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# Mark Scheme (Results)

November 2017

Pearson Edexcel GCSE (9 – 1)

In Mathematics (1MA1)

Foundation (Non-Calculator) Paper 1F

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November 2017

Publications Code 1MA1\_1F\_1711\_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 then mark both methods **as far as they are identical** and award these marks.

- 5** **Incorrect method**

If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks.

**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

<b>M</b>	method mark awarded for a correct method or partial method
<b>P</b>	process mark awarded for a correct process as part of a problem solving question
<b>A</b>	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)
<b>C</b>	communication mark
<b>B</b>	unconditional accuracy mark (no method needed)
<b>oe</b>	or equivalent
<b>cao</b>	correct answer only
<b>ft</b>	follow through (when appropriate as per mark scheme)
<b>sc</b>	special case
<b>dep</b>	dependent (on a previous mark)
<b>indep</b>	independent
<b>awrt</b>	answer which rounds to
<b>isw</b>	ignore subsequent working



Paper 1MA1: 1F				
Question	Working	Answer	Mark	Notes
1 (a)		3.65	B1	cao
(b)		2700	B1	cao
2		72	B1	cao
3		42	B1	cao
4		-9, 2	B1	cao accept either order.
5		47	B1	cao
6		$L = 5a + 3$	M1 M1 A1	for expression $a - 1 + a + a + a + a + 4$ <b>or</b> $L =$ an expression in $a$ for $5a + 3$ <b>or</b> $L = a + a + a - 1 + a + a + 4$ oe for $L = 5a + 3$
7 (a)		(6, -2)	B1	cao
(b) i		Correct point	B1	cao for point marked at (2, 9)
(b) ii		Yes with reasoning	B1	Yes with correct substitution $4 \times 2 + 1 = 9$ <b>or</b> by drawing correct line on diagram
(c)		Correct line	B1	for drawing line $x = -2$ cao

Paper 1MA1: 1F				
Question	Working	Answer	Mark	Notes
8		$4 \times 8$ rectangle drawn	M1  A1	Draws a rectangle with side lengths in the ratio 2:1 <b>or</b> lists possible dimensions in the ratio 2:1 <b>or</b> gives two numbers which multiply to 32  for correct diagram on grid
9		Identifies error in method	C1	Explanation of error eg she should have multiplied 348 by 2 not divided
10 (a)		Jake with reason	C1	Explanation referring to spread eg range <b>or</b> Jakes figures are closer together <b>or</b> highest and lowest values for both.
(b)		Reason	C1	Reason eg stem not used or it should be 26
11 (a)	$30 \div 8$	4	P1  A1	for $30 \div 8$ <b>or</b> 3.75 <b>or</b> 3 <b>or</b> counting up 8s towards 30 to at least 3 lots of 8 <b>or</b> $4 \times 8 (=32)$ oe cao
(b)		No with reason	C1	No with $32 \div 8$ <b>or</b> ft from (a)
12 (a)	<b>12</b> 7 19  18 <b>8</b> 26  <b>30</b> 15 <b>45</b>	Correct table	B3  (B2  (B1	Fully correct table  for 5, 6, 7 or 8 figures correct)  for given values entered correctly in the table <b>or</b> for a correct row <b>or</b> column)
(b)		$\frac{8}{45}$	B1	for $\frac{8}{45}$ <b>or</b> ft from values in table eg $\frac{8}{45}$

Paper 1MA1: 1F				
Question	Working	Answer	Mark	Notes
13		343	P1 P1 P1 A1	for finding area of one face eg $294 \div 6 (= 49)$ for $\sqrt{"49"} (=7)$ for "49" $\times$ "7" <b>or</b> for "7" $\times$ "7" $\times$ "7" oe cao
14		$\frac{5}{7}$  supported	P1 P1 C1	for $\frac{7}{5} = 1.4$ <b>or</b> $\frac{5}{7} = 0.7..$ <b>or</b> compares $\frac{1}{7}$ to $\frac{1}{5}$ <b>or</b> compare $\frac{5}{7}$ to 1 eg $1 - \frac{5}{7} (= \frac{2}{7})$ <b>or</b> compare $\frac{7}{5}$ to 1 eg $\frac{7}{5} = 1\frac{2}{5}$ <b>or</b> eg $\frac{49}{35}$ <b>or</b> $\frac{14}{35}$ <b>or</b> $\frac{25}{35}$ oe for $\frac{7}{5} = 1.4$ and $\frac{5}{7} = 0.7..$ <b>or</b> compares $\frac{5}{7}$ to 1 eg $1 - \frac{5}{7} (= \frac{2}{7})$ and $\frac{7}{5}$ to 1 eg $\frac{7}{5} = 1\frac{2}{5}$ <b>or</b> two correct fractions with common denominator eg $\frac{49}{35}$ and $\frac{25}{35}$ for $\frac{5}{7}$ with supporting evidence
15		45	M1 A1	for a correct first step eg $\frac{9}{7+4+9} (= \frac{9}{20})$ <b>or</b> $\frac{100}{7+4+9} (=5)$ <b>or</b> a full method for one of the other colours cao

Paper 1MA1: 1F				
Question	Working	Answer	Mark	Notes
16 (a)		Explanation	C1	eg States over-estimated for both values
(b)		182.7(0)	P1	for a process to find 10% of a value stated in the question eg $\frac{10}{100} \times 5.80 (=0.58)$ <b>or</b> $\frac{10}{100} \times 35 (=3.5)$ <b>oe or</b> $35 \times 5.80 (=203)$ , allow $30 \times 5.80 (=174)$ <b>or</b> $35 \times [\text{reduced price}]$
			P1	for a process to find 90% of a value stated in the question eg $35 - "3.5" (=31.5)$ <b>or</b> $0.9 \times 5.80 (=5.22)$ <b>oe or</b> $\frac{10}{100} \times "203" (=20.3)$ <b>or</b> $\frac{10}{100} \times "174" (=17.4)$ <b>oe</b>
			P1	for a complete process to find actual cost of 35 eg $0.9 \times 5.80 \times 35$ <b>oe</b>
			A1	cao SC B2 156.6(0)
17		$\frac{4}{9}$	M1	for listed outcomes (allow 1 error eg omission or repeat) <b>or</b> fractions $\frac{1}{3} \times \frac{2}{3} + \frac{2}{3} \times \frac{1}{3}$
			A1	for $\frac{4}{9}$ <b>oe</b>
18		135	M1	for $450 \div "2+3+5" (=45)$ <b>or</b> $\frac{3}{10} \times 450 (=135)$ <b>or</b> 5 parts are 225 <b>or</b> 2 parts are 90
			A1	indicated Cao

Paper 1MA1: 1F				
Question	Working	Answer	Mark	Notes
19		180, 210, 375, 3	M1  M1  A1	for $\frac{24}{16}$ or 1.5 or $\frac{16}{24}$ or 0.5 of any figure in the recipe calculated or amount of any ingredient for 1 flapjack or 3 (tablespoons)  for method to scale at least one ingredient in grams eg $120 \times 1.5$ or $140 \times 1.5$ or $250 \times 1.5$  for all quantities correct
20		Ami  with estimate	M2  (M1 C1	for an approximate calculation eg $\frac{600}{16+5}$ or $\frac{600}{21}$ or $\frac{600}{20}$ or $\frac{600}{20+5}$ or $\frac{600}{25}$ or $\frac{600}{25+5}$ or $\frac{600}{30}$ or $\frac{595}{20}$  for using 600 or 5 or 4)  Ami's answer /27.1115 is closest with accurately calculated figure from approximation
21		$1.8 \times 10^{-3}$	M2  (M1 A1	for $\frac{6 \times 10^{-2} \times 3 \times 10^{-4}}{1 \times 10^{-2}}$ or $18 \times 10^{-4}$ or 0.0018 as the answer  for $6 \times 0.0003$ or $0.06 \times 0.03$ or $1.8 \times 10^n$ ( $n \neq -3$ ) or $0.000018 \div 0.01$ or rewriting one number in standard form)  cao

Paper 1MA1: 1F				
Question	Working	Answer	Mark	Notes
22 (a)	$\frac{8}{20} + \frac{5}{20}$	$\frac{13}{20}$	M1	for suitable common denominator with one fraction out of two correct <b>or</b> $0.4 + 0.25$
			A1	for $\frac{13}{20}$ <b>or</b> 0.65 oe
(b)		$\frac{1}{8}$	B1	Accept 0.125
23		$2 \times 2 \times 3 \times 3$	M1	for complete method to find prime factors; could be shown on a complete factor tree with no more than 1 arithmetic error or 2,2,3,3,(1)
			A1	for $2 \times 2 \times 3 \times 3$ oe
24		14:21:42	P1	for 2 out of 3 expressions in one letter eg from $x, x+7, 2x+14$ <b>or</b> see a set of numbers to show interpretation of the relationships, eg 10, 17, 34
			P1	(dep) for sum of their 3 expressions =77 eg $x + x+7+2x+14 =77$ oe <b>or</b> 2 systematic correct trials including addition
			P1	for a correct process to isolate their term in $x$ <b>or</b> $x=14$
			A1	for ratio 14:21:42 oe

Paper 1MA1: 1F				
Question	Working	Answer	Mark	Notes
25	$CB$ extended to form $CG$	Reasoning	B1  M1  C2  (C1	for 35 <b>or</b> 75 <b>or</b> 145 <b>or</b> 105 <b>or</b> $DEF = 70$ , marked on the diagram or 3 letter description  for $180 - 70 - 35$ <b>or</b> $180 - 75 - 35$ <b>or</b> a correct pair of angles that would lead to 75 or 70, eg $AFB = 35$ and $FAB = 75$ <b>or</b> $AFB = 35$ and $ABG = 75$ <b>or</b> $FBC = 35$ and $ABG = 75$ <b>or</b> $EDF = 75$ and $DEF = 70$ <b>or</b> $FDC = 105$ and $FBC = 35$ <b>or</b> $ABC = 105$ and $FBC = 35$  (dep on B1M1) All figures correct with all appropriate reasons stated. Angles must be clearly labelled or on the diagram. Full solution must be seen  (dep on B1 or M1) for one reason clearly used and stated.) <u>Corresponding angles</u> are equal, <u>alternate angles</u> are equal, <u>opposite angles</u> in a <u>parallelogram</u> are equal, <u>angles</u> in a <u>triangle</u> sum to 180, <u>angles</u> on a straight <u>line</u> sum to 180, vertically <u>opposite angles</u> are equal, <u>vertically opposite angles</u> are equal, <u>angles</u> in a <u>quadrilateral</u> sum to 360, <u>co-interior angles</u> sum to 180, <u>allied angles</u> sum to 180, <u>angles</u> around a <u>point</u> sum to 360

Paper 1MA1: 1F				
Question	Working	Answer	Mark	Notes
26		Daisy is wrong  (supported)	P1  P1  A1  C1	for process to find area of any relevant circle ie $\pi \times 4^2 (=16\pi)$ , $\pi \times 7^2 (=49\pi)$ , $\pi \times 10^2 (=100\pi)$ <b>or</b> $7^2$ and $4^2$  for completed method to find shaded area eg “ $\pi \times 7^2$ ” – “ $\pi \times 4^2$ ” ( $=33\pi$ ) <b>or</b> use of radii eg $7^2 - 4^2 (=33)$  for 2 comparable figures, eg $33\pi$ and $100\pi$ <b>or</b> 33 and 100 <b>or</b> 103 to 103.7 and 314 to 314.2 <b>or</b> 103 to 103.7 and 104.6 to 104.8  statement eg No because it should be $\frac{33}{100}$ and their accurate figures Allow use of $\pi = 3$ or better
27 (a)		365	M1  M1  A1	$fx$ with $x$ consistent within intervals eg $200 \times 1$ , $300 \times 11$ , $400 \times 5$ , $500 \times 0$ , $600 \times 3$ , if 200, 3300, 2000, 0, 1800 are seen without working then condone 1 error  (dep) $\Sigma fx \div \Sigma f$ eg “7300” $\div 20$  Cao
(b)		Comment	C1	for comment about outliers affecting mean

Paper 1MA1: 1F						
Question	Working	Answer	Mark	Notes		
28		Shows reasoning to reach $y=3$	M1  M1  M1  A1	forms equation eg $2x + 6 = 5x - 9$  isolates $x$ and number terms $3x = 15$  substitutes "5" into side length eg $2 \times 5 + 6 (=16)$  $48 \div 16 = 3$ <b>or</b> $16 \times 3 = 48$	$48 \div 3 (=16)$  forms equation $2x+6="16"$ <b>or</b> $5x - 9 = "16"$  isolates $x$ and number terms $2x = "10"$ <b>or</b> $5x = "25"$  shows $x=5$ for both solutions	$3(2x + 6) = 48$ <b>or</b> $3(5x - 9) = 48$ , condone missing bracket Isolates $x$ and number terms $6x = "30"$ <b>or</b> $15x = "75"$  forms the second equation  $x=5$ from 2 different equations.
29		Comment	B1	for correct mathematical comment eg line segments not a curve <b>or</b> should draw freehand <b>or</b> should not use a ruler, <b>or</b> should be a curve  NB Do not accept statements about scale or plotting accuracy.		
30		4	M1  A1	for a complete method eg $2.80 \times 100 \div (100-30)$ oe <b>or</b> $2.80 \div 0.7$ oe <b>or</b> for build up method but must show all intermediate steps unless all figures are correct eg $2.8 \div 7 = 0.4$ and $"0.40" \times 10 (=4)$  cao		

## 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:  $\pm 5$  mm

PAPER: 1MA1_1F		
Question	Modification	Mark scheme notes
4	Boxes enlarged	Standard mark scheme
6	Diagram enlarged. Braille only: the letter a has been changed to the letter r	Standard mark scheme but read a and r for braille.
7	Diagram enlarged. Cross changed to a solid dot. Wording added "It shows a grid".	Standard mark scheme
8	Diagram enlarged. Wording added 'It shows a grid of squares.' Wording changed to 'Draw the rectangle on the grid of squares. Each square on the grid represents a one centimetre square.'	Standard mark scheme.
10	(b) Key moved above and to the left of the diagram. A horizontal line has been added to the bottom row of the stem and leaf diagram	Standard mark scheme.
12	Wording added 'There are nine spaces to fill.' Braille only: answer spaces have been labelled from (i) to (ix): Long hair: (iv), (viii), (vii) Short hair: (v), (iii), (vi) Total (ii), (ix), (i)	Standard mark scheme.

**PAPER: 1MA1\_1F**

Question	Modification	Mark scheme notes
17	Wording added 'It shows two boxes, Box A and Box B.' Diagram enlarged. Boxes have been made into a rectangle and the cards have been placed inside the rectangles horizontally. Braille only: the diagram has been removed and replaced with information about the diagram.	Standard mark scheme
25	Diagram enlarged. Angles moved outside the angle arcs and the angle arcs made smaller. Arrow heads made longer and more obvious. Wording added 'AD is parallel to BC. AB is parallel to EC.'	Standard mark scheme
26	Diagram enlarged. Cross changed to a solid dot. Shading changed to dotty shading.	Standard mark scheme
27	Frequency column has been extended to allow for working	Standard mark scheme
28	Diagram enlarged. Wording added 'All marked angles are right angles.' MLP only: $x$ changed to $e$ , $y$ changed to $f$ . Braille only: will label the corners of the rectangle A to D and will give information about the rectangle.	Standard mark scheme, except for MLP in the mark scheme read $e$ for $x$ , and $f$ for $y$ .
29	Diagram enlarged. Crosses changed to solid dots.	Standard mark scheme





