



Mark Scheme (Results)

November 2020

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

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November 2020

Publications Code 1MA1_2F_2011_MS

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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 $2 \times 6 (=12)$ 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	$\frac{37}{100}$	B1	or any other equivalent fraction	
2	29 000	B1	cao	
3	$6e$	B1		
4	25	B1	cao	
5	27	B1	cao	
6	Yes with supporting calculations	M1 M1 C1	<p>for ONE correct time conversion seen or used eg 105 (mins) is 1 (hr) 45 (mins) or $16\ 45 - 14\ 30 = 2\ \text{hr}\ 15\ \text{mins}$ or $14\ 30 + 1\ (\text{hr}) + 45(\text{mins})$</p> <p>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 $16\ 45 - 14\ 30 = 2\ \text{hr}\ 15\ \text{mins}$ and $105 + 20 = 125\ \text{mins}$ or adding 105 to 14:30 (= 16 15) and $1645 - "16\ 15" = 30$</p> <p>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)</p>	<p>May be implied by a correct calculation $1\ \text{hr} = 60\ \text{mins}$ is not enough for this mark</p> <p>Intention to do the correct calculation or calculations is enough for this mark Accept any sensible time notation throughout (pm is not required)</p> <p>Yes may be implied by a statement</p>

Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
7	Two reasons	C2 (C1)	<p>for two correct reasons</p> <p>for one correct reason)</p> <p>Acceptable examples</p> <p>No label for mark</p> <p>The vertical axis jumps from 0 to 71</p> <p>The bars are not all the same width</p> <p>Toms bar is twice as wide as the others</p> <p>No axes</p> <p>Toms bar should not take up 4 squares</p> <p>Toms bar shaded 2 not 1 block</p> <p>Tom has 2 bars shaded but the others only have one bar shaded</p> <p>It is not labelled</p> <p>Tom has gone over 2 squares</p> <p>Toms bar is bigger than the others</p> <p>Toms bar is not correct</p> <p>The numbering is not correct</p> <p>Not acceptable examples</p> <p>There is no title</p> <p>Different sized gaps between the bars</p> <p>The bars are not symmetrical</p> <p>The bars are not the same size</p>	<p>Allow if one reason is fully correct and the other reason is not.</p> <p>For column accept strip, bar, block, line, cubes in an unambiguous explanation</p>

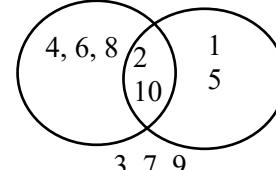
Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
8 (a)(i) (ii) (b)	30 Reason Explanation	B1 C1 C1	<p>cao</p> <p>reason, eg <u>angles</u> on a straight <u>line</u> add up to 180°</p> <p>for explanation eg the two angles don't add up to 360</p> <p>Acceptable examples</p> <p>$90 +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

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

Paper: 1MA1/2F					
Question	Answer	Mark	Mark scheme	Additional guidance	
15 (a)	-13	M1 A1	for substitution eg 3×5 and 4×-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 P1 A1	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) 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	It is possible to award P0P1 on this question Accept 66% or better used for $\frac{2}{3}$ May be seen in parts	

Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
17	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 $30 + 30 + 30 + 30 (=120)$ and $24 + 24 + 24 + 24 + 24 (=120)$ 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	This mark cannot be awarded if the supporting work has an arithmetic error An answer only and no working is no marks
	9 : 2	M1	SCB1 for an answer of 10 supported by working 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: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
19	$\frac{3}{10}$	P1 A1	for a process to find three amounts in the correct proportions, eg $R = 1$, $L = 3 \times 1 = 3$, $A = 2 \times 3 = 6$, or $R : L : A = \frac{1}{6} : 0.5 : 1$ oe or $L=3R$, $L=\frac{A}{2}$ or $L=3R$, $2L=A$ for $\frac{3}{10}$ or equivalent fraction	Relationship could be given in algebraic form or in ratio form, using fractional comparison or using their own figures Award P1 for correct answer not given as a fraction
20	1.75	P1 P1 P1 A1	for an initial process eg $1.80 \div 12 (=0.15)$ or $1.80 \div 3 (=0.6)$ 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” $\times 7 (=1.05)$ for finding the price of one pen eg “0.05” $\times 7 (=0.35)$ or “4.2” $\div 12 (=0.35)$ or $7 \div “20” (=0.35)$ or “2.3.... $\times “0.15” (=0.35)$ or “1.05” $\div 3 (=0.35)$ cao	Accept $1.8 \div 12 = 15$ (p) They can work in pounds or pence
21 (a)	$2 \times 2 \times 3 \times 7$	M1 A1	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 for $2 \times 2 \times 3 \times 7$ oe	Condone the use of 1 Accept $2^2 \times 3 \times 7$
(b)	420	M1 A1	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 or $2 \times 2 \times 3 \times 5 \times 7$ oe	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: 1MA1/2F				
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  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
		M1	for correct numbers in at least two regions	
		A1	for all regions correct	
	(b)	$\frac{2}{10}$	M1 for $\frac{a}{10}$ where $0 < a < 10$ and a is an integer or $\frac{2}{b}$ where $b > 2$ and b is an integer or ft diagram	
		A1	$\frac{2}{10}$ oe or ft diagram	
				Accept any equivalent fraction, decimal form 0.2 or percentage form 20%
23	No (supported)	P1	for $3000 \div (2 + 3) (= 600)$	Full method to compare No may be implied by a statement No working, answer only no marks
		P1	for “600” $\times 2 (= 1200)$ or “600” $\times 3 (= 1800)$ or “600” $\div 6 (= 100)$ or “600” $\div 20 (= 30)$	
		P1	for “1200” $\div 6 (= 200)$ or “1800” $\div 20 (= 90)$ or “100” $\times 2 (= 200)$ or “30” $\times 3 (= 90)$	
		P1	for “90” $\div (“200” + “90”) \times 100 (= 31.0...)$ oe or “90” $\div (“200” + “90”) (= 0.31...)$ or $0.3 \times (“200” + “90”) (= 87)$ oe	
		C1	correct conclusion and fully correct calculations with accurate figure eg No and 87 or No and 31% or No and 0.31	

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 A1	ft (dep on B1) for plotting at least 4 of the points from their table correctly 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 A1	for $\sin(34) = \frac{x}{178}$ oe or alternative method to find x 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 A1	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 $\begin{pmatrix} x \\ 14 \end{pmatrix}$ cao	May be seen in two separate calculations eg $2 \times 3 + -3 \times 5$ and $2 \times 4 + -3 \times -2$ Condone incorrect notation if method is clear for this mark only

Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
27	35.3	P1 P1 P1 A1	for starting the process to find length of third side of triangle, eg $9^2 - 6^2 (=45)$ or $6^2 + x^2 = 9^2$ for $\sqrt{9^2 - 6^2}$ or $\sqrt{81-36}$ or $\sqrt{45}$ or $3\sqrt{5}$ ($= 6.7..$) or $r^2 = 45$ for stating or using $\pi \times [\text{radius}]^2 \div 4$ for answer in range 35.2 to 35.4	[radius] is any value 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 A1	for a complete method eg $360 \div 15 (=24)$ cao	If extra steps are shown do not award this mark.
29	2	B1	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.

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	
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.	
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).	
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.	
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.	
15		Letter x changed to letter w . Wording added “Given that”.	
17		Wording added “Look at the information for Question 17 in the Diagram Book.” Information enlarged. Frame removed.	
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.	

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

