



Mark Scheme (Results)

Summer 2018

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. $2 \times 6 (=12)$ 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" \times 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] \times 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
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	6000	B1	cao	Accept 6 thousand or six thousand
2 (a)	-6,-5,0,6,12	B1	for -6,-5,0,6,12 accept 12, 6, 0, -5,-6	Accept any additional '0's at the end of a decimal, eg 0.780 or 0.870
(b)	0.078,0.708, 0.78,0.87	B1	for 0.078, 0.708, 0.78, 0.87 accept 0.87, 0.78, 0.708, 0.078	
3	$\frac{20}{100}$	B1	$\frac{20}{100}$ oe, eg $\frac{2}{10}$ or $\frac{1}{5}$	Ignore any incorrect simplification of $\frac{20}{100}$ oe and award the mark if $\frac{20}{100}$ oe is seen
4	$\frac{3}{9}$	B1	for $\frac{3}{9}$ accept $\frac{1}{3}$	
5	14	B1	cao	
6 (a)	12t	B1	12t	Accept t12 but not $12 \times t$ or $t \times 12$
(b)	7a	B1	7a	Accept a7 or $7 \times a$ or $a \times 7$ Partial simplification of $5a + 2a$ or $8a - a$ does NOT get the mark

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
10	535	P1 P1 A1	for a start to the process eg $1280+640+220 (=2140)$ or $1280\div 4 (=320)$ or $640\div 4 (=160)$ or $220\div 4 (=55)$ for a full process to find cost per adult eg “2140” $\div 4$ or “320” + “160” + “55” cao SC: B1 for answer of 1495 if P0 scored	Can have arithmetical error as long as the complete processes, in the correct order, are present.
11 (a)	Example	C1	for a correct example, eg $3 \times 4 = 12$ or $12 \div 3 = 4$ or a statement eg ‘3 is a factor of 12’ or ‘1 is a factor of every number’	This may be seen, for example, in a factor tree or in a list of factors, but there must be no incorrect factors on the tree or in the list
(b)	Example	C1	for an example, eg 23 or a statement eg. ‘the tens digit may be even’ or ‘the last digit only needs to be odd’	

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
12 (a)	100	B1	for answer in the range 95 to 100	
(b)	660	M1	for reading at least 3 of the required figures from the graph eg 3 of “100”, 260, 120, 340, 160, 440 OR for 260 – “100” (= 160) or 340 – 120 (= 220) or 440 – 160 (= 280) OR for “100” + 60 (= 160) or 80 + 100 + 40 (= 220) or 40 + 100 + 100 + 40 (= 280)	Figures may be seen on graph
(c)	Tablets and statement	B1 C1	(dep) for adding their 3 differences eg “160” + “220” + “280” A1 for 660 or ft their answer to part (a) B1 Tablets C1 Statement eg the bars get proportionally longer over time (most in 2017 and least in 2015) or they (more than) double each year or for an increase of 280 or numbers range from 60 to 340	Values quoted for tablets must be correct. Ignore any calculations relating to laptops and/or desktop computers whether correct or not. Award previous mark if “tablets” is not specifically stated but can be implied from statement.
(d)	Statement (supported)	C1	for statement, eg (No because) we do not know costs or prices or profit.	Answer of ‘Yes’ gets C0 Answer of ‘No’ without justification gets C0

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
13	3	P1 P1 A1	for a start to the process eg $240 - (2 \times 45) (= 150)$ oe or $(2 \times 45) + 40 (= 130)$ oe for complete process eg “150” $\div 40 (= 3.75)$ – can be implied by $40 + 40 + 40 = 120$ or “130” $+ 40 + 40 (= 210)$ cao	Considering just one piece of 45 cm is not a misread but $(240 - 45) \div 40 (= 4.875)$ oe should be awarded P1 only
14	Isabel (supported)	P1 P1 A1 C1	for process to work with $\frac{3}{4}$ eg $1 - \frac{3}{4} (= \frac{1}{4})$ oe, eg 25% or $\frac{25}{100}$ or $\frac{3}{4} = 75\%$ or $\frac{75}{100}$ or value of salary (say 1000) $\times 3 \div 4 (= 750)$ for process to work with ratio 3 : 7 eg $\frac{3}{3+7}$ oe or $\frac{7}{3+7}$ oe or value of salary (say 1000) $\div (3+7) (= 100)$ for (28(%)), 25(%) and 30(%) or 72(%), 75(%), 70(%) or 0.28, 0.25, 0.3 or for using value of salary (say 1000) giving 280, 250, 300 or 720, 750, 700 (dep P2) for Isabel or ft their comparative values	“Isabel” alone without supported evidence, gets 0 marks.

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
15	24	M1 A1	for method to find 15% of 160, eg $160 \times \frac{15}{100}$ oe (= 24) or $10\% = 160 \div 10 (= 16)$ plus $5\% = "16" \div 2 (= 8) (= 24)$ cao SC B1 for answer of 136 or 184 if M0 scored	When using partitioning methods, the method to find individual %s must be clear including the need to show an intention to sum eg. $10\% = 16 + 5\% = 8$
16 (a)	14	M1 A1	for 4×5 and 3×-2 , the substitution may be seen in two separate calculations, eg $4 \times 5 (= 20)$ and $3 \times -2 (= -6)$ cao	Note: $4e^2 + 8e = 12e^3$ for example gets B1 only Showing $\div 3$ by each side of equation is sufficient
(b)	$4e^2 + 8e$	B2 (B1	for $4e^2 + 8e$ for $4e^2$ or $8e$)	
(c)	11	M1 A1	for a correct first step eg $3 \times m - 3 \times 4 = 21$ oe or $m - 4 = 21 \div 3 (= 7)$ oe cao	
17	1 : 3	M1 A1	for $\frac{1}{4} : \frac{3}{4}$ oe OR for any correct un-simplified ratio, eg 25 : 75 cao SC: B1 for an answer of 3 : 1 or $1 : \frac{1}{3}$ if M0 scored	Ignore 'units' such as 1 nuts : 3 no nuts $1 : 3n$ gets M1A0

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
20	140	P1 P1 A1	for beginning to solve the problem eg $50 \div 5 \times 8 (= 80)$ or $14 : 8 : 5$ oe or $14 : 8$ and $8 : 5$ oe (linked) for a full process to solve the problem eg “80” $\div 4 \times 7$ or $\frac{50}{5} \times “14”$ or $140 : 80 : 50$ cao	80 may be seen in the ratio 80 : 50 If 140 clearly identified as houses in working award full marks
21	30	P1 P1 P1 A1	for full process to find the number of bags sold eg $5 \times 1000 \div 250 (= 20)$ OR for process to find selling price of 1 kg of sweets eg $0.65 \times 4 (= 2.60)$ for [number of bags] $\times 0.65$ or “20” $\times 0.65 (= 13)$ or “2.60” $\times 5 (= 13)$ OR for $10 \div “20”$ oe (= 0.50) OR for $0.65 \times 4 (= 2.60)$ and $10 \div 5 (= 2)$ (dep on previous P1) for a process to find the percentage profit eg (“13” $- 10$) $\div 10 \times 100$ or $(0.65 - “0.50”) \div “0.50” \times 100$ or (“2.60” $- “2”$) $\div “2” \times 100$ OR “13” $\div 10 \times 100 (= 130)$ oe cao	This could be by repeated addition Calculations can be in £ or pence [number of bags] can only come from $5 \times 10 \div 250 (= 0.2)$ or $5 \times 100 \div 250 (= 2)$ or $5 \div 250 (= 0.02)$ 3/10 or 0.3 is not enough but should be awarded 2 marks Award P3 for 130(%)

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
22 (a)	Estimated value	P1	for using a rounded value in a correct process eg $3000 \div 15$ or 15×8 or 20×8	Their rounded value must be used in a calculation Rounding may appear after a correct process eg $15.12 \times 8 = 120.96 \approx 100$ followed by eg $3069.25 \div 100$
		P1	for a full process to find the number of days eg “3000” \div “15” \div “10” (= 20) or “3000” \div “15” \div 8 (= 25)	Accept $3069.25 \div 15.12 \div 8$ oe
		A1	for a correct answer following through their rounded values	
(b)	Explanation	C1	eg less days required or it doesn't affect the answer because I would still round 16.27 down to 15 (or up to 20)	Refers to time taken

Paper: 1MA1/1F					
Question	Answer	Mark	Mark scheme	Additional guidance	
23	(a)	isosceles triangle, base 6 cm, height 4 cm	M1	for drawing an isosceles triangle or for drawing a triangle of base 6cm and height 4cm	Accept a freehand drawing Only a single triangle is acceptable; do not accept any attempted nets or 3-D diagrams Condone a perpendicular drawn from base to vertex
			A1	for a fully correct diagram	
	(b)	96 cm ²	M1	for a method to find the area of a triangular face eg $\frac{1}{2} \times 6 \times 5 (= 15)$	Ignore incorrect or absent units for this mark [The SC is from: $4 \times \frac{1}{2} \times 6 \times 4 + 6 \times 6$] Ignore incorrect or absent numerical answer for this mark
			M1	(dep) for finding the total surface area eg $4 \times "15" + 6 \times 6$	
			A1	for a numerical answer of 96 SC B1 for an answer of 84 if M0 scored	
B1	cm ²				

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
24	(22, 20)	P1	for process to find width or height of diagram eg $38 - 6 (= 32)$ or $36 - 7 (= 29)$	Figures may be shown on the diagram If $(6 + 38) \div 2$ leads to an answer other than 22, award P2 only Award for P3 for $(22, y)$ or $(x, 20)$ or $x = 22$ or $y = 20$
		P1	for process to find length of side of square eg " 32 " $\div 4 (= 8)$ or process to find half width of diagram eg " 32 " $\div 2 (= 16)$	
		P1	for process to find x coordinate eg $6 + 2 \times "8" (= 22)$ or $6 + "16" (= 22)$ or $(6 + 38) \div 2 (= 22)$	
		P1	for process to find y coordinate eg $36 - 2 \times "8" (= 20)$ or $36 - "16" (= 20)$ or $7 + 8 + "29" - 3 \times "8" (= 20)$	
		A1	cao SC: award 4 marks for $(20, 22)$	

Paper: 1MA1/1F																				
Question	Answer	Mark	Mark scheme	Additional guidance																
25	Line drawn	B3 (B2)	for a correct line between $x = -3$ and $x = 3$ for a correct straight-line segment through at least 3 of $(-3, 13), (-2, 9), (-1, 5), (0, 1), (1, -3), (2, -7), (3, -11)$ or for all of these points plotted but not joined or for a line drawn with a negative gradient through $(0, 1)$ and clear intention to use a gradient of -4 , eg line through $(0,1)$ and $(0.5, -1)$	Ignore any incorrect points Table of values <table border="1"> <tr> <td>x</td> <td>-3</td> <td>-2</td> <td>-1</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>y</td> <td>13</td> <td>9</td> <td>5</td> <td>1</td> <td>-3</td> <td>-7</td> <td>-11</td> </tr> </table>	x	-3	-2	-1	0	1	2	3	y	13	9	5	1	-3	-7	-11
x	-3	-2	-1	0	1	2	3													
y	13	9	5	1	-3	-7	-11													
		(B1)	for at least 2 correct points stated or plotted or for a line drawn with a negative gradient through $(0, 1)$ or a line with gradient -4	Ignore any incorrect points coordinates may be in a table or in working																
26	$\begin{pmatrix} 9 \\ 11 \end{pmatrix}$	M1 A1	for $\begin{pmatrix} 2 \times 5 \\ 2 \times 2 \end{pmatrix} [= \begin{pmatrix} 10 \\ 4 \end{pmatrix}]$ or $2 \times 5 - 1 (= 9)$ or $2 \times 2 + 7 (= 11)$ 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: ± 5 mm

Paper: 1MA1/1F			
Question		Modification	Mark scheme notes
2	(a)	Wording 'five' added	Standard mark scheme
2	(b)	Wording 'four' added	Standard mark scheme
6	(b)	Change to n	Standard mark scheme but a changed to n
7		Probability scale enlarged and crosses changed to solid circles; Lines at zero, a half and 1 lengthened	Standard mark scheme
9	(a)	Diagram enlarged. Wording added 'It shows a circle.' Deleted wording 'cross (x).' replaced with 'solid dot.' Cross changed to solid dot.	Standard mark scheme
9	(b)	Diagram enlarged	Standard mark scheme

Paper: 1MA1/1F

Question	Modification	Mark scheme notes
12	<p>Diagram enlarged. Right axis labelled. Key moved above and to the left of the diagram.</p> <p>Vertical axis label moved above the vertical axis. Shading changed.</p> <p>Intermediates added on both the horizontal and vertical axes. Graph lines changed as follows:</p> <p>2015 – Laptops changed from 260 to 250; Tablets changed from 260 to 250 and 320 to 300.</p> <p>2016 – Desktops changed from 120 to 100; Laptops changed from 120 to 100 and 340 to 350.</p> <p>2017 - Desktops changed from 160 to 150; Laptops changed from 160 to 150 and 440 to 450</p> <p>Tablets changed from 440 to 450 and 780 to 800</p>	<p>(a) Standard mark scheme</p> <p>(b) M1 for reading at least 3 of the required figures from the graph eg. 3 of 100, 250, 100, 350, 150 or 450 or finding 2 differences from $250 - 100 (= 150)$, $350 - 100 (= 250)$, $450 - 150 (= 300)$</p> <p>M1 (dep) for complete method shown eg $150 + 250 + 300$</p> <p>A1 cao for 700</p>

Question	Modification	Mark scheme notes																				
<p>12 cont.</p>	<div data-bbox="365 308 651 502" style="border: 1px solid black; padding: 5px;"> <p>Key:</p> <ul style="list-style-type: none"> desktop computers laptops tablets </div> <div data-bbox="353 523 1232 1305" style="text-align: center;"> <p>Number sold</p> <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <caption>Data extracted from the stacked bar chart</caption> <thead> <tr> <th>Year</th> <th>Desktop Computers</th> <th>Laptops</th> <th>Tablets</th> <th>Total Sold</th> </tr> </thead> <tbody> <tr> <td>2015</td> <td>100</td> <td>150</td> <td>50</td> <td>300</td> </tr> <tr> <td>2016</td> <td>100</td> <td>250</td> <td>150</td> <td>500</td> </tr> <tr> <td>2017</td> <td>150</td> <td>300</td> <td>350</td> <td>800</td> </tr> </tbody> </table> </div>	Year	Desktop Computers	Laptops	Tablets	Total Sold	2015	100	150	50	300	2016	100	250	150	500	2017	150	300	350	800	
Year	Desktop Computers	Laptops	Tablets	Total Sold																		
2015	100	150	50	300																		
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2017	150	300	350	800																		

Paper: 1MA1/1F			
Question		Modification	Mark scheme notes
16	(a)	MLP only: x and y changed to s and t .	Standard mark scheme, except for MLP in the mark scheme read s for x , and t for y .
16	(b)	Braille only: e changed to q .	Standard mark scheme, except for Braille in the mark scheme read q for e
23	(a)	<p>Model and a diagram provided. Diagram enlarged. Dashed lines made longer and thicker. Dotted lines made more obvious.</p> <p>Question reversed: Four different options of the front view of the pyramid have been provided. The pyramid has been put on page one for question 23(a) and the four shapes labelled A to D have been put on page two for question 23(a).</p> <p>Question changed to 'Look at the model or at the diagrams for Question 23(a) in the Diagram Book. They are shown on two pages in the Diagram Book.</p> <p>Page one shows a solid square-based pyramid, VABCD.</p> <p>The base of the pyramid is a square of side 6 cm. The height of the pyramid is 4 cm. M is the midpoint of BC and $VM = 5$ cm.</p> <p>Page two for Question 23 shows four shapes, labelled A, B, C and D. Each square represents a one centimetre square.</p> <p>Which shape shows the accurate front elevation of the pyramid from the direction of the arrow?' </p>	<p>Award 1 mark for an answer of D</p> <p>Award 2 marks for an answer of C</p> <p>NB: Accept any other unambiguous indication of the answer such the diagram indicated by circling etc.</p>

Question	Modification	Mark scheme notes
23 cont.	<p data-bbox="916 308 1167 336">Question 23 – page two</p> <p data-bbox="786 355 1296 384">Each square represents a one centimetre square.</p> <div data-bbox="369 311 1344 1364"><p>The diagram shows four shapes on a grid where each square is 1 cm by 1 cm. Shape A is a diamond (square rotated 45 degrees) with a side length of 5 units. Inside it is a 5x5 square. Shape B is a 5x5 square. Shape C is a triangle with a base of 5 units and a height of 5 units. Shape D is a triangle with a base of 5 units and a height of 4 units.</p></div>	

Paper: 1MA1/1F		
Question	Modification	Mark scheme notes
24	Diagram enlarged. Crosses changed to solid dots. Wording changed to 'It shows a pattern made from four identical squares.'	Standard mark scheme
25	Diagram enlarged. Y axis has been cut to go from -14 to 14.	Standard mark scheme

