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Mark Scheme (Results)

June 2012

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

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June 2012
Publications Code UG032663

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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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

5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		Octagon	1	B1 for octagon (allow incorrect spelling as long as the intention is clear)
	(b)		C and D	1	B1 both C and D (any order)
	(c)	1080 ÷ 8	135	2	M1 1080 ÷ 8 A1 cao
2	(a)		July and August	1	B1 (allow incorrect spellings or abbreviations as long as the intention is clear)
	(b)		April	1	B1 (allow incorrect spelling or abbreviation as long as the intention is clear)
	(c)		14	1	B1 cao
	(d)	24–13	11	2	M1 for attempt to read off and subtract (eg 24–13) A1 for 11 (accept – 11)
3			Sketch of a pentagon	1	B1 sketch of any 5-sided shape
4	(a)		–2	1	B1 cao
	(b)		–18	1	B1 cao
5	(a)		5	1	B1 cao
	(b)		7	1	B1 cao

5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
6		7.5 × 2	14.6 – 15.4	2	M1 for "7.5" × 2 or 7.5 (±2mm) seen A1 14.6 – 15.4
7	(a)		Reflected shape	1	B1 for correctly reflected shape
	(b)		Reflected shape	1	B1 for correctly reflected shape
8		10 × £2.50 = 25.00 11 × 15p = 1.65 7 × 20p = 1.40 25 + 1.65 + 1.4	28.05 Yes	5	B1 calculations involve all three items and all five days M1 any one of "10"×£2.50, "11"×15p, "7"×20p A1 any one of 25.00, 1.65, 1.40 A1 for 28.05 C1 (dep M1) for comparison and correct deduction using their figures eg 28.05 so yes OR B1 calculations involve all three items and all five days M1 any one of 1 × £2.50 + 3 × 15p + 2 ×20p or 4 × 15p or 2 × £2.50 + 2 × 15p or 4 × £2.50 + 3 × 20p or 3 × £2.50 + 2 × 15p + 2 ×20p A1 any one of 3.35, 0.60, 5.30, 10.60, 8.20 A1 for 28.05 C1 (dep M1) for comparison and correct deduction using their figures eg 28.05 so yes

5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)	13+17+14+22	66	2	M1 for 13+17+14+22 or (13+17+14)×2 A1 for 66 or 88
	(b)	13+17=30 22+14=36 36–30	6	3	M1 for 13+17 (=30) or for 22+14 (=36) M1 (dep M1) for "36" – "30" A1 cao
	(c)	17 + 1 =	18	2	M1 for 17+1 or 1+16+1 or attempt to find by drawing / diagrams or answer of 17 or 19 A1 for 18 OR accept the other way around the diagram M1 for 49+1 or 1+48+1 or attempt to find by drawing / diagrams or answer of 49 or 51 A1 for 50
10	(a)		3	1	B1 cao
	(b)		Square on grid	1	B1 correct position
	(c)		Square drawn	2	B2 for square within tolerance (see overlay) (B1 for any line 4 cm ± 2mm or angle 90° ± 2°)
11	(a)		Graph drawn	2	B2 for a correct straight line from \$0 to \$60 (B1 for at least 4 points plotted accurately or line through at least 4 of the points from the table)
	(b)		37.50 33.33	2	B1 for value in the range 37 – 38 or ft from (a) (±1sq) B1 for value in the range 33 – 34 or ft from (a) (±1sq)

5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
12	(a)	24 ÷ 4 + 5	11	2	M1 for 24 ÷ 4 + 5 or 6 + 5 A1 cao
	(b)	13 = ? ÷ 4 + 5 ? = (13 – 5) × 4	32	3	M2 for (13 – 5) × 4 (M1 for 13 – 5 × 4 or 13 = ? ÷ 4 + 5 or 13 – 5 or × 4 seen as second operation) A1 cao SC B1 for 47 as answer NB accept reverse flowcharts for inverse operations

5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
13		$\frac{2}{5}$of 14 = 5.60 $\frac{7}{20}$of 14 = 4.90 14 – 5.60 – 4.90 OR $\frac{2}{5} + \frac{7}{20} = \frac{8}{20} + \frac{7}{20} = \frac{15}{20}$ oe then $14 \times \frac{15}{20}$=10.50; 14–10.50 or $1 - \frac{15}{20} = \frac{5}{20}$; $\frac{5}{20} \times 14$ OR 40% + 35% = 75% 100% - 75% = 25% $14 \times \frac{25}{100}$	3.50	4	M1 for $\frac{2}{5} \times 14$ or $14 \times 2 \div 5$ (=5.6) M1 for $\frac{7}{20} \times 14$ or $14 \times 7 \div 20$ (= 4.9) M1 (dep M1) for 14 – "5.6(0)" – "4.9(0)" A1 for 3.5(0) OR M1 for $\frac{2}{5} + \frac{7}{20}$ (= $\frac{15}{20}$ oe) M1 for $14 \times \frac{15}{20}$ (=10.5) M1 (dep M1) for 14 – "10.5" A1 for 3.5(0) OR M1 for $\frac{2}{5} + \frac{7}{20}$ (= $\frac{15}{20}$ oe) M1 for $1 - \frac{15}{20}$ (= $\frac{5}{20}$ oe) M1 (dep M1) for $14 \times \frac{5}{20}$ A1 for 3.5(0) OR M1 for 40% + 35% (= 75%) M1 for 100% - 75% (= 25%) M1 (dep M1) for $14 \times \frac{25}{100}$ oe A1 for 3.5(0) NB: accept decimal equivalents throughout

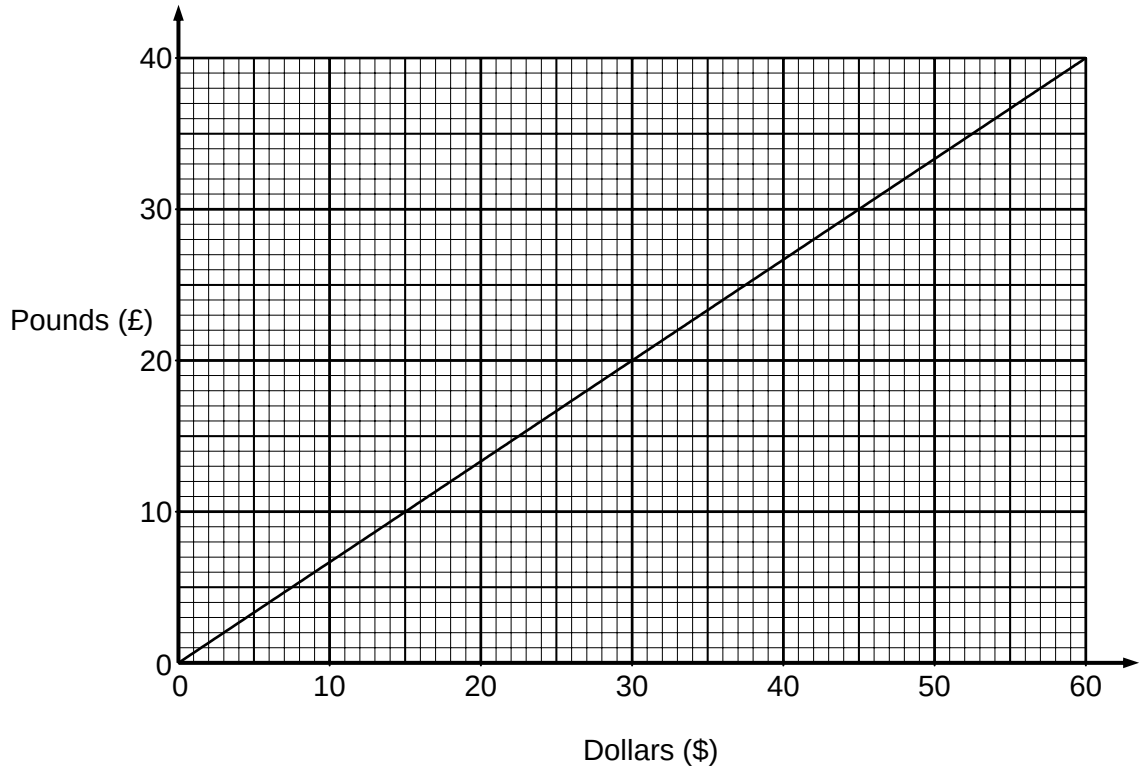
5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
14	(a)	Draws triangle to within tolerances	Scaled diagram drawn	3	B3 for complete and correct scaled diagram drawn (B1 for one scaled length drawn, ±2mm B1 for 50° angle drawn, ±2°) See overlay
	(b)	Measures missing side Add 3 sides to find the perimeter	18.6	2	M1 attempt to find the perimeter: 6 + 7 + "5.6" or missing length found: 5.6 ± 0.4 A1 for answer in the range 18.2 – 19.0
15		18 × 6.5 × 5 = 585 585 ÷ 4	146 or 147	4	M3 for 18 × 6.5 × 5 ÷ 4 or sight of 146.25 (M2 for 18 × 6.5 × 5 or 18 × 5 ÷ 4 or 6.5 × 5 ÷ 4 or 18 × 6 5 ÷ 4 or sight of 585 or 22.5 or 8.125 or 29.25) (M1 18 × 6.5 or 6.5 × 5 or 18 × 5 or ÷4 or sight of 117 or 32.5 or 90) A1 for 146 or 147
16		15 ÷ 3 × 4	20 cm	3	M1 for 4 × 5, 3 × 5 or $\frac{15}{3}$, $\frac{3}{15}$, $\frac{3}{4}$, $\frac{4}{3}$, or equivalent values, 4:20 oe, or identification of 5 as the scale factor of enlargement. A1 cao C1 (indep) for units: cm stated on answer line or with "20" in the working space if not given on answer line.

5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
17		$\frac{3}{100}\times500\times 4$ OR $\frac{500\times3\times T}{100} = 60$ T = $\frac{60\times100}{500\times3}$	4	3	M2 correct method to calculate simple interest over 4 years eg, $\frac{3}{100}\times500\times 4$ or "15" × 4 (M1 correct method to calculate interest over one year,eg $\frac{3}{100}\times500$ oe or 15 seen or 515 seen) A1 cao OR M1 for subs into $\frac{PRT}{100} = I$, eg $\frac{500\times3\times?}{100}$= 60 oe M1 for 15T = 60 or attempt to rearrange, eg, 1500T = 6000 A1 cao SC B1 for 4 from compound interest methods
18	(a)	$x + 2x + x + 5$	$4x + 5 = 33$	3	M1 for sight of $2x$ oe or x+5 oe M1 for sight of $2x$ oe and x+5 oe A1 for $x + 2x + x + 5 = 33$ leading to $4x + 5 = 33$
	(b)	$4x + 5 = 33$ $4x = 33 – 5$ $4x = 28$	7	2	M1 for an intent to subtract 5 from both sides or to divide each term by 4 or 33 – 5 or 28 seen or $\frac{28}{4}$ A1 for 7

5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
19		$\frac{10}{3} \div \frac{19}{4} = \frac{10}{3} \times \frac{4}{19}$ OR 3.33… ÷ 4.75	$\frac{40}{57}$ or 0.70175(4386…)	2	M1 for $\frac{10}{3}$ oe and $\frac{19}{4}$ oe or 3.33(…) and 4.75 or 40 ÷ 57 or 0.7, 0.70, 0.701, 0.702, 0.7017, 0.7018 A1 for $\frac{40}{57}$ oe or 0.70175(4386…)
20	(a)	650 × 1.2 OR 650 × 0.2 (=130) 650 + 130 = 780	780	3	M2 for 650 × 1.2 oe (M1 for 650 × 0.2 oe (=130)) A1 cao
	(b)	$\frac{39}{260} \times 100$	15	2	M1 for $\frac{39}{260} \times 100$ oe A1 cao
	(c)	44.79 ÷ 3 × 8	119.44	2	M1 for 44.79 ÷ 3 (=14.93) or 44.79 × 8 (=358.32) A1 cao

5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
21		1.89÷2 (=0.945) 4.30÷5 (=0.86) 8.46÷9 (=0.94) OR 2÷1.89 (=1.058..) 5÷4.30 (=1.162..) 9÷8.46 (=1.063…)	5kg box	**4**	M2 for all of 1.89÷2 (=0.945), 4.30÷5 (=0.86) and 8.46÷9 (=0.94) (M1 for a method to compare at least two values) A1 for 0.945/0.94/0.95 and 0.86 and 0.94 or 94/95/94.5 and 86 and 94 C1 (dep M1) for a comparison of their 3 values leading to a correct deduction. OR M2 for all of 2÷1.89 (=1.058..), 5÷4.30 (=1.162..) , 9÷8.46 (=1.063…), allow values rounded or truncated to 3 dp (M1 a method to compare at least two values) A1 for 1.058...and 1.162... and 1.063.. oe C1 (dep M1) for a comparison of their 3 values leading to a correct deduction

Q11(a)



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Order Code UG032663 June 2012

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