

EDEXCEL • GCSE MATHEMATICS 1MA1

Foundation Tier — Paper 1

Non-Calculator

November 2024 exam series

MARK SCHEME

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Mark Scheme (Results)

November 2024

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 (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 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 E.g. $2 \times 6 (=12)$ 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 E.g. "12" $\times 50$; 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 E.g. [area] $\times 1.5$: 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	0.25	B1	cao	
2	20	B1	cao	
3	150	B1	cao	
4	27	B1	cao	
5	645	B1	cao	
6	20	P1 P1 A1	for $30 + 45 \times 10 (= 480)$ or $50 \times 10 - 45 \times 10 (= 50)$ or $50 \times 10 - 30 (= 470)$ for $50 \times 10 - "480"$ cao SCB1 for answer 250 or -250 if P0 scored.	P1P1 for $500 - 450 - 30$ may be seen in stages
7	(a) 9.5 (b) acute (c) 32	B1 C1 B1	for answer in the range 9.3 to 9.7 for acute for answer in the range 30 to 34	Accept answer on the diagram Accept interior angle Do not accept co-interior angle Accept answer on the diagram
8	(a) (3, 1) (b) <i>B</i> at (3, -4) (c) (0, 2)	B1 B1 B1	cao cao cao	Accept a cross without label as long as unambiguous. Accept letter <i>B</i> or dot in place of cross.

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
9 (a)	bar at 11 for cricket	M1	for reading from graph of 12 or 17	Where [12] and [17] are their attempt at reading from the graph. May be implied by bar of height $40 - ([12] + [17])$ Condone bar of different width to those given or freehand bar. Shading not required. Bar of height 11 drawn implies M1M1C1 Accept other equivalent fractions. Do not accept equivalent decimals or percentages
		M1	(dep) for $40 - ([12] + [17]) (=11)$	
		C1	for bar drawn at 11 for cricket	
(b)	$\frac{3}{10}$	M1	for $\frac{12}{40}$ or $\frac{6}{20}$	Accept $n = 1.25$ Do not accept 1.25 alone or $n : 1.25$
		A1	cao	
(c)	$\frac{5}{9}$	B1	for $\frac{5}{9}$ or equivalent fraction	
(d)	1.25 : 1	B1	for 1.25 : 1 or $\frac{5}{4} : 1$ or $1\frac{1}{4} : 1$	
10 (a)	reflection	B2	for a fully correct reflection	
		(B1	for a correct reflection in any single mirror line or for at least two correct reflected lines)	
(b)	$y = 1$	B1	$y = 1$ oe	

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
13 (a)	8	M1 A1	for $11 + 5 (= 16)$ cao	
(b)	-3 or $\times 0.7$	P1 A1	for $28 \div 4 (= 7)$ or $10 - 3 (= 7)$ or $10 \times 0.7 (= 7)$ cao	7 may be seen next to function machine or embedded within a calculation Accept $+ - 3$ or $\times \frac{7}{10}$
14 (a)	5	P1 A1	for a start of a method to find the height, eg $10 \times 4 (= 40)$ or $200 \div 10 (= 20)$ or $200 \div 4 (= 50)$ or for forming a correct equation $10 \times 4 \times h = 200$ cao	
(b)	126	M1 M1 A1	for a start to find the area of at least one face, eg $6 \times 3 (= 18)$ or $5 \times 3 (= 15)$ or $6 \times 5 (= 30)$ for combining the area of at least three of the correct faces eg " 18 " + " 15 " + " 30 " ($= 63$) or $2 \times "18" + "15"$ cao	Do not award first M if multiplied by a third length (ie volume calculation) May be part of a larger addition including incorrect areas. Do not award if more than 6 areas added.

Paper: 1MA1/1F					
Question		Answer	Mark	Mark scheme	Additional guidance
15	(a)	$3(2a + 5)$	B1		
	(b)	2	M1	for correct expansion of brackets, ie $12y + 4$ or dividing throughout by 4 as a first step to solve equation, eg $3y + 1 = 28 \div 4$	For M marks step must be carried out not just intention shown. For example, if you see $\begin{array}{r} 4(3y + 1) = 28 \\ \div 4 \qquad \qquad \div 4 \end{array}$ Award M1 for: $3y + 1 = k$ with $k \neq 28$ or 112
			M1	for isolating terms in y, eg $12y = 28 - 4$ or $3y = 7 - 1$	ft their equation of the form $ay \pm b = c$ For example, if you see $\begin{array}{r} 12y + 4 = 28 \\ -4 \qquad \qquad -4 \end{array}$ Award M1 for: $12y = k$ with $k \neq 28$ or 32
			A1	cao	

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
16	15.5(0)	P1	for a correct process to find the cost of some teas only or some coffees only eg (2 teas $\Rightarrow$) $8.50 - 4.50 (= 4)$ or (2 coffees $\Rightarrow$) $3 \times 4.50 - 8.50 (= 5)$	Use of simultaneous equations – marks awarded at the stages shown in the scheme.
		P1	for a process to find the cost of one tea or four teas, eg (1 tea $\Rightarrow$) “4” $\div 2 (= 2)$ or (4 teas $\Rightarrow$) “4” $\times 2 (= 8)$	
		P1	for a process to find cost of one coffee or three coffees, eg (1 coffee $\Rightarrow$) $4.50 - “2” (= 2.50)$ or $8.50 - “2” \times 3 (= 2.50)$ or $1.5 \times “5” (= 7.50)$	
		P1	for a complete process, eg “2” $\times 4 + “2.50” \times 3$	
		A1	cao	

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
17	No, with correct figures	P1	for start to process to find amount of each paint colour needed eg $24 \div (4 + 3 + 1) (= 3)$ or $8 : 6 : 2$ or for start to process to simplify $12 : 7 : 5$ to a ratio that can be compared to $4 : 3 : 1$ eg $12 \div 4 (= 3)$ or $7 \div 3 (= 2.3 \dots)$ or $5 \div 1 (= 5)$	No may be indicated by eg ‘not enough yellow’.
		P1	for complete process to find amount of each paint colour needed eg “3” $\times 4 (= 12)$ and “3” $\times 3 (= 9)$ and “3” $\times 1 (= 3)$ or $12 : 9 : 3$ or for complete process to cancel $12 : 7 : 5$ to a ratio that can be compared to $4 : 3 : 1$ eg $12 : 7 : 5$ as $4 : " \frac{7}{3} " : " \frac{5}{3} "$ or $4 : "2.3 \dots" : "1.6 \dots"$ or $12 : 7 : 5$ as $"5 \frac{1}{7}" : 3 : "2 \frac{1}{7}"$ or $"5.14 \dots" : 3 : "2.14 \dots"$ or $12 : 7 : 5$ as $"2 \frac{2}{5}" : "1 \frac{2}{5}" : 1$ or $"2.4" : "1.4" : 1$	
		C1	No, with correct figure(s) for comparison. eg No with $12 : 9 : 3$ No, 9 litres of yellow needed No with $4 : 2.3 \dots : 1.6 \dots$	
18	682	M1	for a start to a method, eg. $8184 \div 12$ (or $818.4 \div 1.2$) that leads to 6 as the first digit or for a complete method with no more than one arithmetic error	A start to a repeated subtraction method or build-up method is acceptable if a correct first digit of 6 is found
		A1	for digits 682	
		A1	(ft) (dep M1) for correct placement of the decimal point into their final answer	

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
19 (a)	75	P1	for process to find sum of unknown probabilities eg $1 - (0.10 + 0.30 + 0.05 + 0.25) (= 0.3)$ oe or for process to find number of times dice lands on 3, 4, 5 or 6 eg $(0.10 + 0.30 + 0.05 + 0.25) \times 500 (= 350)$ oe	Award mark for any two probabilities that sum to 0.3 eg in the table or probability of 2 = 0.15
		P1	for a complete process, eg $(“0.3” \div 2) \times 500$ oe or $(500 - “350”) \div 2$ oe	P1P1A0 for answer of 75:500 or $\frac{75}{500}$
		A1	cao	
(b)	Answer to part (a) will be greater	C1	for an explanation that the answer will be greater Acceptable examples It makes the answer an underestimate The number will be higher The answer will increase / will go up The number of 2's will increase It would be more than [75] Not acceptable examples My answer will change My answer is incorrect The calculation will change The probability will change It would make the probability of 2 go up My answer won't change	Where [75] is their answer to (a)

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
20 (a)	$2\frac{1}{3}$	M1	for a method to subtract by writing both fractions with a common denominator with at least one correct numerator, eg. $3\frac{3}{6} - 1\frac{1}{6}$ or $\frac{3}{6} - \frac{1}{6} (= \frac{2}{6})$ or $\frac{21}{6} - \frac{7}{6} (= \frac{14}{6})$ or $\frac{42}{12} - \frac{14}{12} (= \frac{28}{12})$	Do not ISW incorrect further work from correct equivalent mixed number
		A1	for $2\frac{1}{3}$ or an equivalent mixed number	
	Shown	M1	for conversion to improper fractions, eg. $\frac{21}{4}$ or $\frac{7}{3}$ or $\frac{9}{4}$	
		M1	(dep) for method to divide by a fraction, eg. $\frac{21}{4} \times \frac{3}{7}$ or $\frac{63}{12} \div \frac{28}{12}$	
		C1	for complete work showing each stage as far as $\frac{9}{4}$ or $2\frac{7}{28}$	
(b)				Must see an intermediate step, eg $\frac{63}{28}$ must be seen and then cancelled or correct cancelling seen before multiplication

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
21	180 – 4e and reason	M1 A1 C1	for angle $ACD = e$ or for angle $ADC + \text{angle } BAD = 180$ or for angle $BAX = 3e$ (where X lies on DA extended) for 180 – 4e oe (dep M1) for an appropriate reason relating to parallel lines from <u>alternate</u> angles are equal or <u>allied</u> angles / <u>co-interior</u> angles add up to 180 or for <u>corresponding</u> angles are equal	Angles must be clearly labelled on the diagram or otherwise identified May be unsimplified Underlined words need to be shown Reason needs to be linked to their method, which can be implied from correctly identified angles (stated or written on the diagram)
22 (a)	Estimated time	P1 P1 A1	for rounding of distance = 5 (miles) or speed = 30 (mph) (dep) for using time = distance / speed eg $5 \div 30$ or for a complete process, eg $30 \div 60 (= 0.5)$ and $5 \div "0.5"$ or $30 \div 5 (= 6)$ and $60 \div "6"$ or $4.96 \times \frac{60}{30}$	
(b)	Overestimate with reason	C1	ft from (a) for decision with correct reasoning, eg overestimate as dividing a larger number by a smaller number or overestimate as miles rounded up and speed rounded down	Ft the rounding and process from (a) Must relate to estimation and not rounding of their final answer and they must have a final answer to part (a)

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
23	55	P1	for process to find the sum of the interior angles of a pentagon, eg. $180 \times (5 - 2) (= 540)$ oe	Can be implied by the shape correctly divided into triangle and quadrilateral or three triangles with correct angle sums marked.
		P1	for the start to a process of giving each angle in a common form, eg. $d = 3c$ or $e = 2c$ or $x, 3x, 2x$	Can be implied by division by 7 or 1, 1, 3, 2 given in a ratio eg 1 : 2 : 1: 3
		P1	for process to find the value of c , eg $([540] - 155) \div 7$ oe or for a correct equation in one variable, eg $c + 155 + c + 3c + 2c = [540]$ oe	Where [540] is what they believe to be the angle sum of the pentagon.
		A1	cao	
24	Rate of change of volume	C1	for a correct explanation Acceptable examples The rate of water poured Speed of pouring water out from the tank How fast the water is being used (in the tank over time) Amount of water decreasing in the tank each second Not acceptable examples Negative correlation / negative gradient Amount of water decreasing in the tank in seconds As time increases the volume of water in the tank decreases It is negative, the volume of litres is going down It represents the deceleration or changing speed	Allow amount of water increasing in the tank each second

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
25	$w = \frac{y+10}{3}$	M1 A1	for $y + 10 = 3w$ or $\frac{y}{3} = w - \frac{10}{3}$ for $w = \frac{y+10}{3}$ oe	Accept $w = \frac{-y-10}{-3}$ for M1A1
26	$x = 5, x = -3$	M1 M1 A1	for factorisation eg $(x \pm 3)(x \pm 5)$ or $(x + a)(x + b)$ where $ab = -15$ or $a + b = -2$ or for substitution into quadratic formula eg $\frac{-(-2) \pm \sqrt{(-2)^2 - 4 \times 1 \times -15}}{2 \times 1}$ oe for $(x + 3)(x - 5)$ or for $\frac{2 \pm \sqrt{64}}{2}$ cao	Condone one sign error in substitution into quadratic formula.

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: $\pm 5^\circ$

Measurements of length: ± 5 mm

PAPER: 1MA1_1F		
Question	Modification	Mark scheme notes
7	Wording changed: ‘Look at the diagram for Question 7 in the Diagram Booklet. It shows an accurately drawn triangle, PQR Angle PQR is marked x’ Diagram enlarged. Wording added above the diagram: Diagram IS accurately drawn Angle moved outside of angle arc and angle arc made smaller. Point R labelled. Line PQ changed to be exactly 11.5cm Angle x changed to be exactly 35°	(a) B1 for answer in the range 11 to 12 (b) Standard mark scheme (c) B1 for answer in the range 30 to 40
8	Wording added: ‘Look at the diagram for Question 8 in the Diagram Booklet. It shows point A and point C on a grid.’ Diagram enlarged. Crosses changed to dots. (b) Wording changed: On the grid in the Diagram Booklet, mark the point (3, – 4) Label this point B For Braille: sentence added ‘Bumpsons are provided if you wish to use them.’	Standard mark scheme
9	Wording added: ‘Look at the diagram for Question 9(a) and 9(b) in the Diagram Booklet. It shows an incomplete bar chart.’ Diagram enlarged. Vertical axis cut at 12. Tennis players value changed to 9. Football players value changed to 11. Shading changed. Additional column on the grid added. (a) Value ‘40’ removed and replaced with ‘30’. Wording added: in the Diagram Booklet For Braille: sentence added ‘Bumpsons and drawing film are provided if you wish to use them.’ (b) Value ‘40’ removed and replaced with ‘30’.	M1 for reading from graph of 9 or 11 M1 for 30 – (“9” + “11”) C1 for bar drawn at 10 for cricket M1 for $\frac{9}{30}$ A1 for $\frac{3}{10}$

PAPER: 1MA1_1F			
Question		Modification	Mark scheme notes
10		Wording added: Look at the diagram for Question 10 in the Diagram Booklet. It shows a shaded shape on a grid. Diagram enlarged. Vertical axis changed to go from –2 to 8. Mirror line changed to $y = 4$ and shape moved up three squares. Shading changed. Mirror line labelled on the left and right. Cutout shape provided. For Braille: sentence added ‘Bumpons, drawing film and an accurate cutout shape are provided if you wish to use them.’	(a) Standard mark scheme but note change in position (b) B1 for $y = 4$
11		Look at the table for Question 11 in the Diagram Booklet. It shows an incomplete two-way table. Wording added: in the Diagram Booklet. There are eleven spaces to fill.	Standard mark scheme
13	(a)	Wording changed: Look at the diagram for Question 13(a) in the Diagram Booklet. It shows a number machine. Diagram enlarged. Open headed arrows.	Standard mark scheme
	(b)	Wording changed: Look at the diagram for Question 13(b) in the Diagram Booklet. It shows a different number machine. Diagram enlarged. Open headed arrows.	Standard mark scheme
14	(a)	Wording changed: Look at Diagram 1, Diagram 2 and Diagram 3 for Question 14(a) in the Diagram Booklet. You may be provided with a model. It is NOT accurate. Diagram 1 and the model show a cuboid. It has length 10 cm and width 4 cm. Diagram 2 shows the front of the cuboid. Diagram 3 shows the side of the cuboid. Model provided. Diagram enlarged. 2 new 2D views added.	Standard mark scheme
	(b)	Wording changed: Look at Diagram 1, Diagram 2 and Diagram 3 for Question 14(b) in the Diagram Booklet. You may be provided with a model. It is NOT accurate. Diagram 1 and the model show a different cuboid. It has height 3 cm, length 6 cm and width 5 cm. Diagram 2 shows the front of the cuboid. Diagram 3 shows the side of the cuboid. Model provided. Diagram enlarged. 2 new 2D views added.	Standard mark scheme

PAPER: 1MA1_1F			
Question		Modification	Mark scheme notes
15	(a)	Letter 'a' changed to 'p'.	Standard mark scheme but note change of letter
19		Wording changed: Look at the table for Question 19 in the Diagram Booklet. It shows ... Table turned vertically and enlarged.	Standard mark scheme
21		Wording changed: Look at the diagram for Question 21 in the Diagram Booklet. It shows parallelogram ABCD. Angle BAC is marked p. Angle ADC is marked 3p. Letter 'e' changed to 'p'. Diagram enlarged. Angles moved outside of angle arcs and angle arcs made smaller.	Standard mark scheme but note change of letter
23		Wording changed: Look at the diagram for Question 23 in the Diagram Booklet. It shows a pentagon. Angles p, q, r, s and t are marked. Letters changed: 'a' changed to 'p', 'b' changed to 'q', 'c' changed to 'r', 'd' changed to 's', 'e' changed to 't'. Diagram enlarged. Angles moved outside angle arcs and angle arcs made smaller.	Standard mark scheme but note change of letters
24		Wording changed: Look at the diagram for Question 24 in the Diagram Booklet. It is a graph showing the volume of water, V litres, in a tank at time t seconds. Diagram enlarged. Open headed arrows.	Standard mark scheme

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