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Mark Scheme (Results)

Summer 2014

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. 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 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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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.
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 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.
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: 1MA0_2F					
Question		Working	Answer	Mark	Notes
1	(a)		French	1	B1 cao
	(b)		Ella	1	B1 cao
	(c)		Penny	1	B1 cao
2	(a)		Line drawn	1	B1 for line length 10 cm drawn
	(b)		Midpoint marked	1	B1 for midpoint of line marked
	(c)		Radius drawn	1	B1 radius shown
	(d)		75	1	B1 for answer in the range 73 – 77
3			3.25	3	M1 for 2 × 9.25 + 9.50 + 10.55 + 4 × 4.55 (= 56.75) or at least one of each item added M1(dep) for 3 × 20 − "56.75" A1 cao (SC B2 for answer 26.15) (SC B1 for answer of 13.85 or 36.75)
4			3.25	1	B1 for 3.25 oe
5	(a)		28 600	1	B1 cao
	(b)		20 000	1	B1 cao
	(c)		22 950	1	B1 cao

PAPER: 1MA0_2F					
Question		Working	Answer	Mark	Notes
6		(D, A) (J, A) (W, A) (D, M) (J, M) (W, M)	list of 6 combinations	2	B2 for six correct and distinct pairs (B1 for at least 3 pairs and no incorrect pairs or all correct pairs with repeats)
7	(a)		C and D	1	B1 cao
	(b)(i)		F	2	B1 cao
	(b)(ii)		2		B1 cao
8	(a)		27	2	M1 for a complete method to find the number of extra squares, e.g. by drawing a square of side 6 cm and attempt to find the number of extra squares or for 6^2 - 3^2 or 3×9 or $4 \times 9 - 9$ A1 cao
	(b)		49	2	M1 for pattern 7 drawn or $(1 + 3 + 5) + 7 + 9 + 11 + 13$ or 40 or 7^2 or a list of square numbers up to 36 A1 cao
9			4.80	3	M1 for 3.50×12 (= 42) M1 for "42" $-$ 37.20 A1 for 4.8(0) **OR** M1 for $37.20 \div 12$ (= 3.10) M1 for $(3.50 - "3.10") \times 12$ A1 for 4.8(0) **Or** M1 for $37.20 \div 12$ (= 3.10) M1 for $3.50 - "3.10"$ A1 for 0.4(0) or 40p

PAPER: 1MA0_2F					
Question		Working	Answer	Mark	Notes
10			13	2	M1 for ordering the 9 numbers or for indicating the middle number A1 cao
11	(a)		Kite drawn	1	B1
	(b)		Rectangle drawn with perimeter 14 cm	2	M1 for rectangle drawn or any shape with perimeter 14 cm A1 for a rectangle with perimeter 14 cm
	(c)		2 lines of symmetry drawn	2	B1 for horizontal or vertical line of symmetry B1 for horizontal and vertical line of symmetry and no extra lines
12	(a)		126, 21	3	B1 for 126 (seats) M1 for method identified to divide number of people by 6, ie "126" ÷ 6 or 84 ÷ 6 (= 14) or 42 ÷ 6 (=7) A1 for 21 (tables)
	(b)		Yes with £483	3	M1 for 84 × 4.5(0) (= 378) or 42 × 2.5(0) (= 105) M1 for 84 × 4.5(0) + 42 × 2.5(0) or "378" + "105" A1 for e.g. yes **and** (£)483 **or** yes **with** (£)17 left
13			15, 4.5	3	B1 for 15 M1 for (23 − 5) ÷ 4 A1 for 4.5 **N.B**. Answer can be either way round
14	(a)(i)		9	2	B1 cao
	(ii)		5		B1 cao
	(b)		*P* marked	1	B1 cao [P top left corner]

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
15	(a)(i)		2 or 3	2	B1 cao
	(ii)		12 or 24		B1 cao
	(b)		correct explanation	1	B1 for explanation eg "2 is prime"
16	(a)		(1, 4)	1	B1 cao
	(b)		cross at (−3, 2)	1	B1 for cross at (−3, 2)
	(c)		$x = 3$	1	B1 cao
17	(a)		30	1	B1 cao
	(b)		63	2	M1 for $[(4 \times 0)] + (5 \times 1) + (10 \times 2) + (7 \times 3) + (3 \times 4) + (1 \times 5)$ Or $[0] + 5 + 20 + 21 + 12 + 5$ condone one error or omission or for 67 given as total A1 cao
	(c)		2.1	2	M1 for an attempt to divide the number of customers by the number of tables A1 for 2.1 or ft from (a) and (b)
18	(a)		2600	1	B1 for 2600
	*(b)	£100 1300 rand 3700 rand £285 Computer 4680 rand Watch 5200 rand Camera 4875 rand	computer, camera	3	M1 for method to convert 3700 rand into £ or for changing one amount in pounds into rand M1for a complete method to compare total money Simon has with the cost of each item C1 (dep M2) for correct conclusion with correct figures e.g.£383 - £386 or 4950 rand to 5050 rand

PAPER: 1MA0_2F					
Question		Working	Answer	Mark	Notes
19			Data collection sheet	3	B1 for labels (e.g. transport type) or transport types listed (minimum 2) B1 for tallies or tallies shown in table B1 for frequency (or total) o.e. **NB do not accept questionnaires or graphical approaches**
20			237 600	4	M1 for one multiplication involving two numbers from (1500 or 8 or 60) **or** 90 000 or 480 or 12 000 given M1 for 1500 × 8 × 60 (= 720 000) M1 for multiplying their number of cans by 330 **and** dividing by 1000 A1 cao **Note** these operations can be applied in any order **SC** B2 if M0 scored for digits 2376

PAPER: 1MA0_2F

Question	Working	Answer	Mark	Notes
*21		$\dfrac{2}{3}$	3	M1 for attempting to write at least two fractions expressed with a common denominator with at least one of the two fractions correct A1 for three correct fractions with suitable common denominator C1 (dep M1) for correct conclusion from comparison of their three **OR** M1 for writing at least two of the fractions as decimals ie $\dfrac{2}{3}$ as $0.66(\ldots)$ or $66(.6\ldots)\%$, $\dfrac{7}{8}$ as $0.87(5)$ or $87.(5)\%$, $\dfrac{3}{4}$ as 0.75 or 75% A1 for three correct decimals or percentages C1 (dep M1) for correct conclusion from comparison of their three **OR** M1 for finding two fractions of the same number e.g. $\dfrac{2}{3}$ of 48 or $\dfrac{7}{8}$ of 48 (may be implied by shading a fraction of a rectangle divided into e.g. 48 parts) A1 for three correct values or three correct diagrams with shading C1 (dep M1) for correct conclusion from comparison of their three **OR** M1 for attempting to find the difference between $\dfrac{3}{4}$ and $\dfrac{2}{3}$ **and** between $\dfrac{3}{4}$ and $\dfrac{7}{8}$ at least one pair of fractions expressed with a suitable common denominator and at least one of the two fractions correct A1 for $\dfrac{1}{12}$ and $\dfrac{1}{8}$ or $0.08(333...)$ and $0.12(5)$ C1 (dep M1) for correct conclusion from comparison of the 2 differences.

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
22			Graph completed	2	B1 for line from (2.5, 45) to (3.5, 45) B1 ft line of correct gradient to axis (after 1½ hour)
23	(a)		92.3521	1	B1 cao
	(b)		p^6	1	B1 cao
	(c)		t^5	1	B1 cao
	(d)		6	1	B1 cao
*24			Tuesday and Friday	3	M1 for $179 \div 12$ or $162 \div 12$ or $170 \div 12$ or $143 \div 12$ A1 for 14.9(166…) or 15 and 13.5 or 14 and 14.1(66…) or 15 and 11.9(16…) or 12 C1 (dep M1) ft for comparison of their results for all the days with the number of teachers available leading to a correct statement **Or** M1 for $179 \div 15$ or $162 \div 13$ or $170 \div 14$ or $143 \div 12$ A1 for 11.9(3…) or 12 and 12.4(6…) or 13 and 12.1(4…) or 13 and 11.9(1…) or 12 C1 (dep M1) ft for comparison of their results for all the days with 12 leading to a correct statement **Or** M1 for 15×12 or 13×12 or 14×12 or 12×12 A1 for 180 and 156 and 168 and 144 C1 (dep M1) ft for comparison of their results for all the days with the number of students taking part leading to a correct statement

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
25	(a)		Points plotted	1	B1 for points plotted at (12, 6) and (13, 2)
	(b)		Description	1	B1 for description; e.g. as the temperature goes up the number of units of gas used goes down oe accept negative correlation.
	(c)		5 – 7	2	M1 for use of graph e.g. a single straight line segment with negative gradient that could be used as a line of best fit **or** an indication on the diagram from 12 on the *y* axis. A1 for 5 – 7
26	(a)		⅔	2	M1 for intention to subtract 4 from both sides or divide each term by 3 or $3p = 2$ written in the workspace A1 for ⅔ accept answer to two decimal places rounded or truncated
	(b)		−4, −3, −2, −1, 0	2	B2 for all 5 correct values; ignore repeats, any order (B1 for 4 correct (and no incorrect) values or all five correct values and −5)
27			2.064(285714…)	2	M1 for substitution of 0.7 into expression or 2.89 or 2.06 seen A1 for 2.064(285714…) or $\dfrac{289}{140}$
28			$5\dfrac{2}{3}$	4	M1 for $AB = 2x$ or $DC = 2x + 4$ or for $38 – 4\ (= 34)$ M1(dep) for $x + x +$ '$2x$'$+$ '$2x + 4$' or for "$38 – 4$" $\div\ 6$ M1 for '$6x + 4$' $= 38$ A1 for $5\dfrac{2}{3}$ oe **N.B.** Accept answers in the range 5.6 to 5.7 if M3 scored **SC** if M0 then B2 for an answer in the range 5.6 to 5.7

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
29	(a)		40	3	M1 for 32² + 24² M1 for √1600 or √(32² + 24²) A1 cao
	(b)		22.72	4	M1 for use of π × 60 oe M1 for method to calculate perimeter of triangle, eg 2 × '40' + 48 (=128) M1(dep M2) for complete method to find total length of strip for both mirrors or to find the cost of strip for one mirror, eg 2 × £5.68 A1 for £22.72 from correct working

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: ±5°
Measurements of length: ±5 mm

PAPER: 1MA0_2F			
Question		**Modification**	**Notes**
Q02	(c)	Circle enlarged	Standard mark scheme
Q02	(d)	Angle arms lengthened. Angle m = 75 degrees	Standard mark scheme
Q07		Triangle D rotated 90 degrees clockwise and moved down 1 square. Triangle E moved down 1 square. Triangle F moved so that the right angle is bottom left	Standard mark scheme
Q08		unit' used instead of 'cm', image named shape X, enlargement drawn on grid and named shape Y. Wording changed: "Look at the diagram for Question 8(a) in the Diagram Book. It shows a square grid. Two shaded shapes are drawn on the grid: shape X and shape Y. Shape X is a square made from nine squares. How many MORE squares must be added to shape X to make shape Y?"	Standard mark scheme

PAPER: 1MA0_2F			
Question		**Modification**	**Notes**
Q11	(a)	Kite drawn on grid. Asked for mathematical name for the quadrilateral.	B1 for kite
	(b)	2cm grid. Wording added to text of question "Each square represents a one centimetre square."	Standard mark scheme
	(c)	Height of top and bottom vertices of hexagon increased. Size of whole enlarged.	Standard mark scheme
Q13		Diagram rotated 90 degrees clockwise.	Standard mark scheme
Q14		Part (b) removed, Part (iii) added to (a) and reads "For this prism, write down the number of vertices."	B1 for 6 cao
Q15	(a)	'nine' inserted before 'numbers'	Standard mark scheme
Q16		2cm grid. Line L thick and dashed. At S cross changed to black circle.	Standard mark scheme
Q17		Frequency column widened to allow for working out	Standard mark scheme
Q18		1½ cm grid. Right axis labelled	Standard mark scheme
	(b)	3700 changed to 3600	Ft changes into working
Q22		2cm grid. Right axis labelled	Standard mark scheme
Q24		2cm grid. Right axis labelled. Crosses changes to solid circles.	Standard mark scheme

PAPER: 1MA0_2F			
Question		Modification	Notes
Q22		2cm grid. Right axis labelled	Standard mark scheme
Q24		2cm grid. Right axis labelled. Crosses changes to solid circles.	Standard mark scheme
Q24		2cm grid. Right axis labelled. Crosses changes to solid circles.	Standard mark scheme
Q27		*x* changed to *y*	Standard mark scheme
Q28		Wording added, "AB is parallel to DC". AD labelled as *x* cm.	Standard mark scheme
Q29	(b)	Mirror B made more obviously an isosceles triangle.	Standard mark scheme