

Mark Scheme (Results)

November 2020

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 " $12'' \times 50$; 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.

Guida	nce on the use of abbreviations within this mark scheme
м	method mark awarded for a correct method or partial method
Р	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)
С	communication mark awarded for a fully correct statement(s) with no contradiction or ambiguity
В	unconditional accuracy mark (no method needed)
oe	or equivalent
сао	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	Paper: 1MA1/2F						
Question	Answer	Mark	Mark scheme	Additional guidance			
1	37	B1	or any other equivalent fraction				
	100						
2	29000	B1	cao				
3	6e	B1					
4	25	B1	сао				
5	27	B1	сао				
6	Yes with supporting calculations	M1 M1	for ONE correct time conversion seen or used eg 105 (mins) is 1 (hr) 45 (mins) or 16 45 - 14 30 = 2 hr 15 mins or 14 30 + 1 (hr) + 45(mins) for a full method to make a comparison eg for adding 20 and 105 to 14 30 (=16 35) or for subtracting 20 and 105 from 16 45 (=14 40) or for finding the time differences eg 16 45 - 14 30 (= 2 hr 15 mins) and 105 from 105 for 105 for 100 for	May be implied by a correct calculation 1 hr = 60 mins is not enough for this mark Intention to do the correct calculation or calculations is enough for this mark Accept any sensible time notation throughout (pm is not required)			
		C1	or adding 105 to 14:30 (= 16 15) and 1645 – "16 15" (=30) correct conclusion from the comparison of accurate figure(s) eg Yes and 16 35 or 4.35(pm) 14 40 or 2.40(pm) or for 2 hours 5 minutes and 2 hours 15 minutes oe or for 10 minutes spare or 30 (minutes to get to the bus stop)	Yes may be implied by a statement			

Paper: 1MA1	/2F			
Question	Answer	Mark	Mark scheme	Additional guidance
7	Two reasons	C2	for two correct reasons	
		(61		
		(CI	for one correct reason)	Allow if one reason is fully correct and the
			Acceptable examples	other reason is not.
			No label for mark	For column accept strip, bar, block, line,
			The vertical axis jumps from 0 to /1	cubes in an unambiguous explanation
			Toma har is twice as wide as the others	
			No aves	
			Toms har should not take up 4 squares	
			Toms bar shaded 2 not 1 block	
			Tom has 2 hars shaded but the others only have one har shaded	
			It is not labelled	
			Tom has gone over 2 squares	
			Toms bar is bigger than the others	
			Toms bar is not correct	
			The numbering is not correct	
			Not acceptable examples	
			There is no title	
			Different sized gaps between the bars	
			The bars are not symmetrical	
			The bars are not the same size	

Pape	Paper: 1MA1/2F						
Ques	tion	Answer	Mark	Mark scheme	Additional guidance		
8	(a)(i)	30	B1	cao			
	(ii)	Reason	C1	reason, eg <u>angles</u> on a straight <u>line</u> add up to 180°			
	(b)	Explanation	C1	for explanation eg the two angles don't add up to 360 Acceptable examples 90 + 280 = 370 The two angles don't add up to 360 280 should be 270 Angles around a point equal 360° It should be 360 (in a circle) It should be 80 It should not be a right angle It cannot be 280° Not acceptable examples They don't add up to 180 365 degrees in a circle means 90 degrees			
9	(a)	25	B1	for 25, accept answer in range 24 to 26			
	(b)	24	M1 A1	for $40 \div 10 \times 6$ cao			
	(c)	Comment	C1	(dep B1 or M1) ft for comment for their results, eg the two answers are quite close or answer to (b) is less than answer to (a) or the rule gives a smaller answer			
10	(a)	12	B1	cao			
	(b)	4	B1	cao			

Paper: 1MA1	Paper: 1MA1/2F						
Question	Answer	Mark	Mark scheme	Additional guidance			
11	600 cm^3	M1	for a complete method to find the volume eg $4 \times 10 \times 15$	If extra steps are shown do not award this mark			
		A1	for 600	Ignore incorrect or absent units for this mark			
		B1	(indep) cm ³	Ignore incorrect or absent numerical answer for this mark			
12	L23, U23, L29, U29	B2	for all 4 outcomes with no extras or repeats	Pairs must be unambiguous and in the correct order of letter number			
		(B1	for at least 2 correct outcomes out of at most 8 different outcomes or for indicating 23 and 29 are the only prime numbers between 20 and 30)				
13	19	P1	for 4275 ÷ 28 (= 152(.678)) or 153 or a build up to at least 150 × 28 (=4200)	Division may be seen as a build up method			
		P1	for "152" × 28 (= 4256) or "153" × 28 (=4284) or ("152.678" – 152) (=0.678) or 4275 \div "152" – 28(= 0.125) or 4275 – "4200" (=75) oe	Use of 150×28 or better for "4200"			
		A1	cao				
14	Correct pie chart	M1	for a method to find at least one angle eg $\frac{50}{(50+45+25)}$ × 360 (= 150) or $\frac{45}{(50+45+25)}$ × 360 (= 135) or $\frac{25}{(50+45+25)}$ × 360 (= 75) oe				
		A1	for at all 3 angles correctly calculated OR at least one correct and accurately drawn angle (from no more than 3 sectors)	Do not award for drawing if the intention is to show more than 3 sectors 3 angles correct in table is enough for this mark irrelevant of diagram			
		A1	for a fully correct labelled pie chart	Labels as "City" from table not just angle size.			

Paper: 1MA1	Paper: 1MA1/2F						
Question	Answer	Mark	Mark scheme	Additional guidance			
15 (a)	-13	M1 A1	for substitution eg 3 \times 5 and 4 \times -7 or 15 and -28 cao	3×5 (= 15) and 4×-7 (= -28) may be seen separately but both must be seen for the award of M1 35 and 4–7 do not get the mark unless multiplication is shown eg $35 = 15$ is evidence of multiplication and should not be seen as choice			
(b)	5	M1 A1	for $38 = 3 \times 6 + 4y$ or $38 - 18$ (=20) or for a complete method to make y the subject eg $y = \frac{T - 3x}{4}$ cao	eg $y = (T - 3x) \div 4$			
16	58	P1 P1	for a correct process to find the pass mark for the exam or either paper eg $(60 + 90) \div 3 \times 2$ oe $(= 100)$ or $60 \div 3 \times 2$ oe $(= 40)$ or $90 \div 3 \times 2$ oe for a process to find 70% of 60 eg $\frac{70}{100} \times 60$ oe $(= 42)$	It is possible to award P0P1 on this question Accept 66% or better used for $\frac{2}{3}$			
		P1 A1	for a complete set of processes to find the required mark "100" – "42"(=58) or "40"+ "60" – "42" (=58) cao SC B2 for an answer of 48	May be seen in parts			

Paper: 1MA1	aper: 1MA1/2F						
Question	Answer	Mark	Mark scheme	Additional guidance			
17 (a)	5	P1	for finding the number of oranges required eg $8 \div 2 \times 30$ (=120) oe or for finding the number of oranges left from use of at least 2 boxes eg $24 \times 2 - 30$ (=18) or $24 \times 4 - 90$ (=6) or finds the correct amount of juice possible from at least two boxes eg $24 + 24$ is 2 litres or $24 + 24 + 24$ is 4 litres	A build up method with no process shown must use fully correct figures			
		P1	for a complete process eg "120" \div 24 (=5) oe or 30 + 30 + 30 (=120) and 24 + 24 + 24 + 24 (=120) or 24 \times 2 - 30 = 18, 18 + 24 = 42, 42 - 30 = 12, 12 + 24 = 36, 36 - 30=6, 6 + 24 = 30	May be seen as a mixture of repeated subtraction and addition			
		A1	cao with no arithmetic errors seen SCB1 for an answer of 10 supported by working	This mark cannot be awarded if the supporting work has an arithmetic error An answer only and no working is no marks			
(b)	9:2	M1	for a partially simplified correct ratio eg 126 : 28 or any other equivalent ratio or 2 : 9	eg 630:140, 315:70, 63: 14 180:40, 90:20, 45:10, 4.5:1			
		A1	cao				
18	Rotation 180° about (-1, 0)	C2	rotation 180° about (-1, 0) or enlargement sf -1 centre (-1, 0)	Award no marks if more than one transformation is given			
		(C1	rotation 180° or rotation about (-1, 0) OR enlargement sf -1 or enlargement centre (-1, 0))				

Paper: 1MA1	Paper: 1MA1/2F						
Question	Answer	Mark	Mark scheme	Additional guidance			
19	$\frac{3}{10}$	P1	for a process to find three amounts in the correct proportions, eg R = 1, L = 3 × 1 = 3, A = 2 × 3 = 6, or R : L : A = $\frac{1}{6}$: 0.5 : 1 oe or L=3R, L= $\frac{A}{2}$ or L=3R, 2L=A	Relationship could be given in algebraic form or in ratio form, using fractional comparison or using their own figures			
		A1	for $\frac{3}{10}$ or equivalent fraction	Award P1 for correct answer not given as a fraction			
20	1.75	P1	for an initial process eg 1.80 ÷ 12 (=0.15) or 1.80 ÷ 3 (=0.6)	Accept $1.8 \div 12 = 15$ (p) They can work in pounds or pence			
		P1	for a correct second step eg " 0.15 " \div 3 (=0.05) or " 0.6 " \times 7 (=4.2) or $3 \div$ " 0.15 "(=20) or $7 \div$ 3 (=2.3) or " 0.15 " \times 7 (=1.05)				
		P1	for finding the price of one pen eg-" 0.05 " × 7 (=0.35) or " 4.2 " ÷ 12 (=0.35) or 7 ÷ " 20 "(=0.35) or " 2.3 × " 0.15 " (=0.35) or " 1.05 " ÷ 3 (=0.35)				
		A1	cao				
21 (a)	2×2×3×7	M1	for a complete method to find prime factors, could be shown on a factor tree, with no more than one arithmetic error or for 2, 2, 3, 7	Condone the use of 1			
		A1	for $2 \times 2 \times 3 \times 7$ oe	Accept $2^2 \times 3 \times 7$			
(b)	420	M1	for at least 3 multiples of both 60 and 84 (can include 60 and 84) or finds the prime factors of both 84 (may be seen in (a)) and 60, may be seen in factor trees $420 \text{ or } 2 \times 2 \times 3 \times 5 \times 7 \text{ or}$	60, 120, 180, 240, 300, 360, 420 84, 168, 252, 336, 420 $60 = 2 \times 2 \times 3 \times 5$ or $2^2 \times 3 \times 5$ If factor tree in (a) is incorrect ft this factor tree in part (b) for M1 only			

Paper: 1MA1	aper: 1MA1/2F						
Question	Answer	Mark	Mark scheme	Additional guidance			
22 (a)	Venn diagram	M1	for correct numbers in at least one region	Ignore all entries except the region you are marking for each method mark			
		M1	for correct numbers in at least two regions	4, 6, 8 2 1			
		A1	for all regions correct				
(b)	$\frac{2}{10}$	M1	for $\frac{a}{10}$ where $0 < a < 10$ and <i>a</i> is an integer or $\frac{2}{b}$ where $b > 2$ and <i>b</i> is an integer or ft diagram	3, 7, 9 Need not be written in correct form at this stage eg could be a ratio 2 : 10 Repeated digits in the diagram should be counted as 2 elements			
		A1	$\frac{2}{10}$ oe or ft diagram	Accept any equivalent fraction, decimal form 0.2 or percentage form 20%			
23	No	P1	for $3000 \div (2+3) (= 600)$				
	(supported)	P1	for "600" × 2 (= 1200) or "600" × 3 (= 1800) or "600" ÷ 6 (= 100) or "600" ÷ 20 (= 30)				
		P1	for "1200" \div 6 (= 200) or "1800" \div 20 (= 90) or "100" \times 2 (= 200) or "30" \times 3 (= 90)				
		P1	for "90" ÷ ("200" + "90") × 100 (= 31.0) oe or "90" ÷ ("200" + "90") (= 0.31) or 0.3 × ("200" + "90") (= 87)oe	Full method to compare			
		C1	correct conclusion and fully correct calculations with accurate figure eg No and 87 or No and 31% or No and 0.31	No may be implied by a statement No working, answer only no marks			

Paper: 1MA1	Paper: 1MA1/2F							
Question	Answer	Mark	Mark scheme	Additional guidance				
24 (a)	13, (6), 5, 4, -3	B2 (B1	for all 4 values correct for 2 or 3 correct values)					
(b)	Correct graph	M1	ft (dep on B1) for plotting at least 4 of the points from their table correctly					
		A1	for a fully correct curve drawn	Accept a freehand curve drawn that is not made of line segments Line sections outside the required range can be ignored.				
25	99.5	M1	for sin (34) = $\frac{x}{178}$ oe or alternative method to find x					
		A1	for answer in range 99.5 to 99.7	If an answer in the range 99.5 to 99.7 is given in the working space then incorrectly rounded, award full marks				
26	$\begin{pmatrix} -9\\ 14 \end{pmatrix}$	M1	for $2\begin{pmatrix}3\\4\end{pmatrix} - 3\begin{pmatrix}5\\-2\end{pmatrix}$ or $\begin{pmatrix}6\\8\end{pmatrix}$ and $\begin{pmatrix}15\\-6\end{pmatrix}$ or $\begin{pmatrix}-9\\y\end{pmatrix}$ or $\begin{pmatrix}x\\14\end{pmatrix}$	May be seen in two separate calculations eg $2\times3 + -3\times5$ and $2\times4 + -3\times-2$ Condone incorrect notation if method is clear for this mark only				
		A1	сао					

Paper: 1MA1	Paper: 1MA1/2F					
Question	Answer	Mark	Mark scheme	Additional guidance		
27	35.3	P1	for starting the process to find length of third side of triangle, eg $9^2 - 6^2$ (=45) or $6^2 + x^2 = 9^2$			
		P1	for $\sqrt{9^2 - 6^2}$ or $\sqrt{81 - 36}$ or $\sqrt{45}$ or $3\sqrt{5}$ (= 6.7) or $r^2 = 45$			
		P1	for stating or using $\pi \times [radius]^2 \div 4$	[radius] is any value		
		A1	for answer in range 35.2 to 35.4	If an answer in the range 35.2 to 35.4 is given in the working space then incorrectly rounded, award full marks No working, answer only no marks		
28	24	M1	for a complete method eg $360 \div 15$ (=24)	If extra steps are shown do not award this mark.		
		A1	cao			
29	2	B1	cao			

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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.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below: Angles: $\pm 5^{\circ}$ Measurements of length: ± 5 mm

PAPE	R: 1M	A1/2F	
Que	stion	Modification	Mark scheme notes
3		The letter <i>e</i> changed to <i>n</i> .	Standard mark scheme but note the change in letter.
5		Wording added "Here is a list of seven numbers."	Standard mark scheme
7		Wording added "Look at the table and the diagram for Question 7 in the Diagram Book." Wording "Here are their marks for the test" removed and replaced with "Their marks for the test are shown in the table." Wording "George drew this bar chart to show the marks they got" removed and replaced with "George drew the bar chart in the Diagram Book to show the marks they got." Table enlarged. Diagram enlarged. Shading changed to dotty shading.	Standard mark scheme
8	(a)	Wording added "Look at the diagram for Question 8(a) in the Diagram Book." Wording "ABC is a straight line" removed and replaced with "It shows a straight line ABC. Two angles are marked x and 150°." Diagram enlarged. Angles moved outside of the angle arcs, and the arcs have been made smaller. Braille only: The top of the line labelled D. A description added stating the angles shown. Wording added "Two angles are marked x° and 150°. ABD is marked x° . CBD is marked 150°."	Standard mark scheme

PAPER: 1MA1/2F				
Question		Modification	Mark scheme notes	
8	(b)	Wording added "Look at the diagram for Question 8(b) in the Diagram Book. It shows a right angle and an angle of 280°". Diagram enlarged. Right angle made thicker. Angle moved outside of the angle arc, and the arc has been made smaller.	Standard mark scheme	
9		Wording added "Look at the diagram for Question 9 in the Diagram Book." Wording "This scale can be used" removed and replaced with "It shows a scale which can be used to change between kilometres and miles." Diagram enlarged. Scale markings made longer and thicker. Frame removed in part (b).	Standard mark scheme	
11		Wording added "Look at the diagram for Question 11 in the Diagram Book." Wording "Here is a cuboid" removed and replaced with "It shows a cuboid. It has length 15 cm, width 10 cm and height 4 cm" Diagram enlarged. "15 cm" label moved to the left of the cuboid. Braille only: Model provided.	Standard mark scheme	
14		Wording added "Look at the diagram for Question 14 in the Diagram Book. It is an incomplete pie chart." "The table below" Table enlarged. The "number of goals" column widened. Diagram enlarged to allow for use of specialist equipment. Solid dot placed at centre of pie chart. 10° markings added to the pie chart.	Standard mark scheme	
15		Letter <i>x</i> changed to letter <i>w</i> . Wording added "Given that".	Standard mark scheme but note the change in letter.	
17		Wording added "Look at the information for Question 17 in the Diagram Book." Information enlarged. Frame removed.	Standard mark scheme.	
18		Cut out shape provided for all candidates. Wording added "Look at the diagram for Question 18 in the Diagram Book. It shows triangle A and triangle B on a grid. A cut out shape may be available if you wish to use it." Diagram enlarged. Shading changed to dotty shading. Triangles labelled "triangle A" and "triangle B." Labels moved above the triangles.	Standard mark scheme	

PAPER: 1MA1/2F				
Question		Modification	Mark scheme notes	
22		Wording added "Look at the diagram for Question 22 in the Diagram Book. It shows an incomplete Venn diagram." Diagram enlarged. Labels "set A" and "set B" moved above the circles. Braille only: The Venn diagram labelled (i) to (iv).	Standard mark scheme	
24	(a)	Wording added "There are four spaces to fill." Table enlarged and turned to vertical format.	Standard mark scheme	
24	(b)	Wording added "Look at the diagram for Question 24(b) in the Diagram Book. It shows a grid." Diagram enlarged. Small squares removed and intermediate lines added.	Standard mark scheme	
25		Wording added "Look at the diagram for Question 25 in the Diagram Book. It shows a right-angled triangle ABC." Triangle labelled ABC. Wording added "Angle ABC is a right angle, Angle ACB = 34° , AB = x mm, AC=178 mm." Diagram enlarged. Right angle made thicker. Angle moved outside of the angle arc, and the arc has been made smaller.	Standard mark scheme	
27		Wording added "Look at the diagram for Question 27 in the Diagram Book." Wording "The diagram shows…" removed and replaced with "It shows…" Wording added "AC = 9 metres, AB = 6 metres" Wording added "Angle BCD=90°". Diagram enlarged. Right angles made thicker.	Standard mark scheme	

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