ 88 =3.886… 570 ÷ 195 =2.923… 1500 ÷ 399 =3.759… **or** 88 ÷ 342 =0.257… 195 ÷ 570 =0.342… 399 ÷ 1500 =0.266	small with correct calculations	4	M1 for one of 342 ÷ 88 (=3.886…), 570 ÷ 195 (=2.923…), 1500 ÷ 399 (=3.759…) **or** for one of 88 ÷ 342 (=0.257…), 195 ÷ 570 (=0.342…), 399 ÷ 1500 (=0.266) **or** any other calculations that could lead to a comparative figure M1 for calculations that could lead to comparative figures for 2 bottles M1 for calculations that could lead to comparative figures for 3 bottles e.g. all three from the above list C1 for three correct comparative figures for all 3 bottles, leading to a correctly stated comparison : small or 342g best value
23			26.7	3	M1 for $(GJ^2 =)$ $24.5^2 + 10.6^2$ or 600.25 + 112.36 or 712.61 M1 for $\sqrt{24.5^2 + 10.6^2}$ or $\sqrt{712.61}$ A1 26.69 – 26.7

PAPER: 5MB3F_01

Question		Working	Answer	Mark	Notes
24		4 40 4.1 44.(321) 4.2 48.(888) 4.3 53.(707) 4.4 58.(784) 4.5 64.(125) 4.6 69.(736) 4.7 75.(623) 4.8 81.(792) 4.9 88.(249) 5 95 4.81 82.4(2464) 4.82 83.0(6017) 4.83 83.6(9859) 4.84 84.3(399) 4.85 84.9(8412)	4.8	4	B2 for a trial between 4 and 5 exclusive (B1 for a trial at 4 or 5) B1 for a different trial of $4.8 < x \leq 4.85$ B1 (dep on at least one previous B1) for 4.8 NB. Trials should be evaluated to at least 2 sf truncated or rounded for values of x correct to 1 decimal place. Trials should be evaluated to at least 1 dp truncated or rounded for values of x correct to 2dp. (NB. For trial at 4.82, accept 83 for trial at 4.85 accept 85) **NB** No working scores 0 marks even if 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		**Modifications**	**Notes**
2		Braille only: Roman numerals inserted into spaces as below 16 £0.52 £(i) (ii) £4.65 £37.20 Total cost £(iii)	Standard mark scheme
7		3 columns on the left and 4 columns on the right removed. 2cm grid. "Mirror line" put at top of diagram as well as at the bottom	Standard mark scheme
10		2cm grid. Shape D rotated 180 degrees. 3 bottom rows of grid removed.	Standard mark scheme
13		Diagram measurements labels changed. AB= 10cm, BC = 7.5cm, Line AB is drawn as 10cm.	Apply mark scheme with these new measurements

PAPER: 5MB3F_01			
Question		**Modifications**	**Notes**
15		"Langford" moved left of X. Stevenage X moved cm away in same direction as Langford to Stevenage. North lines inserted at Hitchin, Langford and Stevenage – all 9 cm long.	Check the bearing on the new paper and apply above tolerances to marking.
17	(a)	2cm grid. Image labelled Shape X. Enlargement drawn on grid and labelled Shape Y. Candidates asked "Describe the single transformation that maps Shape X onto Shape Y."	B1 for "enlargement"; B1 for "scale factor 3"; ignore any reference to points of enlargement that might be given.
	(b)	2cm grid. Wording inserted "The diagram shows Shape A and Shape B."	Standard mark scheme
19		Model given as well as a diagram. A diagram with four shapes A B C and D , drawn accurately. Candidates are asked "Which shape is the accurate net for the cuboid?" Answer is Shape C.	B0 for answer of B B1 for answer of A or D B3 for answer of C
22		No pictures – just information given	Standard mark scheme
23		Braille only – information given about measurements of lines and angles.	Standard mark scheme

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