



Pearson  
Edexcel

# Mark Scheme (Results)

## November 2021

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

## 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)

November 2021

Question Paper Log Number P64632A

Publications Code 1MA1\_2H\_2111\_MS

All the material in this publication is copyright

© Pearson Education Ltd 2021

## 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 (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 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” x 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] x 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

Question		Answer	Mark	Mark scheme	Additional guidance
1	(a)	$x > -1$	B1	cao	
	(b)	Diagram drawn	C2	for a fully correct diagram, eg 	Condone arrow heads or line ending to denote the 'end' of the line
2	(a)	12	M1	for a correct factor tree for either 60 <b>or</b> 84 with no more than one arithmetic error <b>or</b> for listing factors of 60 <b>or</b> 84, at least 4 correct for either (with no more than 1 incorrect in either list), could be in factor pairs <b>or</b> for the prime factors of 60 (2, 2, 3, 5) <b>or</b> 84 (2, 2, 3, 7)	Condone the use of 1 in any factor tree 60: 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60 84: 1, 2, 3, 4, 6, 7, 12, 14, 21, 28, 42, 84
	(b)	120	M1	for 12 or $2 \times 2 \times 3$ oe SC B1 for answer of 4 or 6, if M0 scored	2,2,3 is not enough, it must be a product
			A1	for a correct factor tree for either 24 <b>or</b> 40 with no more than one arithmetic error <b>or</b> for at least 3 multiples of both 24 and 40 (can include 24 and 40) <b>or</b> for the prime factors of either 24 (2, 2, 2, 3) <b>or</b> 40 (2, 2, 2, 5) <b>or</b> for a common multiple from their lists ( $\neq 120$ )	Condone the use of 1 in any factor tree 24: 24, 48, 72, 96, 120, ... 40: 40, 80, 120, ... For the list not containing 120, accept the first 3 correct multiples or one error in the first 4 multiples
			A1	for 120 or $2 \times 2 \times 2 \times 3 \times 5$ oe	

Paper: 1MA1/2H				
Question	Answer	Mark	Mark scheme	
			Additional guidance	
3 (a)	80	M1	for a complete method eg $\frac{20}{15} \times 60$ or $20 \times 4$ or $20 \div \frac{1}{4}$	Can be implied by a distance of 25km drawn on the graph
(b)	Travel graph	A1	cao	
		M1	for method to find distance travelled in last 20 minutes, eg $75 \times \frac{20}{60}$ (= 25)	
		C2	for a fully correct travel graph	
		(C1	for horizontal straight line from (10 15, 20) to (10 25, 20) or for a line of the correct length and gradient to indicate a speed of 75km/h eg a straight line from (10 25, 20) to (10 45, 45))	
4 (a)	(10), 5, (2), 1, 2, (5), 10	B2	for all 4 values correct	Accept a freehand curve drawn that is not made of line segments If answers stated as coordinates, award M1 for both coordinates and M0 for one coordinate
(b)	Graph	(B1	for 2 or 3 correct values)	
		M1	ft (dep on B1) for plotting at least 5 of their points correctly	
		A1	for a fully correct curve drawn	
(c)	-0.65 to -0.8 and 2.65 to 2.8	M1	for $y = 4$ drawn or intersection with $y = x^2 - 2x - 2$ drawn or 1 correct value ft a quadratic graph	
		A1	ft a quadratic graph or for answers in the range 2.65 to 2.8 and -0.65 to -0.8	

Paper: 1MA1/2H			
Question	Answer	Mark	Mark scheme
			Additional guidance
5	41.6	P1	<p>for start of process to find the length of the hypotenuse, eg (hyp<sup>2</sup> =) <math>8^2 + 10^2</math> (= 164)</p> <p>for complete process to find hypotenuse, eg <math>\sqrt{8^2 + 10^2}</math> <b>or</b> <math>\sqrt{64+100}</math> <b>or</b> <math>\sqrt{164}</math> (= 12.8...)</p> <p>(dep P2) for complete process to find the required perimeter, eg <math>8 + 8 + 10 + '12.8'</math> + "12.8" + "12.8 – 10" <b>or</b> <math>16 + 4\sqrt{41}</math></p> <p>for answer in the range 41 to 42</p>
6 (a)	17.8	M1	<p>for <math>\tan 56 = \frac{x}{12}</math> <b>or</b> <math>(BC) = 12 \times \tan 56</math> oe</p> <p><b>or</b> alternative method to find <i>BC</i></p> <p>for an answer in the range 17.7 to 17.8</p>
(b)	33.6	M1	<p>for <math>\cos x = \frac{15}{18}</math> <b>or</b> <math>\cos x = 0.83..</math> <b>or</b> <math>x = \cos^{-1} \frac{15}{18}</math></p> <p><b>or</b> alternative method to find <i>x</i></p> <p>for an answer in the range 33.5 to 33.91</p>
			<p>Note lengths may be seen on the diagram</p> <p><math>8 + 8 + '12.8'</math> + "12.8" oe is acceptable for this mark</p> <p>If an answer in the range 41 to 42 is given in the working space then incorrectly rounded, award full marks.</p> <p>For any alternative method candidates must arrive at an equation with <i>BC</i> as the only unknown</p> <p>If an answer in the range 17.7 to 17.8 is given in the working space then incorrectly rounded, award full marks.</p> <p>For any alternative method candidates must arrive at an equation with <i>x</i> as the only unknown</p> <p>If an answer in the range 33.5 to 33.91 is given in the working space then incorrectly rounded, award full marks.</p>



Paper: 1MA1/2H				
Question	Answer	Mark	Mark scheme	
			Additional guidance	
7	1.6	P1  P1  A1	<p>for <math>1.8 \times 80 (= 144)</math> or <math>1.2 \times 40 (= 48)</math> or for 192  or for <math>80 : 40 = 2 : 1</math></p> <p>for (“144” + “48”) <math>\div (80 + 40)</math> or <math>192 \div 120</math>  or for <math>(1.8 \times 2 + 1.2) \div 3</math> or <math>4.8 \div 3</math></p> <p>oe</p>	
8	Error in inequalities	C1	<p>for identifying incorrect inequalities</p> <p><b>Acceptable examples</b>  gives at least one correct inequality eg <math>(10 &lt; t \leq 20)</math> should be <math>0 &lt; t \leq 20</math>  it should be <math>t \leq 20</math>  (all) inequalities should start with 0  should start with 0</p> <p><b>Not acceptable examples</b>  <math>10 &lt; t \leq 20</math> is wrong  the numbers have been added wrong</p>	

Question	Answer	Mark	Mark scheme	Additional guidance
9 (a)	138	M1	for upper quartile = 188 <b>or</b> lower quartile = 50 <b>or</b> an indication that they are trying UQ – LQ	Could be written on the grid
(b)	Yes, with reason	A1 C1	cao Yes, with reason <b>Acceptable examples</b> Yes, because the median is at 2 hour (120 min) Yes, since 50% is at the 2 hour mark Yes, because the middle is at 2 hours <b>Not acceptable examples</b> No ..... The median is at the 2 hour mark Yes, because 50% is exactly half way between “188” and “50”	
(c)	statement	C1	<b>Acceptable examples</b> The median is lower on Tuesday (higher on Monday) The upper quartile is lower on Tuesday (higher on Monday) There may just have been one person waiting for 210 mins We don't know how many people were waiting for each time <b>Not acceptable examples</b> The range is bigger for Tuesday (smaller for Monday) The IQR is smaller for Tuesday (bigger for Monday)	M T 20 20 50 50 120 100 188 140 200 210 180 190 138 90

Paper: 1MA1/2H				
Question	Answer	Mark	Mark scheme	
			Additional guidance	
10	344 580.48	P1	<p>for a start to the process to find the initial investment eg <math>344\ 605 \div 1.025</math> oe (= 336 200) <b>or</b> for <math>1.025^3</math> (= 1.07689....)</p> <p>for complete process to find original investment, eg <math>344\ 605 \div 1.025^3</math> oe (= 319 078 to 320 265)</p> <p>for [initial investment] <math>\times 1.02^2 \times 1.035</math> oe</p> <p>for answer in the range 343 587 to 344 581</p>	[initial investment] must be clearly what they believe to be that and cannot be 344605
11 (a)	(9, 7.5)	M1	<p>for x coordinate = <math>PO(6) \times \frac{3}{2}</math> (=9) <b>or</b> y coordinate = <math>OQ(3) \times \frac{5}{2}</math> (= 7.5)</p> <p><b>or</b> <math>PO(6) \times \frac{5}{2}</math> (=15) <b>or</b> <math>OQ(3) \times \frac{3}{2}</math> (= 4.5)</p> <p>cao</p>	
(b)	$y = -2x + 3$	P1	<p>for process to find the gradient of the line, eg <math>3 \div 6</math> (=0.5) <b>or</b> <math>y = mx + 3</math></p>	Could use $P$ and $R$ or $Q$ and $R$ as ft from (a)
		P1	<p>for process to find gradient of perpendicular eg <math>-1 \div</math> [gradient of <math>PQ</math>] (= -2)</p>	
		A1	<p>for <math>y = -2x + 3</math> oe</p>	

Paper: 1MA1/2H			
Question	Answer	Mark	Mark scheme
12	$6x^3 + x^2 - 20x - 12$	M1  M1  A1	<p>for method to find the product of any two linear expressions (3 out of no more than 4 terms correct with correct signs or 4 correct terms ignoring signs), eg. <math>6x^2 + 9x + 4x + 6</math> or <math>3x^2 + 2x - 6x - 4</math> or <math>2x^2 + 3x - 4x - 6</math></p> <p>for method of multiplying out remaining products, half of which are correct (ft their first product), eg. <math>6x^3 + 13x^2 - 12x^2 + 6x - 26x - 12</math></p> <p>cao</p>
13	192 000	M1  A1	<p>for <math>16 \times 120 \times 100</math> oe</p> <p>cao</p>
14	25 with reasons	M1  M1  C2  (C1	<p>for method to find angle <math>BCD</math> eg <math>180 \div (3 + 1) (=45)</math> or <math>BAD = 180 \div (3 + 1) \times 3 (=135)</math></p> <p>for method to find angle <math>BDA</math> eg <math>180 - 20 - (180 - "45") (=25)</math> or method to find angle <math>SBD</math> eg <math>SBD = BCD (=45)</math></p> <p>for finding <math>SBA (=25)</math> and both reasons given, eg <u>Opposite angles of a cyclic quadrilateral</u> add up to 180 for angle <math>SBD = 45</math> because <u>alternate segment theorem</u></p> <p>(dep M1) for one reason given <u>Opposite angles of a cyclic quadrilateral</u> add up to 180 for angle <math>SBD = 45</math> because <u>alternate segment theorem</u> )</p>
			<p><b>Additional guidance</b></p> <p>Note that, for example, <math>6x^2 + 13x</math> or <math>13x + 6</math> are regarded as three terms in the expansion of <math>(x - 2)(3x + 2)</math></p> <p>First product must be quadratic but need not be simplified or may be simplified incorrectly.</p> <p>Could be shown on the diagram or in working</p> <p>Do not award if it ambiguous as to which angle is being found</p> <p>Underlined words need to be shown; reasons need to be linked to their method</p>

Paper: 1MA1/2H				
Question	Answer	Mark	Mark scheme	
			Additional guidance	
15 (a)	11.4	M1	for start to method to find the length of $BC$ eg. $8^2 + 11^2 - 2 \times 8 \times 11 \times \cos 72$	If an answer within the given range is seen in working and rounded incorrectly award full marks. Any alternative method must be complete  If an answer within the given range is seen in working and rounded incorrectly award full marks.
		M1	(dep on M1) for method to use correct order of operations, eg. $64 + 121 - 54.38 \dots$ (= 130.61...)	
		A1	for answer in the range 11.4 to 11.5	
		M1	for $0.5 \times 8 \times 11 \times \sin 72$ (= 41.8...)	
		A1	for answer in the range 41.5 to 41.9	
16 (a)	$x_1 = 1.817$ $x_2 = 1.853$ $x_3 = 1.846$	M1	for a correct method to find $x_1$ eg $\sqrt[3]{10 - 2 \times 2}$ (= 1.8171...)	Accept an accuracy of 2dp or more rounded or truncated
		M1	(dep on M1) for substitution of $x_1$ to give $x_2$ <b>and</b> $x_2$ to give $x_3$	
		A1	for $x_1 = 1.81(71\dots)$ , $x_2 = 1.85(33\dots)$ and $x_3 = 1.84(62\dots)$	
		C1	cao	
16 (b)	$a = 2, b = -10$			

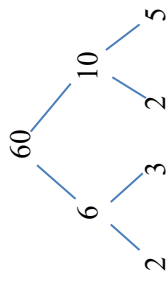
Paper: 1MA1/2H			
Question	Answer	Mark	Mark scheme
17	30	P1	<p>for process to find one correct frequency, eg. <math>0.8 \times 5 (=4)</math> or <math>1.6 \times 10 (=16)</math> or <math>2.2 \times 10 (=22)</math> or <math>1.2 \times 15 (=18)</math></p> <p><b>or</b> to find one correct area eg <math>5 \times 8 (=40)</math> or <math>10 \times 16 (=160)</math> or <math>10 \times 22 (=220)</math> or <math>15 \times 12 (=180)</math></p> <p>for process to find total number of people, eg. “4” + “16” + “22” + “18” (= 60)</p> <p><b>or</b> for process to find total area eg “40” + “160” + “220” + “180” (= 600)</p> <p>for process to find 20% of the total number of people, eg. “60” <math>\times</math> 0.2 oe (= 12)</p> <p><b>or</b> for process to find 20% of the total area “600” <math>\times</math> 0.2 oe (=120)</p> <p>cao</p>
18			
(a)	37, 143, 397, 503	M1	<p>for any two correct angles within the ranges below <b>or</b> for a correct method to find a solution beyond 360, eg. “angle read from 0 to 360” + 360</p>
(b)	$y = -\sin x^\circ$	A1 B1	<p>for all 4 angles in the range, 35 to 40, 140 to 145, 395 to 400 and 500 to 505</p> <p>for any acceptable equations, eg. <math>y = -\sin x^\circ</math> or <math>y = \sin(-x^\circ)</math> or <math>-y = \sin x^\circ</math> or <math>y = \cos(x^\circ + 360n + 90)</math> or for any positive integer <math>n</math>, <math>y = \sin(x^\circ - (2n - 1)180)</math> or <math>y = \cos(x^\circ + 360n)</math></p>
(c)	graph	C1	<p>for correct graph shown translated 2 in the positive x-direction</p>
			<p>Accept equivalent methods proportional to those shown.</p> <p>Condone 1 error in reading from the graph for 2<sup>nd</sup> and 3<sup>rd</sup> P marks</p> <p>NB: correct answer without supportive working gets 0 marks</p> <p>Accept given as coordinates for M1 only</p> <p>Quoted are just the more likely solutions but check all attempts Condone missing degrees sign</p>

Paper: 1MA1/2H			
Question	Answer	Mark	Mark scheme
19	25 : 36	P1	<p>for <math>\sqrt[3]{125}</math> (= 5) <b>and</b> <math>\sqrt[3]{27}</math> (= 3) oe</p> <p><b>OR</b> for correct process to find the radius of A and radius of B (3.10... and 1.86...)</p> <p>for method to find values in ratio of length between A and C eg 5 <b>and</b> <math>2 \times 3</math> (= 6) oe <b>or</b> "3.10..." <b>and</b> "1.86..." <math>\times 2</math> (= 3.72...)</p> <p><b>OR 25 and 36</b></p> <p><b>OR</b> for correct process to find SA of A <b>and</b> SA of C (120.(8...)) and (174.(0...))</p> <p>for 25 : 36 oe eg 1: 1.44</p>
20	0.748	P1	<p>for a process to find a correct probability product for 2 consecutive days, eg. <math>0.7 \times 0.8</math> (rain M + T) <b>or</b> <math>0.7 \times 0.2</math> (rain M + no rain T) <b>or</b> <math>0.3 \times 0.6</math> (no rain M + rain on T) <b>or</b> <math>0.3 \times 0.4</math> (no rain M + T)</p> <p>for process to find a correct triple probability product for it raining on Wednesday, eg. <math>0.7 \times 0.8 \times 0.8</math> (rain M + T + W) (= 0.448 <b>or</b> <math>\frac{56}{125}</math> oe) <b>or</b> <math>0.7 \times 0.2 \times 0.6</math> (rain M + no rain T + rain W) (= 0.084 <b>or</b> <math>\frac{21}{250}</math> oe) <b>or</b> <math>0.3 \times 0.6 \times 0.8</math> (no rain M + rain T + rain W) (= 0.144 <b>or</b> <math>\frac{18}{125}</math> oe) <b>or</b> <math>0.3 \times 0.4 \times 0.6</math> (no rain M + no rain T + rain W) (= 0.072 <b>or</b> <math>\frac{9}{125}</math> oe)</p> <p>for complete process, eg. "0.448" + "0.084" + "0.144" + "0.072"</p> <p>oe eg. <math>\frac{187}{250}</math></p>
		A1	<p>Throughout accept probabilities given as fractions or percentages Could be for Tuesday and Wednesday also</p>
			<p>Accept scale factors expressed as fractions or decimals eg 1.66, 1.67, 0.6 or better Ignore units throughout</p> <p>For both P marks the lengths need not be written as a ratio</p>
			<p>NB: correct answer without supportive working gets 0 marks</p>

Paper: 1MA1/2H			
Question	Answer	Mark	Mark scheme
21	984.(3677853) and 969.(0181643)	B1  P1  P1  A1	<p>stating bound of 51.95 or 52.05 or 1.445 or 1.455</p> <p>for process to rearrange formula to give <math>g</math> as the subject, eg <math>g = \frac{4\pi^2 l}{T^2}</math> oe</p> <p>for process to use LB of <math>l</math> <b>and</b> UB of <math>T</math> in formula for <math>g</math> or <math>T</math>  <b>or</b> process to use UB of <math>l</math> <b>and</b> LB of <math>T</math> in formula for <math>g</math> or <math>T</math>  eg <math>\frac{4\pi^2 [\text{LB of } l]}{[\text{UB of } T]^2}</math> or <math>\frac{4\pi^2 [\text{UB of } l]}{[\text{LB of } T]^2}</math></p> <p>for upper bound = 984.(3677853) or 984.(1125639..)  <b>and</b> lower bound = 969.(0181643) or 968.(7669227..)</p>
			<p>Additional guidance</p> <p>Accept 52.049 or 52.0499... for 52.05  Accept 1.4549 or 1.4549... for 1.455</p> <p>Rearrangement may occur after substitution, in this case correct bounds are not needed for this mark</p> <p><math>51.95 \leq [\text{LB of } l] &lt; 52.0</math>  <math>1.45 &lt; [\text{UB of } T] \leq 1.455</math></p> <p><math>52.0 &lt; [\text{UB of } l] \leq 52.05</math>  <math>1.445 \leq [\text{LB of } T] &lt; 1.45</math></p> <p>Rearrangement may not be correct</p> <p>NB: correct answer without supportive working gets 0 marks  Accept answers rounded or truncated to 3sf or better</p>

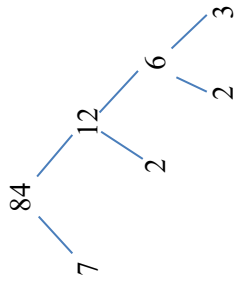


Question 1

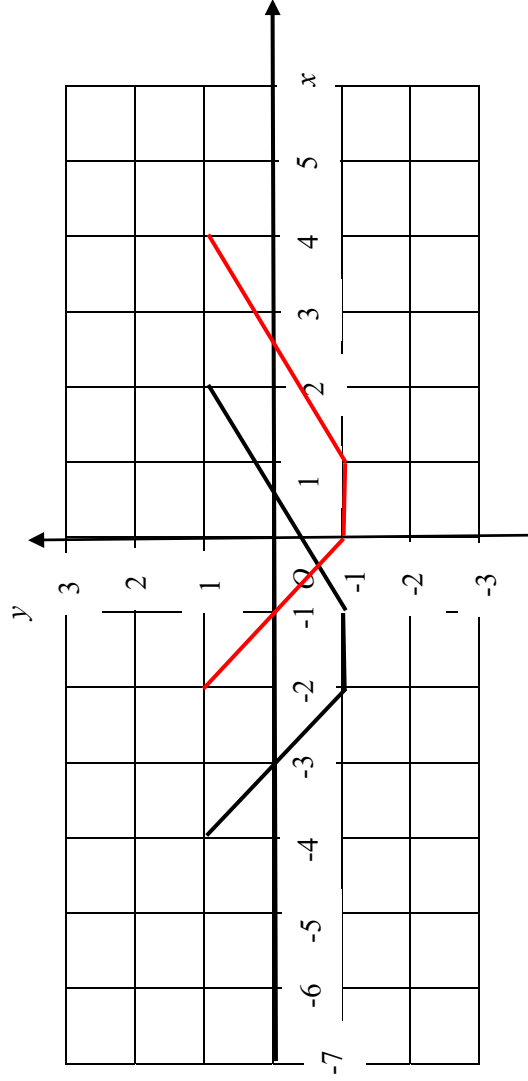


60: 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60

84: 1, 2, 3, 4, 6, 7, 12, 14, 21, 28, 42, 84



Question 18(c)





## 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

---

PAPER: 1MA1_2H		
Question	Modification	Mark scheme notes
1 (a)	<p>Wording added 'Look at the diagram for Question 1(a) in the Diagram Booklet. It shows a number line.'</p> <p>Wording 'shown on this number line' removed and replaced with 'shown on the number line.'</p> <p>Diagram enlarged. The scale cut at <math>-3</math>, but <math>-3</math> still marked.</p> <p>Axis label moved to the right. Scale markings moved above and below.</p> <p>Open headed arrows and shortened at the end of the scale.</p>	Standard mark scheme
1 (b)	<p>Wording added 'Look at the diagram for Question 1(b) in the Diagram Booklet. It shows a blank number line.'</p> <p>Diagram enlarged. The scale cut at <math>-4</math>, but <math>-4</math> still marked.</p> <p>Open headed arrow and shortened at the end of the scale.</p> <p>Axis label moved to the right. Scale markings moved above and below.</p> <p>Braille: a spare diagram is provided with 4 round bumpons, 4 square bumpons, Wikki Stix and drawing film.</p>	Standard mark scheme

PAPER: IMA1_2H		Modification	Mark scheme notes
Question			
3		<p>Wording added 'Look at the diagram for Question 3 in the Diagram Booklet.'</p> <p>Wording added 'The travel graph for the first 15 minutes of his journey is shown in the Diagram Booklet.'</p> <p>Diagram enlarged. Right axis labelled. Open headed arrows.</p> <p>Axes labels moved to the top of the vertical axis and to the left of the horizontal axis.</p> <p>In (b) Wording added 'On the grid in the Diagram Booklet,...'</p> <p>Braille: time shown with colons.</p> <p>Braille alternative wording: 'The diagram shows an incomplete travel graph for Sam's car journey.' 'The first 15 minutes of his journey is represented on the graph.'</p> <p>In part (b) for Braille a spare diagram is provided with 6 round bumpsons and Wikki Stix.</p>	Standard mark scheme
4	(a)	<p>Table enlarged and turned vertical. Wording added 'There are four spaces to fill.'</p> <p>Braille: In the table (i), (ii), (iii), &amp; (iv) in the blank spaces, then 'Ans: (i) __ (ii) __ (iii) __ (iv) __'</p>	Standard mark scheme
4	(b)	<p>Wording added 'Look at the diagram for Question 4(b) in the Diagram booklet. It shows a grid.'</p> <p>Diagram enlarged. Small squares removed. Open headed arrows.</p> <p>Axes labels moved to the top of the vertical axis and to the right of the horizontal axis.</p> <p>Braille: a spare diagram is provided with 16 round bumpsons and Wikki Stix.</p>	Standard mark scheme but in part (c) answers in the ranges 2.6 to 2.9 <b>and</b> -0.6 to -0.9
5		<p>Wording added 'Look at Diagram 1 and Diagram 2 for Question 5 in the Diagram Booklet. Diagram 1 shows a right-angled triangle labelled shape A with a base length of 10 mm and a vertical height of 8 mm.'</p> <p>Diagrams enlarged. Right angles made more obvious.</p> <p>Wording added 'Diagram 2 is a shaded shape made from two shape A triangles.'</p> <p>'shape A' wording added inside the triangles.</p> <p>Wording 'Work out the perimeter of the shaded shape in Diagram 2.'</p>	Standard mark scheme

**PAPER: IMA1\_2H**

<b>Question</b>		<b>Modification</b>	<b>Mark scheme notes</b>
6	(a)	<p>Wording added 'Look at the diagram for Question 6(a) in the Diagram Booklet. It shows a right-angled triangle, <math>ABC</math>.'</p> <p>Wording added: '<math>AC = 12</math> cm, Angle <math>BAC = 56^\circ</math>, Angle <math>CAB</math> is a right angle.'</p> <p>Diagram enlarged. Right angle made more obvious.</p> <p>Angle moved outside of the angle arc and the angle arc made smaller.</p>	Standard mark scheme
6	(b)	<p>Wording added 'Look at the diagram for Question 6(b) in the Diagram Booklet. It shows a right-angled triangle, <math>PQR</math>.'</p> <p>Wording added: '<math>PR = 18</math> cm, <math>RQ = 15</math> cm, Angle <math>PQR</math> is a right angle, Angle <math>PRQ</math> is marked <math>x</math>'</p> <p>Diagram enlarged. Right angle made more obvious.</p> <p>Angle moved outside of the angle arc and the angle arc made smaller.</p>	Standard mark scheme
8		<p>Wording added 'Look at Table 1 and Table 2 for Question 8 in the Diagram Booklet. Table 1 is a grouped frequency table which gives...'</p> <p>Wording 'This is the table that Brian drew.' removed and replaced by 'Brian drew Table 2.'</p> <p>Tables enlarged.</p> <p>For Braille the alternative wording is 'The grouped frequency table below...' and 'The table that Brian drew is shown below.'</p>	Standard mark scheme

PAPER: IMA1_2H		Mark scheme notes
Question	Modification	
9	<p>Wording added 'Look at the diagram for Question 9 in the Diagram Booklet. It is a box plot which shows...'.            The lower quartile moved down to 40 and the upper quartile moved down to 180.            Small squares removed. Diagram enlarged. Open headed arrows.            Horizontal axis label moved to the left. The box plot labelled 'Monday'.</p>	<p>Part (a):            M1 for upper quartile = 180 or lower quartile = 40            or an indication that they are trying UQ – LQ            A1 for 140            Part (b) standard mark scheme</p>
9	<p>Wording added 'Look at the table for Question 9(c) in the Diagram Booklet. It is shown below the box plot. It gives...'.            Table enlarged. The lower quartile changed to 40. The table labelled 'Tuesday'.</p>	<p>Standard mark scheme but with the amended figures:            M T            Shortest time 20 20            Lower quartile 40 40            Median 120 100            Upper quartile 180 140            Longest time 200 210            Range 180 190            IQR 140 100</p>
10	<p>Wording added 'Look at the information for Question 10 in the Diagram Booklet.'            The names '(Louise)' and '(Sadiq)' added beside each title.</p>	<p>Standard mark scheme</p>
11	<p>Wording added 'Look at the diagram for Question 11 in the Diagram Booklet. It shows a sketch...'.            Diagram enlarged. Crosses changed to solid dots. Open headed arrows.            Axes labels moved to the top of the vertical axis and to the right of the horizontal axis.</p>	<p>Standard mark scheme</p>
12	<p>The letter <math>x</math> changed to <math>y</math>.</p>	<p>Standard mark scheme but note the change in letters</p>
14	<p>Wording added 'Look at the diagram for Question 14 in the Diagram Booklet.'            Diagram enlarged. The line <math>SBT</math> reduced slightly so that it is not too long.            Angle moved outside of the angle arc and the angle arc made smaller.</p>	<p>Standard mark scheme</p>

PAPER: IMA1_2H		Mark scheme notes
Question	Modification	
15	<p>Wording added 'Look at the diagram for Question 15 in the Diagram Booklet. It shows the triangle ABC.'</p> <p>Wording added: 'AC = 8 cm, AB = 11 cm, Angle CAB = 72° '</p> <p>Diagram enlarged. Angle moved outside of the angle arc and the angle arc made smaller.</p>	<p>Standard mark scheme</p>
17	<p>Wording added 'Look at the diagram for Question 17 in the Diagram Booklet. It shows a histogram.'</p> <p>The values changed as follows:  0 to 5 moved up to 1.0, 5 to 15 moved down to 1.5  15 to 25 moved up to 2.5, 25 to 40 moved down to 1.0</p> <p>Diagram enlarged. Small squares removed. Open headed arrows.  Axes labels moved to the top of the vertical axis and to the left of the horizontal axis.  Shading changed to dotted shading. Right axis has been labelled.</p>	<p>P1 for process to find one correct frequency,  eg. <math>1.0 \times 5 (=5)</math> or <math>1.5 \times 10 (=15)</math> or <math>2.5 \times 10 (=25)</math> or <math>1.0 \times 15 (=15)</math>  <b>or</b> to find areas  eg <math>5 \times 10 (=50)</math> or <math>10 \times 15 (=150)</math> or <math>10 \times 25 (=250)</math> or <math>15 \times 10 (=150)</math></p> <p>P1 for process to find total number of people,  eg. "5" + "15" + "25" + "15" (= 60)  <b>or</b> to find total area  eg "50" + "150" + "250" + "150" (= 600)</p> <p>P1 for process to find 20% of the total number of people,  eg. "60" <math>\times 0.2</math> oe (= 12)  <b>or</b> for process to find 20% of the total area  eg "600" <math>\times 0.2</math> oe (=120)</p> <p>A1 cao for 28</p>

<b>PAPER: IMA1_2H</b>		<b>Modification</b>	<b>Mark scheme notes</b>
<b>Question</b>			
18	(a), (b)	Wording added 'Look at the diagram for Question 18(a) and (b) in the Diagram Booklet. It shows...' Diagram enlarged. Small squares removed. Axes labels moved to the top of the vertical axis and to the right of the horizontal axis.	Standard mark scheme but in (a) accept answers in the ranges 32 to 45, 135 to 148, 392 to 405 and 495 to 508
18	(c)	Wording added 'Look at the diagram for Question 18(c) in the Diagram Booklet. It shows...' Diagram enlarged. Small squares removed. Axes labels moved to the top of the vertical axis and to the right of the horizontal axis	Standard mark scheme
21		Lowercase / to capital <b>L</b> .	Standard mark scheme





