Pearson

Mark Scheme (Results)

Summer 2023

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

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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: 1MA1/1F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
1	0.38	B1	cao	
2	$\frac{3}{10}$	B1	or any equivalent fraction	3 : 10 or 0.3 or 30% get no marks
3	0.5	B1	cao	
4	−4	B1	cao	
5	5	B1	cao	
6	Explanation	C1	for a correct explanation. **Acceptable examples** he has labelled the radius incorrectly the diameter (label) should read radius the diameter goes from one side (of the circle) to the other the radius is labelled diameter **Not acceptable examples** a label is wrong there is nothing wrong with his labels the radius is wrong the centre is wrong, it should be the radius he has incorrectly labelled the diameter	Do not accept a statement that is ambiguous, where one aspect contradicts another, eg. "the radius goes from the centre whereas the diameter goes all round the circle"
7	Three correct factors	B2 (B1	for at least **three** from 1, 2, 4, 5, 10, 20 for **two** correct factors from 1, 2, 4, 5, 10, 20 and no more than one incorrect factor)	No incorrect factors No repeats (within the chosen 3) Ignore extra correct factors. Accept factor pairs, eg. 1 × 20 as two factors

Paper: 1MA1/1F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
8 (a)	310	M1	for 360 – 50	
		A1	cao	
(b)	Explanation	C1	for explanation relating to the type of angle 50° is, or an explanation why it is not an obtuse angle **Acceptable examples** It's (50°) an acute angle an angle below 90 is acute because it (50°) is less than 90 It (50°) is too small to be an obtuse angle an obtuse angle is greater than 90 (but less than 180) an obtuse angle is greater than 50 **Not acceptable examples** because 50° is not an obtuse angle an angle of 50° is a reflex angle an obtuse angle **is** all angles greater than 90 an obtuse angle is an angle greater than 120 an obtuse angle <u>is 90</u> or more	Do not accept contradictions in the answer, eg. "an obtuse angle is greater than 180 so 50 is an acute angle" **or** "an obtuse angle is greater than 90 and less than 270"

Paper: 1MA1/1F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
9 (a)	(5, 2)	B1	cao	
(b)	(4, −2) marked	B1	for the point (4, −2) unambiguously marked on the grid	Allow without label, provided unambiguous
(c)	(1, 3)	B1	cao	
(d)	$y = -4$ shown	B1	for correct single line unambiguously marked	Need not be labelled if clear. Accept a single line drawn freehand of any length. Accept a dotted (or dashed) line
10	Yes (supported)	P1	for an initial process, eg 6 × 2 (=12) **or** 80 ÷ 2 (=40 = 0.40) oe **or** 6 × 0.8 (= 4.80) oe **or** 6 ÷ 2 (= 3)	May work in pounds or pence
		P1	for a process using the special offer eg 6 × "40" (= 240 or 2.40) oe **or** "4.80" ÷ 2 (= 2.40) oe **or** 2 + "0.40" (= 2.40) oe **or** "3" × 0.8 (= 2.40)	Allow use of inconsistent units for the first 2 marks
		P1	for a complete process to find figures to compare, eg 6 × 2 + 6 × "0.40" (= 14.40) oe **or** 15 – "12" – "2.40" (= 0.60 or 60p)	
		C1	for Yes with correct comparable figures, eg Yes **and** (£)14.4(0) **or** Yes **and** (£)0.6(0) or 60p change	Award 0 marks for a correct answer with no supportive working. Answer of 'No' gets C0 irrespective of working, correct or not. Ignore incorrect value for change, if (£) 14.4(0) seen

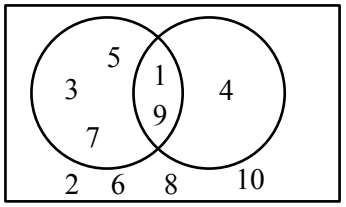
Paper: 1MA1/1F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
11 (a)	248	P1	for 700 – 452	
		A1	cao	
(b)	11000	P1	for evidence of rounding values to 1 significant figure, eg 300 **or** 400 **or** 10 or 9 **or** 20	
		P1	(dep on P1) for beginning a process to work with ticket sales, eg. 300 × 10 (= 3000) or 290 × 10 (= 2900) or 297 × 10 (= 2970) or 300 × 9 (= 2700) or 300 × 9.5 (= 2850) or 290 × 9 (= 2610) or 297 × 9 (= 2673) **OR** 400 × 20 (= 8000) or 390 × 20 (= 7800) or 399 × 20 (= 7980) or 400 × 19.5 (= 7800) or 400 × 19 (= 7600)	Note: **not** 290 × 9.5 (= 2755) or 297 × 9.5 (= 2821.5) Note: **not** 390 × 19 (= 7410) or 390 × 19.5 (= 7605) or 399 × 19 (= 7581) or 399 × 19.5 (= 7780.5)
		A1	for using **correct** values giving an answer in the range 10 200 to 11 000 from calculations using their rounded values	Award 0 marks for an answer in the range with no supportive working
(c)	Overestimate with reason	C1	(dep on P2 in (b)) for overestimate and reason, eg (ft from (b)) true total amount of money paid will be less as all values were rounded up	Must relate to estimation and not to rounding of their final answer and they must have a final answer to part (b)
12	7	M1	for (13 + 4 + 5 + 9 + 3 + 8) ÷ 6 or "42" ÷ 6	Condone missing brackets for M1
		A1	cao	

Paper: 1MA1/1F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
13 (a)	$5a$	B1	cao	
(b)	$19 - 2b + 5c$	M1	for $-2b$ or $5c$	
		A1	for $19 - 2b + 5c$	Accept the correct 3 terms in any order The A mark is lost for any incorrect subsequent working, eg. $17b + 5c$
(c)	$2(4d - 3)$	B1	for $2(4d - 3)$ oe	Accept $(4d - 3)2$ or $2\times(4d - 3)$ or $(4d - 3)\times 2$ Condone missing final bracket, eg $2(4d - 3$
14 (a)	27	B1	cao	
(b)	$\frac{2}{7}$	B1	or any equivalent fraction	
(c)	No (supported)	P1	for method to find the number of children on Friday eg 0.7×500 oe (= 350)	
		P1	for method to find the number of children on Saturday eg $720 \div 8 \times 5$ oe (= 450)	
		C1	for No with correct figures, eg No **and** 350 **and** 450 **or** No **and** 100 more on Saturday	Award 0 marks for a correct answer with no supportive working.

Paper: 1MA1/1F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
15	$\frac{5}{14}$	M1	for method to multiply fractions, eg $\frac{6 \times 5}{7 \times 12}$ **or** to simplify, eg $\frac{1}{7} \times \frac{5}{2}$ **OR** for a fractional answer equivalent to $\frac{5}{14}$	$\frac{30}{84}, \frac{15}{42}, \frac{10}{28}$
		A1	cao	
16	750	M1	for $250 \times (60 \div 20)$ oe or $150 \times (60 \div 20)$ oe or $100 \times (60 \div 20)$ oe	
		A1	cao	
17	27.5	P1	for process to find number of yellow and green counters, eg $200 - 38 - 52$ (= 110) **OR** for process to express red and blue counters as a percentage of 200, eg $\frac{38 + 52}{200} \times 100$ oe (= 45)	
		P1	for process to find number of yellow counters and/or the number of green counters eg "110" ÷ 2 (= 55) **OR** for process to express the sum of the yellow and green counters as a percentage of 200, eg $\frac{"110"}{200} \times 100$ (= 55) **or** 100 – "45" (= 55)	
		P1	for a complete process to express the number of yellow counters as a percentage, eg $\frac{"55"}{200} \times 100$ **or** "55" ÷ 2	
		A1	for 27.5 oe	

Paper: 1MA1/1F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
18	$T = 5b + 28c$	M1	for $5b$ **or** $28c$ **or** T = a linear expression in b and/or c	Allow $5 \times b$ and $28 \times c$ throughout
		M1	for $5b + 28c$ **or** partially correct formula, eg $T = 5b$ (+ kc) oe **or** $T = 28c$ (+ kb) oe	
		A1	for $T = 5b + 28c$ oe	
19	$8n - 13$	B2	for $8n - 13$ oe	Accept a different variable eg $8x - 13$
		(B1	for $8n + k$ where $k \neq -13$ or is absent unambiguously shown)	$n = 8n - 13$ or $8n^{th}$ - 13 gets B1 only
20	56.4	M1	for a start to a method, eg $846 \div 15$ or $8.46 \div 0.15$ or $8.46 \div 3 \times 20$ or $282 \div 5$ that leads to 5 as the first digit. **or** for a complete method with no more than one arithmetic error.	A start to a repeated subtraction method or a build-up method is acceptable if a correct first digit of 5 is found
		A1	for digits 564 identified	
		A1	(ft) dep on M1 for correct placement of the decimal point into their final answer	An answer of $56\frac{2}{5}$ gets 3 marks

Paper: 1MA1/1F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
21	$4\frac{7}{8}$	M2	for a complete method, eg $7 - 2 + \frac{3}{8} - \frac{4}{8}$ condoning error with one numerator **or** for $\frac{59}{8} - \frac{5}{2} = \frac{59}{8} - \frac{20}{8}$ $(=\frac{39}{8})$ with no more than one error **OR** for an answer of 4.875	
		(M1	for finding two fractions with a correct common denominator, with at least one correct corresponding numerator, eg $\frac{3}{8}, \frac{4}{8}$ **or** for converting both to improper fractions, eg $\frac{59}{8}, \frac{5}{2}$ **OR** for 7.375 – 2.5)	At least one improper fraction must be correct Both decimals must be correct
		A1	for $4\frac{7}{8}$ oe eg $4\frac{14}{16}$	Any equivalents must be a mixed number
22	125	P1	for process to find area of one face, eg 150 ÷ 6 (= 25) **or** $6x^2 = 150$	where x is the length of one side
		P1	for process to find side length, eg $\sqrt{"25"}$ (= 5)	
		P1	for a complete process to find volume, eg "5" × "5" × "5" or "25" × "5"	
		A1	cao	

Paper: 1MA1/1F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
23	Frequency polygon drawn	B2	for fully correct frequency polygon with points plotted at the midpoints	Joining must be with line segments Accept points plotted within half a small square Ignore any histogram drawn and any part of a frequency polygon outside range of first and last points plotted
	(2.5, 8), (7.5, 24) (12.5, 13) (17.5, 11) (22.5, 4)	(B1	for all points plotted correctly but not joined with line segments **or** points plotted at correct heights not at midpoints but consistently within each interval and joined with line segments **or** correct frequency polygon with one point incorrect **or** correct frequency polygon with first and last points joined directly)	for example, at 0, 5, 10,…or at 5, 10, 15,…
24 (a)	Venn diagram	B3	for a fully correct Venn diagram	Ignore all entries except the region you are marking for each method mark
		(B2	for two or three of the four regions correct)	
		(B1	for just one of the four regions correct)	
(b)	$\frac{7}{10}$	M1	(ft diagram) for $\frac{a}{10}$ where $0 < a < 10$ and a is an integer or $\frac{7}{b}$ where $b > 7$ and b is an integer **or** $1 - \frac{3}{10}$ **or** 7 : 10	Repeated digits in the diagram should be counted as 2 elements
		A1	(ft diagram) for $\frac{7}{10}$ oe	Accept any equivalent fraction, or 0.7 or 70%

Paper: 1MA1/1F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
25 (a)	Description	C1	for a valid description of the relationship **Acceptable examples** As age increases, weight increases The older you are the greater the weight Positive correlation **Not acceptable examples** Positive (relationship) age and weight are in proportion strong correlation or correlation is increasing as the babies get older the heavier they get, negative correlation they are directly proportional, weight goes up as age goes up	Accept positive correlation Ignore any comment about strength
(b)	2.5 to 4.5	B2 (B1	for an answer in the range 2.5 to 4.5 for a suitable line of best fit drawn **or** for a point on the grid at (x, 5.8) where x lies between 2.5 and 4.5 **or** a horizontal line drawn from 5.8 across to (x, 5.8) where x is in the range 2.5 to 4.5)	
26	1200	M1 A1	for a fully correct method, eg 240 ÷ 0.2 or 240 × 5 oe cao SC B1 for an answer of 960 or 1440 if M0 scored	
27	3	P1 P1 A1	for process to find area of base, eg 1200 ÷ 40 (= 30) for process to find pressure, eg 90 ÷ "30" cao	
28	$x = 6$ $y = -2$	B1	cao	

Paper: 1MA1/1F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
29	16	M1 A1	for simplifying using a correct rule of indices as a first step eg $4^{9-6}(= 4^3$ oe) or 4^{-6-1} $(= 4^{-7}$ oe) or 4^{9-1} $(= 4^8$ oe) **or** $\frac{4\times4\times4\times4\times4\times4\times4\times4\times4}{4\times4\times4\times4\times4\times4 \times 4}$ **or** 4^2 cao	
30	$\frac{1}{2}$	B1	for $\frac{1}{2}$ oe	
31	0.06	M1 A1	for 0.2 × 0.3 oe 0.06 oe	 Accept any equivalent fraction or 6%

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

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_1F			
Question		**Modification**	**Mark scheme notes**
2		Wording added ‘Look at the diagram for Question 2 in the Diagram Booklet. It shows a shaded shape.’; Wording ‘this’ removed and replaced with ‘the’. Diagram enlarged. Shading changed.	Standard mark scheme
6		Wording added ‘Look at the diagram for Question 6 in the Diagram Booklet.’ Wording added ‘three’. Wording ‘this’ removed and replaced with ‘the’. Wording added ‘shown in the Diagram Booklet.’ Diagram enlarged, open headed arrows, frames removed, labels straightened, Centre dot enlarged.	Standard mark scheme
8		Wording added ‘Look at the diagram for Question 8 in the Diagram Booklet. It shows two angles marked x and 50°’ Diagram enlarged. Angles moved outside the angle arcs. Angle arcs made smaller.	Standard mark scheme
9		Wording added ‘Look at the diagram for Question 9 in the Diagram Booklet. It shows a grid.’ Diagram enlarged. Black grid lines. Crosses changed to solid dots. Open headed arrows. Axes labels moved to top of vertical axis and to right of horizontal axis.	Standard mark scheme
13	(a)	Letter *a* changed to *w*.	Standard mark scheme but note change of letter
13	(b)	Letter *b* changed to *p*; Letter *c* changed to *q*.	Standard mark scheme but note change of letter
13	(c)	Letter *d* changed to *y*.	Standard mark scheme but note change of letter
16		Wording added ‘Look at the information for Question 16 in the Diagram Booklet.’ Wording removed ‘Here’. Frame removed	Standard mark scheme
18		Letter *b* changed to B; Letter *c* changed to C.	Standard mark scheme but note change of letter

23		Table enlarged and left aligned. Black outline and tracking lines added. Values changed in the table: 8 changed to 5; 24 changed to 25; 13 changed to 15; 11 changed to 10; 4 changed to 5 Wording 'Draw' removed and replaced with 'Look at the diagram for Question 23 in the Diagram Booklet. It shows a blank grid. On the grid, draw'. Wording 'this' removed and replaced with 'the'. Axes labels moved to the top of the vertical axis and to the left of the horizontal axis. Right axis labelled. Grid enlarged and small squares removed. Grid lines made black. Open headed arrows.	Standard mark scheme but note the change in points to be plotted.
24		Wording added 'Look at the diagram for Question 24 in the Diagram Booklet. It shows an incomplete Venn diagram.' Wording added 'in the Diagram Booklet'. Diagram enlarged. Labels changed to 'set A' and 'set B'. For Braille add "Ans: (i) __ (ii) __ (iii) __ (iv) __"	Standard mark scheme
25		Wording added 'Look at the diagram for Question 25 in the Diagram Booklet. It shows a scatter graph with'. Wording removed 'The scatter graph shows'. Axes labels moved to the top of the vertical axis and to the left of the horizontal axis. Right axis labelled. Grid enlarged and small squares removed. Grid lines made black. Open headed arrows. Crosses changed to dots.	
25	(b)	Wording added 'in the Diagram Booklet'. Value changed from 5.8 kg to 6.0kg.	B2 for an answer in the range 2.5 to 4.5 (B1 for a suitable line of best fit drawn **or** for a point on the grid at (x, 6) where x lies between 2.5 and 4.5 **or** a horizontal line drawn from 6 across to (x, 6) where x is in the range 2.5 to 4.5)
27		Wording added 'Look at the diagram for Question 27 in the Diagram Booklet. You may be provided with a model. They are NOT accurate. They show'. Wording removed 'The diagram shows'. Diagram enlarged. A floor added to the diagram, labelled 'Floor' to match the model provided. Label '40 cm' changed to 'height 40 cm'. Dashed lines made longer and thicker. Formula moved to top left of the diagram and frame removed. Model provided.	Standard mark scheme

28		Wording added ‘Look at the diagram for Question 28 in the Diagram Booklet. It shows two intersecting straight lines on a grid.’ Equations moved outside the grid. Grid enlarged. Grid lines made black. Open headed arrows. Graph lines made thicker. Axes labels moved to the top of the vertical axis and to the right of the horizontal axis.	Standard mark scheme
31		Wording added ‘Look at the diagram for Question 31 in the Diagram Booklet. It is a probability tree diagram showing’. Wording removed ‘The probability tree diagram shows’ Diagram enlarged.	Standard mark scheme

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