Mark Scheme (Results)

November 2020

Pearson Edexcel GCSE
In Mathematics (1MA1)
Foundation (Calculator) Paper 3F

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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

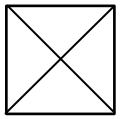
Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
1	3	B1	cao	
2	8	B1	cao	
3	$\frac{40}{100}$	B1	for $\frac{40}{100}$ or any equivalent fraction	
4	6.25	B1	for 6.25 oe	
5	–6,–4,–3, 0,1, 2,7	B1	for –6, –4, –3, 0, 1, 2, 7	accept reverse order
6 (a)	5	B1	cao	
(b)	5, 6	B1	cao	
7	$\frac{3}{4}$	M1	for method to find fraction shaded, eg 12 out of 16 squares shaded or unsimplified answer eg $\frac{12}{16}$ **or** for $1-\frac{1}{4}$ oe or for an answer of $\frac{1}{4}$	May be expressed in a wide variety of ways.
		A1	cao	
8	78	P1	for process to find the number of boxes, eg 200 ÷ 25 (=8) or to find the cost of each tile, eg 9.75 ÷ 25 (=0.39)	Could work in £ or in pence for P marks
		P1	for complete process, eg "8" × 9.75, "0.39" × 200	
		A1	cao	

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
9 (a)	30	B1	cao	
(b)	42	B1	cao	
(c)	$\frac{1}{20}$	B1	for $\frac{\mathbf{1}}{\mathbf{20}}$ or any equivalent fraction or 0.05	
10 (a)	80	B1	cao	
(b)	8	B1	cao	
(c)	Yes and reason	C1	for yes and reason **Acceptable examples** Yes, because 27 is greater than 7 Yes, because the drop is 20 more Yes, the gradient is steeper (in the first 3 mins) and is then less steep (in the last 3 mins) Yes, because the drop is 20 less in the last 3 mins Yes, because the drop is more **Not acceptable examples** No …. Yes, because the drop is 20 less	"Yes" may be implied from wording Ignore any references to actual readings from the graph
11	110	M1	for use of angles in a quadrilateral add to 360°, eg 360 – 130 – 95 – 65 (= 70)	May be seen in diagram or as a sum to 360°.
		M1	for 180 – "70" or for (130 + 95 + 65) – 180	(130 + 95 + 65) – 180 gains M2
		A1	cao	

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
12 (a)(i)	20, 15	B1	cao	Working may be seen near the sequence
(ii)	11	B1	cao	Working may be seen near the sequence
(b)	39	B1	cao	
13	34	M1	for start to method, eg 10 – 4 (= 6) or 7 – 5 (= 2) **or** 10 + 7 + 4 + 5 (=26) **or** (10 + 7) × 2	6, 2 may be seen on diagram
		A1	cao	
14 (a)	$5x + y$	M1	for method to collect terms, eg $5x$ or y	May be seen in working. Accept if no ambiguity. Accept $1y$.
		A1	cao	
(b)	3	M1	for subtracting 7 from both sides or dividing each term by 5 as a first step, eg $5p = 15$ or $5p = 22 - 7$ or $\frac{5p}{5} + \frac{7}{5} = \frac{22}{5}$	Must be carried out, not just intention. Division by 5 must be all terms.
		A1	cao	

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
15 (a)	shop A from correct figures	P1	for start of process to find the number of packs needed from at least one shop, eg 30 ÷ 4 (= 7.5 or 8) **or** 30 ÷ 6 (= 5)	
		P1	for process to find cost of batteries from at least one shop, eg (30 ÷ 4) × 1.6 (= 12.8 or 12) **or** (30 ÷ 6) × 2.7 (= 13.5)	
		P1	for a complete process to find the cost of batteries from both shops using whole packs eg "8" × 1.6 (= 12.8) **and** "5" × 2.7 (= 13.5)	"8" must come from "7.5" rounded up
		C1	for shop A with both 12.8(0) and 13.5(0)	
(b)	No effect (supported)	C1	(ft) for "has no effect" with reason **Acceptable examples** No, since A is 12 and B is 13.5(0) No, since A is just 80(p) less and B is the same. No, since A is less and B has not changed. No, since A is 1.5(0) less No, since 40(p) is less than 45(p) No, as batteries in B are 5p more **Not acceptable examples** Yes …. There is no change (unsupported) No, since A is less (incomplete)	If figures are given as part of the answer they must be correct

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
16 (a)	$\frac{5}{11}$	M1	for $\frac{5}{n}$ where $n > 5$ or $\frac{m}{"11"}$ where $m < 11$	where "11" comes from 5+2+4
		A1	for $\frac{5}{11}$ oe	Accept any equivalent fraction, decimal form 0.45(45...) or percentage form 45(.45...)%
(b)	0.7	B1	for 0.7 oe	Accept any equivalent fraction eg $\frac{7}{10}$ or percentage form eg 70%
17	accurate drawing	M1	for drawing a side of length 6cm	
		A1	for correct triangle	
18	258 to 275	M1	for taking a correct reading from the graph that shows conversion of an amount in $ to £	
		M1	for a complete method eg attempts to read from the graph at using numbers that sum to 345 **and** finds the sum of their readings eg 6 × 50 + 45	Must be a complete method to get to 345
		A1	for answer in the range 258 to 275	Condone incorrect money notation if the meaning is clear
19 (a)	140	M1	for complete method eg 56 ÷ 40 × 100	May be seen in different ways, eg 2.5 × 56
		A1	cao	
(b)	32	M1	for method to find percentage, eg $\frac{18}{56} \times 100$ (=32.14…)	
		A1	for an answer in the range 32 to 32.2	

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
20	4	P1 P1 P1 A1	for start to process, eg 65 + 100 + 3 × 5 + 1 × 20 (= 200) **or** 3 × 80 (= 240) for 65 + 100 + 3 × 5 + 1 × 20 (= 200) **and** 3 × 80 (= 240) **or** "240" – 100 – 65 (=75) for process to find value of £10 notes in Carl's wallet, eg "240" – "200" (= 40) **or** for "75" – 3 × 5 – 1 × 20 (=40) cao	May be part of an algebraic statement eg 65 + 100 +35 + 10*x* NB 80 – 35 (=45) leading to 4 gets 0 marks
21 (a)	25	B1	cao	
(b)	Simon with reason	C1	for Simon with reason **Acceptable examples** Simon; he uses more trials Simon; he does 10 times more Simon, since 100 > 10 Simon because he threw it more frequently / often Simon since he has a larger range of results **Not acceptable examples** Paula …. Simon (unsupported) Simon because he threw it 100 times He gets more tails	If figures are given as part of the answer they must be correct
22		M1 A1	for square, side 6 cm or complete plan with incorrect scale cao	Do not award if the 6 cm square is included with a triangle attached externally (eg elevation)

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
23 (a)	n^8	B1	cao	
(b)	cd^3	M1	for partial simplification, eg c or d^3	May be seen as simplification in original fraction
		A1	for cd^3	Accept c^1d^3
(c)	$x > \frac{14}{5}$	M1	for $5x > 14$ or $5x = 14$ or critical value, $\frac{14}{5}$ oe	Must see carried out correctly, ie at least $5x > 7 \times 2$ not just intention seen. Allow other signs for this mark.
		A1	$x > \frac{14}{5}$ or $x > 2\frac{4}{5}$ or $x > 2.8$	
24	2 hours 45 minutes	P1	for $30 \div 24$ (= 1.25) or $12 \div 8$ (= 1.5)	May be written in hours and/or minutes
		P1	for finding the sum of their two times eg "1.25" + "1.5" (= 2.75) or 165 (minutes)	or 3 h 15 min or 2 h 75 min
		A1	cao	
25	9.35, 9.45	B1	for 9.35 in the correct position	
		B1	for 9.45 in the correct position	Accept $9.44\dot{9}$ oe or 9.4499… oe

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
26 (a)	Yes (supported)	P1	for start of process, eg 5 × 9 (= 45) **or** 10 × 14 (= 140) **or** 5 × 2 (= 10 (kg)) **or** 3 ÷ 2 (= 1.5 (boxes))	Accept values rounded or truncated to 1dp in both (a) and (b). Ignore units
		P1	for process using ratio of areas, eg "140" ÷ "45" (= 3.1...) **or** for using ratio of amount of seed eg "10" ÷ 3 (= 3.3...) **or** for finding coverage for 1 kg of grass seed, eg "45" ÷ 3 (=15 (m^2))	
		P1	for process to find amount of seed needed, eg "140" ÷ "45" × 3 (= 9.3...kg) **or** "140" ÷ "45" × "1.5" (= 4.6...(boxes)) oe **or** "15" × 2 (= 30 (m^2 per box)) **and** "140" ÷ "30" (= 4.6...(boxes)) **or** for process to find area that can be seeded, eg "10" ÷ 3 × "45" (= 150 (m^2)) **or** "140" ÷ "10" (= 14 (m^2)) oe	Accept 9.4 Accept 4.7
		C1	for "Yes" supported by correct figures eg 4.6...(and 5), **or** 9.3...and 10 **or** 150 and 140 (or 140 to 148.5) **or** 15 and 14	
(b)	Yes, (does not have enough) (supported)	C1	for reasoning supported with correct figures, eg does not have enough seed and compares 9 (kg) with 9.3…(kg) or 4.5 (boxes) with 4.6… (boxes) or 135 (m^2) with 140 (m^2) or 14 (m^2) with 15 (m^2) ft from (a)	Values used in (a) do not need repeating in (b) as long as intention is clear

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
27 (a)	$\frac{1}{3}, \frac{2}{3}$ $\frac{1}{3}, \frac{2}{3}, \frac{1}{3}, \frac{2}{3}$	B2	six fully correct probabilities	Accept any equivalent fraction, decimal form 0.33(3...) and 0.66(6...) or 0.67 or percentage form 33(.3...)% and 66(.6...)% or 67%
		(B1	at least 2 correct probabilities)	
(b)	$\frac{2}{9}$	M1	for $\frac{1}{3} \times \frac{2}{3}$ oe or ft probabilities from diagram	
		A1	for $\frac{2}{9}$ oe	Accept any equivalent fraction, decimal form 0.22(2...) or percentage form 22(.2...)%
28 (a)	−2, 4	B1	cao	
(b)	0.55 to 0.65, 3.35 to 3.45	M1	for correct method, eg marking intercepts with *x*-axis or one correct answer or both solutions given as a coordinate eg (0.6, 3.4) or (0.6, 0) (3.4, 0)	If answers are stated as coordinates, award M1 for both coordinates and M0 for one coordinate.
		A1	for answers in the ranges 0.55 to 0.65 and 3.35 to 3.45	With no extras
29	96	M1	for a complete process to find the volume eg $6 \times 4 \times 10 \div 2$ (= 120)	
		M1	for a complete process, eg $(6 \times 4 \times 10 \div 2) \times 0.8$	
		A1	cao SC B1 for 192	

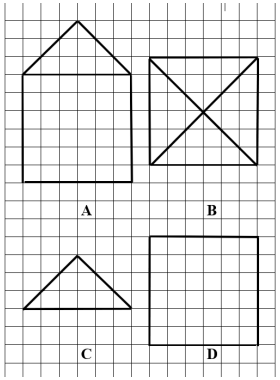
Modifications to the mark scheme for Modified Large Print (MLP) papers: 1MA1 3F

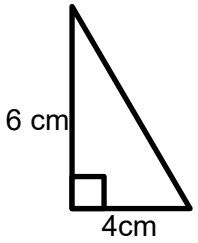
Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5º
Measurements of length: ±5 mm

PAPER: 1MA1/3F			
Question		**Modification**	**Mark scheme notes**
5		The wording "Write the following numbers…" removed and replaced by "Write the following seven numbers…".	Standard mark scheme
6		Wording added 'Look at the diagram for Question 6 in the Diagram Book. It is a graph which shows...'. Diagram enlarged; bars made wider. Axes labels moved above the vertical axis and to the left of the horizontal axis. An extra column added and the right axis labelled. Braille only: diagonal shading on the bars.	Standard mark scheme
7		Wording added 'Look at the diagram for Question 7 in the Diagram Book. It shows a shape.' Diagram enlarged. Shading changed to dotty shading.	Standard mark scheme
10		Wording added 'Look at the diagram for Question 10 in the Diagram Book. It is a graph which shows…'. Diagram enlarged; graph line made thicker. Right axis labelled. Small squares removed. Axis labels moved above the vertical axis and to the left of the horizontal axis.	Standard mark scheme
11		Wording added 'Look at the diagram for Question 11 in the Diagram Book'; 'Angle PQR = 130°, Angle QRS = 65°, Angle SPQ = 95°, Angle RST = y°' Angle labels moved outside angle arcs and angle arcs made smaller. Shape enlarged.	Standard mark scheme

PAPER: 1MA1/3F			
Question		**Modification**	**Mark scheme notes**
13		Wording added 'Look at the diagram for Question 13 in the Diagram Book. It shows a shape. Four sides of the shape are labelled 4 cm, 5 cm, 10 cm and 7 cm. All five marked angles are right angles'. Shape enlarged. Arrows removed. Braille only: Label shape ABCDEF. Wording added 'AB = 4cm, BC = 5cm, EF = 10cm, FA = 7cm.'	Standard mark scheme
14	(a)	The letter *x* changed to the letter *w*.	Standard mark scheme but note the change in letter
15		Wording added 'Look at the information for Question 15 in the Diagram Book'. Diagram enlarged to fit the text.	Standard mark scheme
17		Wording added 'Look at the diagram for Question 17 in the Diagram Book.' Braille: The wording 'of length 8 cm, 6 cm and 6 cm' removed and replaced by 'of length 9 cm, 7 cm and 7 cm' to make the question accessible.	M1 for drawing a side of length 6 cm (±5mm) A1 for correct triangle with two added sides each of length 6cm (±5mm) Braille: applies to 7 cm lengths.
18		Graph line moved to go through (15, 20), (30,40) and (45,60). Wording added 'Look at the diagram for Question 18 in the Diagram Book.' Wording 'This graph…' changed to 'It shows a graph that…' Diagram enlarged. Axis labels moved above the vertical axis and to the left of the horizontal axis. Right axis labelled. Open headed arrows. Small squares removed.	Standard mark scheme but for A1 allow answers in the range 245 to 275
19		Wording added 'Look at the information for Question 19 in the Diagram Book. It shows the four types…'. Left align the sandwiches.	Standard mark scheme

PAPER: 1MA1/3F			
Question		**Modification**	**Mark scheme notes**
22		Model provided for all candidates with a base. Wording added 'Look at the diagram for Question 22 in the Diagram Book. You may be provided with a model.' Wording 'Here is a solid…' changed to 'They show a solid…' Diagram enlarged. The wording 'On the centimetre grid, draw the plan of this solid' removed and replaced by 'Now look at the three shapes labelled A, B, C and D in the Diagram Book. Which shape represents the plan of the solid? One square length on the grid represents 1 cm on the solid'. Grid provided with the four different plans.  	B2 for shape B (B1 for shape D)
23	(b)	The letter *c* changed to *p*. The letter *d* changed to *q*.	Standard mark scheme but note the change in letters.
27		Wording added 'Look at the diagrams for Question 27 in the Diagram Book.' Diagrams enlarged. Spinner headings moved above the spinners. Spinners straightened, stick replaced with black dot. Wording added 'There are six spaces to fill.'	Standard mark scheme

PAPER: 1MA1/3F			
Question		**Modification**	**Mark scheme notes**
28	(a)	Wording added 'Look at the diagram for Question 28(a) in the Diagram Book. It shows the graphs of $5x - 9y = -46$ and $y = -2x$' Diagram enlarged and turned landscape. Label '$y = -2x$' moved to the other end of the graph line.	Standard mark scheme
28	(b)	Wording added 'Look at the diagram for Question 28(b) in the Diagram Book. It shows the graph of $y = x^2 - 4x + 2$.' Diagram enlarged. Grid cut at y=8. Small squares removed. Graph line made thicker.	Standard mark scheme but for answers in the ranges 0.5 to 0.7 and 3.3 to 3.5
29		Wording added 'Look at Diagram 1 and Diagram 2 for Question 29 in the Diagram Book. You may be provided with a model'. Wording 'The diagram shows…' changed to 'Diagram 1 shows…' Diagrams enlarged. g changed to grams. Wording added 'Diagram 2 shows one of the triangular faces.' Diagram 2 created as shown:  	Standard mark scheme

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