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## Mark Scheme (Results)

November 2020

Pearson Edexcel GCSE  
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 (eg 3.5 – 4.2) then this is inclusive of the end points (eg 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 eg  $2 \times 6 (=12)$  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 eg “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 eg [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

<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 awarded for a fully correct statement(s) with no contradiction or ambiguity
<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	Answer	Mark	Mark scheme	Additional guidance
1	0.309, 0.32, 0.35, 0.4	B1	for 0.309, 0.32, 0.35, 0.4	Accept written in reverse order:  0.4, 0.35, 0.32, 0.309
2	18	B1	cao	18 must be the only number selected for this award
3	5	B1	cao	
4	0.75	B1	cao	
5	700	B1	for 700 Accept 7 hundreds	
6	(a) cross at $\frac{1}{2}$	B1	Cross (or mark) at $\frac{1}{2}$	Accept any mark near to $\frac{1}{2}$ if the intention is clear; do not accept if any additional marks are shown
	(b) cross at 0	B1	Cross (or mark) at 0	Accept any mark near to 0 if the intention is clear; do not accept if any additional marks are shown

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
7	Correct pictogram drawn	C1  C1  C1  C1    C2  C1  C1	deduces that 1 ellipse represents 12 (eggs) oe  2 ellipses for Tuesday oe  2¼ ellipses for Wednesday oe  correctly represented key  <b>Alternative</b> (using 1 ellipse to represent a different number of eggs)  for a correctly shown key, eg. 1 drawn ellipse represents 4 (eggs) oe <b>and</b> one day in agreement with their key.  for a second day in agreement with their key  for a third day in agreement with their key.	eg. ½ ellipse represents 6 (eggs), ¼ ellipse represents 3 (eggs)  some interpretation of shapes will be needed         eg. a correctly represented key plus, 4½ ellipses for Monday oe  eg. 6 ellipses for Tuesday oe  eg. 6¾ ellipses for Wednesday oe
8	(a)  (b)  (c)	(2, 3)  (0, -1)  C at (-2,1)	B1  B1  B1	cao  cao  cao
				If more than one point marked accept if labelled, otherwise not, unless clear

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
9	(a) $\frac{3}{7}$	B1	oe	
	(b) 1 : 2.5	M1	for appropriate method shown eg $30 \div 12 (= 2.5)$ <b>or</b> for a method that involves simplification of 12 : 30 approaching 1 : $n$ , eg. 4 : 10 or 6 : 15 or 2 : 5 <b>or</b> for 2.5 : 1 or $2\frac{1}{2} : 1$	
		A1	for 1 : 2.5 or $1 : 2\frac{1}{2}$ <b>or</b> for $n = 2.5$	Accept a fraction equivalent to $2\frac{1}{2}$ , eg. $1 : \frac{30}{12}$ 2.5 alone gets M1A0
10	660	P1	for a process to work out the <b>number</b> of large marbles eg $12 \div 4 (=3)$ <b>or</b> the <b>number</b> of small marbles eg $12 - [\text{number of large marbles}]$ <b>or</b> $12 \times (1 - \frac{1}{4}) (=9)$	[number of large marbles] could come from an incorrect method for finding $\frac{1}{4}$ of 12
		P1	(dep) for a process to work out the <b>weight</b> of large marbles eg “3” $\times 70 (=210)$ <b>or</b> to work out the <b>weight</b> of small marbles eg “9” $\times 50 (=450)$	
		P1	for a complete process eg $(12 \div 4) \times 70 + 12 \times (1 - \frac{1}{4}) \times 50$ oe	
		A1	cao	
11	Reflection	M1	for a correct reflection of the shape in any line <b>or</b> a correct reflection of at least 3 vertices	Allow hand-drawn
		A1	cao	



Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
12	(a) 11	B1	cao	
	(b) 22	M1	Starts to find input using inverse operations, $41 + 3 (= 44)$  <b>or</b> sight of $+3$ <b>and</b> $\div 2$  <b>or</b> derivation of equation eg $2n - 3 = 41$	$+3$ and $\div 2$ could be seen in a flow diagram Evidence could be provided by algebraic statement, numerical statements or by diagrams
		A1	cao	
13	(a) 025	B1	for angle in the range 23 to 27	Accept without the initial 0, eg. 25
	(b) 1.25	M1	for measurement of $AB$ in the range 4.8 to 5.2 (cm) or 48 to 52 (mm)	Could be just seen on the diagram
		M1	for " $5$ " $\times 25000 (= 125000)$ or " $50$ " $\times 25000 (= 1250000)$  <b>or</b> " $5$ " $\div 100000 (= 0.00005)$ or " $50$ " $\div 1000000 (= 0.00005)$  <b>or</b> $25000 \div 100000 (= 0.25)$ or $25000 \div 1000000 (= 0.025)$	125000 or 1250000 seen implies M1M1  For the award of this mark, " $5$ " or " $50$ " can be any value in the range 4 to 6 or 40 to 60
		A1	for answer in the range 1.2 to 1.3	

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
14	Completed table	M1	for correctly entering <b>two</b> of 11, 2, 5, 10 (= 30 – 20)	4 2 4 10 1 8 11 20 5 10 15 30
		M1	(indep) for using the rule for the top row eg. $([10 \text{ males}] - [2 \text{ male tennis}] \div 2 (=4)$	Award 2 <sup>nd</sup> M1 if top row is correct
		A1	for complete correct table	
15	7	P1	for $750 \times 9 (=6750)$  <b>or</b> $1 + 9 (=10)$  <b>or</b> $750 \div 1000 (= 0.75)$	
		P1	(dep) for “6750” + 750 (=7500)  <b>or</b> for “10” $\times$ 750 (=7500)  <b>or</b> “0.75” $\times$ “1 + 9” (= 7.5)	
		A1	cao	
		<b>Alternative</b>		
		P1	for $100 + 900 (= 1000)$	
		P1	(dep) for $750 \div 100 (= 7.5)$	
		A1	cao	This can be implied by (1 litre of drink =) 100 (ml) of squash and 900 (ml) of water)

Paper: 1MA1/1F					
Question	Answer	Mark	Mark scheme	Additional guidance	
16	(a)	Explanation	C1	for explanation  <b>Acceptable examples</b> the number of points only goes up to 4 because the median is 2 no-one scored 5 points (implies number of points scored was less than 5)  <b>Not acceptable examples</b> she was right since 5 is the middle number she has used the wrong column (insufficient) the median is 3	Explanations must relate to median number of points and not median of the frequency values
	(b)	Explanation	C1	for explanation identifying the error in the working  <b>Acceptable examples</b> $0 \times 1 = 0$ or $0 \times 1$ is not 1 Anything times zero is zero  <b>Not acceptable examples</b> the correct answer is 37	

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
17	Conclusion (supported)	P1  P1  P1  P1  C1	<p>for process to find 1/10 of 500 eg. <math>500 \div 10 (= 50)</math> <b>or</b> <math>1 - 0.1 (= 0.9)</math> oe</p> <p>(dep) for process to reduce 500 by 1/10 eg. <math>500 - "50"</math> <b>or</b> <math>500 \times "0.9"</math> (= 450)</p> <p>for process to calculate 20% of [Monday sale price] eg. <math>"450" \times \frac{20}{100} (= 90)</math> oe <b>or</b> for use of <math>100 - 20 (= 80)</math> or <math>1 - 0.2 (= 0.8)</math> in relation to [Monday sale price]</p> <p>(dep on P3) for a fully correct process to find the cost of the TV on Tuesday eg. <math>"450" - "90"</math> (= 360) or <math>"450" \times "0.8"</math> (= 360)</p> <p>for conclusion (Yes) supported by correct figures.</p>	<p>eg Yes, the TV will cost 360 Yes, he will have 40 over left</p>
18	4550 to 4800	M1  M1  A1	<p>for rounding at least two figures to 800, 50, 300 or 290 (which could be evidenced through partial calculation)</p> <p>(dep) for a correct calculation using their rounded values eg. sight of 240000 (= <math>800 \times 300</math>) <b>or</b> 232000 (= <math>800 \times 290</math>) <b>or</b> 229100 (= <math>790 \times 290</math>)</p> <p><b>or</b> 16 (= <math>800 \div 50</math>) <b>or</b> 15.8 (= <math>790 \div 50</math>)</p> <p><b>or</b> 6 (= <math>300 \div 50</math>) <b>or</b> 5.8 (= <math>290 \div 50</math>)</p> <p>for answer in range 4550 to 4800</p>	<p>Any attempt to find the exact answer gets NO marks even if followed by rounding</p> <p>Various operations possible</p>

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
19	(a) $x^2 - 4x$	B1	cao	
	(b) $5(3y - 2)$	B1	cao	
	(c) 9	M1	for a correct first stage, eg. expanding brackets, $7 \times f - 7 \times 5 (= 28)$ oe <b>or</b> for division of both sides by 7, eg. $\frac{7(f-5)}{7} = \frac{28}{7}$	
		A1	cao	
20	$3n - 2$	B2	for $3n - 2$ oe	Accept a different variable, eg. $3x - 2$
		(B1)	for $3n + k$ where $k \neq -2$ or is absent unambiguously shown)	$n = 3n - 2$ gets B1 only $n + 3$ gets NO marks
21	Shown	M1	for conversion to improper fractions eg. $\frac{7}{3}$ <b>or</b> $\frac{15}{4}$	Need not be shown with operators
		M1	(dep) for method to multiply fractions, eg. $\frac{7 \times 15}{3 \times 4} (= \frac{105}{12})$ <b>or</b> $\frac{28 \times 45}{12 \times 12} (= \frac{1260}{144})$ oe	
		C1	for complete working showing each stage as far as $\frac{35}{4}$ or $8\frac{9}{12}$	
22	B C D A	B2	cao	
		(B1)	for two or three correct)	
23	A & D	B1	cao	

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
24	20	P1  P1  A1	for process to find SP of 24 chocolate bars, eg. $0.50 \times 24 (= 12)$ oe  <b>or</b> for process to find the overall profit eg $(24 \times 0.5) - 10 (=2)$  <b>or</b> for process to find CP of one chocolate bar, eg. $1000 \div 24 (= 41.66\dots)$ oe  (dep) for start to a process to find percentage profit, eg. using $\frac{"12"-10}{10}$ <b>or</b> $\frac{"12"}{10}$  <b>or</b> $\frac{50-"41.66.."}{"41.66.."}$ oe with consistent units  cao	Working can be carried out in either pounds or pence.
25	85 with working and reasons	M1  M1  A1  C2   (C1)	for correct use of corresponding angles eg $AEB = 63$ <b>or</b> co-interior angles eg $BCD = 180 - 148 (= 32)$ or $DEB = 180 - 63 (= 117)$  for a complete method to find angle $EAB$ eg. $180 - "63" - (180 - 148)$ <b>or</b> $148 - "63"$ <b>or</b> $"117" - (180 - 148)$  for $EAB = 85$ (identified)  (dep on M2) all working correct with all appropriate reasons stated. <u>Corresponding</u> angles are equal <u>Allied</u> angles / <u>Co-interior</u> angles add up to 180 <u>Angles</u> on a straight line add up to 180 <u>Angles</u> in a triangle add up to 180 The <u>exterior angle</u> of a triangle is <u>equal</u> to the sum of the <u>interior opposite angles</u> .  for <b>one</b> reason relating to parallel lines clearly used and stated <b>or</b> for any <b>two</b> reasons clearly stated for their fully correct method)	Angles must be clearly labelled on the diagram or otherwise identified. Full solution must be seen. Correct method can be implied from angles on the diagram if no ambiguity or contradiction.  When reasons are given the key words underlined must be present. Reasons need to be linked to their method; any reasons not linked, do not credit. There should be no incorrect reasons given.

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
26	20 or 24 or 168  Comparison	B1  C2        (C1)	for identification of the range of the girls (20) <b>or</b> the range (24) <b>or</b> the median (168) of the boys  for a correct comparison of medians <b>and</b> a correct comparison of ranges supported by correct figures.  eg the median height for girls (165) is less than the median height for boys (168) and the range for girls (20) is less than the range for boys (24)  At least one comparison must be in context referring to height or quoting cm.  for a correct comparison of medians <b>or</b> a correct comparison of ranges that could fit their incorrect figure(s))	Simply quoting values for median, range is insufficient; they must be compared.    Context not necessary for C1
27	450	M1  M1  A1	for $18 \div 3 (=6)$  for substitution eg. $75 = \frac{F}{6}$ or $75 \times "6"$  cao	Ignore units
28	0.000 672, $67.2 \times 10^{-4}$ $6.72 \times 10^5$ $672 \times 10^4$	B2  (B1)	cao  for correct conversions to same format, condoning one error.  <b>or</b> for 3 numbers in the correct order (ignoring one)  <b>or</b> for all 4 numbers listed in reverse order)	Accept correct numbers in any form

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
29	6 : 15 : 20	P1             P1             A1	<p>chooses a multiplier to equate the two fractions in terms of <math>b</math>  eg <math>\frac{2}{5} \times \frac{3}{3} (= \frac{6}{15})</math> <b>or</b> <math>\frac{3}{4} \times \frac{5}{5} (= \frac{15}{20})</math></p> <p><b>or</b> lists equivalent fractions to <math>\frac{2}{5}</math> up to at least <math>\frac{6}{15}</math>, eg. <math>\frac{2}{5}, \frac{4}{10}, \frac{6}{15}, \dots</math></p> <p><b>or</b> lists equivalent fractions to <math>\frac{3}{4}</math> up to at least <math>\frac{15}{20}</math>, eg. <math>\frac{3}{4}, \frac{6}{8}, \frac{9}{12}, \frac{12}{16}, \frac{15}{20}, \dots</math></p> <p><b>or</b> (<math>a : b =</math>) 2 : 5 <b>and</b> (<math>b : c =</math>) 3 : 4</p> <p><b>or</b> for 6 : 15 or 15 : 20 seen</p> <p>puts into related terms ready for ratio eg <math>\frac{2}{5} \times \frac{3}{3} = \frac{6}{15}</math> <b>and</b> <math>\frac{3}{4} \times \frac{5}{5} = \frac{15}{20}</math></p> <p><b>or</b> for (<math>a : b =</math>) 6 : 15 <b>and</b> (<math>b : c =</math>) 15 : 20</p> <p><b>or</b> lists equivalent ratios up to a common element for <math>b</math>,  eg <math>a : b = 2 : 5, 4 : 10, 6 : \underline{15}</math> <b>and</b> <math>b : c = 3 : 4, 6 : 8, 9 : 12, 12 : 16, \underline{15} : 20</math></p> <p>for 6 : 15 : 20 oe</p>	<p>Need not be written in ratio form</p> <p>Accept equivalent ratios  Accept <math>a = 6. b = 15</math> and <math>c = 20</math></p>
30	(a) $q = \frac{p-7}{6}$	M1             A1	<p>for a correct first step, showing a method of subtraction of 7 from both sides or  division of all terms by 6 eg <math>p - 7 = 6q + 7 - 7</math> <b>or</b> <math>\frac{p}{6} = \frac{6q}{6} + \frac{7}{6}</math> oe</p> <p>for <math>q = \frac{p-7}{6}</math> <b>or</b> <math>q = \frac{p}{6} - \frac{7}{6}</math></p>	<p>Allow <math>1 \frac{1}{6}</math> for <math>\frac{7}{6}</math>  Award for answer without “<math>q =</math>”</p>
(b)	$m^6$	B1	cao	





