Pearson

Mark Scheme (Results)

November 2023

Pearson Edexcel GCSE
In Mathematics (1MA1)
Foundation (Calculator) Paper 2F

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General marking guidance

These notes offer general guidance, but the specific notes for examiners appertaining to individual questions take precedence.

1 All candidates must receive the same treatment. Examiners must mark the last candidate in exactly the same way as they mark the first. Where some judgement is required, mark schemes will provide the principles by which marks will be awarded; exemplification/indicative content will not be exhaustive. When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the response should be sent to review.

2 All the marks on the mark scheme are designed to be awarded; mark schemes should be applied positively. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme. If there is a wrong answer (or no 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.

Questions where working is not required: In general, the correct answer should be given full marks.
Questions that specifically require working: In general, candidates who do not show working on this type of question will get no marks – full details will be given in the mark scheme for each individual question.

3 Crossed out work

This should be marked **unless** the candidate has replaced it with an alternative response.

4 Choice of method

If there is a choice of methods shown, mark the method that leads to the answer given on the answer line.
If no answer appears on the answer line, mark both methods **then award the lower number of marks.**

5 Incorrect method

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 for your Team Leader to check.

6 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working as you can check the answer, 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.

7 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 or its context. (eg an incorrectly cancelled fraction when the unsimplified fraction would gain full marks).
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect (eg. incorrect algebraic simplification).

8 Probability

Probability answers must be given as a fraction, percentage or decimal. 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 fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

9 Linear equations

Unless indicated otherwise in the mark scheme, full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously identified 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).

10 Range of answers

Unless otherwise stated, when an answer is given as a range (eg 3.5 – 4.2) then this is inclusive of the end points (eg 3.5, 4.2) and all numbers within the range

11 Number in brackets after a calculation

Where there is a number in brackets after a calculation eg 2 × 6 (=12) then the mark can be awarded **either** for the correct method, implied by the calculation **or** for the correct answer to the calculation.

12 Use of inverted commas

Some numbers in the mark scheme will appear inside inverted commas eg "12" × 50 ; the number in inverted commas cannot be any number – it must come from a correct method or process but the candidate may make an arithmetic error in their working.

13 Word in square brackets

Where a word is used in square brackets eg [area] × 1.5 : the value used for [area] does **not** have to come from a correct method or process but is the value that the candidate believes is the area. If there are any constraints on the value that can be used, details will be given in the mark scheme.

14 Misread

If a candidate misreads a number from the question. eg uses 252 instead of 255; method or process marks may be awarded provided the question has not been simplified. Examiners should send any instance of a suspected misread to review.

Guidance on the use of abbreviations within this mark scheme	
M	method mark awarded for a correct method or partial method
P	process mark awarded for a correct process as part of a problem solving question
A	accuracy mark (awarded after a correct method or process; if no method or process is seen then full marks for the question are implied but see individual mark schemes for more details)
C	communication mark awarded for a fully correct statement(s) with no contradiction or ambiguity
B	unconditional accuracy mark (no method needed)
oe	or equivalent
cao	correct answer only
ft	follow through (when appropriate as per mark scheme)
sc	special case
dep	dependent (on a previous mark)
indep	independent
awrt	answer which rounds to
isw	ignore subsequent working

Paper: 1MA1/2F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
1	Two of: 1, 2, 3, 6, 9, 18	B1	for 2 correct factors and no incorrect	Allow more than 2 correct factors but no incorrect.
2	$\frac{9}{10}$	B1	oe	
3	700	B1	cao	
4	One of: 16, 25, 36, 49	B1	for one correct square number	Allow more than 1 correct square number but no incorrect.
5	120	B1	cao	
6	12.5(0)	M1 A1	for $50 \div 4$ cao	
7 (a) (b)	Cone Diagram	B1 B1	for cone or circular pyramid suitable diagram drawn	

Paper: 1MA1/2F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
8	Shown	M1	for a method to find the total cost for footballs, hockey sticks or cricket bats, eg 9.5 × 5 (= 47.5) **or** (6 ÷2) × 30 (= 90) **or** 23 × 2 (= 46) **OR** begins to work with budget, eg 200 – 5 (= 195)	Can be done with addition or subtraction, or combination
		M1	for a method to find the total cost for two of footballs, hockey sticks or cricket bats, eg two from 9.5 × 5 (= 47.5) **or** (6 ÷2) × 30 (= 90) **or** 23 × 2 (= 46) **OR** works with budget **and** total cost for one of footballs, hockey sticks or cricket bats, eg 200 – "47.5"	
		M1	for a complete method to find comparable figures, eg 9.5 × 5 + (6 ÷2) × 30 + 23 × 2 + 5 or "47.5" + "90" + "46" + 5 or 200 – (9.5 × 5 + (6 ÷2) × 30 + 23 × 2 + 5) or 200 – "188.5"	
		C1	shows correct figures for a conclusion eg (£)188.5(0) **or** (£)11.5(0)	Figures need not be supported by words but must not be contradicted.
9	WP WS WC BP BS BC GP GS GC	B2	for all correct and no incorrect or repeats	
		(B1	for at least 4 correct)	Ignore repeats
10	3 : 5	M1	for 24 : 40 or for any ratio equivalent to 24 : 40 **or** 5 : 3	
		A1	for 3 : 5	Accept 3 : 5 in the form n : 1, eg 0.6 : 1 **or** 1 : n, eg 1 : 1.66(..)
11 (a)	Unlikely	B1	cao	
(b)	Evens	B1	cao	
12	111	M1	for a complete method, eg 37 × 3 oe	
		A1	cao	

Paper: 1MA1/2F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
13 (a)	Explanation	C1	for correct explanation **Acceptable response** should have multiplied 5 and 4 (once) it should be (just) 5×4 it is b × h **or** l × w she has not used the formula for area it should be 20 (cm^2) shouldn't multiply all (four) sides **Not acceptable response** he has found the area twice he is correct he has worked out volume he has worked out the perimeter **or** he should have added the 4 sides	Units may be ignored
13 (b)	Explanation	C1	for correct explanation **Acceptable response** units should be cm^2 or units should be squared it should be 86 cm^2 **or** 20 cm^2 she didn't use the correct units (for area) cm is wrong **Not acceptable response** she is correct it is not squared **or** they should have squared it should be 400 cm **or** it should be 20 cm she has found the perimeter	Ignore numerical value if given

<table>
<tr><th colspan="5">Paper: 1MA1/2F</th></tr>
<tr><th>Question</th><th>Answer</th><th>Mark</th><th>Mark scheme</th><th>Additional guidance</th></tr>
<tr><td>14</td><td>6.95 or
(2kg flour =) 2.70
and
(5 kg sugar =) 4.25</td><td>P1

P1

P1

A1</td><td>for process to find the cost of 1kg of flour, eg 4.05 ÷ 3 (= 1.35)

for process to work with cost of sugar, eg 11.85 – 5 × “1.35” (= 5.10)

for process to find cost for 5kg of sugar, eg “5.10” ÷ 6 × 5(= 4.25)

for 6.95 or (2kg flour =) 2.70 and (5 kg sugar =) 4.25</td><td>May be implied by (2 kg =) 2.70

May be implied by (1 kg =) 0.85 oe</td></tr>
<tr><td>15</td><td>60.48</td><td>P1

P1

A1</td><td>for a beginning process, eg 72 ÷ 100 × 120 (= 86.4)
OR 72 ÷ 100 × 30 ÷ 100 (= 0.216)

for process to use both percentages,
eg [86.4] – ([86.4] × 30 ÷ 100) or [86.4] × ((100 – 30) ÷ 100)
or [86.4] × 30 ÷ 100 (= 25.92)
OR 72 ÷ 100 × ((100 – 30) ÷ 100) (= 0.504)
OR 120 × “0.216” (= 25.92)

cao</td><td>

[86.4] must be a value less than 120</td></tr>
<tr><td>16</td><td>24</td><td>P1

P1

P1

A1</td><td>for finding the total for adults, eg 160 – 85 (= 75)
or for finding adult romance, eg 33 – 19 (= 14)
or for finding children adventure, eg 76 – 34 (= 42)

for finding adult horror, eg “75” – 34 – “14” – 7 (= 20)

for a process to find the number of children who chose horror,
eg 85 – 19 – “42” – “20” (= 4)
or for a complete process to find total horror,
eg (85 – 19 – “42” – “20”) + “20”
or 160 – 33 – 76 – (“20” + 7)

cao</td><td><table><tr><td></td><td>R</td><td>A</td><td>H</td><td>T</td><td>Tot</td></tr><tr><td>C</td><td>19</td><td>42</td><td>4</td><td>20</td><td>85</td></tr><tr><td>A</td><td>14</td><td>34</td><td>20</td><td>7</td><td>75</td></tr><tr><td>Tot</td><td>33</td><td>76</td><td>24</td><td>27</td><td>160</td></tr></table>

A correct answer unsupported will score 1 mark only</td></tr>
</table>

Paper: 1MA1/2F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
17	16 | 0 2 8 17 | 2 2 3 7 8 18 | 0 0 3 4 6 8 19 | 1 7 Key: 16|0 = 160 **or** 160|0 = 160	B2 (B1 B1	for a fully correct ordered diagram for a complete unordered diagram **or** for an ordered diagram with at most one error or omission) (indep) for correct key, eg 16|0 **or** 160|0 represents 160	Accept stem of 160, 170, 180, 190 Can be in reverse vertical order (with matching leaves) eg 19, 18, 17, 16 Errors can be omissions; one number in the wrong position is one error. Key must be consistent with the stem.
18 (a)	1.882(0861678…)	B2 (B1	1.882(0861678…) for 16.6 **or** 8.82 **or** $\frac{830}{441}$ **or** 1.88)	Condone $1.\dot{8}82(0861668...)$ for both marks
(b)	1.88	B1	for 1.88 **or** ft their answer to part (a) correctly rounded to 2 dp, providing part (a) has at least 3 dp	Condone $1.\dot{8}8$ Do not accept trailing 0, eg 1.880
19	78	M1 M1 C2 (C1	for finding one angle within the triangle is 180 ÷ 3 (= 60) for method to use parallel lines, eg *BDE* = *DBC* **or** *BCD* + *CDE* = 180 (dep M2) for (*x* =) 78 with a correct reason relating to parallel lines **and** one other correct reason given, with no unused reasons. (dep M1) for one correct reason given for their chosen method, angles in an equilateral triangle are equal alternate angles are equal angles in a quadrilateral add up to 360 angles in a triangle add up to 180 Allied angles / Co-interior angles add up to 180	Angles must be clearly labelled on the diagram or otherwise identified. Correct method can be implied from angles on the diagram if no ambiguity or contradiction. If *x* is clearly identified as 78 award M2 (implied) Underlined words need to be shown; reasons need to be linked to their method, which can be implied from correctly identified angles (stated or written on the diagram).

Paper: 1MA1/2F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
20 (a)	4 **0** **–2** –2 **0** **4**	B2	for all 4 correct values	
		(B1	for 2 or 3 correct values)	
(b)	Graph	M1	ft (dep B1) for plotting at least 4 points correctly	
		A1	for a fully correct curve drawn	Accept a freehand curve drawn that is not made of line segments.
21	Reflection $y = -x$	B1	for reflection	Score B0 for more than one transformation
		B1	for line $y = -x$ oe	
22 (a)	$13y - 1$	M1	for method to expand one bracket or collect like terms eg $3 \times 2y - 3 \times 5$ ($= 6y - 15$) **or** $7 \times y + 7 \times 2$ ($= 7y + 14$) **or** $3 \times 2y + 7 \times y$ ($= 6y + 7y$) **or** $3 \times -5 + 7 \times 2$ ($= -15 + 14$)	May be implied by $13y$ **or** -1
		A1	oe	
(b)	$3x(2x + 5)$	B2	oe	
		(B1	for $3(2x^2 + 5x)$ **or** $x(6x + 15)$ **or** $3x(ax + b)$)	
(c)	$g = \frac{f - 11}{3}$	M1	for correct first step to rearrange eg $f - 11 = 3g + 11 - 11$ or $f - 11 = 3g$ **or** eg $\frac{f}{3} = \frac{3g}{3} + \frac{11}{3}$ **or** $-3g = 11 - f$ **or** answer ambiguously shown, eg $g = f - 11 \div 3$ **or** given as $\frac{f - 11}{3}$	May be seen in different equivalent form
		A1	oe	

Paper: 1MA1/2F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
23	35	P1	for process to work out income and outgoings, eg 7.5(0) × 54 (= 405) **and** 100 + 120 + 80 (= 300)	
		P1	for process to find the profit, eg "405" **–** "300" (= 105) **OR** "405" ÷ "300" (= 1.35) **or** "405" ÷ "300" × 100 (= 135)	
		P1	for a full process to find percentage profit, eg ("105" ÷ "300") ×100 **or** ("1.35" – 1) × 100 **or** "135" – 100	
		A1	cao	
24	4811.20	M1	for full method for one year, eg 4500 × 1.034 (= 4653) oe	Can be implied by 4806 or 9306
		A1	for 4811.2(0)	Accept 4811.202 and 4811.21
25	11	M1	for one correct step to isolate x term or constant term on one side, eg adds x to both sides to get $5x – 14 + x = 52 – x + x$ **or** adds 14 to both sides to get $5x – 14 + 14 = 52 – x + 14$ oe	May be seen in different equivalent forms but must be carried out, not just intention seen. Can be implied by eg $4x = 66$ or $6x = 38$
		M1	for both correct steps to isolate terms in x on one side and constant term on one side, eg "$6x$" – 14 + 14 = 52 + 14, **or** $5x + x =$ "66" $+ x – x$	
		A1	cao	

Paper: 1MA1/2F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
26	21	P1 P1 P1 A1	for process to work correctly with initial ratio, eg 120 ÷ 4 × 9 (= 270) **or** 90 + 120 + 60 (= 270) for process to find the value of 1 part in the new ratio, eg "270" ÷ (2 + 5 + 3) (= 27) for process to find both values for Errol, eg ("27" × 3) (= 81) **and** (120 ÷ 4 × 2) (= 60) cao	Can be implied by 90 : 120 : 60 or by a second ratio that totals to 270
27	327	M1 A1	for 147 + 180 or for 360 – (180 – 147), **or** for drawing a suitable diagram with 147 in the correct position **and** with the bearing of A from B indicated cao	Diagram can be a sketch
28	65	P1 P1 P1 A1	for a full process to find the volume of the container, eg $\pi \times 15^2 \times 43$ (= 30 394.9…) for a process to convert between cm^3 and litres, eg "30 394.9…" ÷ 1000 (= 30.39…) **or** [volume] ÷ 1000 **or** 0.47 × 1000 (= 470) for a complete process to find the time taken, eg [volume] ÷ 0.47 **or** [volume] ÷ "470" answer in the range 64.6 to 65	These steps may be completed in a different order Accept 9675π Accept 9.675π or $\frac{387}{40}\pi$ [volume] can be any value they believe to be the volume that might have been incorrectly converted (or not at all) If an answer is given in the range in working and then rounded incorrectly award full marks.

Paper: 1MA1/2F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
29	32.2	M1	for a correct trig statement, eg 28 × tan 49 or tan 49 = $AB \div 28$	Can use a combination of skills but must have only one unknown in x to score this mark
		A1	Answer in the range 32.2 to 32.22	If an answer is given in the range in working and then rounded incorrectly award full marks.
30	$x = -2$ $y = 1.5$	M1	for correct method to eliminate either x or y or a method leading to substitution	condone one arithmetic error
		M1	(dep M1) for substituting found value in one of the equations **or** correct method after starting again	condone one arithmetic error
		A1	for $x = -2$ and $y = 1.5$ oe	

Modifications to the mark scheme for Modified Large Print (MLP) papers: 1MA1 2F

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.
Notes apply to both MLP papers and Braille papers unless otherwise stated.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5º
Measurements of length: ±5 mm

PAPER: 1MA1_2F			
Question		**Modification**	**Mark scheme notes**
7	(a)	Wording added 'Look at the diagram for Question 7(a) in the Diagram Booklet. You may be provided with a model. It is NOT accurate. They show'. Wording removed 'Here is'; Diagram enlarged. Dashed lines made longer and thicker.	Standard mark scheme
	(b)	Question replaced with a diagram of a triangular prism and possibly a model. "Write down the number of vertices of the prism."	B1 for 6
8		Wording added 'Look at the table for Question 8 in the Diagram Booklet.' Wording 'Here is' removed and replaced with 'The table in the Diagram Booklet shows'. Table enlarged.	Standard mark scheme
9		Wording added 'Look at the table for Question 9 in the Diagram Booklet.' Wording added 'as shown in the table in the Diagram Booklet.' Table enlarged.	Standard mark scheme
13	(a)	Wording added 'Look at the diagram for Question 13 in the Diagram Booklet. It shows a rectangle 5 cm long and 4 cm wide.' Wording 'this' removed and replaced with 'the'. Diagram enlarged.	Standard mark scheme
16		Wording added 'Look at the information for Question 16 in the Diagram Booklet. 160 people were asked to choose their favourite type of book. They each chose from romance or adventure or horror or thriller.' Information moved to the Diagram Booklet.	Standard mark scheme
17		Wording added 'Look at the diagram for Question 17 in the Diagram Booklet. It shows an incomplete stem and leaf diagram.' Wording 'a' removed and replaced with 'the'. Wording added 'in the Diagram Booklet'. Diagram enlarged. Key moved above and left of diagram. Horizontal line added on the bottom of the stem and leaf diagram so the candidates have a line to write on.	Standard mark scheme
19		Wording added 'Look at the diagram for Question 19 in the Diagram Booklet. It'. Wording removed 'The diagram'. Diagram enlarged. Angles moved outside of angle arcs and angle arcs made smaller. Right angle made more obvious. Wording added 'Angle ABD is a right angle. Angle EAB is marked x.'	Standard mark scheme
20	(a)	Wording added 'There are four spaces to fill.' Table turned vertically and enlarged. For Braille (i), (ii), (iii), (iv) added to the table for missing values.	Standard mark scheme
20	(b)	Wording added 'Look at the diagram for Question 20(b) in the Diagram Booklet. It is a grid.' Diagram enlarged. Small squares removed. Axis labels moved to the top of the vertical axis and to the right of the horizontal axis.	Standard mark scheme

PAPER: 1MA1_2F			
Question		**Modification**	**Mark scheme notes**
1		Wording added 'Look at the diagram for Question 21 in the Diagram Booklet. It shows triangle A and triangle B on a grid.' Diagram enlarged. Axis labels moved to the top of the vertical axis and to the right of the horizontal axis. Shapes labelled 'triangle A' and 'triangle B'. Cut out shape provided. Wording added 'A cut out shape may be available if you wish to use it.'	Standard mark scheme
22	(c)	Letter 'f' changed to 'p'. Letter 'g' changed to 'q'.	Standard mark scheme but note change of letter
28		Wording added 'Look at the diagram for Question 28 in the Diagram Booklet. You may be provided with a model. They show'. Wording removed 'The diagram shows'. Diagram enlarged. Radius and height labels moved to the left. Dashed lines made longer and thicker.	Standard mark scheme
29		Wording added 'Look at the diagram for Question 29 in the Diagram Booklet. It shows a right-angled triangle ABC.' Diagram enlarged. Right angle made more obvious. Angle moved outside of angle arc and angle arc made smaller. Wording added 'BC = 28 cm Angle ACB = 49° Angle ABC is a right angle.	Standard mark scheme

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