

Mark Scheme (Results)

November 2015

Pearson Edexcel GCSE
In Mathematics A (1MA0)
Foundation (Non-Calculator) Paper 1F

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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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

14 The detailed notes in the mark scheme, and in practice/training material for examiners, should be taken as precedents over the above notes.

Guidance on the use of codes within this mark scheme

M1 – method mark for appropriate method in the context of the question
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

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Question		Working	Answer	Mark	Notes
1	(a)		Charlie	1	B1 cao
	(b)		8	1	B1 cao
	(c)		11	1	B1 cao
	(d)		2 ½ circles drawn	1	B1 for 2 ½ circles drawn oe
2	(a)		26	3	M1 for $25-13+20$ ($=32$) or $20-13$ ($=7$) M1 for $58-“32”$ or $58-25-“7”$ A1 cao
	(b)		6	3	M1 for adding week 1 or week 2, eg $12+ \dots +13$ ($=64$) or $16+ \dots +9$ ($=70$) M1 for $“70” - “64”$ ($=6$) A1 cao OR M1 for finding differences for each day, eg $16-12$ ($=\pm 4$), $20-12$ ($=\pm 8$), etc oe M1 for adding differences using consistent signs, eg $4+8-4+2-4$ ($=6$) oe or $-4-8+4-2+4$ ($=-6$) oe A1 cao

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Question		Working	Answer	Mark	Notes
3	(a)		7400	1	B1 cao
	(b)		6402 in words	1	B1 for eg six thousand four hundred and two
	(c)		54 000	1	B1 cao
	(d)		7	1	B1 cao
	(e)		13	1	B1 cao
4	(a)(i)		56	2	B1 for 56
	(ii)		reason		B1 for <u>angles</u> on a straight <u>line</u> add up to <u>180</u> ° oe
	(b)		square or rectangle	1	B1 for square or rectangle
	(c)		kite drawn	1	B1 for kite drawn
5	(a)(i)		unlikely	3	B1 cao
	(ii)		impossible		B1 cao
	(iii)		evens		B1 cao
	(b)		J K L L L L M M	2	M1 for number of Js = number of Ks OR number of Ls = twice number of Ms A1 cao

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Question		Working	Answer	Mark	Notes
6	(a)		12	2	M1 for correct first step, eg $37 - 13 (=24)$ or $(37 + 13) \div 2 (=25)$ oe or two weights with a difference of 13 or two weights with a total of 37 A1 cao
	(b)		44 pounds or 20 kg	4	M1 for $30 \times 2.2 (=66)$ M1 (dep) for $110 - "66" (=44)$ A1 for 44 A1 (dep on first M1) for pounds OR M1 for $110 \div 2.2 (=50)$ M1 (dep) for $"50" - 30 (=20)$ A1 for 20 A1 (dep on first M1) for kg
7	(a)		trapezium	1	B1 cao
	(b)		A	1	B1 cao
	(c)		5	1	B1 cao
	(d)		parallel lines marked	1	B1 for correct parallel lines marked with arrows
	(e)		obtuse	1	B1 cao

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Question		Working	Answer	Mark	Notes
8	(a)		(£) 5.20	3	M1 for 8×0.6 (=4.8) or 8×60 (=480) M1 for $10 - "4.8"$ (=5.2) or $1000 - "480"$ (=520) A1 cao SC B2 for (£)8.87
	(b)*		Correct comparison	3	M1 for 10×0.85 (=8.5) or 5×1.13 (=5.65) A1 for 8.5 and 5.65 oe C1 (dep on M1) for correct comparison OR M1 for 10×85 (=850) or 5×113 (=565) A1 for 850 and 565 oe C1 (dep on M1) for correct comparison
9			BG RG WG BO RO WO	2	B2 for exactly 6 correct combinations in any order (B1 for at least 4 combinations ignoring repeats)
10	(a)		$3t$	1	B1 for $3 \times t$ or $3t$
	(b)		$5ef$	1	B1 cao
	(c)		$4x + 6y$	2	M1 for $4x$ or $6y$ A1 cao
11	(a)		10	1	B1 cao
	(b)		reflected shape	2	M1 for shape reflected but in the wrong position A1 for correct reflection

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Question		Working	Answer	Mark	Notes
12	(a)		410	2	M1 for $4 \times 90 + 50 (=410)$ A1 cao
	(b)		9	3	M1 for one inverse operation eg -50 or $\div 90$ M1 for complete inverse operations, eg $(860 - 50) \div 90$ accept $860 - 50 \div 90$ A1 cao OR M1 ft for finding the difference to part (a), ie $860 - "410" (=450)$ M1 for $"450" \div 90$ A1 cao
13	(a)		5	2	M1 for equating sides, eg $x + 1 + x - 1 = 10$ or $2x = 10$ or $x + 1 = 6$ or $x - 1 = 4$ A1 for $(x =) 5$
	(b)		30	2	M1 for $1y + 2y + 3y = 180$ oe or $180 \div 6 (=30)$ A1 cao
14	(a)		28 – 29	1	B1 answer in range 28 – 29
	(b)		8 – 8.5	1	B1 answer in range 8 – 8.5
	(c)		250 – 259	3	M1 for use of conversion graph to change 250 km to miles (eg 140 – 160 miles) or 100 miles to km (eg 150 – 170 km) M1 (dep) for addition of 100 miles or 250 km in consistent units A1 for answer in the range 250 – 259 (miles)

1MA0 1F November 2015				
Question	Working	Answer	Mark	Notes
15*	<p>Common partitioning:</p> <p>1. $14 + 9 + 9 + 12 (=44)$</p> <p>2. $14 + 14 + 8 + 8 (=44)$</p> <p>3. $12 + 10 + 12 + 10 (=44)$</p> <p>4. $9 + 14 + 8 + 13 (=44)$</p> <p>5. $12 + 12 + 8 + 8 + 4 (=44)$</p>	No supported by working	4	<p>Method 1 (partitioning) M1 for method to find paving stones for 2 (or more) rectangles M1 (dep) for addition of paving stones for complete path A1 for 44 (tiles) C1 (dep on M1) ft for correct decision supported by working</p> <p>Method 2 (area 1) M1 for $7 \times 5 - 6 \times 4 (=11)$ oe M1 (dep) for "11" $\div 0.5^2 (=44)$ A1 for 44 (paving stones) C1 (dep on M1) ft for correct decision supported by working</p> <p>Method 3 (area 2) M1 for $7 \times 5 - 6 \times 4 (=11)$ oe M1 for $0.5^2 \times 35 (=8.75)$ A1 for 11 and 8.75 C1 (dep on M1) ft for correct decision supported by working</p> <p>Method 4 (using perimeter) M1 for $(6 + 4 + 6 + 4) \div 0.5 (=40)$ M1 for "40" + 4 A1 for 44 (tiles) C1 (dep on M1) ft for correct decision supported by correct working</p>

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Question		Working	Answer	Mark	Notes
16	(a)*		Explanation	3	M1 for recognition of sum to 360° A1 for eg sum to 350 or subtraction to 100 or difference of 10 C1 (dep on at least M1) for correct explanation supported by their figures and working
	(b)		Tessellation	2	B2 for at least 6 correct shapes (including the initial shape) correctly tessellating (B1 for at least 4 correct shapes, including initial shape, correctly tessellating ignore any additional sections attempted, gaps or incorrectly shaped tiles)
17			69	4	M1 for finding 15% of £720 (=108) M1 (dep) for finding total of £720 plus interest (=828) or 115% of 720 M1 (dep on previous M1) for dividing by 12 A1 cao OR M1 for finding $720 \div 12$ (=60) M1 (dep) for finding 15% of 60 (=9) M1 (dep on previous M1) for adding, eg $60 + 9$ (=69) A1 cao
18	(a)		$6n + 5$	2	B2 for $6n + 5$ (B1 for $6n + k$, where k is an integer or absent)
	(b)		no with explanation	2	M1 for " $6n + 5$ " = 121 or any other valid method, eg counting on 6s to get to 119 (or more) A1 for no with complete explanation, eg $6n = 116$ will not give a whole number

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Question		Working	Answer	Mark	Notes
19			20	3	<p>M1 for $330 \div 120 (=2.75)$ or $200 \div 60 (=3 \frac{1}{3})$ or $450 \div 180 (=2.5)$ M1 for $450 \div 180 (=2.5)$ AND $8 \times "2.5" (=20)$ A1 cao OR M1 for $120 \div 8 (=15)$ or $60 \div 8 (=7.5)$ or $180 \div 8 (=22.5)$ M1 for $330 \div (120 \div 8) (=22)$ or $200 \div (60 \div 8) (=26.6...)$ or $450 \div (180 \div 8) (=20)$ A1 cao OR M1 for multiples of 120:60:180, eg 240:120:360 M1 for multiples linked to 450 and $8+8+4$ or scaling 2.5 oe A1 cao</p>
20*			40°	4	<p>M1 for angle $FBC=70$ or $CFG = x$ or $ABF = 110$ may be seen in diagram M1 for angle $CBF = BFC =70$ or $90 - \frac{1}{2}x$ may be seen in diagram A1 for 40 supported by working C1 (dep on M2) for full reasons linked to appropriate working, eg <u>alternate angles</u> are equal; <u>allied angles</u> / <u>co-interior angles</u> add up to <u>180°</u>; base <u>angles</u> of an <u>isosceles</u> triangle are <u>equal</u>, <u>angles</u> on a <u>straight line</u> add up to <u>180°</u>, <u>angles</u> in a <u>triangle</u> add up to <u>180°</u></p>
21	(a)		explanations	2	<p>B2 for two aspects from: no time frame; responses vague; no “never” box (B1 for one correct aspect)</p>
	(b)		question response boxes	2	<p>B1 for a question with time frame (may appear with response boxes) B1 for at least 3 correctly labelled response boxes (non-overlapping and exhaustive) Do not accept inequality symbols.</p>

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Question	Working	Answer	Mark	Notes	
22	<p>2p 1p ½ p Tot</p> <p>Sat 7 16 (31) 54</p> <p>Sun (15) 14 17 (46)</p> <p>Tot (22)(30) 48 (100)</p>	14	4	<p>M1 for (total Sat bottles) $100 - 46 (=54)$ or (total ½ pint bottles) $100 - 22 - 30 (=48)$ or (total 2 pint bottles on Sat) $22 - 15 (=7)$</p> <p>M1 for (total Sun bottles of ½ pint) $"48" - 31 (=17)$ or (total Sat bottles of 1 pint: $"54" - 31 - "7" (=16)$</p> <p>M1 for $46 - 15 - "17" (=14)$ or $30 - "16" (=14)$</p> <p>A1 cao</p> <p>NB any of the above figures could be shown in a 2-way table</p>	
23*		NO with evidence	4	<p>M1 for $50 \times 40 \times 30 (=60\ 000)$</p> <p>M1 for $"60\ 000" \div 3000 (=20)$</p> <p>M1 for $"20" \times \text{£}3.50$</p> <p>C1 for (£)70 and comparison resulting in NO</p> <p>OR</p> <p>M1 for $60 \div 3.50 (=17 \text{ bottles})$</p> <p>M1 for $"17" \times 3000 (=51,000)$</p> <p>M1 for $50 \times 40 \times 30 (=60,000)$</p> <p>C1 for 51,000 and 60,000 and comparison resulting in NO</p>	

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: $\pm 5^\circ$

Measurements of length: ± 5 mm

PAPER: 1MA0_1F			
Question		Modification	Notes
Q01		Pictogram is enlarged. Key moved to top left. Vertical line put on each circle in the centre.	
Q04	(c)	Diagram is enlarged Grid is enlarged.	
Q07	(d) (e)	The five shapes are enlarged. Set of shapes provided for braille, tactiles and 36 pt. Diagram is enlarged. Diagram is enlarged	
Q10	(c)	MLP only: x and y changed to g and h.	
Q11		Grid is enlarged. Wording added “mirror line” above mirror line. Dotty shading. Shape provided for braille, tactiles and 36 pt. Line 1: “centimetre” is removed. Inserted into text and on diagram “Each square on the grid represents a one centimetre square.”	

PAPER: 1MA0_1F			
Question		Modification	Notes
Q13	(a)	Diagram is enlarged. MLP: x changed to y. (b) Diagram is enlarged.	
Q14	(a) (b)	Graph is enlarged. Right axis labelled 18 changed to 15 13 changed to 10.	
Q15		Diagram is enlarged .M changed to metres where it will fit.	
Q16	(b)	Grid is enlarged. Dotty shading. 6 shapes changed to 5 shapes. Cut out shape is provided.	
Q20		Diagram is enlarged.	
Q23		Model provided for all candidates. Diagram also provided for MLP. Diagram is enlarged.	

