

Mark Scheme (Results)

Summer 2017

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.

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
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	Working	Answer	Mark	Notes
1		16	B1	cao
2		7.265	B1	cao
3 (a) (b)		56 _{ef} 12.5	B1 B1	cao oe
4		80	B1	cao
5		42	M1 A1	for showing method to work out 60% of 70, eg 0.6×70 or $(70 \div 10) \times 6$ (= 42) cao
6 (i)		$\times$ at $\frac{1}{2}$	B1	
(ii)		$\times$ at 0	B1	
7		No (supported)	P1 P1 C1	process to work with either cost of 3 sausages e.g. 3×2.30 (=6.9(0)) or division of a cost by 3 process to work with costs of at least 3 of bread rolls, bread rolls, ketchup, change, sausages e.g. $2 \times 1.50 + 1.60$ or $1.50 + 1.60 + 0.30$, or $10 - 1.50 - 1.60 - 0.30$ or $10 - 1.50 - 1.50 - 1.60$ E.g. No and (£)5.10 and (£)6.90 No and (£)5.40 and (£)6.90 No and (£)1.70 No and (£)11.50 or (£)11.80 or shows cost of sausages at £2.30 and cost of any 2 other items is greater than (or equal to) £10 NB can work in £ or p throughout. Condone 5.1 etc

Paper: 1MA1/1F				
Question	Working	Answer	Mark	Notes
8 (a)		$\frac{15}{32}$	B1	oe
(b)		$\frac{5}{12}$	M1 A1	uses a correct common denominator with at least one correct matching numerator e.g. $\frac{8}{12}$, $\frac{3}{12}$
9		126	P1 P1 P1 A1	for working with time, eg $10 - 8(=2)$ or $12 \times 8(=96)$ or $12 \times 10(=120)$ for working with overtime, eg $12 \div 4(=3)$ or $1.25 \times "2" (=2.5)$ or $0.25 \times "2" (=0.5)$ or $1.25 \times 12(=15)$ for a complete process, eg $(10 - 8) \times \text{overtime rate} + 12 \times 8$ or $12 \times 10 + "0.5" \times 12$ cao
10		1 : 10	M1 A1	for $12 : (20 \times 6)$ oe or $10 : 1$ or 1 with 10 in incorrect notation cao

Paper: 1MA1/1F				
Question	Working	Answer	Mark	Notes
11 (a)		36	M1 A1	demonstrates the start of a method that could lead to the answer, eg recognition of square numbers, or use of differences, or diagrams cao
(b)		80	M1 A1	demonstrates the start of a method that could lead to the answer, eg repeated addition of 4, or 20×4 cao
(c)			C2 (C1)	conclusion with supportive evidence, eg $\text{odd} \times \text{odd} = \text{odd}$, or all odd numbers squared will be odd. (e.g. starts to work with (generate) square numbers for odd patterns or $(2n + 1)^2$ eg $1 \times 1 = 1$, or generates sequence for squares using differences)
12		$\frac{7}{17}$	M1 A1	for $\frac{a}{17}$ where $a \neq 7$ but < 17 or $\frac{7}{b}$ where $b \neq 17$ but > 7 oe
13 (a)		1.5 to 2	B1	in the range 1.5 to 2
(b)		7.5 to 12	M1 A1	for scale factor in the range 5 to 6 (ft) or for answer in the range 7.5 to 12

Paper: 1MA1/1F				
Question	Working	Answer	Mark	Notes
14 (a)		168°, 120°, 72°	M1 A1 B1	for correct working to find an angle (could be implied by one angle drawn correctly on the pie chart) for all three angles drawn $\pm 2^\circ$ (dep on M1) for correct labels (languages)
(b)		No and reason	C1	NO and reason given e.g. “don’t have actual figures for Lowry”
15		13.5	P1 P1 P1 A1	process shown to find the area of the triangle e.g. $\frac{1}{2} \times 8 \times 9 (=36)$ for calculating $6 \times (\text{area}) (=216)$ for process shown of dividing their area of rectangle by 16 (oe) oe
16		$-\frac{1}{2}$	M1 A1	for substitution with operations shown e.g. $1 + -3 \times \frac{1}{2}$ or $1 - \frac{3}{2}$ or $1\frac{1}{2}$ or $-1\frac{1}{2}$ oe
17		1110	M1 M1 M1 A1	method to find the weight of 1 tin of soup e.g. $1750 \div 5 (=350)$ method to find the weight of 3 packets of soup e.g. $1490 - (4 \times “350”) (=90)$ method to find the weight of 3 tins and 2 packets e.g. $3 \times “350” + “90” \div 3 \times 2$ cao

Paper: 1MA1/1F				
Question	Working	Answer	Mark	Notes
18 (a)		6 to 8	M1 M1 M1 A1	evidence of recall of area formula with correct radius e.g. $\pi \times 10^2$ calculation to find number of boxes, (area) $\div$ (coverage figure) (indep) evidence of estimation, eg π in range 3 to 3.2, or coverage figure of 40, 42, 45, 48 or 50 (dep on M3) answer in the range 6 to 8
(b)		underestimate	C1	e.g. (ft from (a)) underestimate: true area greater so could need more boxes. Must relate to estimation, not rounding of answer.
19 (a)		9.5	M1 A1	expands brackets or divides by 4 as a first step oe
(b)		-2, -1, 0, 1, 2	B2 (B1)	cao (for the numbers -2, -1, 0, 1 (accept with -3 and/or 2 only), or 4 correct with no incorrect)
20		1545	M1 A1	shows a method to find 3% eg $1500 \times 0.03 (=45)$ cao

Paper: 1MA1/1F				
Question	Working	Answer	Mark	Notes
21 (a)		10,19	B1	cao
(b)		Positive	C1	positive (correlation)
(c)		12 to 13	M1	for an appropriate line of best fit drawn, or a point marked at $(x, 16.4)$ or a horizontal line drawn from 16.4 across to $(x, 16.4)$ where x is in the range 12 to 13
			A1	hours given in the range 12 to 13
(d)		explanation	C1	(yes) e.g. as the majority of points for high temperature appear when there are more hours of sunshine (positive correlation)
22		$2 \times 2 \times 2 \times 7$	M1	for complete method to find prime factors; could be shown on a complete factor tree with no more than 1 arithmetic error
			A1	accept $2^3 \times 7$

Paper: 1MA1/1F																
Question	Working	Answer	Mark	Notes												
23	21840 1638 23478	234.78	M1	for complete method with relative place value correct including addition of all the appropriate elements of the calculation e.g. two lines of 1 st method, internal numbers of grids, or complete structure shown of partitioning methods												
	<div><div><div>5</div><div>4</div><div>6</div></div><div><div>2</div><div>2</div><div>0</div><div>1</div><div>6</div><div>2</div><div>4</div><div>4</div></div><div><div>3</div><div>1</div><div>5</div><div>1</div><div>2</div><div>1</div><div>8</div><div>3</div></div><div><div>4</div><div>7</div><div>8</div></div></div>															
	<table><tr><td></td><td>500</td><td>40</td><td>6</td></tr><tr><td>40</td><td>20000</td><td>1600</td><td>240</td></tr><tr><td>3</td><td>1500</td><td>120</td><td>18</td></tr></table>					500	40	6	40	20000	1600	240	3	1500	120	18
					500	40	6									
	40				20000	1600	240									
3	1500	120	18													
20000 + 1600 + 240 + 1500 + 120 + 18 = 23478																
			A1	for digits 23478												
			A1	(ft dep M1) for correct placement of the decimal point into their final answer												
24		$x^2 + 6x = 1$	M1	writes the area using algebraic terms e.g. $(x + 3) \times (x + 3)$ or at least two correct area expressions, may be written on the diagram or x given as $\sqrt{10} - 3$												
			M1	expands and includes the given 10 e.g. $x^2 + 3x + 3x + 9 = 10$; condone one error in the four terms when expanding or $10 - 3\sqrt{10} - 3\sqrt{10} + 9 + 6\sqrt{10} - 18 (=1)$ condone 1 error in the 6 terms												
			A1	rearranges to give the given equation or shows surd expression simplifies to 1												

Paper: 1MA1/1F				
Question	Working	Answer	Mark	Notes
25		70.5	P1 P1 P1 P1 A1	starts process of Pythagoras e.g. $5^2 + 12^2$ complete process for Pythagoras e.g. $\sqrt{5^2 + 12^2}$ or $\sqrt{25 + 144}$ or $\sqrt{169}$ (=13) (dep P1 for Pythagoras) process of adding all the lengths e.g. $5 + 5 + 12 + 12 + "13"$ (=47) (indep) process of multiplying at least 2 lengths by 1.5 cao SC: any evidence of working with Pythagoras award the P1 or P2
26		comparison	M1 A1	starts to manipulate expression e.g. $3y = 9x - 6$ or $3y = 9x - 5$ gives equation(s) which can be used to show that the gradients of the two lines are the same e.g. $y = 3x - 5/3$
27	(a) (b) (c)	2b b – a – a – b	B1 B1 B1	oe oe ft oe

Modifications to the mark scheme for Modified Large Print (MLP) papers.

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

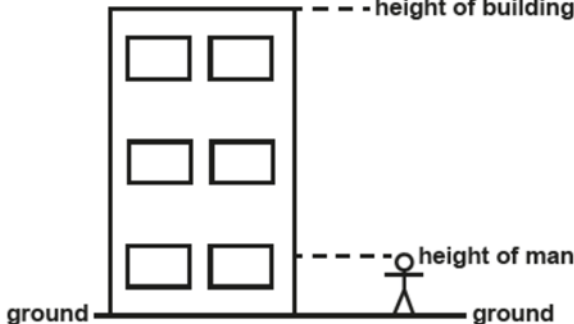
The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:

Angles: $\pm 5^\circ$

Measurements of length: ± 5 mm

PAPER: 1MA1_1F			
Question		Modification	Mark scheme notes
3	(a)	Braille only: e and f changed to p and q.	Standard mark scheme but read e and f for p and q.
6	i	Diagram enlarged. Spinner redrawn. The wording 'with a cross (x)' has been removed.	Apply a greater tolerance when judging the mark for the probability; allow indicators other than crosses and arrows.
6	ii	Diagram enlarged. Spinner repeated above the probability scale. The wording 'with a cross (x)' has been removed.	Apply a greater tolerance when judging the mark for the probability; allow indicators other than crosses and arrows.
11		Diagrams enlarged and stacked vertically. Question wording changed to 'There is a sequence of patterns made with circular tiles and square tiles: pattern number 1, pattern number 2 and pattern number 3.' A key has been added to the diagram.	Standard mark scheme
13		See notes at end	
14		Rows French and Spanish swapped around so Spanish comes first. Numbers on the table changed so that: French – 55; Spanish – 40; German – 25 Diagram enlarged and 10° intervals added.	In part (a) angles drawn are to be French: 165; Spanish: 120; German: 75 to a tolerance of $\pm 5^\circ$. Part (b) standard mark scheme.
15		Diagram enlarged. Labels on the rectangle moved above and to the left of the diagram. Braille only: will add labels A B C D etc. and information about the diagrams.	Standard mark scheme

PAPER: 1MA1_1F			
Question		Modification	Mark scheme notes
18		Diagram enlarged. 10 metres label moved above the line.	Standard mark scheme
21		Diagram enlarged. Right axis has been labelled. Crosses have been changed to solid circles.	Standard mark scheme but in (c) accept 12 to 14
24		Diagram enlarged. Arrows removed. Dashed lines at the top and left of the square extended. Dashes made longer and thicker.	Standard mark scheme
25		Diagram enlarged. Left hand side and top of shape labelled as well. Wording added 'The marked angles are right angles.' Braille only: will add labels A B C D etc. and information about the diagrams.	Standard mark scheme
27		Diagram enlarged.	Standard mark scheme

Question	Modification	Mark scheme notes
13	<p data-bbox="974 300 1086 319">Question 13</p>  <p data-bbox="356 775 1220 874">Diagram changed as shown. The height of the building is 10cm and that of the man is 2cm. For Braille the height of the building is 15cm and that of the man is 3 cm.</p>	<p data-bbox="1563 292 2016 387">B1 in the range 1.6 to 2 M1 for scale factor in the range 4 to 6 A1 ft for answer in the range 6.4 to 12</p>

