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Mark Scheme (Results)

November 2012

GCSE Mathematics (2MB01) Foundation
5MB2F (Non-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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		14	1	B1 cao
	(b)	72 minutes = 1 hour 12 minutes	23 40	2	M1 for attempt to convert from minutes to hours and minutes or to add 72 minutes on to 22 28 A1 for 23 40 (accept 11.40 pm) SC B1 11:40 (am)
2	(a)		1357, 3517, 5713, 7135	1	B1 cao
	(b)		0.345, 0.35, 0.354, 0.4	1	B1 cao
3	(a)		1	1	B1 cao
	(b)(i)		Rhombus	2	B1 for rhombus (accept parallelogram, trapezium or kite)
	(ii)		2		B1 cao
4	(a)		5600	1	B1 cao
	(b)		198 000	1	B1 cao

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
5	(i)	10 ÷ 1.95	5	4	M1 for 10 ÷ 1.95 or 10 ÷ 2 or attempts repeated addition of 1.95 or attempts repeated subtraction of 1.95 from 10 oe A1 for 5
	(ii)	10 – 5 × 1.95	25p or £0.25		M1 for 10 – '5' × 1.95 or '5'×5 or '5'×0.05 or 10-'9.75' A1 for 25p oe correct units must be included
6	(a)		3 sectors shaded	1	B1 for 3 sectors shaded oe
	(b)		60	1	B1 cao
	(c)		4	1	B1 cao
	(d)	40 ÷ 8 × 3	15	2	M1 for 40 ÷ 8 × 3 oe A1 cao
	(e)		13 or 17	1	B1 13 or 17
7	(a)		(4, 5)	1	B1 cao
	(b)		*D* marked on diagram	1	B1 for *D* marked at (2, − 1) (± 2 mm)

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
8	(a)		29	1	B1 cao
	(b)(i)		45	2	B1 ft from (a)
	(ii)		Explanation		B1 for a complete method to generate the eleventh term.
9	(a)		$3t$	1	B1 for $3t$ or $t3$
	(b)		$6w$	1	B1 for $6w$ or $w6$
	(c)		$2mn$	1	B1 for $2mn$ or $2nm$ or $nm2$ or $mn2$ or $n2m$ or $m2n$

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
10*		6 small packs, $6 \times 7 = 42$ 2 medium packs, $2 \times 18 = 36$ 1 large and 2 small packs, $25 + 2 \times 7 = 39$ 1 medium and 3 small packs, $18 + 3 \times 7 = 39$ **OR** cost per envelope Medium $\frac{1800}{750} = 2.4p$ 2.4p x 1500 = 36 Cost per envelope Small $\frac{700}{250} = 2.8p$ 2.8 x 1500 = 42	Two medium + supportive evidence	5	M2 work out at least two possible combinations for 1500 envelopes (M1 for an attempt to work out one possible combination of envelopes) A1 for one correct costing for 1500 envelopes. A1 for 3 or 4 correct costings for 1500 envelopes including £36 C1 Dep M2 for conclusion and clear evidence from their costs **OR** M2 work out the cost of the same number of envelopes (eg 1 or 250) in at least two pack sizes. (must see at least 2 calculations) (M1 for attempt to work out the cost of a fixed number of envelopes (eg 1 or 250) in 1 pack size (must see a calculation)) A1 for one correct costing for their quantity resulting from their calculations. A1 for all 3 correct costings C1 Dep M2 for conclusion and clear evidence from their costs

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
11	(a)		1.5 - 2	1	B1 estimate of man as 1.5 to 2.0 m
	(b)		50 - 70	3	M1 comparison of the heights ie sight of $\frac{1}{3}$ (accept 0.3 to 0.4 or 2.5 to 3.5) indication can be on diagram and can be in measurements if in correct ratio M1 for correct conversion from metres to centimetres or × by 100 A1 for 50 to 70 OR SC B2 ft 'a'÷3x100
12	(a)	5 × 4 – 2 × 3	14	2	M1 for 5 × 4 – 2 × 3 oe A1 cao
	(b)	− 5 × − 5	25	1	B1 cao
13	(a)	5 ÷ 2 2.5 × 4 10 × 28	280	3	M2 for 4 × 28 × 5 ÷ 2 oe (M1 for 5 ÷ 2 × 4 (=10) or 4 × 28 (=112) or 4÷2×28 (=56) oe or 560 seen) A1 cao
	(b)	140 ÷ 28 5 × 2	10	2	M1 for 140 ÷ 28 × 2 or 140 ÷ 14 oe A1 cao

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Question		**Working**	**Answer**	**Mark**	**Notes**
14	(a)	$\frac{1}{2} \times 9 \times 12$ 54×4	216	3	M1 for 9×12 or 108 seen or better M1 (dep) for "108" $\div 2 \times 4$ oe A1 cao OR SC B1 for 432 seen
	(b)	Work with whole shape: $12 - 9$ $4 \times (3 + 15)$ Work with 4 triangles: $15 + 12 + 9 = 36$ $4 \times 36 = 144$ $144 - (9 \times 8) =$ Work with single triangles: $15 + 12 + 9 = 36$ $4 \times (36 - 18) =$	72	3	M1 $12 - 9$ (=3) M1 for $4 \times$ ("3" + 15) oe A1 cao OR M1 for $4 \times (15 + 12 + 9)$ (=144) M1 for '144'-9×8 oe A1 cao OR M1 $(15 + 12 + 9) - (2 \times 9)$ (=18) oe M1 for $4 \times$ "18" oe A1 cao

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
15*		180 − 30 150 ÷ 2 180 − 75 **OR** 180 − 30 150 ÷ 2 75 + 30	105° + reasons	4	M1 for (180 – 30) ÷ 2 (=75) oe can be seen on the diagram M1 (dep) for 180 – "75" C2 (dep on M1) for complete reasons as below and correct answer identified with no redundant reasons (C1 (dep on M1) for for one reason from: angles on a straight line add up to 180; angles in a triangle add up to 180; base angles of an isosceles triangle are equal) SC award B2 for 105° **OR** M1 for (180–30) ÷ 2 (=75) oe M1 (dep) for "75" + 30 C2 (dep on M1) for complete reasons as below and correct answer identified with no redundant reasons (C1(dep on M1) for one reason from: angles in a triangle add up to 180; base angles of an isosceles triangle are equal; the exterior angle of a triangle is equal to the sum of the interior opposite angles. SC award B2 for 105°
16			39.00	3	M1 for 240 ÷ 8 or 30 seen, or 240 × 1.3(0) or 312 seen, or 1.3 ÷ 8 or 0.1625 seen M1 (dep) for 240 × 1.3 ÷ 8 or "30" × 1.3(0) or "312"÷ 8 or "0.1625"×240 A1 for 39.00 or 39 NB: M marks for use of 130 in place of 1.30
17			$7x(1 - 4xy)$	2	B2 Cao (B1 for $x(7 - 28xy)$ or $7(x - 4x^2y)$ or $7x(a - bxy)$ where a and b are integers $\neq 0$)

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