



Mark Scheme (Results)

November 2022

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

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

November 2022

Question Paper Log Number P68722

Publications Code 1MA1_2F_2211_MS

All the material in this publication is copyright

© Pearson Education Ltd 2022

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 $2 \times 6 (=12)$ 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 eg “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 eg [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

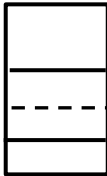
Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
1	-7, -2, -1, 0, 7	B1	cao	Accept reverse order
2	$\frac{37}{100}$	B1	oe fraction	
3	13	B1	cao	
4	530	B1	cao	
5	3476	B1	cao	
6 (a)	4.5	B1	accept answer in the range 4.3 to 4.7	
(b)	110	B1	accept answers in the range 108 to 112	
7	49.01	P1 P1 B1 A1	for process to work with the number of miles, eg $12845 - 12468 (= 377)$ or $12845 \times 13 (= 166985)$ or $12468 \times 13 (= 162084)$ for process to find the cost, eg $"377" \times 13 (= 4901)$ or $"166985" - "162084" (= 4901)$ (indep) for converting from pence to pounds, eg $"4901" \div 100$ or $13 \div 100$ or miles divided by 100 eg $"377" \div 100 (= 3.77)$ or $12845 \div 100 (= 128.45)$ and $12468 \div 100 (= 124.68)$ 49 or 49.01	This mark can be awarded at any stage in the process
8	315	M1 A1	for 45×7 cao	

Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
9	Chart	B1 M1 A1	for correct day labels or a linear scale for correct bars showing information for at least 3 days for a fully correct bar chart	Accept key in place of labels Condone bars of varying widths Condone no gaps or inconsistent gaps Labels of Day and Frequency not essential
10 (a)	49	M1 A1	for attempt to find the difference between 07 20 and 08 09 cao	May be seen in stages eg 10+30+9
(b)	Yes with correct working	P1 P1 C1	for a process shown to add a time to a departure time, eg $0800 + 7$ or $0800 + 15$ or $0800 + 7 + 15$ or process for time at work after Bolton bus stop arrival, eg “0858” + 15 or find accumulated additional time, eg $7 + 15 (= 22)$ or starts to work backwards, eg $0920 - 15$ for a process to select correct bus time from Blackrod to Bolton eg 0809 to 0858 for conclusion of “yes” supported by correct comparable figures, eg states 0913 or 0858 and 22 (spare)	8 09 stated as bus start time or 7 40 (from Wigan) is enough for this mark NOTE other comparisons may be seen
11	130	P1 P1 P1 A1	process to find the total number of children, eg $214 - 14 (= 200)$ process to find the number of children wearing a hat, eg $“200” \times 35 \div 100 (= 70)$ or process to find the multiplier for the percentage of children not wearing a hat, eg $(100 - 35) \div 100 (= 0.65)$ for full process to find the number of children not wearing a hat, eg $“200” - “70”$ or $“200” \times “0.65”$ or $214 - “70” - 14$ cao	

Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
12 (a)	82.5	M1	for a complete method, eg $132 \div 8 \times 5$	$132 - 82.5 (= 49.5)$ M1 implied
		A1	cao	
(b)	$\frac{1}{4}, \frac{9}{32}, \frac{21}{64}, \frac{3}{8}$	M1	converts into decimals or percentages or equivalent fractions, at least 2 conversions correct or for any 3 fractions in correct order	0.25, 0.28(125), 0.32(8125), 0.37(5)
		A1	cao	Accept in reverse order for this mark Accept expressed in equivalent decimals or percentages or fractions or in mixed numerical form
13	4 pint with correct figures	P1	for a process to find the price for one deal, eg 6 pints on 1 st deal, $75 \times 2 (= 150)$ or 8 pints on 2 nd deal, $128 \times 1.5 (= 192)$ oe	
		P1	for a process to find the price for both deals, eg 6 pints on 1 st deal, $75 \times 2 (= 150)$ and 8 pints on 2 nd deal, $128 \times 1.5 (= 192)$ oe	
		P1	for a process to find the cost per pint for both deals, eg “150” $\div 6 (= 25)$ and “192” $\div 8 (= 24)$ or for prices for a consistent number of pints for both deals eg for 2 pints “1.5” $\div 3 (= 0.5)$ and “1.92” $\div 4 (= 0.48)$ or a comparison using a unit price eg “150” $\div 6 \times 8 (= 200)$ and $128 \times 1.5 (= 192)$ oe	Accept in mixed units of pence and pounds Might look at a price difference for a consistent number of pints
		C1	“4 pint” with two correct comparative costs calculated making full use of both offers	“4 pint” can be indicated in words or other indication

Paper: 1MA1/2F																																						
Question	Answer	Mark	Mark scheme	Additional guidance																																		
14 (a)	$7c + 6d$	M1	for $7c$ or $6d$																																			
		A1	for $7c + 6d$																																			
	7	M1	for correct method to expand, eg $5 \times 2m - 5 \times 6$, or divides both sides by 5 as a first step.																																			
		M1	for correct method to isolate terms in m , eg $10m - 30 + 30 = 40 + 30$																																			
		A1	cao																																			
	$3x + 2y$	M1	for $3x$ or $2y$																																			
		A1	cao																																			
15 (a)	Diagram	B2	for a fully correct ordered diagram	<table><tr><td>7</td><td> </td><td>1</td><td>1</td><td>4</td><td>5</td><td>7</td></tr><tr><td>8</td><td> </td><td>2</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td></tr><tr><td>9</td><td> </td><td>1</td><td>4</td><td>7</td><td>8</td><td></td><td></td><td></td></tr><tr><td>10</td><td> </td><td>3</td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> Accept stem of 70, 80, 90, 100 Can be in reverse vertical order (with matching leaves) eg 10, 9, 8, 7 Errors can be omissions; one number in the wrong position is one error.	7		1	1	4	5	7	8		2	4	5	6	7	8	9	9		1	4	7	8				10		3						
		7			1	1	4	5	7																													
		8			2	4	5	6	7	8	9																											
		9			1	4	7	8																														
	10		3																																			
	(B1	for a complete unordered diagram or for an ordered diagram with at most one error or omission)																																				
	B1	for correct key eg $7 1$ or $70 1$ represents 71 Key must be consistent with the stem																																				
	86	M1	for identifying the median, eg “6” circled or an answer of 6 or ft their list or diagram for selection of middle value (allow up to two errors or omission in listing)																																			
A1		for 86 or ft their list or diagram for selection of middle value (allow up to two errors or omission in listing)																																				

Paper: 1MA1/2F																	
Question		Answer	Mark	Mark scheme	Additional guidance												
16		2	P1 P1 A1	for a calculation from within the list $4 \times 12 \div 4 \div 6$ eg $4 \times 12 (= 48)$ or $12 \div 4 (= 3)$ or $6 \div 4 (=1.5)$ or $4 \div 6 (= 0.66..)$ for a complete process, eg $(“48” \div 6) \div 4$ or for $“0.\dot{6}” \times 12 \div 4$ cao	Accept $12 \div 6$ as a full process												
17		176	M1 M1 A1	for a method to find 5 products within intervals (including end points) for $\Sigma“fx” \div (8 + 14 + 24 + 30 + 4)$ or $(155 \times 8 + 165 \times 14 + 175 \times 24 + 185 \times 30 + 195 \times 4) \div (8 + 14 + 24 + 30 + 4)$ or $(“1240” + “2310” + “4200” + “5550” + “780”) \div “80”$ or $“14080” \div “80”$ cao	<table><tr><td>Min fx</td><td>Max fx</td></tr><tr><td>1200</td><td>1280</td></tr><tr><td>2240</td><td>2380</td></tr><tr><td>4080</td><td>4320</td></tr><tr><td>5400</td><td>5700</td></tr><tr><td>760</td><td>800</td></tr></table> $\Sigma“fx”$ must come from 5 products fx within intervals (including end points)	Min fx	Max fx	1200	1280	2240	2380	4080	4320	5400	5700	760	800
Min fx	Max fx																
1200	1280																
2240	2380																
4080	4320																
5400	5700																
760	800																
18	(a)	(2, 1)	B1	cao	Accept negative correlation Ignore any comment about strength Any numbers used in the description must be within tolerance												
	(b)	Description	C1	correct description, eg as the amount of rainfall decreases the number of hours of sunshine increases													
	(c)	3 to 4	M1	for a suitable line of best fit drawn, or for a point marked at $(x, 7)$, or a horizontal line drawn from 7 across to $(x, 7)$ where x is in the range 2.5 to 4													
			A1	answer in the range 3 to 4													

Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
19	Elevation	B2 (B1)	fully correct side elevation 5 high and 3 wide for a rectangle 5 high and 3 wide or correct side elevation in the wrong orientation)	
20 (a)	$6n + 1$	B2 (B1)	oe for $6n + c$ where c is an integer $\neq 1$ or is missing)	2, -4, -10, -16, -22, -28, -34, -40, -46, -52 May stop at -58 or ring if sequence continues
(b)	Shown with supportive working	M1	for $8 - 6n = -58$ or $8 - 6 \times 11 (= -58)$ or starts to list terms of the sequence, with at least 3 correct or any other valid method.	
		A1	shown with working or an explanation, eg Yes and 11 or 2, -4, -10, -16,, -52, -58	
21	186.15	P1 P1 P1 P1 A1	for correctly finding the area of at least three sections, eg 3 of $11 \times 7 (= 77)$, or $9 \times 7 (= 63)$, or $\frac{1}{2} \times 11 \times 9 (= 49.5)$, or $\frac{1}{4} \times \pi \times 7^2 (= 38.4845..)$ for a method to find the number of bags required for one area or a combination of areas eg “77” $\div 14 (= 5.5)$ or “227.9845..” $\div 14 (= 16.2846...)$ for method to work out the total area for all four sections eg “77” + “63” + “49.5” + “38.4845...” $(= 227.9845...)$ or adding the exact number of bags per section for all four sections eg “5.5” + “4.5” + “3.53..” + “2.74..” $(= 16.28...)$ for method to find the cost, eg integer number of bags $\times 10.95$ cao	Note a trapezium for the rectangle and triangle should be classed as two areas. Accept figures rounded or truncated to 1 dp or better throughout. This mark is dependent upon correct processes seen for all four sections. integer number of bags must come from area $\div 14$ rounded up

Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
22	8.73	M1	for a correct trig statement, eg $14.5 \times \cos 53$ or $\cos 53 = x \div 14.5$	Can use a combination of skills but must have only one unknown in x to score this mark If an answer is given in the range in working and then rounded incorrectly award full marks.
		A1	answer in the range 8.726 to 8.73	
23	7318.15	M1	for a correct first step eg working out increase for one year $7000 \times (100 + 3) \div 100$ (= 7210) oe or $7000 \times 3 \div 100$ (= 210) oe or find the multiplier for both years eg $(100 + 3) \div 100 \times (100 + 1.5) \div 100$ (=1.04545)	7315 or 315 implies M1
		M1	for a compound method, eg $7000 \times (100 + 3) \div 100 \times (100 + 1.5) \div 100$ oe or “7210” $\times 1.5 \div 100$ or (= 108.15) oe	318.15 implies M1M1A0
		A1	cao	
24 (a)	4	B1	for 4	Condone (0,4) or 0,4 Accept both solutions given as a coordinate for M1 eg (5.2, 0.8) or (0.8, 5.2) or (5.2, 0) and (0.8, 0)
(b)	(3, -5)	B1	cao	
(c)	5.1 to 5.3 and 0.7 to 0.9	M1	for a correct method, eg marking both intercepts with x -axis or one correct solution	
		A1	for answers in the range 5.1 to 5.3 and 0.7 to 0.9	
25 (a)	1.25	B1	for 1.25 or $\frac{5}{4}$ or $1\frac{1}{4}$	Accept 4749.9 or 4749.99(...)
(b)	4650 and 4750	B1	for 4650 in the correct position	
		B1	for 4750 in the correct position	

Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
26	152000	M1	for a complete method eg $165680 \div 109 \times 100$ or $165680 \div 1.09$ oe	
		A1	cao	

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

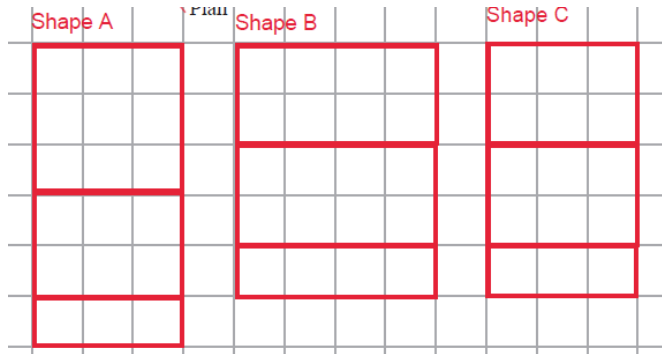
Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme. Notes apply to both MLP papers and Braille papers unless otherwise stated.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:

Angles: $\pm 5^\circ$

Measurements of length: ± 5 mm

PAPER: 1MA1_2F			
Question		Modification	Mark scheme notes
1		The wording ‘following numbers’ removed and replaced with ‘five numbers below’. Numbers left aligned.	Standard mark scheme
5		Wording added ‘Look at the diagram for Question 5 in the Diagram Booklet.’ The wording ‘Here are’ removed and replaced with ‘It shows’. Diagram enlarged.	Standard mark scheme
6		Wording added ‘Look at the diagram for Question 6 in the Diagram Booklet. It is accurately drawn.’ The wording ‘Here is’ removed and replaced with ‘It shows’. Wording added ‘Angle ADC is marked x.’ Diagram enlarged to allow for use of specialist equipment. Angle moved outside the arc. Angle arc made smaller.	(a) accept answers in the range 8.0 to 9.0 (b) accept answers in the range 105 to 115
7		The word ‘Here’ removed and replaced with ‘Below’. Boxes removed and information presented as statements.	Standard mark scheme
8		Frame removed and information left aligned	Standard mark scheme
9		Wording added ‘Look at the diagram for Question 9 in the Diagram Booklet.’ Table enlarged. Wording added ‘in the Diagram Booklet’. Diagram enlarged and cut on top row and right column.	Standard mark scheme
10		Wording added ‘Look at the table for Question 10 in the Diagram Booklet.’ The wording ‘Here is’ removed and replaced with ‘It shows’. Table enlarged. The fifth row and third column removed.	Standard mark scheme
12	(b)	The wording ‘following fractions’ removed and replaced with ‘four fractions below’. Fractions left aligned.	Standard mark scheme
13		Diagrams removed. Wording added ‘Offer 1: 2 pints cost 75p. Pay for 2 bottles, get 1 free. Offer 2: 4 pints cost £1.28. Pay for 1 bottle, get 1 bottle half price.’	Standard mark scheme
14		Values changed: c to p ; d to q	Standard mark scheme but note change of letters
15		Wording added ‘Look at the diagram for Question 15(a) in the Diagram Booklet.’ The word ‘her removed and replaced with ‘seventeen’; ‘Here’ removed and replaced with ‘Below’. Line added to the top of the diagram. Then in part (a): Wording added ‘in the Diagram Booklet’. Diagram enlarged. Key box enlarged, moved above the diagram and left aligned. Bottom line added to the diagram.	Standard mark scheme
17		Wording added ‘Look at the table for Question 17 in the Diagram Booklet.’ Diagram enlarged. Frequency information left aligned and column widened.	Standard mark scheme

PAPER: 1MA1_2F			
Question		Modification	Mark scheme notes
18		Wording added ‘Look at the diagram for Question 18 in the Diagram Booklet.’ Diagram enlarged and intermediates marked. Crosses changed to dots. Axes labels moved above the vertical axis and left on the horizontal axis. Open headed arrows. Small squares removed.	Standard mark scheme but in part (c) widen the range to consider 2.5 to 4.5
19		Wording added ‘Look at the diagram for Question 19 in the Diagram Booklet. It shows a grid with shapes.’ The wording ‘and the plan of a solid are shown on the grid’ removed and replaced with ‘of a solid is shown in the Diagram Booklet.’ The wording ‘On the grid, draw the’ removed and replaced with ‘Choose which of the shapes A to C shows the side elevation of the solid from the direction of the arrow.’ ‘Front elevation’ and ‘Plan’ labels moved above. Shapes labelled ‘Shape A’ to ‘Shape C’. Grid and diagrams enlarged. Shape outlines made thicker. Open headed arrow. Arrow made thicker. Model provided. 	Shape C is the correct shape for 2 marks. The dotted line was removed to avoid confusion to visually impaired candidates.
20		The wording ‘Here’ removed and replaced with ‘Below’. Terms left aligned.	Standard mark scheme
21		Wording added ‘Look at the diagram for Question 21 in the Diagram Booklet.’ Diagram enlarged. Dashed lines made longer and thicker. Right angles made more obvious. Wording added: ‘All the marked angles are right angles.’ ‘AB = 11 metres’; ‘BC = 7 metres’; ‘DE = 7 metres’; ‘EF = 9 metres’	Standard mark scheme

22		Wording added 'Look at the diagram for Question 22 in the Diagram Booklet. It shows shape ABC.' Shape labelled with A, B and C. Wording added: 'ABC is the right angle'; 'AC = 14.5 cm'; 'BC = x cm'; 'angle ACB = 53°' Diagram enlarged. Right angle made more obvious. Angle moved outside smaller angle arc.	Standard mark scheme
24		Wording added 'Look at the diagram for Question 24 in the Diagram Booklet.' The wording 'Here is' removed and replaced with 'It shows'. Diagram enlarged and intermediates marked. Axes labels moved above the vertical axis and right on the horizontal axis. Open headed arrows. Small squares removed.	Standard mark scheme

