



# Mark Scheme (Results)

Summer 2019

Pearson Edexcel GCSE (9 – 1)  
In Mathematics (1MA1)  
Higher (Calculator) Paper 2H

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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 awarded for a fully correct statement(s) with no contradiction or ambiguity

**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: 1MA1/2H																					
Question	Answer	Mark	Mark scheme	Additional guidance																	
1 (a)	$n > 2$	M1	for a method to isolate terms in $n$ in any inequality or equation eg $14n - 11n > 6$ or $n = 2$	Ignore incorrect inequality sign and accept “=” sign																	
(b)		A1 M1 M1 A1	cao for $-2 - 3 < x \leq 4 - 3$ ( $-5 < x \leq 1$ ) for drawing a line from $-5$ to $1$ <b>or</b> (indep) for an open circle at either $-2$ or $-5$ <b>or</b> (indep) for a closed circle at $4$ or $1$ cao	A circle around $-5$ and $1$ implies M1 A line from $-5$ to $1$ implies M2 if no working shown																	
2	Graph	B3 (B2) (B1)	for a correct line between $x = -2$ and $x = 4$ for a correct straight line segment through at least 3 of $(-2, -7), (-1, -5), (0, -3), (1, -1), (2, 1), (3, 3), (4, 5)$ <b>or</b> for all of these points plotted but not joined  <b>OR</b> for a line drawn with a positive gradient through $(0, -3)$ <b>and</b> clear intention to use a gradient of 2, eg line through $(0, -3)$ going across 2 squares and up 4 squares )  for at least 2 correct points stated or plotted  <b>OR</b> for a line drawn with a positive gradient through $(0, -3)$  <b>OR</b> a line with gradient 2)	Ignore any incorrect points. Points need not be plotted for a correct line (segment) drawn  Table of values <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td><math>x</math></td><td>-2</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td></tr> <tr> <td><math>y</math></td><td>-7</td><td>-5</td><td>-3</td><td>-1</td><td>1</td><td>3</td><td>5</td></tr> </table> Ignore any incorrect points Coordinates may be in a table or in working		$x$	-2	-1	0	1	2	3	4	$y$	-7	-5	-3	-1	1	3	5
$x$	-2	-1	0	1	2	3	4														
$y$	-7	-5	-3	-1	1	3	5														

Paper: 1MA1/2H				
Question	Answer	Mark	Mark scheme	Additional guidance
3 (i)  (ii)	65  statement	M1  A1  C1	<p>for working with proportion eg <math>10 \div 30 \times 195 (=65)</math></p> <p>cao</p> <p>for statement</p> <p><b>Acceptable examples</b>            sample is representative (otherwise answer wrong)            random sample (otherwise answer will be different)            the 30 students are from the 195 (otherwise not accurate)            10 out of every 30 want to go to the Theme Park (otherwise answer will be different/wrong)            there is no bias</p> <p><b>Not acceptable examples</b>            There would be more than 10 people who want to go to the Theme Park            I rounded my answer</p>	Condone use of 200 for 195
4	8	P1  P1  P1  A1	<p>for working with volume of the cuboid, eg <math>30 \times 6 \times 19 (= 3420)</math></p> <p><b>OR</b> for using <math>\frac{2}{3}</math> with one dimension, eg. <math>30 \times 2 \div 3 (= 20)</math></p> <p>for “3420” <math>\times 2 \div 3 (= 2280)</math> <b>or</b> “3420” <math>\div 3 (= 1140)</math></p> <p><b>OR</b> “20” <math>\times 6 \times 19 (= 2280)</math></p> <p><b>OR</b> “3420” <math>\div 275 (= 12.4\dots = 12</math> cups)</p> <p>(dep on P2) for “2280” <math>\div 275 (= 8(.29\dots))</math> <b>or</b> “1140” <math>\div 275 (= 4(.14\dots))</math></p> <p><b>OR</b> “12” <math>\times 2 \div 3</math></p> <p><b>OR</b> for <math>275 \times 8 (= 2200)</math> <b>or</b> <math>275 \times 9 (= 2475)</math></p> <p>cao</p>	For P marks, ignore attempts at unit conversion

Paper: 1MA1/2H				
Question	Answer	Mark	Mark scheme	Additional guidance
5	9.85	M1  A1	for $\sin(38) = \frac{AB}{16}$ oe <b>or</b> alternative method to find AB  for an answer in the range 9.76 to 9.92	
6	8.3 and 8.4	B1  B1	for 8.3 in the correct position  for 8.4 in the correct position	Accept 8.3̄ or 8.399...
7	168	P1  P1  P1  A1	for working with ratio to find the amount for C or D eg $1.5 \times 2 (=3)$ or (A, B, C, D) 2, 7, 3, 3 oe <b>OR</b> for suitable expressions linking A with C or D, eg. $A = x$ , $C = 1.5x$  for “ $2 + 3 + 3 + 7$ ” (=15) <b>OR</b> adds 4 suitable expressions, eg. “ $x + 3.5x + 1.5x + 1.5x$ ” (= $7.5x$ )  for a complete process to find the amount of money eg $360 \div “15” \times 7$ <b>OR</b> $360 \div “7.5” \times 3.5$  cao	
8 (a)	$5.62 \times 10^{-3}$	B1	cao	
(b)	1452	B1	cao	

Paper: 1MA1/2H				
Question	Answer	Mark	Mark scheme	Additional guidance
9	100 : 81	M1	for a scale factor of 0.9 oe used; <b>OR</b> for 10 : 9 oe <b>OR</b> 81 : 100 oe <b>OR</b> 81%	
		A1	for 100 : 81 oe	eg. 1 : 0.81, accept 1.23(4...) : 1
	6 : 5	P1	for 1.44 oe used as the scale factor <b>or</b> 1.2 oe <b>OR</b> for 144 : 100 oe or $\sqrt{144} : \sqrt{100}$ oe <b>OR</b> 5 : 6 oe	
		A1	for 6 : 5 oe	eg 1.2 : 1, accept 1 : 0.83(3...)
10	Diagram completed 0.85 0.15, 0.85, 0.15, 0.85	M1	for $1 - 0.15 (=0.85)$	
		A1	fully correct diagram	
	0.2775	M1	for one correct product eg $0.15 \times 0.15 (= 0.0225)$ or $0.15 \times 0.85 (= 0.1275)$ or $0.85 \times 0.85 (= 0.7225)$	ft their diagram provided probabilities are less than 1
		M1	for a complete method eg “0.0225” + $2 \times$ “0.1275” <b>OR</b> $1 - “0.7225”$ oe	ft their diagram provided probabilities are less than 1
		A1	oe, eg $\frac{111}{400}$	

Paper: 1MA1/2H				
Question	Answer	Mark	Mark scheme	Additional guidance
11	(a) 5, 35, 55, 70, 78, 80	B1	cao	
		M1	for 5 or 6 of their points plotted correctly from a cf table	Ignore to the left of the first point and right of the last point
	(b) cf graph	A1	for a fully correct graph  SCB1 if 5 or 6 of their points plotted not at end but consistent within each interval and joined by a curve or line segments providing no gradient is negative	Accept a smooth curve or line segments
		M1	for a clear method to read off the cf graph at 90	Sight of 74 or 6 implies M1
		M1	for a full method to find the percentage eg $(80 - "74") \div 80 \times 100 (=7.5)$	The following readings give the following percentages
		A1	for 7.5 or ft cf graph	$72 = 10\%$ $73 = 8.75\%$ $74 = 7.5\%$ $75 = 6.25\%$ $76 = 5\%$

Paper: 1MA1/2H				
Question	Answer	Mark	Mark scheme	Additional guidance
12	25.4	P2  (P1)  P1  A1	<p>for finding the size of the angle eg <math>\frac{40 \times 360}{\pi \times 7^2}</math> (=93.5(4..))</p> <p><b>or</b> for working with proportion,            eg <math>\frac{40}{49\pi}</math> (=0.259(8...) or 0.26) <b>or</b> <math>\frac{49\pi}{40}</math> (=3.84(8...) or 3.85)</p> <p>for finding the area of the circle eg <math>\pi \times 7^2</math> (=153(.938..) or 154) )</p> <p>(dep on P2) for a process to find the arc length,            eg <math>\frac{"93.5(4...)"}{360} \times \pi \times 2 \times 7</math> (=11.4(28...)) <b>or</b> <math>\frac{40}{49\pi} \times \pi \times 2 \times 7</math>            (=11.4(28...)) <b>or</b> <math>\pi \times 2 \times 7 \div \frac{49\pi}{40}</math> (=11.4(28...))</p> <p>for answer in the range 25 to 25.44</p>	<p>May be embedded</p> <p>If an answer is shown in the range in working and then incorrectly rounded award full marks.            Accept <math>\frac{178}{7}</math></p>

Paper: 1MA1/2H				
Question	Answer	Mark	Mark scheme	Additional guidance
13	$\frac{7x - 13}{x - 2}$	B1  M1  M1  A1	<p>for factorising eg <math>(x+5)(x-2)</math></p> <p>for a method to divide <math>(x+5)</math> by the algebraic fraction eg <math>(x+5) \times \frac{(x-1)}{x^2+3x-10}</math></p> <p>for finding 2 fractions with a common denominator or a single fraction eg <math>\frac{6(x-2)}{x-2} + \frac{(x-1)}{x-2}</math> or <math>\frac{6(x-2)+(x-1)}{x-2}</math> or  <math>\frac{6(x^2+3x-10)}{x^2+3x-10} + \frac{(x+5)(x-1)}{x^2+3x-10}</math> or <math>\frac{6(x^2+3x-10)+(x+5)(x-1)}{x^2+3x-10}</math></p> <p><math>\frac{7x-13}{x-2}</math></p>	Condone incorrect factorising  Condone incorrect factorising  

Paper: 1MA1/2H				
Question	Answer	Mark	Mark scheme	Additional guidance
14 (a)(i)	0.83	B1	for a tangent drawn at $t = 15$	Working: $7.5 \div 9 = 0.83....$ No tangent scores 0 marks
		M1	full method to use the tangent to find the gradient (eg $7.5 \div 9$ )	This mark can be awarded if the tangent is drawn at $t \neq 15$ Working may be seen on the diagram
(ii)	Statement	A1	for answer in the range 0.6 to 1.0	
		C1	<p>statement  <b>Acceptable examples</b>          acceleration          rate of change of speed          increase in speed over time  <b>Not acceptable examples</b>          rate of change          m/s/s          increase in speed</p>	
(b)	220	P1	for splitting the area into strips and correct process to find the area of one strip, eg $\frac{5 \times 4}{2} (=10)$ or $\frac{(4+12)}{2} \times 5 (=40)$ or $\frac{(12+18)}{2} \times 5 (=75)$ or $\frac{(18+20)}{2} \times 5 (=95)$	Working 4, 12, 18, 20
		P1	for a complete process using at least 4 strips to find the area under the curve eg, "10" + "40" + "75" + "95"	Allow one error in the reading of speeds
		A1	for answer in the range 215 to 225 from correct working using at least 4 strips	

Paper: 1MA1/2H				
Question	Answer	Mark	Mark scheme	Additional guidance
15	$m = \frac{f+4}{f-3}$	M1 M1 A1	<p>for multiplying both sides by <math>m - 1</math>, eg. <math>f(m - 1) = 3m + 4</math></p> <p>(dep) for a method to rearrange the formula to isolate terms in <math>m</math> in a correct equation, eg. <math>fm - 3m = f + 4</math> or <math>-fm + 3m = -f - 4</math></p> <p>for <math>m = \frac{f+4}{f-3}</math> oe, eg <math>m = \frac{-f-4}{-f+3}</math></p>	Condone missing brackets for this mark only
16	$y = -\frac{3}{4}x - \frac{11}{4}$	M1 M1 A1	<p>for identifying gradient of <math>\frac{4}{3}</math></p> <p>for beginning a method to find the gradient of the perpendicular line eg <math>\frac{4}{3} \times m = -1</math> or identifies gradient of perpendicular line as <math>-\frac{3}{4}</math></p> <p>for <math>y = -\frac{3}{4}x - \frac{11}{4}</math> or any equivalent equation</p>	<p>Ignore constant term</p> <p>Can ft providing gradient is clearly stated</p> <p><math>4y + 3x = -11</math> <math>y + 5 = -\frac{3}{4}(x - 3)</math></p>

Paper: 1MA1/2H				
Question	Answer	Mark	Mark scheme	Additional guidance
17 (a)	Explanation	C1	For stating the LCM of (4+7) and (5+3) is 88 <b>or</b> there is no smaller multiple of 8 and 11 (than 88)	
(b)	23	P1	<p>for using a scale factor appropriately eg <math>4 \times 8 (=32)</math> <b>or</b> <math>3 \times 11 (=33)</math>  <b>or</b> <math>7 \times 8 (=56)</math> <b>or</b> <math>5 \times 11 (=55)</math></p> <p><b>or</b> for writing a pair of suitable fractions, eg <math>\frac{7}{11}</math> and <math>\frac{3}{8}</math> <b>or</b> <math>\frac{4}{11}</math> and <math>\frac{5}{8}</math></p> <p><b>or</b> <math>\frac{3}{8}</math> and <math>\frac{4}{11}</math></p> <p>for finding the number of large cubes and red cubes <b>or</b> small and yellow  <b>or</b> small and red</p> <p>eg <math>7 \times 8 (=56)</math> and <math>3 \times 11 (=33)</math> <b>or</b> <math>4 \times 8 (=32)</math> and <math>5 \times 11 (=55)</math>  <b>or</b> <math>4 \times 8 (=32)</math> and <math>3 \times 11 (=33)</math></p> <p><b>OR</b> a suitable fractional equation, eg <math>\frac{7}{11} - x = \frac{3}{8}</math> <b>or</b> <math>\frac{5}{8} - x = \frac{4}{11}</math></p> <p><b>or</b> <math>x = 1 - \frac{3}{8} - \frac{4}{11}</math></p> <p><b>OR</b> a suitable pair of probabilities with a common denominator,  eg <math>\frac{56}{88}</math> and <math>\frac{33}{88}</math> <b>or</b> <math>\frac{32}{88}</math> and <math>\frac{55}{88}</math> <b>or</b> <math>\frac{33}{88}</math> and <math>\frac{32}{88}</math></p> <p>cao</p>	<p>May be seen in a two-way table or probability tree</p> <p>May be seen in a two-way table or probability tree</p> <p><math>\frac{23}{88}</math> scores P2A0</p>

Paper: 1MA1/2H				
Question	Answer	Mark	Mark scheme	Additional guidance
18	75° with reasons	M1  M1  A1  C2  (C1)	<p>for finding angle <math>BAD = \frac{180 - 40}{2} (= 70)</math></p> <p><b>or</b> angle <math>BDA = \frac{180 - 40}{2} (= 70)</math></p> <p>for finding angle <math>BCD = 180 - "70" (=110)</math> or <math>40 + x + 70 + x = 180</math></p> <p>for finding angle <math>ADE = 75</math></p> <p>(dep M2) for <u>Opposite angles</u> of a <u>cyclic quadrilateral</u> add up to 180 <b>and</b> one other reason; all reasons given must be appropriate for their working Base angles of an <u>isosceles triangle</u> are equal <u>Angles</u> in a <u>triangle</u> add up to 180, <u>Angles</u> on a straight <u>line</u> add up to 180 [<b>or</b> <u>exterior angle</u> of a <u>cyclic quadrilateral</u> is equal to the <u>interior opposite angle</u>]</p> <p>(dep M2) for <u>Opposite angles</u> of a <u>cyclic quadrilateral</u> add up to 180, <b>or</b> all other reasons given appropriate for their working)</p>	<p>Could be shown on the diagram or in working</p> <p>Underlined words need to be shown; reasons need to be linked to their method</p> <p>Apply the above criteria</p>

Paper: 1MA1/2H				
Question	Answer	Mark	Mark scheme	Additional guidance
19	31.0	P1	<p>for <math>\tan 35 = BE \div 15</math> or <math>BE = 10.5(0...)</math></p> <p><b>OR</b> finding the length <math>DM = \frac{2}{5} \times 15 (= 6)</math> or <math>MA = \frac{3}{5} \times 15 (= 9)</math> or 6.9</p> <p><b>OR</b> showing the required angle on a diagram eg with an arc</p> <p>for <math>MB = \sqrt{15^2 + 9^2}</math> or <math>\sqrt{306}</math> or 17.4(9....)</p> <p><b>OR</b> <math>ME = \sqrt{9^2 + 18.31(1...)^2}</math> or <math>\sqrt{416. (3 ...)}</math> or 20.4(0...)</p>	$MB = \sqrt{9^2 + 15^2} = \sqrt{306} (=17.4(9...))$ or 17.5 $BE = 15 \times \tan 35 (=10.5(0...))$ $AE = 15 \div \cos 35 (=18.3(1...))$ $ME = \sqrt{9^2 + 18.31 ...^2} = \sqrt{416. (3 ...)}$ $(=20.4(0...))$
		P1	<p>for using appropriate trigonometry ratio to set up an equation in angle <math>EMB</math> eg <math>\tan \theta = "10.5(0...)" \div "17.4(9...)"</math></p> <p><b>or</b> <math>\cos \theta = "17.4(9...)" \div "20.4(0...)"</math></p> <p><b>or</b> <math>\sin \theta = "10.5(0...)" \div "20.4(0...)"</math></p>	Check diagram for working
		A1	for answer in the range 30.9 to 31	If an answer is shown in the range in working and then incorrectly rounded award full marks.

Paper: 1MA1/2H				
Question	Answer	Mark	Mark scheme	Additional guidance
20 (a)	2a	M1	for $\mathbf{a} - \mathbf{b} + \mathbf{a} + \mathbf{b}$ (=2a)	
		A1	cao	
(b)	4	P1	for a process to find $\overrightarrow{MF} = -0.5\mathbf{b} - \mathbf{a} - (\mathbf{a} - \mathbf{b})$ (=0.5b-2a) or $\overrightarrow{CE} = \mathbf{a} + \mathbf{b}$ or $\overrightarrow{FM} = \mathbf{a} - \mathbf{b} + \mathbf{a} + 0.5\mathbf{b}$ (=2a-0.5b)	Accept ft from (a) providing vectors are clearly stated
		P1	For finding a suitable vector expression for <b>two</b> of ( $\overrightarrow{CE}$ or $\overrightarrow{EC}$ ), ( $\overrightarrow{CX}$ or $\overrightarrow{XC}$ ) or ( $\overrightarrow{EX}$ or $\overrightarrow{XE}$ ) eg, $\overrightarrow{CX} = \mathbf{a} + 0.5\mathbf{b} + \frac{1}{n+1}(0.5\mathbf{b} - 2\mathbf{a})$ or $\overrightarrow{CX} = -\mathbf{a} + \mathbf{b} + \frac{n}{n+1}(2\mathbf{a} - 0.5\mathbf{b})$ $\overrightarrow{XE} = \frac{1}{n+1}(2\mathbf{a} - 0.5\mathbf{b}) + 0.5\mathbf{b}$ or $\overrightarrow{XE} = \frac{n}{n+1}(0.5\mathbf{b} - 2\mathbf{a}) + 2\mathbf{a}$ or $\overrightarrow{XC} = \frac{n}{n+1}(0.5\mathbf{b} - 2\mathbf{a}) + \mathbf{a} - \mathbf{b}$ or $\overrightarrow{XC} = \frac{1}{n+1}(2\mathbf{a} - 0.5\mathbf{b}) - 0.5\mathbf{b} - \mathbf{a}$ or $\overrightarrow{EX} = -0.5\mathbf{b} + \frac{1}{n+1}(0.5\mathbf{b} - 2\mathbf{a})$ or $\overrightarrow{EX} = -2\mathbf{a} + \frac{n}{n+1}(2\mathbf{a} - 0.5\mathbf{b})$	$\overrightarrow{CX} = \frac{n-1}{n+1}\mathbf{a} + \frac{n+2}{2(n+1)}\mathbf{b} \quad \overrightarrow{XE} = \frac{2}{n+1}\mathbf{a} + \frac{n}{2(n+1)}\mathbf{b}$ $\overrightarrow{XC} = \frac{1-n}{n+1}\mathbf{a} + \frac{-n-2}{2(n+1)}\mathbf{b} \quad \overrightarrow{EX} = \frac{-2}{n+1}\mathbf{a} - \frac{n}{2(n+1)}\mathbf{b}$
		P1	for complete process to equate the coefficients of <b>a</b> and <b>b</b> eg $\frac{n-1}{n+1} = \frac{n+2}{2(n+1)}$	
		A1	cao	

Paper: 1MA1/2H				
Question	Answer	Mark	Mark scheme	Additional guidance
		P1	<b>ALTERNATIVE</b> for a process to find $\vec{MF} = -0.5\mathbf{b} - \mathbf{a} - (\mathbf{a} - \mathbf{b}) (=0.5\mathbf{b} - 2\mathbf{a})$ <b>or</b> $\vec{CE} = \mathbf{a} + \mathbf{b}$ <b>or</b> $\vec{FM} = \mathbf{a} - \mathbf{b} + \mathbf{a} + 0.5\mathbf{b} (=2\mathbf{a} - 0.5\mathbf{b})$  P1 For finding two suitable vector expressions for $\vec{FX}$ eg $\vec{FX} = \frac{n}{n+1}(2\mathbf{a} - 0.5\mathbf{b})$ <b>and</b> $\vec{FX} = \mathbf{a} - \mathbf{b} + k\mathbf{a} + k\mathbf{b}$  P1 for complete process to equate the coefficients of $\mathbf{a}$ and $\mathbf{b}$ eg $\frac{2n}{n+1} - 1 = 1 - \frac{n}{2(n+1)}$  A1 cao	Accept ft from (a) providing vectors are clearly stated



## **Modifications to the mark scheme for Modified Large Print (MLP) papers: 1MA1 2H**

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

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<b>PAPER: 1MA1/2H</b>		
<b>Question</b>	<b>Modification</b>	<b>Mark scheme notes</b>
1 (b)	Diagram enlarged. Wording ‘below’ removed.	Standard mark scheme
2	Diagram enlarged. Wording ‘below’ removed.	Standard mark scheme
4	Diagram enlarged. Wording changed to ‘It shows a container in the shape of a cuboid with length 30 cm, width 6 cm and height 19 cm.’ Second 19 cm label added on the left of the diagram. Dashed line and ‘Water’ added.	Standard mark scheme
5	Diagram enlarged. Angle moved outside of the angle arc and the angle arc made smaller. Wording added: ‘AC = 16 cm Angle ACB = $38^\circ$ Angle ABC is a right angle.’	Standard mark scheme
9	Braille only: ‘A’ to ‘P’, ‘B’ to ‘Q’, ‘E’ to ‘S’, ‘F’ to ‘T’, ‘e’ and ‘f’ to ‘s’ and ‘t’.	Standard mark scheme but note changes of letters for Braille.
10	Diagram enlarged. Braille only- spaces labelled (i) to (v).	Standard mark scheme

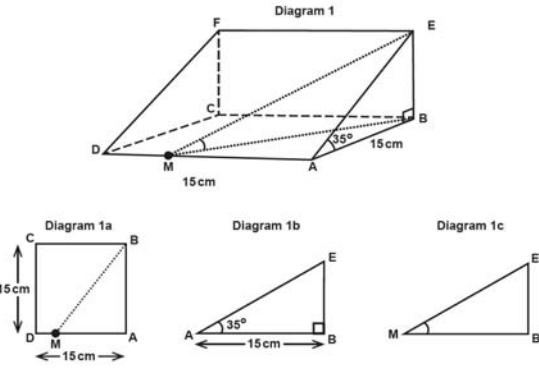
**PAPER: 1MA1/2H**

<b>Question</b>	<b>Modification</b>	<b>Mark scheme notes</b>
11	<p>Numbers in the frequency column now: 5, 25, 20, 15, 10, 5</p> <p>(a) Wording added ‘There are six spaces to fill.’</p> <p>(b) Diagram enlarged. Right axis labelled.</p> <p>Axis labels moved to the left of the horizontal axis and above the vertical axis.</p>	<p>(a) B1 for 5, 30, 50, 65, 75, 80</p> <p>(b) use standard mark scheme</p> <p>(c)</p> <p>M1 for a clear method to read off the graph at 90</p> <p>M1 for a full method to find the percentage eg <math>(80 - "70") \div 80 \times 100 (=12.5)</math></p> <p>A1 for an answer in the range 12.5 or ft their diagram</p>
12	Diagram enlarged	Standard mark scheme

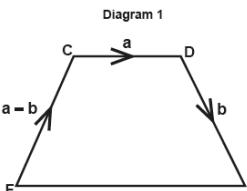
**PAPER: 1MA1/2H**

<b>Question</b>	<b>Modification</b>	<b>Mark scheme notes</b>
14	<p>Wording added 'It shows a graph.' Diagram enlarged. Graph line made thicker.          Axis labels moved to the left of the horizontal axis and above the vertical axis.          Right axis labelled. Graph line moved:          Graph line changed to go through: (5,5), (10,12.5), (15,17.5), (20,20), (30,17.5)</p>	<p>(a)(i)          B1 for a tangent drawn at <math>t = 15</math>          M1 full method to use the tangent to find the gradient (eg <math>7.5 \div 9</math>)          A1 for answer in the range 0.6 to 1.0          (a)(ii) use standard mark scheme          (c) use standard mark scheme leading to an answer of approx. 225 or in the range 215 to 235          Strips: <math>12.5 + 43.75 + 75 + 93.75</math></p>
18	<p>Diagram enlarged.          Angle moved outside of the angle arc and the angle arc made smaller.</p>	Standard mark scheme

**PAPER: 1MA1/2H**

Question	Modification	Mark scheme notes
19	<p>Model may be provided for candidates. Enlarged diagram for MLP.</p> <p>Three extra diagrams added and labelled 1a, 1b and 1c. See screen shot below.</p> <p>Wording added: ‘Diagram 1 shows’, ‘shown in diagram 1a’, ‘Diagram 1b shows the face ABE.’, ‘Diagram 1c shows triangle MBE.’</p>  <p>The main diagram, Diagram 1, shows a rectangular prism with vertices labeled D, E, F, C, B, A. The front face DEFA is a rectangle of side 15 cm by 15 cm. The top face ABCF is a rectangle. The vertical edges are labeled 15 cm. A point M is marked on the edge DA. A dashed line segment connects M to vertex B. A dotted line segment connects M to vertex E. An angle of 35° is shown between the horizontal edge DA and the line segment MB. The angle between the vertical edge EA and the line segment ME is also 35°. The angle between the vertical edge EA and the line segment EB is 90°.</p> <p>Diagram 1a shows the front face DEFA of the prism as a square of side 15 cm. Point M is marked on the bottom edge DA. A dashed line segment connects M to vertex B. A dotted line segment connects M to vertex E.</p> <p>Diagram 1b shows the top face ABCF of the prism as a rectangle. Point M is marked on the bottom edge DA. A dashed line segment connects M to vertex B. A dotted line segment connects M to vertex E. An angle of 35° is shown between the horizontal edge DA and the line segment MB.</p> <p>Diagram 1c shows the triangle MBE. Vertex M is at the bottom left, vertex B is at the bottom right, and vertex E is at the top right. The angle at vertex M is 35°.</p>	Standard mark scheme

**PAPER: 1MA1/2H**

<b>Question</b>		<b>Modification</b>	<b>Mark scheme notes</b>
20	(a)	<p>Original diagram enlarged/changed and labelled as Diagram 1.</p> 	Standard mark scheme for both parts.
	(b)	<p>A second diagram added for part (a) and labelled as Diagram 2.          Wording added ‘Below diagram 1, diagram 2 shows the same quadrilateral CDEF.’          Line CXE added to diagram 2.</p> 