



Pearson
Edexcel

Mark Scheme (Results)

November 2021

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

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

November 2021

Question Paper Log Number P64630A

Publications Code 1MA1_1H_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 (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

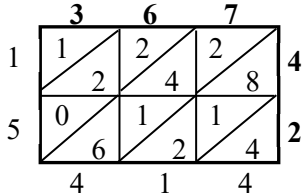
Where a word is used in square brackets eg [area] \times 1.5 : the value used for [area] does **not** have to come from a correct method or process but is the value that the candidate believes is the area. If there are any constraints on the value that can be used, details will be given in the mark scheme.

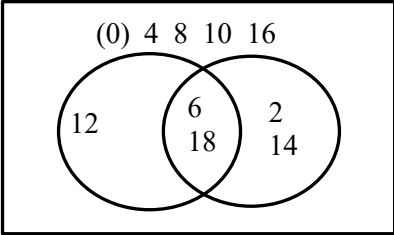
14 Misread

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

- 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: 1MA1/1H																
Question	Answer	Mark	Mark scheme	Additional guidance												
1 (a)	15.414	M1	for a complete method with relative place value correct including intention to add all the appropriate elements of the calculation eg 2 lines of the 1 st method, internal numbers of grids, or complete structure shown of partitioning methods.	14680 734 15414 												
		A1	for digits 15414	<table border="1" data-bbox="1563 638 1995 743"> <tr> <td></td> <td>300</td> <td>60</td> <td>7</td> </tr> <tr> <td>40</td> <td>12000</td> <td>2400</td> <td>280</td> </tr> <tr> <td>2</td> <td>600</td> <td>120</td> <td>14</td> </tr> </table> 12000 + 2400 + 280 + 600 + 120 + 14 = 15414		300	60	7	40	12000	2400	280	2	600	120	14
			300	60	7											
40	12000	2400	280													
2	600	120	14													
A1	(ft) dep on M1 for correct placement of the decimal point into their final answer															
(b)	37.4	M1	for a start to a method, eg $598.4 \div 16$ (or $59.84 \div 1.6$) = 3 (as a first digit)	A start to a repeated subtraction method or build-up method is acceptable if a correct first digit of 3 is found												
		A1	for digits 374													
		A1	(ft) dep on M1 for correct placement of the decimal point into their final answer													

Paper: 1MA1/1H				
Question	Answer	Mark	Mark scheme	Additional guidance
2	Venn Diagram	C1 C1 C1	for one correct region for two correct regions for all regions correct	 <p>Ignore all entries except the region you are marking for each mark</p>
3	$1\frac{8}{15}$	M2 (M1 A1	<p>for a complete method, eg $4 - 2 + \frac{3}{15} - \frac{10}{15}$ condoning error with one numerator or for $\frac{21}{5} - \frac{8}{3} = \frac{63}{15} - \frac{40}{15} (= \frac{23}{15})$ with no more than one error</p> <p>for finding two fractions with a correct common denominator, with at least one correct corresponding numerator, eg $\frac{3}{15}, \frac{10}{15}$ or for converting both to improper fractions, eg $\frac{21}{5}, \frac{8}{3}$</p> <p>$1\frac{8}{15}$ oe</p>	<p>At least one improper fraction must be correct</p> <p>Any equivalents must be a mixed number</p>

Paper: 1MA1/1H				
Question	Answer	Mark	Mark scheme	Additional guidance
4	Rahim and correct figures	P1 P1 A1 C1	<p>for start to the process to find 20% for Tamara, eg 220000×0.2 oe (= 44000) or 30% for Rahim, eg 160000×0.3 oe (= 48000)</p> <p>OR</p> <p>for $1 - 0.2$ (= 0.8) or $100 - 20$ (= 80) or $1 + 0.3$ (= 1.3) or $100 + 30$ (= 130)</p> <p>for a complete process to find at least one new value, eg $220000 - \text{“44000”}$ (= 176 000) or $160000 + \text{“48000”}$ (=208 000) OR $220000 \times \text{“0.8”}$ (=176 000) or $160000 \times \text{“1.3”}$ (= 208 000)</p> <p>for one correct value, 176 000 or 208 000</p> <p>for correct conclusion supported by correct figures eg Rahim, 176 000 and 208 000</p>	<p>Build up processes are acceptable but must be complete and correct</p> <p>Award 0 marks for a correct answer with no supportive working</p>
5	33	P1 P1 A1	<p>for relating 24 to 8 parts or (1 part =) $24 \div 8$ (= 3)</p> <p>or for $15 - 7$ (= 8)</p> <p>or starts to use a build-up method, eg (8 :) 14 : 30</p> <p>for $15 - 4$ (= 11) and $24 \div 8$ (= 3)</p> <p>or 15×3 (= 45) and 4×3 (= 12)</p> <p>or for 12 (: 21) : 45</p> <p>cao</p>	8 parts = 24

Paper: 1MA1/1H				
Question	Answer	Mark	Mark scheme	Additional guidance
6	12	P1 P1 A1	<p>for a process to find the area of cross section, eg $750 \div 25 (= 30)$ oe or $\frac{1}{2} \times 5 \times h$ oe</p> <p>for a correct equation in h, eg $750 \div 25 = \frac{1}{2} \times 5 \times h$ oe or $\frac{1}{2} \times 5 \times h \times 25 = 750$ oe or for a complete process to find h, eg $\frac{750}{25} \times \frac{2}{5}$ oe or “30” $\times 2 \div 5$</p> <p>cao</p> <p>SC B1 for answer of 6 if P0 scored</p>	May use any letter for h or may use ?
7	Shown	M1 M1 M1 A1	<p>for a correct expression for the area of one face of the cube, eg x^2 or a correct expression for the surface area of the cube, eg $6 \times x^2$</p> <p>for a correct expression for the surface area of the sphere, eg $4 \times \pi \times 3^2 (= 36\pi)$</p> <p>for forming a suitable equation, eg $6 \times x^2 = 4 \times \pi \times 3^2$ or $6x^2 = “36\pi”$</p> <p>for completing the method to $x = \sqrt{6\pi}$ or $k = 6$</p>	<p>No marks for $x = \sqrt{6\pi}$ without any working.</p> <p>$6 \times x^2 = 4 \times \pi \times 3^2$ $x^2 = 36\pi \div 6$ $x = \sqrt{6\pi}$</p>

Paper: 1MA1/1H				
Question	Answer	Mark	Mark scheme	Additional guidance
8	8 and -3	M1 M1 A1	for rearranging to get $x^2 - 5x - 24 (= 0)$ or $-x^2 + 5x + 24 (= 0)$ for $(x \pm 8)(x \pm 3)$ or $(x + a)(x + b)$ where $ab = -24$ or $a + b = -5$ or substitution into formula, condoning one sign error eg $(x =) \frac{- -5 \pm \sqrt{(-5)^2 - 4 \times 1 \times -24}}{2 \times 1}$ for 8 and -3	Can be implied by $(x - 8)(x + 3)$ or $(-x + 8)(x + 3)$
9	(a) 1 (b) 3 (c) $\frac{1}{16}$ (d) 3	B1 B1 B1 B1	cao cao oe cao	
10	(a) 30 (b) Explanation	P1 P1 A1 C1	for a start to the process, eg $5406 \div 6 (= 901)$ or $5400 \div 6 (= 900)$ or $5000 \div 6 (= 833.33..)$ or $5410 \div 6 (= 901.66..)$ for a process to find the length of one side, eg $\sqrt{"901"}$ or $\sqrt{"900"}$ or $\sqrt{"833.33.."}$ or $\sqrt{"901.66.."}$ for 30	Must be based on the use of a rounded value in a calculation

Paper: 1MA1/1H				
Question	Answer	Mark	Mark scheme	Additional guidance
11	$\frac{30w}{6-21w}$	P1 P1 P1 A1	<p>for forming an equation, eg $6(2w + y) = 7w(3y + 6)$ or $12w + 6y = 21wy + 42w$ oe</p> <p>for expanding brackets correctly and gathering w terms or isolating y terms in a correct equation, eg $6y = 21wy + 30w$ or $6y - 21wy = 42w - 12w$ or $6y - 21wy = 30w$</p> <p>(dep on two terms in y) for factorising out the y, eg $y(6 - 21w) = 42w - 12w$ or $y(6 - 21w) = 30w$ or $3y(2 - 7w) = 30w$</p> <p>for $(y =) \frac{30w}{6-21w}$ oe</p>	Condone missing brackets for this mark
12 (a)	cf graph	M1 A1	<p>for 5 or 6 points plotted correctly</p> <p>for a fully correct graph</p> <p>SC B1 if 5 or 6 of their points plotted not at the end but consistent within each interval and joined by a curve or line segments providing no gradient is negative</p>	<p>If histograms drawn, points must be identified</p> <p>Accept a smooth curve or line segments Ignore to the left of the first point and right of the last point</p>
(b)	13 to 14	B1	for answer in the range 13 to 14 or ft their cf graph	ft only from a cf graph

Paper: 1MA1/1H				
Question	Answer	Mark	Mark scheme	Additional guidance
13	Explanation	C1	<p>explanation</p> <p>Acceptable examples he should have used $100(x)$ rather than $10(x)$ he should have used $1000x$ and $10x$ Ted's working does not eliminate the recurring decimals the recurring numbers after the decimal point have to be in the same sequence he should have multiplied by 100 to subtract easier after the decimal point he should have multiplied by 100 because two numbers are recurring</p> <p>Not acceptable examples it is not correct the method is not complete he should have used $1000x$ he should have multiplied by 100 he should have multiplied by 100 and then done $100x - 10x$ to give $43/90$</p>	
14	Shown	<p>M1</p> <p>M1</p> <p>A1</p>	<p>for a start to the method, eg finds one correct area</p> <p>$4(x + 1)$ or $(x + 7)(2x + 6)$ or $(x + 1)(x + 11)$ or $(x + 7)(x + 5)$ or $4(x + 5)$ or $(x + 11)(2x + 6)$</p> <p>for a complete expression for the total area,</p> <p>eg $4(x + 1) + (x + 7)(2x + 6)$ or $4x + 4 + 2x^2 + 14x + 6x + 42$ OR $(x + 1)(x + 11) + (x + 7)(x + 5)$ or $x^2 + x + 11x + 11 + x^2 + 7x + 5x + 35$ OR $(x + 11)(2x + 6) - 4(x + 5)$ or $2x^2 + 22x + 6x + 66 - 4x - 20$</p> <p>for a complete chain of reasoning with fully correct algebra leading to $2x^2 + 24x + 46$</p>	<p>$2x^2 + 24x + 46$ is given so need to see brackets expanded correctly</p>

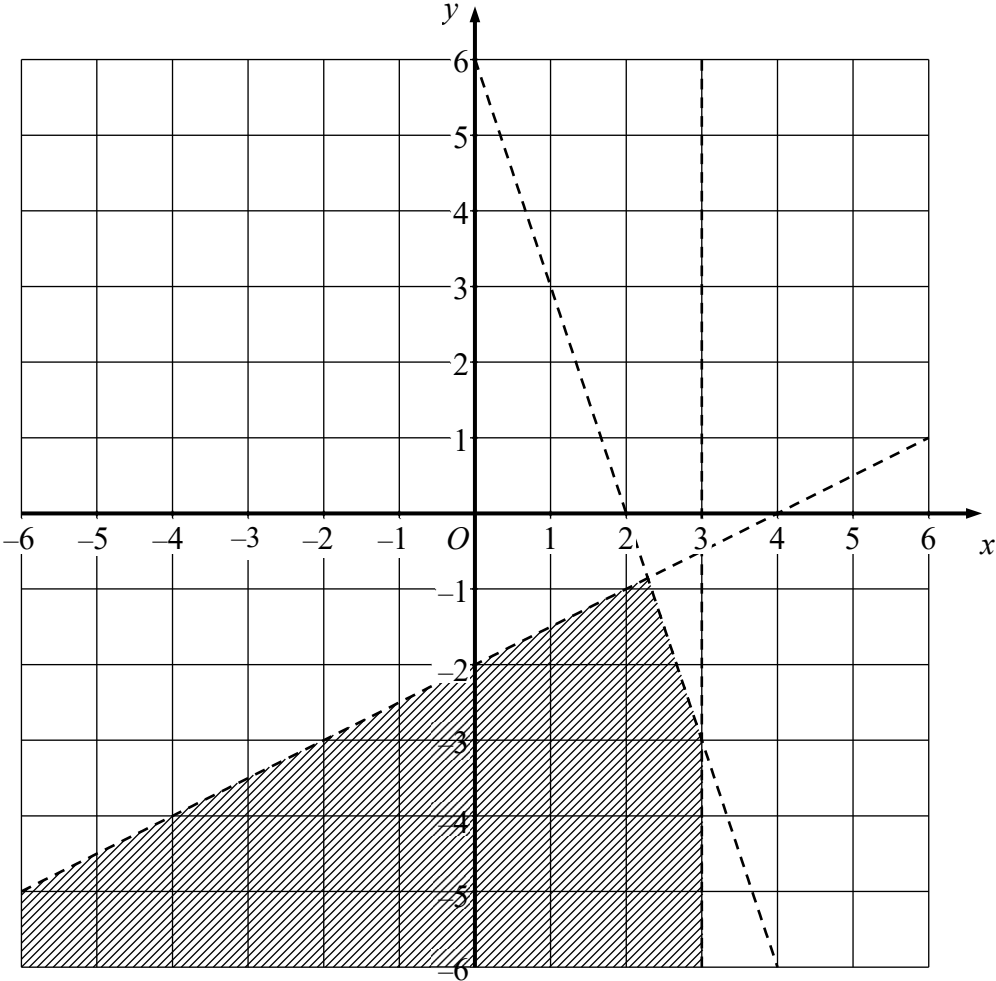
Paper: 1MA1/1H				
Question	Answer	Mark	Mark scheme	Additional guidance
15	$\frac{26x+15}{10x}$	M1 M1 A1	<p>for method to write at least one of the fractions with a suitable denominator, eg $\frac{4x+3}{2x} \times \frac{5}{5} (= \frac{20x+15}{10x})$ or $\frac{3}{5} \times \frac{2x}{2x} (= \frac{6x}{10x})$</p> <p>for method to combine the fractions, eg $\frac{5(4x+3)}{5 \times 2x} + \frac{3 \times 2x}{5 \times 2x}$ or $\frac{5(4x+3)+3 \times 2x}{5 \times 2x}$ or $\frac{20x+15}{10x} + \frac{6x}{10x}$</p> <p>for correct algebra leading to $\frac{26x+15}{10x}$ oe in form $\frac{ax+b}{cx}$</p>	
16	$\frac{180}{336}$	P1 P1 P1 A1	<p>for $\frac{3}{7}$ or $\frac{4}{7}$ or $\frac{5}{7}$ as probability for second counter</p> <p>for one correct product eg $\frac{3}{8} \times \frac{5}{7} \times \frac{4}{6} (= \frac{60}{336})$ or $\frac{5}{8} \times \frac{3}{7} \times \frac{4}{6} (= \frac{60}{336})$ or $\frac{5}{8} \times \frac{4}{7} \times \frac{3}{6} (= \frac{60}{336})$</p> <p>for a complete process eg $\frac{3}{8} \times \frac{5}{7} \times \frac{4}{6} + \frac{5}{8} \times \frac{3}{7} \times \frac{4}{6} + \frac{5}{8} \times \frac{4}{7} \times \frac{3}{6}$</p> <p>oe, eg $\frac{15}{28}$</p> <p>SC B1 for answer of $\frac{225}{512}$ (replacement)</p>	<p>May be seen in a calculation or on a diagram</p> <p>Accept equivalent fractions, decimals (0.53... or 0.54) or percentages (53% or 54%)</p>

Paper: 1MA1/1H				
Question	Answer	Mark	Mark scheme	Additional guidance
17	Region shaded	M1 M1 A1	for two of the lines $2y + 4 = x$, $x = 3$, $y = 6 - 3x$ correctly drawn for all three correct lines correctly drawn for a fully correct region indicated with all lines correct	Accept full or broken lines for all marks Award for clear intention, shading not needed Diagram at end of mark scheme
18	17.6	P1 P1 P1 P1 A1	for correct trig statement, eg $\sin 30 = \frac{h}{6}$ for complete process to find h , eg $6 \times \frac{1}{2} (= 3)$ for correct substitution into the area of a trapezium formula, eg $\frac{1}{2}(a + b) \times "3" = 66$ or $a + b = 44$ or $\frac{1}{2}(2x + 3x) \times h = 66$ for complete correct process to find the length of AB , eg $\left[\frac{66 \times 2}{3} \div (2 + "3") \right] \times 2$	An answer of $\frac{88}{5}$ gets P4 A0

Paper: 1MA1/1H				
Question	Answer	Mark	Mark scheme	Additional guidance
19	Result shown	M1	(indep) for writing $\sqrt{12}$ as $2\sqrt{3}$	This mark can be awarded whenever this is seen, which might be later in the process.
		M1	for method to rationalise the denominator eg $\frac{8+\sqrt{12}}{5+\sqrt{3}} \times \frac{5-\sqrt{3}}{5-\sqrt{3}}$ or $\frac{8+2\sqrt{3}}{5+\sqrt{3}} \times \frac{5-\sqrt{3}}{5-\sqrt{3}}$ oe	
		M1	(dep on previous M1) for expanding terms, condone one error in numerator or denominator eg $\frac{40-8\sqrt{3}+5\sqrt{12}-\sqrt{12}\sqrt{3}}{25-5\sqrt{3}+5\sqrt{3}-\sqrt{3}\sqrt{3}}$ or $\frac{40-8\sqrt{3}+10\sqrt{3}-2\sqrt{3}\sqrt{3}}{25-5\sqrt{3}+5\sqrt{3}-\sqrt{3}\sqrt{3}}$ or $\frac{34+2\sqrt{3}}{22}$ oe	
		A1	for a complete chain of reasoning leading to $\frac{17+\sqrt{3}}{11}$	
20	$x = 2.1, y = 5.1$ $x = -2.9, y = -4.7$	M1	for drawing the graph of $y - 2x = 1$	For both A marks accept answers in the ranges $x = 2.0$ to $2.2, y = 5.0$ to 5.2 $x = -2.8$ to $-3.0, y = -4.6$ to -4.8 Accept values given as coordinates
		A1	for one correct pair of values or for both correct x values, or for both correct y values	
		A1	for both correct pairs, correctly matched	

Paper: 1MA1/1H				
Question	Answer	Mark	Mark scheme	Additional guidance
21 (a)	$\frac{1}{4}$	M1	for $f(1) = 3 \times 1^2 + 1 (= 4)$ and a clear intention to find $g(“4”)$ or for $\frac{4}{(3 \times 1^2 + 1)^2}$ or for stating $gf(x)$, eg $\frac{4}{(3x^2 + 1)^2}$ oe	
		A1	oe	
(b)	$\sqrt[4]{\frac{48}{x-1}}$	M1	for finding $fg(x)$, eg $3 \times \left(\frac{4}{x^2}\right)^2 + 1$ or $\frac{48}{x^4} + 1$	
		M1	for start of method to find the inverse of $fg(x)$, eg $y - 1 = 3 \times \left(\frac{4}{x^2}\right)^2$ or $y - 1 = \frac{48}{x^4}$ or $x - 1 = \frac{48}{y^4}$ or $x - 1 = 3 \times \left(\frac{4}{y^2}\right)^2$	
		M1	for $y^4 = \frac{48}{x-1}$ or $x^4 = \frac{48}{y-1}$ or for a final answer of $\sqrt[4]{\frac{48}{y-1}}$	
		A1	oe	
22	(3, 36)	P1	for factorising -3 from the expression, eg $-3(x^2 - 6x - 3)$ or $-3(x^2 - 6x) + 9$	
		P1	for starting the process to complete the square, eg $(x - 3)^2 - 9$	ft from their factorising if only one error
		P1	for completing the process of completing the square, eg $-3[(x - 3)^2 - 12]$ or $-3(x - 3)^2 + 36$	
		A1	cao	An answer only and no working is 0 marks

Question 17



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

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_1H		
Question	Modification	Mark scheme notes
2	<p>Wording added ‘Look at the diagram for Question 2 in the Diagram Booklet. It shows an incomplete Venn diagram.’</p> <p>Wording added ‘in the Diagram Booklet...’.</p> <p>Diagram enlarged.</p> <p>Labels ‘Set <i>A</i>’ and ‘Set <i>B</i>’ moved above the circles.</p> <p>Braille: In the diagram, add (i) for universal set, (ii) for Set <i>A</i>, (iii) for the overlap & (iv) for Set B.</p> <p>Then add ‘Ans: (i) __ (ii) __ (iii) __ (iv) __’</p>	Standard mark scheme
5	<p>Wording added ‘Look at the information for Question 5 in the Diagram Booklet.’</p> <p>Information enlarged.</p>	Standard mark scheme

PAPER: IMA1_1H		
Question	Modification	Mark scheme notes
6	<p>Wording ‘Look at Diagram 1 and Diagram 2 for Question 6 in the Diagram Booklet. You may be provided with a model.’</p> <p>The triangle labelled ABC.</p> <p>Diagram 1 to show the 3D prism. Diagram 2 to show the cross-section ABC.</p> <p>Wording added ‘Diagram 1 and the model show a prism’.</p> <p>Wording added ‘The cross section of the prism shown in Diagram 2 is a right-angled triangle labelled ABC.’</p> <p>Wording added ‘Angle ABC is a right angle. The base of the triangle, $BC = 5$ cm.’</p> <p>Diagram enlarged. Right angle made more obvious. Dashed lines made longer and thicker.</p> <p>Model could be provided candidates.</p>	Standard mark scheme
7	<p>Model of the cube and sphere provided for all candidates.</p> <p>Wording added ‘Look at Diagram 1, Diagram 2 and the formula for Question 7 in the Diagram Booklet. You may be provided with two models.’</p> <p>Wording ‘The diagram shows...’ removed and replaced with ‘Diagram 1 and Model A show a cube with edges of length x cm.’</p> <p>Wording added ‘Diagram 2 and Model B show a sphere of radius 3 cm.’</p> <p>Diagrams enlarged and stacked vertically. Dashed lines made longer and thicker.</p> <p>The ‘3 cm’ label and arrow moved to the left on the sphere diagram.</p> <p>Formula moved above the surface area diagram. Open headed arrows.</p>	Standard mark scheme
8	Change x to y .	Standard mark scheme but note the changes to the letters.
10	<p>Wording added ‘Look at the diagram for Question 10 in the Diagram Booklet.’</p> <p>Wording ‘The diagram shows...’ removed and replaced with ‘It shows...’</p> <p>Diagram enlarged.</p>	Standard mark scheme

PAPER: IMA1_1H		
Question	Modification	Mark scheme notes
11	<p>Wording added ‘Look at the diagram for Question 11 in the Diagram Booklet.’</p> <p>Wording ‘The diagram shows...’ removed and replaced with ‘It shows...’</p> <p>Diagrams enlarged. Labels moved to the left and above the diagrams.</p> <p>The rectangles labelled as ‘rectangle A’ and ‘rectangle B’. Diagrams stacked vertically.</p> <p>Braille: Additional words: ‘Rectangle A has a length of $2w + y$ and a width of 6. Rectangle B has a length of $3y + 6$ and a width of $7w$’</p>	Standard mark scheme
12	<p>Wording added ‘Look at the diagram for Question 12 in the Diagram Booklet. It shows a grid.’</p> <p>Wording added ‘The cumulative frequency table below gives...’</p> <p>Table enlarged. Cumulative frequency values modified: 4 changed to 5, 11 changed to 10, 24 changed to 25, 34 changed to 35</p> <p>Wording added ‘On the grid in the Diagram Booklet,..’</p> <p>Diagram enlarged. Open headed arrows.</p> <p>Axes labels moved to the left of the horizontal axis and above the vertical axis.</p> <p>Right axis has been labelled. Small squares removed.</p> <p>Braille: a spare diagram, 14 round bumpons and Wikki Stix.</p>	Standard mark scheme but in (b) allow an answer in the range 12.6 to 14.5 (ft)
14	<p>Wording added ‘Look at the diagram for Question 14 in the Diagram Booklet. It shows the shape <i>ABCDEF</i>. All the measurements are in centimetres.’ With the shape labelled <i>ABCDEF</i>.</p> <p>Wording added: ‘$AB = x + 1$, $BC = 4$, $EF = 2x + 6$, $AF = x + 11$’</p> <p>All the marked angles are right angles.’ Wording ‘Here is...’ removed.</p> <p>Diagram enlarged. Right angles made more obvious.</p>	Standard mark scheme
15	x changed to y .	Standard mark scheme but note the changes to the letters.

PAPER: IMA1_1H		
Question	Modification	Mark scheme notes
17	<p>Wording added ‘Look at the diagram for Question 17 in the Diagram Booklet. It shows a grid.’</p> <p>Diagram enlarged. Open headed arrows. The grid cut at $x = -4$.</p> <p>Axes labels moved to the right of the horizontal axis and above the vertical axis.</p>	Standard mark scheme
18	<p>Wording added ‘Look at the diagram for Question 18 in the Diagram Booklet.’</p> <p>Wording ‘Here is...’ removed and replaced with ‘It shows...’</p> <p>Wording added: ‘AB is parallel to DC. $BC = 6$ cm Angle $BCD = 30^\circ$’</p> <p>Angle moved outside of the angle arc and the arc made smaller.</p> <p>Diagram enlarged.</p>	Standard mark scheme
20	<p>Wording added ‘Look at the diagram for Question 20 in the Diagram Booklet.’</p> <p>Wording ‘The diagram shows...’ removed and replaced with ‘It shows...’</p> <p>Diagram enlarged. Open headed arrows. Small squares removed.</p> <p>Axes labels moved to the right of the horizontal axis and above the vertical axis.</p>	<p>Standard mark scheme but for both A marks accept answers in the ranges</p> <p>$x = 2.0$ to 2.25, $y = 5.0$ to 5.25</p> <p>$x = -2.5$ to -3.0, $y = -4.6$ to -4.9</p>

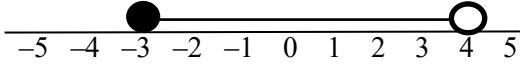


Pearson
Edexcel

Mark Scheme (Results)

November 2021

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

Paper: 1MA1/2H				
Question	Answer	Mark	Mark scheme	Additional guidance
1 (a)	$x > -1$	B1	cao	
(b)	Diagram drawn	C2	for a fully correct diagram, eg 	
		(C1)	for drawing a line from -3 to 4 or (indep) for an open circle at 4 or (indep) for a closed circle at -3)	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 or 84 with no more than one arithmetic error or for listing factors of 60 or 84, at least 4 correct for either (with no more than 1 incorrect in either list), could be in factor pairs or for the prime factors of 60 (2, 2, 3, 5) or 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
		A1	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
(b)	120	M1	for a correct factor tree for either 24 or 40 with no more than one arithmetic error or for at least 3 multiples of both 24 and 40 (can include 24 and 40) or for the prime factors of either 24 (2, 2, 2, 3) or 40 (2, 2, 2, 5) or 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 20×4 or $20 \div \frac{1}{4}$	Can be implied by a distance of 25km drawn on the graph
		A1	cao	
(b)	Travel graph	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
		(B1)	for 2 or 3 correct values)	
(b)	Graph	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 $y = 4$ or $y = x^2 - 2x - 2$ 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	for start of process to find the length of the hypotenuse, eg (hyp ² =) 8 ² + 10 ² (= 164)	Note lengths may be seen on the diagram
		P1	for complete process to find hypotenuse, eg $\sqrt{8^2 + 10^2}$ or $\sqrt{64 + 100}$ or $\sqrt{164}$ (= 12.8...)	
		P1	(dep P2) for complete process to find the required perimeter, eg 8 + 8 + 10 + “12.8” + “12.8 – 10” or 16 + 4 $\sqrt{41}$	8 + 8+ “12.8” + “12.8” oe is acceptable for this mark
		A1	for answer in the range 41 to 42	If an answer in the range 41 to 42 is given in the working space then incorrectly rounded, award full marks.
6 (a)	17.8	M1	for $\tan 56 = \frac{x}{12}$ or $(BC) = 12 \times \tan 56$ oe or alternative method to find BC	For any alternative method candidates must arrive at an equation with BC as the only unknown
		A1	for an answer in the range 17.7 to 17.8	If an answer in the range 17.7 to 17.8 is given in the working space then incorrectly rounded, award full marks.
(b)	33.6	M1	for $\cos x = \frac{15}{18}$ or $\cos x = 0.83..$ or $x = \cos^{-1} \frac{15}{18}$ or alternative method to find x	For any alternative method candidates must arrive at an equation with x as the only unknown
		A1	for an answer in the range 33.5 to 33.91	If an answer in the range 33.5 to 33.91 is given in the working space then incorrectly rounded, award full marks.

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

Paper: 1MA1/2H																												
Question	Answer	Mark	Mark scheme	Additional guidance																								
9	(a)	138	M1	for upper quartile = 188 or lower quartile = 50 or an indication that they are trying UQ – LQ	Could be written on the grid																							
			A1	cao																								
	(b)	Yes, with reason	C1	Yes, with reason Acceptable examples 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 Not acceptable examples No The median is at the 2 hour mark Yes, because 50% is exactly half way between “188” and “50”																								
(c)	statement	C1	Acceptable examples 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 Not acceptable examples The range is bigger for Tuesday (smaller for Monday) The IQR is smaller for Tuesday (bigger for Monday)	<table border="0"> <tr> <td></td> <td>M</td> <td>T</td> </tr> <tr> <td>Shortest time</td> <td>20</td> <td>20</td> </tr> <tr> <td>Lower quartile</td> <td>50</td> <td>50</td> </tr> <tr> <td>Median</td> <td>120</td> <td>100</td> </tr> <tr> <td>Upper quartile</td> <td>188</td> <td>140</td> </tr> <tr> <td>Longest time</td> <td>200</td> <td>210</td> </tr> <tr> <td>Range</td> <td>180</td> <td>190</td> </tr> <tr> <td>IQR</td> <td>138</td> <td>90</td> </tr> </table>		M	T	Shortest time	20	20	Lower quartile	50	50	Median	120	100	Upper quartile	188	140	Longest time	200	210	Range	180	190	IQR	138	90
	M	T																										
Shortest time	20	20																										
Lower quartile	50	50																										
Median	120	100																										
Upper quartile	188	140																										
Longest time	200	210																										
Range	180	190																										
IQR	138	90																										

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

Paper: 1MA1/2H				
Question	Answer	Mark	Mark scheme	Additional guidance
12	$6x^3 + x^2 - 20x - 12$	M1 M1 A1	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. $6x^2 + 9x + 4x + 6$ or $3x^2 + 2x - 6x - 4$ or $2x^2 + 3x - 4x - 6$ for method of multiplying out remaining products, half of which are correct (ft their first product), eg. $6x^3 + 13x^2 - 12x^2 + 6x - 26x - 12$ cao	Note that, for example, $6x^2 + 13x$ or $13x + 6$ are regarded as three terms in the expansion of $(x - 2)(3x + 2)$ First product must be quadratic but need not be simplified or may be simplified incorrectly.
13	192 000	M1 A1	for $16 \times 120 \times 100$ oe cao	
14	25 with reasons	M1 M1 C2 (C1)	for method to find angle BCD eg $180 \div (3 + 1) (= 45)$ or $BAD = 180 \div (3 + 1) \times 3 (=135)$ for method to find angle BDA eg $180 - 20 - (180 - "45") (=25)$ or method to find angle SBD eg $SBD = BCD (=45)$ for finding $SBA (=25)$ and both reasons given, eg <u>Opposite angles of a cyclic quadrilateral</u> add up to 180 for angle $SBD = 45$ because <u>alternate segment</u> theorem (dep M1) for one reason given <u>Opposite angles of a cyclic quadrilateral</u> add up to 180 for angle $SBD = 45$ because <u>alternate segment</u> theorem)	Could be shown on the diagram or in working Do not award if it ambiguous as to which angle is being found Underlined words need to be shown; reasons need to be linked to their method

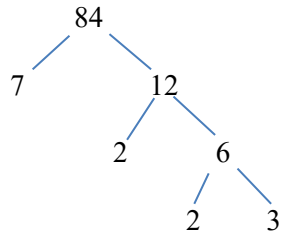
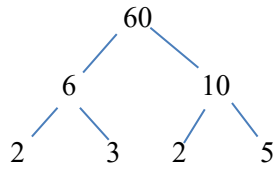
Paper: 1MA1/2H					
Question	Answer	Mark	Mark scheme	Additional guidance	
15	(a)	11.4	M1	for start to method to find the length of BC eg. $8^2 + 11^2 - 2 \times 8 \times 11 \times \cos 72$	If an answer within the given range is seen in working and rounded incorrectly award full marks. Any alternative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

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

Paper: 1MA1/2H				
Question	Answer	Mark	Mark scheme	Additional guidance
19	25 : 36	P1 P1 A1	<p>for $\sqrt[3]{125}$ (= 5) and $\sqrt[3]{27}$ (= 3) oe OR 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 <i>A</i> and <i>C</i> eg 5 and 2×3 (= 6) oe or “3.10...” and “1.86...” $\times 2$ (=3.72...) OR 25 and 36 OR for correct process to find SA of A and SA of C (120.(8...)) and (174.(0...))</p> <p>for 25 : 36 oe eg 1: 1.44</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>
20	0.748	P1 P1 P1 A1	<p>for a process to find a correct probability product for 2 consecutive days, eg. 0.7×0.8 (rain M + T) or 0.7×0.2 (rain M + no rain T) or 0.3×0.6 (no rain M + rain on T) or 0.3×0.4 (no rain M + T)</p> <p>for process to find a correct triple probability product for it raining on Wednesday, eg. $0.7 \times 0.8 \times 0.8$ (rain M + T + W) (= 0.448 or $\frac{56}{125}$ oe) or $0.7 \times 0.2 \times 0.6$ (rain M + no rain T + rain W) (= 0.084 or $\frac{21}{250}$ oe) or $0.3 \times 0.6 \times 0.8$ (no rain M + rain T + rain W) (= 0.144 or $\frac{18}{125}$ oe) or $0.3 \times 0.4 \times 0.6$ (no rain M + no rain T + rain W) (= 0.072 or $\frac{9}{125}$ oe)</p> <p>for complete process, eg. “0.448” + “0.084” + “0.144” + “0.072”</p> <p>oe eg, $\frac{187}{250}$</p>	<p>Throughout accept probabilities given as fractions or percentages Could be for Tuesday and Wednesday also</p> <p>NB: correct answer without supportive working gets 0 marks</p>

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

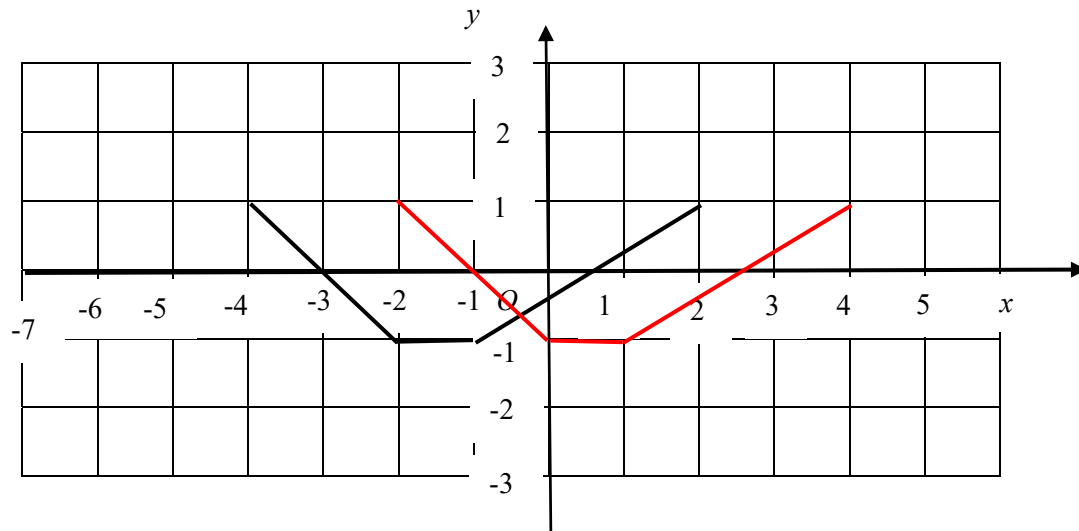
Question 1



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: ± 5 mm

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

PAPER: IMA1_2H

Question	Modification	Mark scheme notes
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 bumpons 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), & (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 bumpons and Wikki Stix.</p>	Standard mark scheme but in part (c) answers in the ranges 2.6 to 2.9 and -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: 1MA1_2H

Question		Modification	Mark scheme notes
6	(a)	<p>Wording added 'Look at the diagram for Question 6(a) in the Diagram Booklet. It shows a right-angled triangle, ABC.'</p> <p>Wording added: '$AC = 12$ cm, Angle $BAC = 56^\circ$, Angle CAB 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, PQR.'</p> <p>Wording added: '$PR = 18$ cm, $RQ = 15$ cm, Angle PQR is a right angle, Angle PRQ is marked x'</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: 1MA1_2H

Question	Modification	Mark scheme notes																								
9	<p>Wording added ‘Look at the diagram for Question 9 in the Diagram Booklet. It is a box plot which shows...’.</p> <p>The lower quartile moved down to 40 and the upper quartile moved down to 180.</p> <p>Small squares removed. Diagram enlarged. Open headed arrows.</p> <p>Horizontal axis label moved to the left. The box plot labelled ‘Monday’.</p>	<p>Part (a):</p> <p>M1 for upper quartile = 180 or lower quartile = 40 or an indication that they are trying UQ – LQ</p> <p>A1 for 140</p> <p>Part (b) standard mark scheme</p>																								
9	<p>(c)</p> <p>Wording added ‘Look at the table for Question 9(c) in the Diagram Booklet. It is shown below the box plot. It gives...’.</p> <p>Table enlarged. The lower quartile changed to 40. The table labelled ‘Tuesday’.</p>	<p>Standard mark scheme but with the amended figures:</p> <table border="1" data-bbox="1464 555 2152 823"> <thead> <tr> <th></th> <th>M</th> <th>T</th> </tr> </thead> <tbody> <tr> <td>Shortest time</td> <td>20</td> <td>20</td> </tr> <tr> <td>Lower quartile</td> <td>40</td> <td>40</td> </tr> <tr> <td>Median</td> <td>120</td> <td>100</td> </tr> <tr> <td>Upper quartile</td> <td>180</td> <td>140</td> </tr> <tr> <td>Longest time</td> <td>200</td> <td>210</td> </tr> <tr> <td>Range</td> <td>180</td> <td>190</td> </tr> <tr> <td>IQR</td> <td>140</td> <td>100</td> </tr> </tbody> </table>		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
	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																								
10	<p>Wording added ‘Look at the information for Question 10 in the Diagram Booklet.’</p> <p>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...’.</p> <p>Diagram enlarged. Crosses changed to solid dots. 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>Standard mark scheme</p>																								
12	<p>The letter x changed to y.</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.’</p> <p>Diagram enlarged. The line SBT reduced slightly so that it is not too long.</p> <p>Angle moved outside of the angle arc and the angle arc made smaller.</p>	<p>Standard mark scheme</p>																								

PAPER: 1MA1_2H

Question	Modification	Mark scheme notes
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. $1.0 \times 5 (= 5)$ or $1.5 \times 10 (= 15)$ or $2.5 \times 10 (= 25)$ or $1.0 \times 15 (= 15)$ or to find areas eg $5 \times 10 (=50)$ or $10 \times 15 (=150)$ or $10 \times 25 (=250)$ or $15 \times 10 (=150)$</p> <p>P1 for process to find total number of people, eg. “5” + “15” + “25” + “15” (= 60) or 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” \times 0.2 oe (= 12) or for process to find 20% of the total area eg “600” \times 0.2 oe (=120)</p> <p>A1 cao for 28</p>

PAPER: 1MA1_2H

Question		Modification	Mark scheme notes
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 <i>l</i> to capital L .	Standard mark scheme



Pearson
Edexcel

Mark Scheme (Results)

November 2021

Pearson Edexcel GCSE
In Mathematics (1MA1)
Higher (Calculator) Paper 3H

Paper: 1MA1/3H				
Question	Answer	Mark	Mark scheme	Additional guidance
1 (a)	(100,18)	B1	cao	
(b)	12.8 to 14.8	M1	for a method to read off eg line of best fit or line up from 370 or for a point on the grid at (370, y) where y lies between 12.8 and 14.8	
		A1	for an answer in the range 12.8 to 14.8	
(c)	Decision and statement	C1	for decision and statement Acceptable examples No, as this point can be disregarded from the general trend No, ignore this point No, the correlation is positive No, because even with an outlier you can still have a negative or positive correlation. No, there is still a correlation. No, as you can use the rest of the data to determine a correlation. No, as outlier does not affect the majority No as a line of best fit can still be drawn No, it is an anomaly Not acceptable examples Yes, Outliers can be ignored [no decision] No, the outlier can be ignored so the correlation is negative No there are other things that can affect the test	

Paper: 1MA1/3H				
Question	Answer	Mark	Mark scheme	Additional guidance
2	12.85 or 12.86 or 13.5(0)	P1 P1 P1 A1	for $9 + 2 + 1$ (= 12) for working out how many lots of 175g are needed eg $6000 \div "12" \times 2 \div 175$ (= 5.71...) for a complete process eg $"5.71..." \times 2.25$ (= 12.857...) for 12.85 or 12.86 or 13.5(0)	Award this mark for sight of 4500, 1000 or 500 Process may lead to 5 or 6 instead of 5.71... "5.71..." (ft) may be rounded or truncated.eg "6"
3	(a) 450 000 (b) 7×10^{-3} (c) 4.73×10^3	B1 B1 M1 A1	cao cao for 4730 oe or for 4.73×10^n where $n \neq 3$ cao	

Paper: 1MA1/3H				
Question	Answer	Mark	Mark scheme	Additional guidance
4	260	P1	conversion to common units of capacity eg $2.2 \times 4.54 (= 9.988)$ or $8 \div 4.54 (= 1.76\dots)$ OR for Company A $2400 \div 4.54 (= 528.63\dots)$ OR $2400 \div 8 (= 300)$ OR a rate per minute $8 \div [\text{time for Company A}] (= 4.8\dots)$ oe	Results of calculations may be truncated or rounded. [time for Company A] could be 1 min 40 sec or 1.66... or 1.6 or 1.40 etc as long as it is clear it relates to 1 min 40 sec
		P1	for a complete process to find the time for company A or company B in minutes. eg in litres Company A $2400 \div "4.8\dots" (= 500)$ or $"300" \times [1 \text{ min } 40 \text{ sec}] (= 500)$ or Company B $2400 \div "9.988" (= 240.28\dots)$ OR eg in gallons Company A $"528.63\dots" \div ("1.76\dots" \div [1 \text{ min } 40 \text{ sec}]) (= 500)$ or Company B $"528.63\dots" \div 2.2 (= 240.28\dots)$	
		P1	for complete processes to find the times for both company A and company B in minutes. Company A eg in litres $2400 \div "4.8\dots" (= 500)$ or $"300" \times [1 \text{ min } 40 \text{ sec}] (= 500)$ or in gallons $"528.63\dots" \div ("1.76\dots" \div [1 \text{ min } 40 \text{ sec}]) (= 500)$ AND Company B eg in litres $2400 \div "9.988" (= 240.28\dots)$ or in gallons $"528.63\dots" \div 2.2 (= 240.28\dots)$	
		A1	for an answer in the range 259 to 260	If the answer is given within the range but then rounded incorrectly award full marks.

Paper: 1MA1/3H				
Question	Answer	Mark	Mark scheme	Additional guidance
5	12	P1 P1 A1	for a process to find the fifth term, eg $3a + 5a (= 8a)$ for setting up the equation eg $a + 2a + 3a + 5a + [8a] = 228$ cao	[8a] allow use of what is clearly indicated as the missing term $\frac{228}{19}$ or $\frac{228}{1+2+3+5+8}$ scores P1 P1 $\frac{228}{1+2+3+5+[8]}$ scores P0P1
6 (a)	0.5, 0.3	P1 A1	for $1 - 0.05 - 0.15 (= 0.8)$ oe	Award this mark for any two probabilities that sum to 0.8
(b)	120	M1 A1	$18 \div 0.15$ oe or $6 + 18 + a + b$ where $a + b = 96$ cao	
7	18.3	P1 P1 P1 A1	for finding the area of the triangle eg $0.5 \times 8 \times 8 (= 32)$ for finding the area of the circle $\pi \times 8 \times 8 (= 201.06..)$ for finding the area of the sector eg $\frac{1}{4} \times \pi \times 8^2$ or " $201.06..$ " $\div 4 (= 50.26..)$ for an answer in the range 18.2 to 18.3	Accept rounded or truncated figures If the answer is given within the range but then rounded incorrectly award full marks.
8 (a)	Graph sketched	C1	Sketch	Accept freehand provided intention is clear
(b)	Graph sketched	C1	Sketch	

Paper: 1MA1/3H				
Question	Answer	Mark	Mark scheme	Additional guidance
9 (a)	4	P1 A1	$12 \times 5 \div 15$ cao	
(b)	Statement	C1	<p>Acceptable examples it could take more time it could take less time it could take more or less time it would take longer if they worked at a slower rate</p> <p>Not acceptable examples the time will be less as there are more people if the rate at which the 15 people work changes it would have taken longer it would take less time</p>	
10	14.14	P1 P1 P1 A1	<p>works out scale factor eg $(9 + 6) \div 6 (= 2.5)$ OR for start of process to find angle DBE eg $\sin B = \frac{2}{6}$ oe</p> <p>uses Pythagoras eg $6^2 - 2^2 (= 32)$ or $\sqrt{32} (= 5.6\dots)$ OR calculates AC eg $2 \times "2.5" (= 5)$ OR for complete process to find angle DBE eg $\sin^{-1}\left(\frac{2}{6}\right) (= 19.4\dots)$</p> <p>complete process to find CB eg $"2.5" \times "\sqrt{32}" (= 10\sqrt{2})$ or $\sqrt{(9 + 6)^2 - "5" ^2} (= 10\sqrt{2})$ OR uses trigonometry, eg $15 \times \cos "19.4\dots"$</p> <p>14.1 to 14.15</p>	<p>Note method can be carried out in either order</p> <p>May be seen on diagram</p> <p>If the answer is given within the range but then rounded incorrectly award full marks.</p>

Paper: 1MA1/3H				
Question	Answer	Mark	Mark scheme	Additional guidance
11	6.35, 6.45	B1	for 6.35 in the correct position	Accept 6.449 oe or 6.4499... oe
		B1	for 6.45 in the correct position	
12	49, 2	P1	for setting up $6 \div n = 3$ oe or $7^n = a$ oe or one correct answer	Accept the figures written as a complete statement eg $(49x^6)^{\frac{1}{2}}$
		A1	cao	
13	(9, 8)	P1	for setting up an equation for one dimension (width) of the pattern eg $2b - a = 8$ oe or $2x + y = 8$ oe	a and b are the width and length x is the difference between the length and width, y is the width of the rectangle Both values correct implies this mark
		P1	for setting up an equation for the other dimension (height) of the pattern eg $2b + a = 16$ oe or $2x + 3y = 16$ oe	
		P1	(dep P2) for a full process to solve for both variables eg $4b = 24$, $b = 6$ and $12 - a = 8$, $a = 4$ or $8 = 2y$, $y = 4$ and $8 = 2x + y$, $x = 2$	
		P1	(dep P3) for a full process to find one of the coordinates of C eg $3 + 6 (= 9)$ or $4 + 4 (= 8)$ or $3 + 2 + 4 (= 9)$ or $4 + 4 (= 8)$	
		A1	cao	

Paper: 1MA1/3H				
Question	Answer	Mark	Mark scheme	Additional guidance
14	8 : 12 : 9 : 1	P1	for $2 + 3 (= 5)$ and $9 + 1 (= 10)$ OR for assigning a total number of sweets for $F + G$ and $O + J$ eg $F + G = 100, O + J = 50$	May be in algebraic form, eg $2a + 3a (= 5a)$ and $9a + 1a (= 10a)$ May be in algebraic form, eg $F + G = 5a, O + J = 2.5a$
		P1	for finding correct multiplier for relationship between totals for $F + G$ and $O + J$ eg $\times 4$ to get from 5, 10 to 20, 10 OR for working out the number of sweets from their totals for F, G eg 40, 60 or for O, J , eg 45, 5	
		P1	for $2 \times 4 (= 8)$ and $3 \times 4 (= 12)$ OR for ratio in unsimplified form, eg $40 : 60 : 45 : 5$	
		A1	cao	
15	0.7 to 1.1	M1	for tangent to the curve drawn at $t = 12$	
		M1	for method to find the gradient of their tangent, eg $28 \div 30$	Working may be seen on the diagram
		A1	for answer in the range 0.7 to 1.1 dependent upon tangent drawn	Ignore negative signs

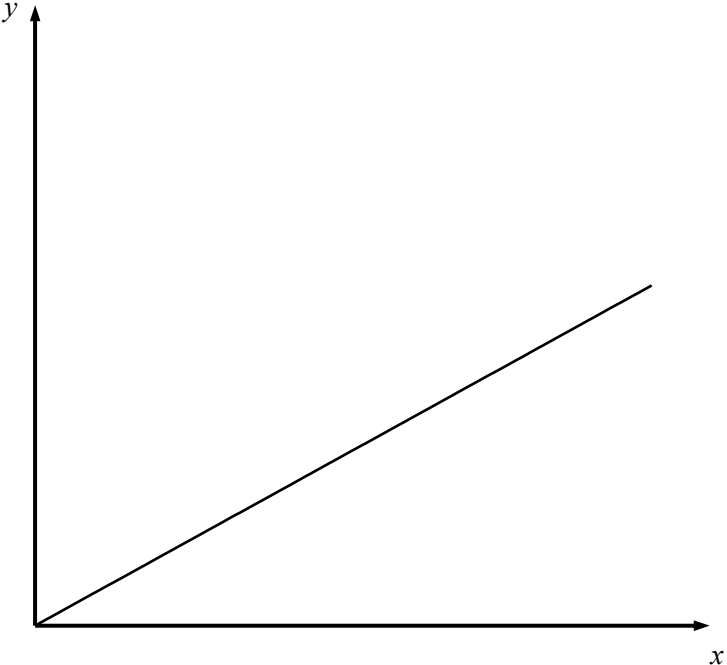
Paper: 1MA1/3H				
Question	Answer	Mark	Mark scheme	Additional guidance
16	Shown (supported)	M1 M1 M1 C1	for eliminating y or x , eg $x^2 + 3x - 3 = 5x - 4$ for rearranging, collecting terms and setting to 0 eg $x^2 - 2x + 1 (= 0)$ for factorising or solving eg $(x - 1)^2 (= 0)$ for statement confirming only 1 point in common eg only 1 root or only 1 value of x so only 1 set of coordinates	There must be a statement in words for the award of this mark
17	$x = \frac{1}{2}z^6$	M1 M1 M1 A1	for setting up an equation eg $x = ky^2$ oe or $y = cz^3$ oe for eliminating y eg $x = k(cz^3)^2$ oe OR substitutes values in both equations, eg $32 = ky^2$ and $y = c2^3$ for substituting in 32 and 2 to find the constant, eg $32 = m2^6$ OR combines equations, eg $32 = k c^2 2^6$ oe	Accept use of proportionality sign, eg $x \propto y^2$ or $y \propto z^3$ or $x \propto ky^2$ or $y \propto cz^3$ Accept use of proportionality sign, eg $32 \propto ky^2$ and $y \propto c2^3$

Paper: 1MA1/3H				
Question	Answer	Mark	Mark scheme	Additional guidance
18	$\frac{2}{5}\mathbf{a} + \mathbf{b}$	P1	for relationship involving D eg $\overrightarrow{OD} = \frac{2}{5}\overrightarrow{OB}$ or $\overrightarrow{DB} = \frac{3}{5}\overrightarrow{OB}$ or for relationship involving E eg $\overrightarrow{BE} = \frac{1}{5}\overrightarrow{BC}$ or $\overrightarrow{EC} = \frac{4}{5}\overrightarrow{BC}$	
		P1	for relationship involving D in terms of \mathbf{a} and \mathbf{b} eg $\overrightarrow{OD} = \frac{2}{5}(\mathbf{a} + \mathbf{b})$ or $\overrightarrow{DB} = \frac{3}{5}(\mathbf{a} + \mathbf{b})$ or for relationship involving E in terms of \mathbf{a} and \mathbf{b} eg $\overrightarrow{BE} = \frac{1}{5}(-\mathbf{b} - \mathbf{a} + 3\mathbf{b})$ oe or $\overrightarrow{EC} = \frac{4}{5}(-\mathbf{b} - \mathbf{a} + 3\mathbf{b})$ oe or $\overrightarrow{BC} = 2\mathbf{b} - \mathbf{a}$ oe or $\overrightarrow{CB} = \mathbf{a} - 2\mathbf{b}$ oe	
		P1	(dep P2) for expression for \overrightarrow{DE} in terms of \mathbf{a} and \mathbf{b} eg $\overrightarrow{DE} = \frac{3}{5}(\mathbf{a} + \mathbf{b}) + \frac{1}{5}(-\mathbf{b} - \mathbf{a} + 3\mathbf{b})$	
		A1	for $\frac{2}{5}\mathbf{a} + (1)\mathbf{b}$ or $\frac{1}{5}(2\mathbf{a} + 5\mathbf{b})$	
19	0.95	P1	for initial use of the formula eg $3610 = kP_n$ or $P_{n+1} = 4000k$ or for $P_{n+2} = k^2P_n$ or for $3610 = k^2 \times 4000$	Accept n or any integer replacement for n
		P1	for a complete method to find k eg $\sqrt{\frac{3610}{4000}}$ or ± 0.95	This may be seen in steps
		A1	oe	

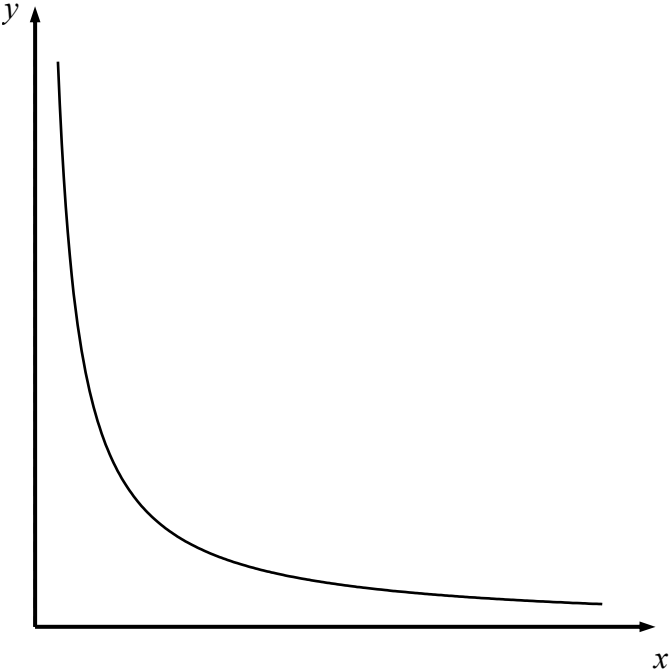
Paper: 1MA1/3H				
Question	Answer	Mark	Mark scheme	Additional guidance
20	$1 - \left(\frac{1}{2}\right)^n - \left(\frac{1}{2}\right)^n$	M1 A1	for $\left(\frac{1}{2}\right)^n$ oe oe eg $1 - \left(\frac{1}{2}\right)^{n-1}$	
21 (a)	19.1	M1 M1 A1	for a method to find an estimate for the area of at least 1 trapezium under the curve eg $0.5 \times 1 \times (4 + 6)$ or $0.5 \times 1 \times (6 + 7.2)$ or $0.5 \times 1 \times (7.2 + 7.8)$ for a complete method eg $0.5 \times 1 \times (4 + 6) + 0.5 \times 1 \times (6 + 7.2) + 0.5 \times 1 \times (7.2 + 7.8)$ or $0.5 \{(4 + 7.8) + 2(6 + 7.2)\}$	Allow a maximum of 2 errors in y values used
(b)	Statement	C1	eg distance (travelled)	Ignore any reference to units If units are given they must be correct
22	$\frac{1}{x(x+4)}$	M1 M1 A1	inverting the fraction and multiplying eg $\frac{6x^3}{(9x^2-144)} \times \frac{3(x-4)}{2x^4}$ for factorising $9x^2 - 144$, eg $(3x - 12)(3x + 12)$ cao	

Paper: 1MA1/3H				
Question	Answer	Mark	Mark scheme	Additional guidance
23	Proof (supported)	M1	<p>for using the sine rule on triangle ABD or on triangle ADC, to involve sides AB, BD, AC, or DC</p> <p>eg $\frac{AB}{\sin ADB} = \frac{BD}{\sin x}$ oe or $\frac{AC}{\sin ADC} = \frac{DC}{\sin x}$ oe</p> <p>OR</p> <p>for an expression for the area of triangle ABD or for the area of triangle ADC</p> <p>eg $\frac{1}{2} AB AD \sin x$ or $\frac{1}{2} AD AC \sin x$ or $\frac{1}{2} h BD$ or $\frac{1}{2} h DC$</p>	Accept extra letters eg y shown on diagram for any angle used
		M1	<p>for using the sine rule on both triangle ABD and on triangle ADC, to involve sides AB, BD, AC, or DC</p> <p>eg $\frac{AB}{\sin ADB} = \frac{BD}{\sin x}$ oe and $\frac{AC}{\sin ADC} = \frac{DC}{\sin x}$ oe</p> <p>OR</p> <p>for two expressions for the area of either triangle ABD or for triangle ADC</p> <p>eg $\frac{1}{2} AB AD \sin x$ and $\frac{1}{2} h BD$ or $\frac{1}{2} AD AC \sin x$ and $\frac{1}{2} h DC$</p>	
		M1	<p>for stating or showing $\sin ADB = \sin ADC$,</p> <p>eg $\sin y = \sin (180 - y)$</p> <p>OR</p> <p>for using two expressions to form an equation</p> <p>eg $\frac{\frac{1}{2} AB AD \sin x}{\frac{1}{2} AD AC \sin x} = \frac{\frac{1}{2} h BD}{\frac{1}{2} h DC}$ oe</p>	
		C1	for a full method to arrive at the given answer	

Question 8(a)



Question 8(b)



Modifications to the mark scheme for Modified Large Print (MLP) papers: 1MA1 3H

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_3H		
Question	Modification	Mark scheme notes
1	<p>Wording added 'Look at the diagram for Question 1 in the Diagram Booklet. It is a scatter graph which shows...'</p> <p>Diagram enlarged. Open headed arrows. Right axis has been labelled.</p> <p>Axes labels moved to the left of the horizontal axis and above the vertical axis.</p> <p>Crosses changed to solid dots. Small squares removed.</p> <p>Braille: There will be a spare diagram and Wikki Stix</p>	Standard mark scheme but in part (b) use a range of 12.5 to 15
5	Change a to n .	Standard mark scheme but note the change in letter.
6	<p>Wording added 'Look at the table for Question 6 in the Diagram Booklet.'</p> <p>Wording added 'The table in the Diagram Booklet...'; Table enlarged and turned vertical.</p> <p>In part (a) Wording added 'in the Diagram Booklet.'; Wording added 'There are two spaces to fill.'</p> <p>Braille: In the table letters (i) & (ii) placed in the blank spaces with an answer line: 'Ans: (i) __ (ii) __'</p>	Standard mark scheme
7	<p>Wording added 'Look at the diagram for Question 7 in the Diagram Booklet.'</p> <p>Wording 'The diagram shows...' removed and replaced with 'It shows...'</p> <p>Wording added '$OP = OR = 8$ cm.'</p> <p>Wording added 'The marked angle is a right angle.'</p> <p>Diagram enlarged. Right angle made more obvious. Shading changed.</p>	Standard mark scheme

PAPER: 1MA1_3H

Question		Modification	Mark scheme notes
8	(a)	Wording added 'Look at the diagram for Question 8(a) in the Diagram Booklet.' Wording 'below' removed and replaced with 'in the Diagram Booklet,..' Diagram enlarged. Open headed arrows. Axes labels moved to the right of the horizontal axis and above the vertical axis. Braille: also provided with a spare diagram, Wikki Stix and drawing film	
8	(b)	Wording added 'Look at the diagram for Question 8(b) in the Diagram Booklet.' Wording 'below' removed and replaced with 'in the Diagram Booklet,..' Diagram enlarged. Open headed arrows. Axes labels moved to the right of the horizontal axis and above the vertical axis. Braille: also provided with a spare diagram, Wikki Stix and drawing film	
10		Wording added 'Look at the diagram for Question 10 in the Diagram Booklet.' Wording added 'Triangle DEB is smaller than triangle ACB .' Wording added 'Both the marked angles are right angles.' The measurements 9 cm, 2 cm and 6 cm added to the diagram. Diagram enlarged. Right angles made more obvious. Braille alternative wording to that shown above: 'Triangle DEB is shaded and is smaller than triangle ACB .'	
12		Change a to m .	Standard mark scheme but note letter change.
13		Wording added 'Look at the diagram for Question 13 in the Diagram Booklet.' Wording 'A pattern is made from four identical rectangles' removed and replaced with 'It shows a pattern made from four identical rectangles within a set of axes.' Diagram enlarged. Open headed arrows. Axes labels moved to the right of the horizontal axis and above the vertical axis. Crosses changed to solid dots. Wording added 'Point C is marked on the diagram in the Diagram Booklet.'	Standard mark scheme

PAPER: 1MA1_3H

Question	Modification	Mark scheme notes
15	Wording added 'Look at the diagram for Question 15 in the Diagram Booklet. It shows a graph...' Diagram enlarged. Open headed arrows. Right axis labelled. Small squares removed. Axes labels moved to the left of the horizontal axis and above the vertical axis.	Standard mark scheme
18	Wording added 'Look at the diagram for Question 18 in the Diagram Booklet.' Wording ' <i>OABC</i> is a trapezium' removed and replaced with 'It shows a trapezium <i>OABC</i> .' Wording added 'A straight line inside the trapezium joins point <i>O</i> and point <i>B</i> .' Diagram enlarged.	Standard mark scheme
21	Wording added 'Look at the diagram for Question 21 in the Diagram Booklet. It is a...' Diagram enlarged. Open headed arrows. Axes labels moved to the left of the horizontal axis and above the vertical axis. Right axis has been labelled. Small squares removed. Braille: also provided with a spare diagram and Wikki Stix.	Standard mark scheme, but some leeway needs to be given with regard to reading off the vales, and therefore also in the answer.
22	Change x to y .	Standard mark scheme but note letter change.
23	Wording added 'Look at the diagram for Question 23 in the Diagram Booklet.' Wording ' <i>ABC</i> is a triangle' removed and replaced with 'It shows triangle <i>ABC</i> .' Diagram enlarged. Angles moved outside of the angle arcs and the arcs made smaller.	Standard mark scheme

