



Pearson

# Mark Scheme (Results)

Summer 2017

Pearson Edexcel GCSE (9 – 1)  
In Mathematics (1MA1)  
Foundation (Calculator) Paper 2F

## **Edexcel and BTEC Qualifications**

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at [www.edexcel.com](http://www.edexcel.com) or [www.btec.co.uk](http://www.btec.co.uk). Alternatively, you can get in touch with us using the details on our contact us page at [www.edexcel.com/contactus](http://www.edexcel.com/contactus).

## **Pearson: helping people progress, everywhere**

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: [www.pearson.com/uk](http://www.pearson.com/uk)

Summer 2017

Publications Code 1MA1\_2F\_1706\_MS

All the material in this publication is copyright

© Pearson Education Ltd 2017

## 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. (e.g.. 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 (e.g.. 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: 2F**

Question	Working	Answer	Mark	Notes
1 (a)		$3p$	B1	cao
(b)		$2m^3$	B1	cao
(c)		$10 - 4c + 6d$	M1 A1	for $-4c$ or $6d$ (accept $+4c$ ) for $10 - 4c + 6d$
2		60	B1	cao
3 (a)		Walk	B1	cao
(b)		7 on chart	B1	for bar of height 7 drawn for girls walking
(c)		4	B1	cao
(d)		96	M1 A1	for method to find number of Year 6 students in the survey e.g. $5 + 9 + 6 + 4 + 9 + 7 + 4 + 1 + 2 + 1$ (= 48) or $14 + 10 + 16 + 5 + 3$ (= 48) for 96 or ft from (b), eg 82 if no bar in (b)
4		$\frac{11}{30}, \frac{2}{5}, \frac{7}{15}, \frac{1}{2}$	M1 A1	converts fractions to a common form, e.g. fractions with a denominator of 30, decimals or percentages, at least two conversions correct or any 3 fractions in correct order correct order

Paper 1MA1: 2F				
Question	Working	Answer	Mark	Notes
5		(a) Monday wrong	C1	for seeing difference in tally marks and frequency for Monday
		(b) Comment	C1	for suitable comment, eg extra picture for Tuesday needed or explains that 0.5 of a CD is not possible
6		268.20	P1	for a process to work out the value of the £1 coins, eg. $495 \div 3 (= 165)$ or $495 \times 0.33\dots$ or of the 50p coins, eg. $124 \div 2 (= 62)$
			P1	for process to find the number of 20p coins, eg. $(495 - 124 - ("165")) (= 206)$
			P1	for complete process to find total value using consistent units., eg. $(("165") + (124 \div 2) + ("206" \times 0.2))$ or $165 + 62 + 41.2$
			A1	cao (accept 268.2)
7		0.985	B1	oe
8		(a) 25	B1	for 25 (accept $5^2$ )
		(b) 24	B1	cao
		(c) 23, 29	B1	for 23 and 29 and no extras
9		54	M1	for method to form equation, eg $90 + 2x + 3x = 360$ or for $360 - 90 (= 270)$
			M1	for $5x = 360 - 90$ or for $2x + 3x = 360 - 90$ or for $2x = 108$ or for $3x = 162$ or for $270 \div 5$
			A1	cao



**Paper 1MA1: 2F**

<b>Question</b>	<b>Working</b>	<b>Answer</b>	<b>Mark</b>	<b>Notes</b>
10		Letters2send (supported)	P1  P1  P1  C1   OR  P1  P1  P1  C1	for the start of a process to find comparable costs at either shop, e.g. $150 \div 25 (= 6)$ or $150 \div 30 (= 5)$ , $150 \div 10 (= 15)$ , $2.10 \div 15 (= 0.14)$  for process to find cost from Letters2send, e.g. $(150 \div 25) \times 3.49 (= 20.94)$  for process to find cost at Stationery World, e.g. $(150 \div 30) \times 2 \times 2.10 (= 21)$  for correct conclusion with correct values from each shop (20.94 and 21)  OR  for the start of a process to find comparable costs, eg $3.49 \div 25 (= 0.1396)$ , $2.10 \div 10 (= 0.21)$ , $25 \div 3.49 = (7.1\dots)$ , $2.10 \div 15 (= 0.14)$  for process to take into account the offer at Stationery World, eg buy 30 envelopes pay for 20,  for complete process to find values that can be used for comparison, eg $30 \times 0.13(96)$ and $2 \times 2.10 (= 4.2(0))$  for correct conclusion with correct values from each shop (4.1(88) and 4.2(0))

**Paper 1MA1: 2F**

Question	Working	Answer	Mark	Notes
11 (a)		29	B1	answer in the range 29 to 30
(b)		186 to 195	M1	for changing 6ft 3 inches to inches e.g. $6 \times 12 + 3 (= 75)$ or changing 1ft to 30 cm
			M1	for a method to convert to cm, e.g. $25 \rightarrow 63$ then $\times 3$ , $6 \times 30 + \frac{1}{4} \times 30$
			A1	for answer in the range 186 to 195 or ft from correct use of graph
12		0.0733(03...)	M1	for correct numerator (3.4496.....) or correct denominator (47.0596) or 0.073
			A1	for 0.0733(03.....)
13 (a)		Rotation	B2	for a fully correct rotation at $(-4,-1)$ , $(-3,-1)$ , $(-4,-4)$ , $(-1,-2)$
(b)		Reflection in the y-axis	[B1	for the quadrilateral in correct orientation and size or rotated $90^\circ$ anticlockwise about the origin]
			B1	for reflection
			B1	for y-axis (or $x = 0$ )
				[A combination of transformations scores 0 marks]

Paper 1MA1: 2F				
Question	Working	Answer	Mark	Notes
14 (a)		$5(1 - 2m)$	B1	cao
(b)		$2ab(a + 3b)$	M1	for $2a(ab + 3b^2)$ or $2b(a^2 + 3ab)$ or $ab(2a + 6b)$ or $2ab$ (2 term expression with terms in $a$ or $b$ or $ab$ , can include constants), eg $2ab(1a + 3ab)$ , $2ab(1 + 3b)$
			A1	for $2ab(a + 3b)$
15 (a)		0.47	B1	
(b)		$2.28 \times 10^9$	M1	for correct value but not in standard form, eg $22.8 \times 10^{3+5}$ , $228 \times 10^7$ , 2 280 000 000 or for $2.28 \times 10^n$ , $n \neq 9$
			A1	cao
16		$T$ shown on the map	C1	for showing a perpendicular bisector or point $T$ equidistant from points $B$ and $C$ .
			C1	for a circle or arc of circle of radius 2.5 cm or point $T$ 2.5 cm from point $A$
			C1	for $T$ shown in correct position

Paper 1MA1: 2F				
Question	Working	Answer	Mark	Notes
17		98	P1	for process to find P(1), e.g. $1 - 0.17 - 0.18 - 0.09 - 0.15 - 0.1 (= 0.31)$ or for a process to find P(1 or 3), e.g. $1 - 0.17 - 0.09 - 0.15 - 0.1 (= 0.49)$
			P1	for process to find the number of 3s, e.g. $0.18 \times 200 (=36)$ or process to find the number of 1s, e.g. $P(1) \times 200 (= 62)$ , or process to find the number of (1 or 3)s, eg $[P(1) + 0.18] \times 200$ or process to find any expected frequency, using any probability $\times 200$ , eg $0.17 \times 200$
			A1	cao  OR
		98	P1	for process to find P(2 or 4 or 5 or 6), eg $0.17 + 0.09 + 0.15 + 0.1 (= 0.51)$
			P1	for process to find the number of (2 or 4 or 5 or 6)'s, eg " $0.51$ " $\times 200 (= 102)$
			A1	cao

Paper 1MA1: 2F				
Question	Working	Answer	Mark	Notes
18		Yes (supported)	P1	for process to work out the total number of children, e.g. $117 \times 4 (= 468)$
			P1	(dep P1) for process to work out total number of adults or the total number of people, e.g. $"468" \times 5 \div 2 (= 1170)$ or $"468" \times 7 \div 2 (= 1638)$
			A1	for 1170 or 1638
			P1	for process to work out the percentage of theatre full, e.g. $\frac{"468"+"1170"}{2600} \times 100 (= 63)$ or for a process to work out 60% of 2600 ( $= 1560$ )
			C1	for a correct conclusion supported by correct figures e.g. 63% or 1560 <b>and</b> 1638
				OR
			P1	for a process to work out 60% of 2600, eg. $\frac{60}{100} \times 2600 (= 1560)$
			P1	(dep P1) for process to work out total number of children, e.g. $"1560" \times 2 \div 7 (= 445(.7...))$
			A1	for 445(.7...)
			P1	for process to work out number of children in the circle, eg. $"445(.7...)" \div 4 (= 111 \text{ to } 112)$
			C1	for a correct conclusion supported by correct figures e.g. 111 to 112
				[Where appropriate, accept rounded or truncated values]

**Paper 1MA1: 2F**

Question	Working	Answer	Mark	Notes
18 cont.			OR  P1  P1  A1  P1  C1	for a process to find the maximum number of children, eg. $2600 \times 2 \div 7 (= 742(.8\dots))$  for process to work out the total number of children, e.g. $117 \times 4 (= 468)$  for 468 and $742(.8\dots)$  for $\frac{"468"}{"742(.8\dots)} \times 100 (= 63)$ or process to work out 60% of "742.8.." (= $445(7\dots)$ )  for a correct conclusion supported by correct figures e.g. 63% or 468 and $445(7\dots)$  [Where appropriate, accept rounded or truncated values]
19		Side elevation    Front elevation	C2 [C1  C2 [C1	for the side elevation (4 cm by 2 cm rectangle with a solid line drawn 1 cm from the 2 cm edge, and correct orientation) for the side elevation as a rectangle  for the front elevation as a trapezium in correct orientation with base 4 cm, parallel sides 1 cm and 4 cm for the front elevation as a trapezium with two right angles  [Ignore incorrect or no labelling]

**Paper 1MA1: 2F**

Question	Working	Answer	Mark	Notes
20 (a)		57.1	P1	for a process to find time from Liverpool to Manchester, eg. $56 \div 70 (= 0.8 \text{ (hrs) or } 48 \text{ (mins)})$
(b)		explanation	P1 P1 P1 A1 C1	for a process to find the total distance, eg $56 + 61 (= 117)$ or the total time, eg “48” + 75 (= 123) or “0.8” + $\frac{75}{60} (= 2.05)$ , with consistent units of time  (dep P2) for a correct process to find average speed with consistent units of time, eg. “117” $\div$ “2.05” or “117” $\div$ “123”  for answer in the range 57 to 57.1  for explaining that the time taken for the two parts of the journey must be the same or the distance from Leeds to York is $\frac{3}{4}$ the distance from Barnsley to York oe
21 (a)		3.9	M1	for a ratio of $\frac{8.1}{5.4} (= 1.5)$ oe or $\frac{5.4}{8.1} (= 0.66..)$ oe or $\frac{2.6}{5.4} (= 0.48..)$ oe or $\frac{5.4}{2.6} (= 2.07..)$ oe
(b)		2.05	M1 A1	for $\frac{5.4}{8.1} \times 6.15 (= 4.1)$ or $\frac{2.7}{8.1} \times 6.15$ oe or ft “scale factor” from (a)  cao

Paper 1MA1: 2F				
Question	Working	Answer	Mark	Notes
22		Secure Bank (supported)	P1  P1  C1	for a process to work out the interest after one year e.g. $0.02 \times 25000 (= 500)$ or $0.043 \times 25000 (= 1075)$ or for 1.02 or 25500 or 1.043 or 26075  for process to find value of the investment after 3 years or the multiplicative factor for 3 years at one of the banks, e.g. $25000 \times 1.02 \times 1.02 \times 1.02$ oe (= 26530...) or $1.02^3 (= 1.0612...)$ or $25000 \times 1.043 \times 1.009 \times 1.009$ oe (= 26546...) or $1.043 \times 1.009 \times 1.009 (= 1.0618.....)$ [accept total interest of 1530...or 1546...if final values of investment are not found]  for Secure Bank from correct figures eg 26530.. and 26546..or 1530.. and 1546.. or 1.0612.. and 1.0618
23		$4.755 \leq n < 4.765$	B2  [B1]	for $4.755 \leq n < 4.765$  for 4.755 or 4.765 or 4.7649]
24		$x = -8, x = 3$	M1  M1 A1	for factorisation or for substitution into quadratic formula ( $x \pm a$ )( $x \pm b$ ) where product of $a$ and $b = 24$ , eg ( $x \pm 4$ )( $x \pm 6$ ) or difference of $a$ and $b = 5$ , eg ( $x \pm 2$ )( $x \pm 7$ )  $\frac{-5 \pm \sqrt{5^2 - 4 \times 1 \times -24}}{2}$ oe (condone one sign error)  for ( $x + 8$ )( $x - 3$ ) or for $\frac{-5 \pm \sqrt{121}}{2}$ oe cao



Paper 1MA1: 2F				
Question	Working	Answer	Mark	Notes
25 (a)		$5n - 2$	B2	for $5n - 2$ oe
			[B1	for $5n + k$ , $k$ may be 0]
(b)		No (supported)	C1	for No with evidence, e.g. $3 \times 4^2 = 48$ , $\sqrt{48}$ is not an integer, he has multiplied by 3 first but should have squared first



## 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_2F			
Question	Modification	Mark scheme notes	
1	(c)	MLP and braille: $c$ and $d$ changed to $s$ and $t$ .	Standard mark scheme but change $c$ & $d$ to $s$ & $t$
3		Grid enlarged. Key moved above the diagram. Right axis has been labelled. Boys shading has been changed to dotted. The vertical axis label has been moved above the vertical axis	Standard mark scheme
5	(b)	Pictogram enlarged. Key moved above the diagram.	Standard mark scheme
8		Wording 'nine' added	Standard mark scheme
9		Diagram enlarged. Angle sizes moved outside the angle arcs; the arcs have been made smaller.	Standard mark scheme
11		Grid enlarged. Right axis labelled. Axes labels have been moved to the left of the horizontal axis and above the vertical axis. In (a) Number '74' changed to '90'.	(a) becomes 35 to 37. In (b) suggest 180 to 200
13	(a)	Question reversed. Rotation drawn on the diagram and labelled as 'shape B'. Grid enlarged and y axis reduced so it finishes at 2. Shapes labelled 'shape A' and 'shape B'. Wording changed 'It shows shape A and shape B given on a grid. Describe fully the single transformation that maps shape A onto shape B.'	Award B1 for "rotation" Award B1 for "90° clockwise about centre O [or (0,0)] NB: award B0 for any indication of a mention of other transformations
13	(b)	Grid enlarged and y axis reduced so it starts at -2. Wording 'B' and 'C' deleted and shapes labelled as 'shape P' and 'shape Q'. Triangles P and Q moved above the $x$ axis. Wording added 'It shows shape P and shape Q given on a grid.'	Standard mark scheme

PAPER: 1MA1_2F			
Question		Modification	Mark scheme notes
14	(b)	MLP only: $a$ changed to $x$ and $b$ changed to $y$ .	Standard mark scheme but change $a$ & $b$ to $x$ & $y$
16		Number '250 metres' changed to '500 metres'. Points $B$ and $C$ moved to the right to allow for use of specialist equipment. Points $B$ and $C$ joined with a line. Scale moved above the diagram.	Standard mark scheme, but given the alternations to the given diagram, the relative positions of any constructions and the position(s) of $T$ will change.
17		Table turned to vertical format.	Standard mark scheme
19		<p>Alternative question.</p> <p>Model has been provided for all candidates. Diagram enlarged and also provided for MLP. The measurements on the prism have been doubled.</p> <p>Wording added next to the diagram of the trapezium 'Diagram NOT accurately drawn'.</p> <p>Four shapes have been provided below the trapezium labelled A to D.</p> <p>Wording added above the four shapes 'scale: 2 cm to 1 metre'.</p> <p>Question wording has changed and has been split into two parts:</p> <p>'Look at the model or at the diagrams for Question 19 in the Diagram Book. They show a prism with a cross section in the shape of a trapezium. All measurements are in metres. Below the prism there are four shapes A, B, C and D.</p> <p>(i) Which shape shows the front elevation of the prism?</p> <p>(ii) Which shape shows the side elevation of the prism?'</p>	<p>Mark scheme amended as follows:</p> <p>(i) B2 for C</p> <p>(ii) B2 for A (B1 for B or D)</p>
21		Diagram enlarged. Measurements '2.6 cm' and '5.4 cm' added to the diagram.	Standard mark scheme



