Mark Scheme (Results)

November 2017

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

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 or 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.

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

November 2017
Publications Code 1MA1_1F_1711_MS

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	
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 (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	for expression $a - 1 + a + a + a + a + 4$ **or** L= an expression in a
			M1	for $5a + 3$ **or** $L = a + a + a - 1 + a + a + 4$ oe
			A1	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 4×2+1=9 **or** 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 × 8 rectangle drawn	M1	Draws a rectangle with side lengths in the ratio 2:1 **or** lists possible dimensions in the ratio 2:1 **or** gives two numbers which multiply to 32
			A1	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 **or** Jakes figures are closer together **or** highest and lowest values for both.
(b)		Reason	C1	Reason eg stem not used or it should be 26
11 (a)	30 ÷ 8	4	P1	for 30 ÷ 8 **or** 3.75 **or** 3 **or** counting up 8s towards 30 to at least 3 lots of 8 **or** 4 × 8(=32) oe
			A1	cao
(b)		No with reason	C1	No with 32 ÷ 8 **or** ft from (a)
12 (a)	**12** 7 19 18 **8** 26 **30** 15 **45**	Correct table	B3	Fully correct table
			(B2	for 5, 6, 7 or 8 figures correct)
			(B1	for given values entered correctly in the table **or** for a correct row **or** column)
(b)		$\frac{8}{45}$	B1	for $\frac{8}{45}$ **or** ft from values in table eg $\frac{"8"}{"45"}$

Paper 1MA1: 1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
13		343	P1	for finding area of one face eg 294 ÷ 6 (= 49)
			P1	for $\sqrt{\text{“49”}}$ (=7)
			P1	for “49” × “7” **or** for “7” × “7” × “7” oe
			A1	cao
14		$\frac{5}{7}$	P1	for $\frac{7}{5}$ = 1.4 **or** $\frac{5}{7}$ = 0.7.. **or** compares $\frac{1}{7}$ to $\frac{1}{5}$ **or** compare $\frac{5}{7}$ to 1 eg $1-\frac{5}{7}$ $(=\frac{2}{7})$ **or** compare $\frac{7}{5}$ to 1 eg $\frac{7}{5}$ = $1\frac{2}{5}$ **or** eg $\frac{49}{35}$ **or** $\frac{14}{35}$ **or** $\frac{25}{35}$ oe
		supported	P1	for $\frac{7}{5}$ = 1.4 and $\frac{5}{7}$ = 0.7.. **or** compares $\frac{5}{7}$ to 1 eg $1-\frac{5}{7}$ $(=\frac{2}{7})$ and $\frac{7}{5}$ to 1 eg $\frac{7}{5}$ = $1\frac{2}{5}$ **or** two correct fractions with common denominator eg $\frac{49}{35}$ and $\frac{25}{35}$
			C1	for $\frac{5}{7}$ with supporting evidence
15		45	M1	for a correct first step eg $\frac{9}{7+4+9}$ $(=\frac{9}{20})$ **or** $\frac{100}{7+4+9}$ (=5) **or** a full method for one of the other colours
			A1	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 $\frac{10}{100}$ ×5.80 (=0.58) **or** $\frac{10}{100}$ × 35 (=3.5) oe **or** 35 × 5.80 (=203), allow 30 × 5.80 (=174) **or** 35 × [reduced price]
			P1	for a process to find 90% of a value stated in the question eg 35 – "3.5" (=31.5) **or** 0.9 × 5.80 (=5.22) oe **or** $\frac{10}{100}$ × "203" (=20.3) **or** $\frac{10}{100}$ × "174" (=17.4) oe
			P1	for a complete process to find actual cost of 35 eg 0.9 ×5.80 × 35 oe
			A1	cao
				SC B2 156.6(0)
17		$\frac{4}{9}$	M1	for listed outcomes (allow 1 error eg omission or repeat) **or** fractions $\frac{1}{3}\times\frac{2}{3}+\frac{2}{3}\times\frac{1}{3}$
			A1	for $\frac{4}{9}$ oe
18		135	M1	for 450 ÷ "2+3+5" (=45) **or** $\frac{3}{10}$ × 450 (=135) **or** 5 parts are 225 **or** 2 parts are 90 indicated
			A1	Cao

Paper 1MA1: 1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
19		180, 210, 375, 3	M1	for $\frac{24}{16}$ **or** 1.5 **or** $\frac{16}{24}$ oe **or** 0.5 of any figure in the recipe calculated **or** amount of any ingredient for 1 flapjack or 3 (tablespoons)
			M1	for method to scale at least one ingredient in grams eg 120 × 1.5 **or** 140 × 1.5 **or** 250 × 1.5
			A1	for all quantities correct
20		Ami	M2	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** $\frac{595}{20}$
		with estimate	(M1	for using 600 **or** 5 **or** 4)
			C1	Ami's answer /27.1115 is closest with accurately calculated figure from approximation
21		1.8×10^{-3}	M2	for $\frac{6\times10^{-2}\times3\times10^{-4}}{1\times10^{-2}}$ or 18×10^{-4} or 0.0018 as the answer
			(M1	for 6×0.0003 **or** 0.06×0.03 **or** 1.8×10^{n} ($n \neq -3$) **or** $0.000018 \div 0.01$ **or** rewriting one number in standard form)
			A1	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 **or** 0.4 + 0.25
			A1	for $\frac{13}{20}$ **or** 0.65 oe
(b)		$\frac{1}{8}$	B1	Accept 0.125
23		2×2×3×3	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 2×2×3×3 oe
24		14:21:42	P1	for 2 out of 3 expressions in one letter eg from x, x+7 2x+14 **or** 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 **or** 2 systematic correct trials including addition
			P1	for a correct process to isolate their term in x **or** 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	for 35 **or** 75 **or** 145 **or** 105 **or** *DEF* = 70, marked on the diagram or 3 letter description
			M1	for 180−70−35 **or** 180−75−35 **or** a correct pair of angles that would lead to 75 or 70, eg *AFB* = 35 and *FAB* = 75 **or** *AFB* = 35 and *ABG* = 75 **or** *FBC* = 35 and *ABG* = 75 **or** *EDF* = 75 and *DEF* = 70 **or** *FDC* = 105 and *FBC* = 35 **or** *ABC* = 105 and *FBC* = 35
			C2	(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
			(C1	(dep on B1 or M1) for one reason clearly used and stated.) Corresponding angles are equal, alternate angles are equal, opposite angles in a parallelogram are equal, angles in a triangle sum to 180, angles on a straight line sum to 180, vertically opposite angles are equal, vertically opposite angles are equal, angles in a quadrilateral sum to 360, co-interior angles sum to 180, allied angles sum to 180, angles around a point sum to 360

Paper 1MA1: 1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
26		Daisy is wrong	P1	for process to find area of any relevant circle ie $\pi\times4^2$ (=16π), $\pi\times7^2$ (=49π), $\pi\times10^2$ (=100π) **or** 7^2 and 4^2
		(supported)	P1	for completed method to find shaded area eg "$\pi\times7^2$" – "$\pi\times4^2$" (=33π) **or** use of radii eg $7^2 - 4^2$ (=33)
			A1	for 2 comparable figures, eg 33π and 100π **or** 33 and 100 **or** 103 to 103.7 and 314 to 314.2 **or** 103 to 103.7 and 104.6 to 104.8
			C1	statement eg No because it should be $\frac{33}{100}$ and their accurate figures Allow use of π = 3 or better
27 (a)		365	M1	*fx* with *x* consistent within intervals eg 200 × 1 , 300 × 11 , 400 × 5 , 500 × 0 , 600 × 3, if 200, 3300, 2000, 0, 1800 are seen without working then condone 1 error
			M1	(dep) $\Sigma fx \div \Sigma f$ eg "7300" ÷ 20
			A1	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÷16=3 **or** 16×3=48	48÷3 (=16) forms equation $2x$+6="16" **or** $5x - 9$= "16" isolates x and number terms $2x$= "10" **or** $5x$ = "25" shows x=5 for both solutions	$3(2x + 6) = 48$ **or** $3(5x - 9) = 48$, condone missing bracket Isolates x and number terms 6x = "30" **or** $15x$ = "75" forms the second equation x=5 from 2 different equations.
29		Comment	B1	for correct mathematical comment eg line segments not a curve **or** should draw freehand **or** should not use a ruler, **or** 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 × 100 ÷ (100−30) oe **or** 2.80 ÷ 0.7 oe **or** for build up method but must show all intermediate steps unless all figures are correct eg 2.8 ÷ 7 = 0.4 and "0.40" × 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: ±5º
Measurements of length: ±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

Pearson Education Limited. Registered company number 872828
with its registered office at 80 Strand, London, WC2R 0RL, United Kingdom