

Mark Scheme (Results)

November 2016

Pearson Edexcel GCSE
In Mathematics A (1MA0)
Foundation (Calculator) Paper 2F

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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.

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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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

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)	5906	1	B1 cao
	(b)	7200	1	B1 cao
	(c)	28	1	B1 cao
	(d)	3.67, 5.08, 5.45, 6.03	1	B1 cao
2	(a)	white	1	B1 cao
	(b)	Sunflower	1	B1 cao
	(c)	Poppy	1	B1 cao
3		531	2	M1 for $565 - 143 (= 422)$ or $565 + 109 (= 674)$ or for $143 - 109 (= 34)$ A1 cao
4	(a)	G	1	B1 cao
	(b)	A	1	B1 cao
	(c)	8	1	B1 cao

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Question	Working	Answer	Mark	Notes
5		(a) 2	1	B1 cao
		(b) 14	1	B1 Accept -14
6		(a) 32	2	M1 for reading off frequencies (condone one error) A1 cao
		(b) 7	1	B1 cao
		(c) 8	2	M1 for $10 - 2$ or $2 - 10$ or -8 A1 cao
7		76p	3	M1 for $1000 \div 84$ or $10 \div 0.84$ ($= 11.90\dots$) or 11×84 ($=924$) or 11×0.84 ($=9.24$) or 11 given as the answer. M1 for complete method to find the change (showing figures in compatible units) or 76 as the answer no/incorrect units. A1 for 76p or £0.76 or £0.76p
8		36	1	B1 cao for Cazda
		120°	1	B1 cao for Zusuki
		42	2	M1 for correct method from using 105° eg $18 \div 45 \times 105$, $"36" \div 90 \times 105$ or from table eg Cazda $"36" \times 4 - (18 + 36 + 48)$ A1 for 42 or ft values from their table.

PAPER: 1MA0/2F				
Question	Working	Answer	Mark	Notes
9 (a)		6	1	B1 cao
(b)		8	1	B1 cao
*10		Jane should buy Greens Garden Shop + costs	4	M1 for Suttons: $140 \div 20 (= 7)$ bags of compost needed M1 for $3 \times 3.25 (= 9.75) + 1 \times 2.25 (=12)$ M1 for Greens: cost of 2 bags eg $\times 4.99 (= 9.98)$, $2 \times 5 (=10)$ etc. C1 for correct conclusion from a comparison of correct appropriate figures
11 (a)		14 cm	2	B1 for 14 B1 for cm
(b)		$\frac{1}{8}$	2	M1 for $\frac{7}{56}$ or 0.125 A1 cao
(c)		three squares correctly added	1	B1 for 3 squares shaded to give a shape with one line of symmetry
(d)		three squares correctly added	1	B1 for 3 squares shaded to give a shape with rotational symmetry of order 2

PAPER: 1MA0/2F				
Question	Working	Answer	Mark	Notes
12 (a)		50	2	M1 for 1 kg = 1000g or $1 \div 20 (=0.05)$ A1 cao
(b)		70	3	M1 for $5000/20 (=250)$ or for $250 / 100 (= 2.5)$ or for $5000/2000 (=2.5)$ M1 for $28 \times "2.5"$ A1 cao Note: calculations may be carried out in kg or in g.
13 (i)		72	3	B1 cao
(ii)		5		B1 cao
(iii)		5 or 31		B1 cao

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Question	Working	Answer	Mark	Notes
14 (a)		61	2	M1 for a complete method eg $7 \times 8 + 5$ A1 cao
(b)		3	3	M1 for $29 - 5 (=24)$ or for $8x + 5 = 29$ M1 for " 24 " $\div 8$ or for $8x = 24$ A1 cao
15 (a)		66	1	B1 for $65 - 67$
(b)		125	2	M1 for complete method using graph eg 50 euros = £42; 42×3 A1 for $122 - 128$
16 (a)		6	1	B1 cao
(b)		sketch of net	2	B2 for a correct sketch of a possible net. (B1 for between 3 and 5 faces (of which at least one must be a rectangle and no more than two triangles) with adjoining edges)
(c)		triangle drawn	2	M1 for line length 6.5 cm drawn (± 2 mm) A1 for accurately drawn triangle (within overlay)
17 (a)		6.7	1	B1 for 6.7
(b)		0.064	2	B2 for 0.064 (B1 for 15.625 oe or 0.4 oe)

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Question	Working	Answer	Mark	Notes
18		1440	3	<p>M1 for correct method to find volume of a cuboid eg $300 \times 600 \times 200$ (=36000000) or $25 \times 50 \times 20$ (=25000) M1 (dep) for “volume of container” \div “volume of box” A1 cao Ignore units.</p> <p>OR</p> <p>M1 for correct method to find number of boxes along one edge eg $300 \div 25$ (=12) or $600 \div 50$ (=12) or $200 \div 20$ (=10) M1 (dep) for intention to use 3 values to find total number of boxes A1 cao Ignore units.</p> <p>NB : must use consistent units for M marks.</p>
19	(a)	9.6	2	<p>M1 for complete method to calculate the mean eg $(12+6+7+10+13) \div 5$ A1 for 9.6 oe</p>
	(b)	5	2	<p>M1 for $\frac{12}{240} \times 100$ oe A1 cao</p>
20	(a)	10, 8, (6), 4, 2, (0)	2	<p>B2 for fully correct table (B1 for 2 or 3 entries correct)</p>
	(b)	line drawn	2	<p>B2 for correct straight line between $x = -1$ and $x = 4$ (B1 for a single straight line which passes through (0, 8) or for a single straight line with negative gradient -2 or for at least 5 points from their table plotted correctly)</p>

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Question	Working	Answer	Mark	Notes
21 (a)		25	1	B1 cao
* (b)		yes with correct comparative figures	3	M1 for method to calculate journey time travelling at 30 mph, eg $\frac{20}{30}$ (=0.66...) or 40 (mins) M1 (dep) for method to work out arrival time at home, (consistent units), eg 18 10 + "40 mins" (=18 50) C1 for yes with comparison of 40 minutes with 50 minutes or stating arrival time home as 18 50 OR M1 for method to calculate speed in order to get home by 1900 eg $20 \div \frac{50}{60}$ (= 24 mph) M1 (dep) for stating speed as 24 mph C1 for yes with supporting calculations showing speed as 24 mph
22		Question and responses	2	B1 for a suitable question which includes a time frame (the time frame could appear with the response boxes) B1 for at least 3 non-overlapping response boxes which are exhaustive for their question NB do not accept inequality signs
23 (a)		0.3	2	M1 for $1 - (0.25 + 0.10 + 0.20 + 0.15)$ oe A1 oe
(b)		6	2	M1 for 60×0.10 oe A1 cao

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Question	Working	Answer	Mark	Notes
*24		large carton with correct calculations	3	<p>M1 for $1.60 \div 125 (= 0.0128)$ or $2.8 \div 225 (= 0.0124(4\dots))$ or $125 \div 1.60 (= 78(.125(\text{g}))$ or $225 \div 2.80 (= 80(.35\dots\text{g}))$ or any other calculation that could lead to a comparative figure</p> <p>M1 for $1.60 \div 125 (= 0.0128)$ and $2.8 \div 225 (= 0.0124(4\dots))$ or for $125 \div 1.60 (= 78(.125(\text{g}))$ and $225 \div 2.80 (= 80(.35\dots\text{g}))$ or for calculations that could lead to comparative figures for the 2 cartons</p> <p>C1 for correct comparative figures for both cartons leading to a correctly stated comparison.</p> <p>Accept any other method considered equivalent. Figures may be truncated or rounded as long as their method is clear.</p>
25 (a)		n^4	2	<p>M1 for $\frac{n^{10}}{n^6}$ oe or $n^3 \times n$ oe or $\frac{n^7}{n^3}$ oe</p> <p>A1 cao</p>
(b)		$5(y - 3)$	1	<p>B1 cao</p>

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Question	Working	Answer	Mark	Notes
26		6 : 5	4	<p>M1 for $\frac{2}{3} \times 165$ oe (= 110) [black counters]</p> <p>M1 (dep M1) for $\frac{40}{100} \times \text{“110”}$ oe (=44) [where 110 is their black counters]</p> <p>M1 (dep M2) for (110 – “44”) : 55 or 66 : 55 or a reversed ratio</p> <p>A1 cao</p> <p>OR</p> <p>M1 for 2 : 1</p> <p>M1 for $2 \times \text{“1 – 0.4”}$ or 1.2</p> <p>M1 (dep M2) for “1.2” : 1</p> <p>A1 cao</p> <p>OR</p> <p>M1 for correct method to find proportion of black counters left in the bag</p> <p>eg $\frac{60}{100} \times \frac{2}{3}$ (= $\frac{120}{300}$)</p> <p>M1 for correct method to find proportion of white counters in the bag ie $\frac{1}{3}$ oe</p> <p>M1 (dep M2) for correct method to find ratio after</p> <p>eg “$\frac{120}{300}$” : “$\frac{1}{3}$”</p> <p>A1 cao</p>

PAPER: 1MA0/2F				
Question	Working	Answer	Mark	Notes
27		26	3	<p>M1 for $(360 - 90) \div 2 (= 135)$ M1 for $4x + 31 = "135"$ or $6x - 21 = "135"$ A1 cao OR M1 for forming an appropriate equation eg $4x + 31 = 6x - 21$ or $6x - 21 + 4x + 31 + 90 = 360$ oe M1 (dep) for isolating terms in x and number terms A1 cao</p>
28		41.1	4	<p>M1 for method to work out the area of the circle or quarter circle or semi-circle eg $\pi \times 6^2 (=113.(09..))$ or $\pi \times 6^2 \div 2 (=56.5(48..))$ or $\pi \times 6^2 \div 4 (= 28.2(7...))$ M1 for method to work out the area of the square eg $(=72)$ oe or a triangle eg $\frac{1}{2} \times 6 \times 6 (=18)$ M1 for complete method to find shaded area. A1 for value in the range 41.04 - 41.112</p>

