Mark Scheme (Results)

Summer 2019

Pearson Edexcel GCSE (9 – 1)
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 × 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” × 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] × 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	3	B1	cao	
2	73	B1	cao	
3	80	B1	cao	
4	23 or 29	B1	for 23 or 29	Do not award if any other numbers are included, but award if both 23 and 29 are shown.
5	11	B1	cao	
6	3000	P1 P1 P1 A1	for a correct step for travel or/and spending money eg 4 × 150 (=600) or 4 × 250 (=1000) or 150 + 250 (=400) for an appropriate step with the hotel price eg 7× 50 (=350) or 4 × 50 (=200) for combining at least two "costs" for 4 people for 7 nights eg 4 × 150 + 4 × 250 (=1600) or 4 × 150 + 7 × 4 × 50 (=2000) cao	Can be embedded eg 4×7×150 Can be 4×7×50 Must be correct process for two costs eg not 4 × 150 ×7 but may be 2 correct costs and one incorrect

Paper: 1MA1/1F					
Question		**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
7	(a)	7	P1	for process to find the number of blue flowers, eg 30 – 8 – 10 – 5	Allow one error
			A1	cao	
	(b)	white	B1	for white or ft from (a)	Must be seen clearly for ft
8		$\frac{1}{4}, \frac{1}{3}, \frac{1}{2}, \frac{7}{12}, \frac{3}{4}$	M1	converts fractions to a common equivalent form, at least two conversions correct eg fractions with a denominator of 12, decimals or percentages, **or** any 4 fractions in correct order	0.25, 0.33(…), 0.5, 0.58(…), 0.75
			A1	cao	Accept list in reverse order for this mark Accept expressed in equivalent decimals or percentages or any other appropriate from or mixed forms
9	(a)	6	M1	for method to find distance, eg 4 × time difference **or** 30 mins = 2 miles	10.30 am – 9 am may be seen as 1.5(hr) or 1(hr) 30 (min) or 90 (min) or $\frac{3}{2}$(hr) or $1\frac{1}{2}$ (hr)
			A1	cao	
	(b)	12 35 pm	M1	for method to add time using consistent units eg 11 20 **or** 50 + 75 **or** 2 hours 5 mins	
			A1	12 35 pm or 12 35 (h)	Allow 12 35 but not 12 35 am
10	(a)	4	B1	cao	
	(b)	8	B1	cao	
	(c)	3	M1	for a correct first step eg subtracting 2 from both sides **or** dividing all terms by 6	Division by 6 must be ALL terms
			A1	cao	

Paper: 1MA1/1F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
11	4292	M1	for complete method with relative place value correct including addition of all the appropriate elements of the calculation	Working 592 3700 4292 **7** **4** 4 | 3 / 5 | 2 / 0 | **5** 2 | 5 / 6 | 3 / 2 | **8** 9 2 | | 70 | 4 | | 50 | 3500 | 200 | | 8 | 560 | 32 | 3500 + 560 + 200 + 32 = 4292
		A1	cao	

Paper: 1MA1/1F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
12 (a)	40	M1	for using 90, eg 90 – 25 – 25	90 – 25 is enough for this mark
		A1	cao	
(b)(i)	*b* or *d* with reason	B1	for *b* or *d* (or both)	A correct answer can be implied by writing 125 immediately next to *b* or *d* (or both) as long as 125 is not written next to an incorrect angle.
		C1	(dep) for appropriate reason(s) vertically <u>opposite angles</u> are equal <u>vertically opposite</u> angles are equal <u>corresponding</u> angles are equal <u>alternate</u> angles are equal <u>angles</u> on a straight <u>line</u> add up to 180	Underlined words need to be shown; reasons need to be linked to their method; any reasons not linked, do not credit. There should be no incorrect reasons given.
(ii)	reason	C1	for correct explanation using 360 or a full explanation using angles around a point **Acceptable examples** Because 360 around a point 360 – 125 = 235 125 + 235 = 360 Because they add to 360 **Not acceptable examples** Because b is 125	Using 360 appropriately and not in an incorrect setting
13	10*x*	B1	for 10*x* oe	

Paper: 1MA1/1F					
Question		**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
14	(a)	14	B1	for 14	
	(b)	Explanation	C1	for explanation **Acceptable examples** she divided by 2 but should have multiplied by 2 there are 96 halves in 48 $48 \times 2 = 96$ **Not acceptable examples** $24 \times 2 = 48$	
15	(a)	8	B1	cao	
	(b)	125	B1	cao	
16	(a)	$10m - 15$	B1	for $10m - 15$ oe	Accept any reversing of order in the expression
	(b)	$3(n + 4)$	B1	for $3(n + 4)$ oe	Accept any answer in reverse order
17	(i)	Maxine with bigger number of trials	C1	for Maxine with reason **Acceptable examples** She throws the coin more times than Stuart **Not acceptable examples** Maxine throws it 50 times She gets more Tails Stuart (he) ……	
	(ii)	$\frac{37}{60}$	B1	for $\frac{37}{60}$ oe	

Paper: 1MA1/1F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
18	Accurate figures with supportive working	M1	for a correct first step eg 600 ÷ 30 (= 20) **or** 120 ÷ 30 (=4) **or** 600 × 120 (=72 000) **or** 30 × 30 (=900)	Could work in m or cm
		M1	for finding an appropriate cost 2.5 × "20" (=50) **or** 2.5 × "4" (=10) **OR** number of tiles required "72 000" ÷ "900" (=80) **or** "4" × "20" (=80) **OR** number they can afford 220 ÷ 2.5 (=88)	Units must be consistent
		M1	for full **method** to get figures to compare eg cost to tile whole area eg "80" × 2.5 **OR** number of tiles they need and number they can afford eg "72 000" ÷ "900" and 220 ÷ 2.5	
		A1	for 200 **OR** 80 and 88 **OR** 72 000 and 79 200 **OR** 132 (cm) **OR** 660 (cm) SC B2 for answer of 60	

Paper: 1MA1/1F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
19 (a)	$\frac{7}{15}$	M1	for suitable common denominator with at least one fraction out of two correct, eg $\frac{10}{15} - \frac{3}{15}$ oe	
		A1	oe	
(b)	$\frac{1}{2}$	M1	for method to multiply fractions, eg $\frac{2\times3}{3\times4}$, $\frac{8\times9}{12\times12}$ **or** to simplify, $\frac{1}{3}\times\frac{3}{2}$ or $\frac{2}{1}\times\frac{1}{4}$ **OR** for an answer equivalent to $\frac{1}{2}$ (unsimplified) eg $\frac{2}{4}$, 0.5	
		A1	cao	
20	12.5	P1	starts to process the problem, eg assigns lengths of sides to squares **A** and **B** in the ratio 1 : 2 oe **and** calculates at least one area **OR** fits 4 of square **A** into square **B** **OR** for ratio of areas of squares eg 1 : 4 oe	May be seen in a diagram
		P1	for process to express relationship between area of shaded triangle and area of square B, eg 1 : 8, $\frac{1}{8}$ **OR** 0.125	May be seen in a diagram with figure given
		A1	for 12.5 oe	

Paper: 1MA1/1F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
21	14	P1 P1 P1 A1	for process to find total number of boys, 40 – 22 (= 18) **OR** the number of girls who travel by bus 10 – 6 (= 4) for process to find the number of girls who cycle to school 22 – "4" – 9 (=9) **OR** the number of boys who walk to school "18" – 6 – 7 (= 5) full process to find the total number of students who walked to school eg "5"+ 9 or 40 – (6+ 7 + "4" + "9") cao	<table><tr><td></td><td>W</td><td>C</td><td>B</td><td></td></tr><tr><td>boy</td><td>5</td><td>(7)</td><td>(6)</td><td>18</td></tr><tr><td>girl</td><td>(9)</td><td>9</td><td>4</td><td>(22)</td></tr><tr><td></td><td>14</td><td>16</td><td>(10)</td><td>(40)</td></tr></table> Note 16 is 7+9 and 10 is 6+4 6+7 is 13 and 4+9=13 may be seen as intermediate steps
22 (a)	0.4, 0.4	P1 A1	for process to find sum of unknown probabilities, eg 1 – 0.2 (= 0.8) oe	Award mark for any two probabilities given that sum to 0.8, eg given in the table Accept any equivalent fraction or 40%
(b)	60	P1 A1	for complete process to find total number of cubes, eg 12 ÷ 0.2 **or** 12 × 5 **or** ("0.4" ÷ 0.2) ×12 + ("0.4" ÷ 0.2) ×12 + 12 **OR** states 0.1 = 6 **or** 0.4 = 24 cao	

Paper: 1MA1/1F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
23 (a)	600	P1	for starting process to calculate amount of flour eg 60 ÷ 15 (= 4) **or** 3 × 50 (= 150)	4 implied by 200g of sugar
		P1	for complete process eg $\frac{60}{15} \times$ "150"	
		A1	cao	
(b)	2	P1	for process to calculate amount of butter eg $\frac{60}{15} \times 2 \times 50$ (= 400)	
			OR for process to calculate the number of packs of butter needed eg [butter] ÷ 250	[butter] must be clearly stated or calculated, may be seen in part (a)
		A1	cao	2 must not come from incorrect working
24	18	M1	for listing factors of 72 and 90, at least 4 correct for each (with no more than 1 incorrect in each list), could be in factor pairs	Factors of 72: 1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36, 72 Factors of 90: 1, 2, 3, 5, 6, 9, 10, 15, 18, 30, 45, 90
			OR for the prime factors of 72 (2, 2, 2, 3, 3) **or** 90 (2, 3, 3, 5)	
		A1	for 18 or 2×3^2 oe	2, 3^2 is not enough, it must be a product
			SC B1 for answer of 6 or 9 if M0 scored	
25	sketch	M1	for sketch of a cylinder	Hidden edges may or may not be shown
		A1	sketch of cylinder, with dimensions shown	2 (cm) for radius or 4 (cm) for diameter and 5 (cm) for height

Paper: 1MA1/1F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
26	$c = -6$ $d = -1$	M1	for reflection in x-axis shown on diagram	Vertices (3, −2), (5, −2), (3, −5)
		A1	for $c = -6$ or $d = -1$	One correct value is M1A1 regardless of second value or diagram
		A1	for both $c = -6$ and $d = -1$ SCB2 for $c = -1$ and $d = -6$	
27	96	P1	for process to find the ratio of the number of pens of each colour sold, eg $2 \times 7 : 5 \times 3 : 6 \times 4$ (= 14 : 15 : 24)	Does not have to be seen as a ratio but all three needed
		P1	for process to find the proportion of green pens sold, eg $\frac{212}{"14"+"15"+"24"}$ **or** $\frac{"24"}{"14"+"15"+"24"}$	
		P1	for a complete process to find the number of green pens sold, eg $\frac{212}{"14"+"15"+"24"} \times$ "24" **or** $\frac{"24"}{"14"+"15"+"24"} \times 212$	P3 can be implied by the values 56, 60 and 96
		A1	cao	

Paper: 1MA1/1F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
28	8.5	P1	for process to use the area of *PQRS* to find the length of *PQ*, eg $10y = 45$ **or** $45 \div 10$ (= 4.5)	Sets up equation for area
		P1	for process to use the perimeter of *ABCD*, eg $2x + 2 \times$ "4.5" = 26 **or** $26 - 2 \times$ "4.5" (= 17) **or** $26 \div 2$ (= 13)	Uses perimeter of *ABCD*
		P1	for process to use length of *BC* to find length of *AB*, eg solves $2x + 2 \times$ "4.5" = 26 **or** $(26 - 2 \times$ "4.5"$) \div 2$ **or** "13" – "4.5"	
		A1	for 8.5 **or** $8\frac{1}{2}$	Accept $\frac{17}{2}$
29 (a)	1, –4	B1	cao	Brackets are given on the answer line, ignore any extra brackets seen
(b)	–1 and 3	B2	for both correct answers	
		(B1	for one correct solution or $(x + 1)(x - 3)$ or $(-1, 3)$)	

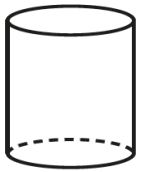
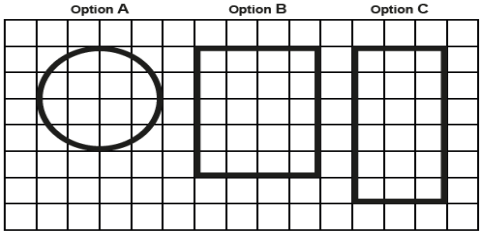
Modifications to the mark scheme for Modified Large Print (MLP) papers: 1MA1 1F

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

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

PAPER: 1MA1/1F			
Question		**Modification**	**Mark scheme notes**
6		Horizontal lines added underneath the information.	Standard mark scheme
7		Diagram enlarged. Right axis labelled. Graph lines made thicker. Axes labels moved to the left of the horizontal axis and above the vertical axis.	Standard mark scheme
8		Wording 'five' added.	Standard mark scheme
12(a)		Diagram enlarged. Wording added 'Two angles are marked 25°. One angle is marked x°.' Angles moved outside of angle arcs and angle arcs made smaller. Wording added 'Find the value of the angle marked x°.'	Standard mark scheme
12(b)		Diagram enlarged. Angles a, b, c, d, e changed to v, w, x, y, z. Wording added 'Angles v, w, x, y and z are marked on the diagram.' Angles moved outside of angle arcs and angle arcs made smaller. (ii) changed to "Explain why $v + w + x = 235$°"	Standard mark scheme with a, b, c, d, e changed to v, w, x, y, z.
18		Diagram enlarged. Measurements moved above/to the left of diagram. Wording changed to 'It shows a rectangular path, 600 cm long and 120 cm wide'. Braille only: Path labelled 'rectangular path' inside the shape.	Standard mark scheme

PAPER: 1MA1/1F			
Question		**Modification**	**Mark scheme notes**
20		Diagram enlarged. Shapes labelled ‘square A’ and ‘square B’. Labels moved above diagrams. Shading changed to dotty shading.	Standard mark scheme
22(a)		Wording added ‘There are two spaces to fill.’	Standard mark scheme

PAPER: 1MA1/1F			
Question		**Modification**	**Mark scheme notes**
25		Question changed. Model should be provided. Diagram 1  Diagram 2 Option A Option B Option C  Look at the diagrams for Question 25. You may be provided with a model. Diagram 1 and the model show a solid cylinder. They are not accurate. Look at Diagram 2 below Diagram 1. Diagram 2 shows three options labelled Option A, Option B and Option C on a grid of squares. Each square on the grid represents a one centimetre square. The cylinder is placed with its flat face on a surface. (a) Which of the options, A, B or C, shows the plan of the cylinder? (1 mark) (b) Remember: Each square on the grid represents a one centimetre square. Using Diagram 2, (i) write down the diameter of the cylinder. (ii) write down the height of the cylinder. (1 mark)	Mark scheme: (a) B1 for Option A Could indicated on the diagram eg by circling etc. Accept a description eg circle (b) B1 for (i) as 4 **or** (ii) as 3, 4, 5 or 6

PAPER: 1MA1/1F			
Question		**Modification**	**Mark scheme notes**
26		Diagram enlarged. Grid cut to make the axes from −7 to 7. Shading changed to dotty shading. Labels removed from inside the shapes. Shapes labelled as 'shape **A**' and 'shape **B**'. Wording added 'It shows shape **A** and shape **B** on a coordinate grid.' Question changed to: (a) Reflect shape **A** in the x-axis. Label the new shape **X**. (1 mark). (b) Shape **X** can be transformed to shape **B** by a translation $\begin{pmatrix} c \\ d \end{pmatrix}$ Find the value of c and the value of d. (2 marks)	Apply the standard mark scheme but in two stages: (a) B1 for showing the reflected shape **X** (need not be labelled if there is only one shape drawn). (b) B2 for $c = -6$ or $d = -1$ (B1 for one correct value or reverse order)
28		Diagram enlarged. Wording changed to 'It shows two rectangles, *ABCD* and *PQRS*.' Rectangle *PQRS* moved to lie landscape below *ABCD*. *PQRS* relabelled to follow clockwise vertex labelling convention prescribed in *ABCD*. Wording changed to 'PQ = 10cm', '$AD = PS$'. Braille only: rectangles labelled 'Rectangle 1' and 'Rectangle 2'.	Standard mark scheme but note the change in vertex labelling.
29		Diagram enlarged. Graph line made thicker.	Standard mark scheme

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