Mark Scheme (Results)

November 2022

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

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General marking guidance

These notes offer general guidance, but the specific notes for examiners appertaining to individual questions take precedence.

1 All candidates must receive the same treatment. Examiners must mark the last candidate in exactly the same way as they mark the first. Where some judgement is required, mark schemes will provide the principles by which marks will be awarded; exemplification/indicative content will not be exhaustive. When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the response should be sent to review.

2 All the marks on the mark scheme are designed to be awarded; mark schemes should be applied positively. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme. If there is a wrong answer (or no answer) indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.

Questions where working is not required: In general, the correct answer should be given full marks.
Questions that specifically require working: In general, candidates who do not show working on this type of question will get no marks – full details will be given in the mark scheme for each individual question.

3 Crossed out work

This should be marked **unless** the candidate has replaced it with an alternative response.

4 Choice of method

If there is a choice of methods shown, mark the method that leads to the answer given on the answer line.
If no answer appears on the answer line, mark both methods **then award the lower number of marks.**

5 Incorrect method

If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review for your Team Leader to check.

6 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working as you can check the answer, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

7 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question or its context. (eg an incorrectly cancelled fraction when the unsimplified fraction would gain full marks).

It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect (eg. incorrect algebraic simplification).

8 Probability

Probability answers must be given as a fraction, percentage or decimal. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).

Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.

If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

9 Linear equations

Unless indicated otherwise in the mark scheme, full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously identified in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded (embedded answers).

10 Range of answers

Unless otherwise stated, when an answer is given as a range (eg 3.5 – 4.2) then this is inclusive of the end points (eg 3.5, 4.2) and all numbers within the range

11 Number in brackets after a calculation

Where there is a number in brackets after a calculation eg 2 × 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” × 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] × 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	$2^2 \times 5^3$	M1	for a complete method to find prime factors, could be shown on a complete factor tree with no more than one error or by division by prime factors with no more than one error	Condone the inclusion of 1 for the method marks
		M1	for complete factorisation, eg 2, 2, 5, 5, 5	Could be shown on a fully correct factor tree
		A1	for $2^2 \times 5^3$	
2 (a)	$3\frac{17}{20}$	M1	for finding two fractions with a correct common denominator (multiple of 20), with at least one correct corresponding numerator, eg $\frac{12}{20}$, $\frac{5}{20}$ or $\frac{32}{20}$, $\frac{45}{20}$	May be from $\frac{3}{5}$ and $\frac{1}{4}$ or from $\frac{8}{5}$ and $\frac{9}{4}$
		A1	for $3\frac{17}{20}$ or an equivalent mixed number SC B1 for an answer of 3.85 if M0 scored	
(b)	shown	M1	for $\frac{8}{3}\times\frac{1}{6}$ oe or $\frac{4}{9}\times\frac{6}{1}$ oe or $\frac{8}{3}\times\frac{9}{4}$ oe	
		A1	for unsimplified fraction which could lead to $\frac{4}{9}$, eg $\frac{8}{18}$ or for $\frac{4}{3}\times\frac{1}{3}$ or $\frac{24}{9}\div 6$ **or** for unsimplified fraction which could lead to $2\frac{2}{3}$, eg $\frac{24}{9}$ **or** for unsimplified fraction which could lead to 6, eg $\frac{72}{12}$	

Paper: 1MA1/1H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
3	2^6	M1	for the start of a method of simplification, eg 2^{-5+8} (= 2^3) or $2^{-5\times2}$ (= 2^{-10}) or $2^{8\times2}$ (= 2^{16})	
		A1	cao SC B1 for answer of 64 or 8^2 or 4^3 if M0 scored.	
4	0.00128	M1	for digits 128 **or** for correct placement of the decimal point following one arithmetical error, eg 32 × 4 = 138 with an answer of 0.00138	
		A1	for 0.00128 **or** 1.28×10^{-3}	
5	7500	M1	for method to find expected number of model B, eg $\frac{15}{80} \times 40000$ oe **or** $\frac{15}{"23+15+30+12"} \times 40000$ oe	
		A1	cao	

Paper: 1MA1/1H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
6 (a)(i)	2 : 6 : 5	P1	for process to compare ratios, eg $a : b = 2 : 6$ or $b : c = 3 : 2.5$	Could use 3 or any common multiple of 3 and 6
		A1	for 2 : 6 : 5 oe	
(ii)	$\frac{2}{13}$	M1	for process to find fraction, eg $\frac{[2]}{[2+6+5]}$ or for $\frac{a}{a+b+c}$	
		A1	for $\frac{2}{13}$ oe or ft (a)(i)	
(b)	1 : 10	P1	for process to express all numbers in terms of one number, eg $p = 5 \times 2m$ (= $10m$) or $m = \frac{n}{2}$ **or** for $2m = \frac{p}{5}$ **or** for assigning values in the ratio given, eg $m = 1$, $n = 2$, $p = 10$ **or** for $n : m : p = 2 : 1 : 10$ oe **or** 10 : 1 oe	
		A1	for 1 : 10 oe	

Paper: 1MA1/1H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
7	1250	P1	for process to use area of base in the formula, eg $\frac{10000}{2\times 4}$	
		A1	cao	
8	Pair of values	P1	for at least 5 multiples of 5 (with no more than 1 incorrect) **or** for at least 5 multiples of 7 (with no more than 1 incorrect) or for m = a multiple of 35 **and** n = a multiple of 14 or for m = 35 **or** n = 14	
		A1	for a correct pair of values, eg m = 35 and n = 14 or m = 35 and n = 28 or m = 105 and n = 14	m = 35, n = 14, 28, 42, 56, 84, … m = 105, n = 14, 28, 56, 98, …
9 (a)	(9), –4, –5, 0, 5, (4), (–9)	B2	for all 4 values correct	
		(B1	for 2 or 3 correct values)	
(b)	Graph drawn	B2	for a fully correct graph	Accept a freehand curve drawn that is not made of line segments Ignore anything outside the required range
		(B1	ft (dep on B1 in (a)) for plotting at least 5 of the points from their table correctly)	

Paper: 1MA1/1H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
10 (a)	$\frac{1}{16}$	M1	for method to find probability of getting a score of 5, eg $\frac{10}{6+8+9+7+10}$ $(=\frac{10}{40})$ oe	
		A1	for $\frac{1}{16}$ oe	Accept any equivalent fraction, decimal form 0.06(25) or 0.063, percentage form 6(.25)% or 6.3% Ignore subsequent incorrect attempts to write the correct answer in a different form.
(b)	15	M1	for method to find the proportion of 1s, eg $\frac{6}{40}$ oe	
		A1	cao	
11	Enlargement scale factor $\frac{1}{3}$ centre (0, 2)	B2	for enlargement scale factor $\frac{1}{3}$ centre (0, 2)	No marks if more than one transformation is given
		(B1	for any 2 aspects)	
12	$x = 3, y = -2$	M1	for a correct method to eliminate either variable or rearrangement of one equation leading to substitution (condone one arithmetic error)	Trial and improvement methods score 0 marks unless both x and y are correct
		A1	for either correct value of x or correct value of y	
		M1	(dep M1) for a correct substitution of found value into one of the equations or a correct method leading to the second value (condone one arithmetic error)	
		A1	$x = 3, y = -2$	

Paper: 1MA1/1H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
13	$t = 20$ $p = 4, 50$	M1	for method to find a missing value of p, eg $\frac{100}{25}$ oe (= 4) or $\frac{100}{2}$ oe (= 50) **or** for $p = \frac{100}{t}$	Marks for 4 or 50 can only be awarded if in correct cell of table or unambiguous in working
		M1	for method to find the missing value of t, eg $100 \div \frac{5}{1}$ (= 20) **or** for finding both missing values of p	Mark for 20 can only be awarded if in correct cell of table or unambiguous in working
		A1	cao	
14	Histogram drawn	B3	for fully correct histogram, eg relative heights 1, 5, 6, 1.5	Frequency densities are 1, 5, 6, 1.5
		(B2	for 3 correct bars **or** for frequency ÷ class interval for at least 3 frequencies and 2 correct bars of different widths)	
		(B1	for 2 correct bars of different widths **or** for frequency ÷ class interval for at least 3 frequencies)	
15	40	P1	for a start to the process, eg $\frac{x}{360} \times 2 \times \pi \times 18$ (= 4π) oe or $\frac{4\pi}{2 \times \pi \times 18}$ (= $\frac{x}{360}$) oe	Any arrangement equivalent to this equation acceptable
		P1	for a complete process to find x, eg $\frac{4\pi}{36\pi} \times 360$ oe	
		A1	cao	

Paper: 1MA1/1H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
16 (a)	Proof	M1	for expansion of $(2m + 1)^2$ or $(2n – 1)^2$, all 4 terms correct with or without signs (and no additional terms) or 3 out of 4 terms correct with signs, eg $4m^2 + 2m + 2m + 1$ or $4n^2 – 2n – 2n + 1$ **or** for correct expansion of $4(m + n)(m – n + 1)$ or $(m + n)(m – n + 1)$ eg $4m^2 – 4mn + 4m + 4mn – 4n^2 + 4n$ oe or $m^2 – mn + m + mn – n^2 + n$ oe **or** for $[2m + 1 + 2n – 1][(2m + 1) – (2n – 1)]$	Note that, for example, $4m + 1$ is regarded as 3 terms in the expansion of $(2m + 1)^2$
		M1	for correct expression after expansion for $(2m + 1)^2 – (2n – 1)^2$ eg $(4m^2 + 4m + 1) – (4n^2 – 4n + 1)$ or $4m^2 + 4m + 1 – 4n^2 + 4n – 1$ oe $(= 4m^2 + 4m – 4n^2 + 4n)$ **or** for $[2m + 1 + 2n – 1][2m + 1 – 2n + 1]$	
		C1	for a complete proof without any errors, eg uses difference of two squares to show that LHS = RHS **or** expands both sides and shows that LHS = RHS **or** expands and simplifies LHS and factorises convincingly to get RHS	Must see correct expression $4m^2 – 4n^2 + 4m + 4n$ $= 4[(m^2 – n^2) + (m + n)]$ $= 4[(m + n)(m – n) + (m + n)]$ $= 4(m + n)(m – n + 1)$
(b)	Yes (supported)	C1	for yes with explanation, eg $2m + 1$ and $2n – 1$ are odd numbers (for any positive integer value of m, n) and the right-hand side is a multiple of 4	

Paper: 1MA1/1H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
17	$\frac{16}{81}$	M1	for showing the cube root of 8 = 2 **and** the cube root of 27 = 3 **or** an intention to find the cube root and raise to power 4 eg $\sqrt[3]{\left(\frac{8}{27}\right)^4}$ or $\left(\sqrt[3]{\frac{8}{27}}\right)^4$ or $\left(\frac{2}{3}\right)^4$	
		A1	cao	

Paper: 1MA1/1H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
18	Result shown	M1	for angle $OBC = 90$ **or** for method to find angle OBA or angle OAB, eg $\frac{180 - x}{2}$ oe **or** for angle ABC = 90 – angle OBA, eg angle $ABC = 90 - y$ **or** marks point on circumference and draws triangle using A and B and point marked	Angles must be clearly labelled on the diagram or otherwise identified. Correct method can be implied from angles on the diagram if no ambiguity or contradiction.
		M1	for method to find angle ABC, eg $90 - \text{“}\frac{180 - x}{2}\text{”}$ oe **or** for $x = 180 - 2 \times$ angle OBA, eg $x = 180 - 2y$ **or** for angle at circumference = $\frac{1}{2}x$	
		C1	for correct algebra leading to angle $ABC = \frac{1}{2}x$ **and** one circle theorem relevant to their method, eg The <u>tangent</u> to a circle is perpendicular to the <u>radius</u> **OR** for $x = 180 - 2y$ and angle $ABC = 90 - y$ **and** one circle theorem relevant to their method, eg The <u>tangent</u> to a circle is perpendicular to the <u>radius</u> **OR** for angle $ABC = \frac{1}{2}x$ **and** one circle theorem relevant to their method, eg The <u>angle</u> at the <u>centre</u> of a circle is <u>twice</u> the <u>angle</u> at the <u>circumference</u> or <u>Alternate segment</u> theorem	Underlined words need to be shown; reasons need to be linked to their method.

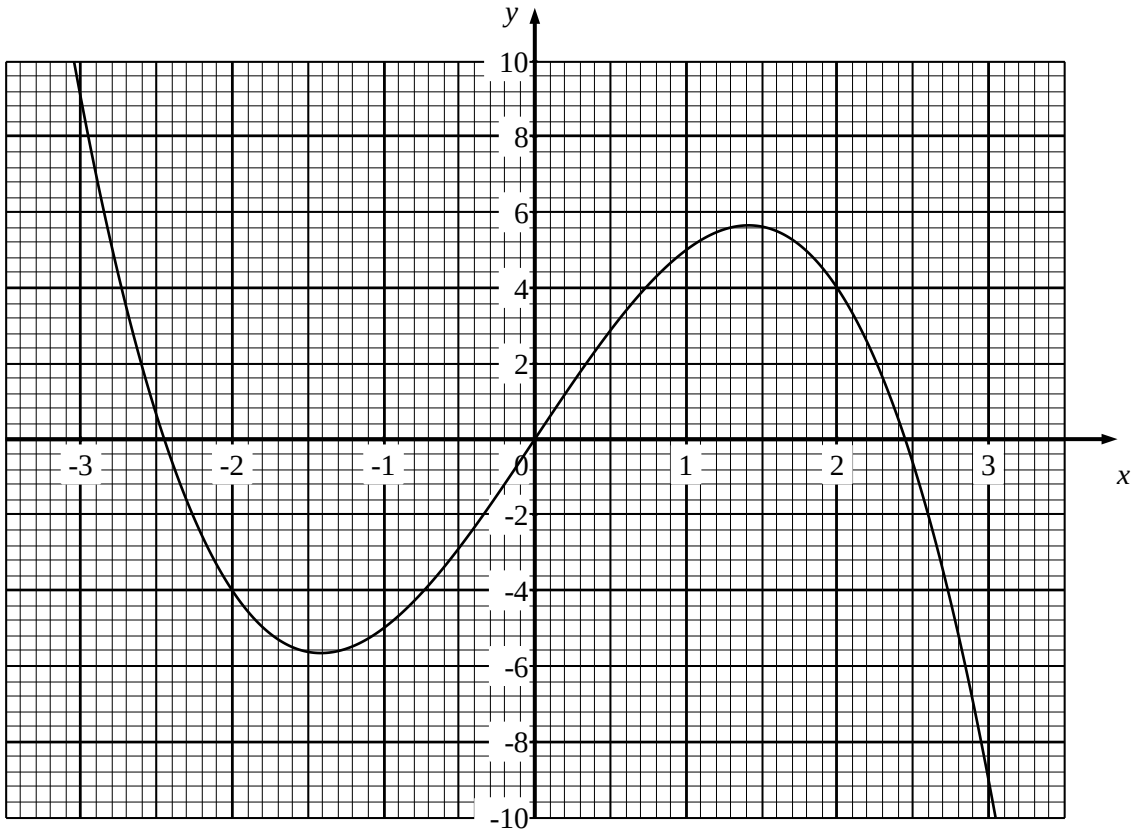
Paper: 1MA1/1H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
19	$-\frac{1}{2}\pm\frac{1}{2}\sqrt{2}$	P1	for using a common denominator, eg $\frac{x+1}{x(x+1)}-\frac{x}{x(x+1)}$ (= 4) or $\frac{x+1-x}{x(x+1)}$ (= 4) **or** $x+1-x = 4x(x+1)$	
		P1	for expanding and rearranging to get $4x^2 + 4x - 1$ (= 0)	Note we don't need to see "= 0"; just the LHS is sufficient Accept other forms of the 3 term quadratic, eg $4x^2 + 4x = 1$
		P1	(dep P1) ft for a method to solve their 3 term quadratic equation, eg $\frac{-4\pm\sqrt{4^2-4\times4\times-1}}{2\times4}$ or $4\left[\left(x+\frac{1}{2}\right)^2-\left(\frac{1}{2}\right)^2\right]-1=0$ oe	Correct use of formula or completing the square
		A1	for values of x, eg $\frac{-4\pm\sqrt{32}}{8}$ or $\pm\sqrt{\frac{1}{2}}-\frac{1}{2}$ oe	
		A1	for $-\frac{1}{2}\pm\frac{1}{2}\sqrt{2}$ oe in the form $a\pm b\sqrt{2}$ where are a and b are fractions	Accept $a = -\frac{1}{2}$, $b = \frac{1}{2}$ or $a = -\frac{1}{2}$, $b = -\frac{1}{2}$

Paper: 1MA1/1H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
20	$\frac{62}{110}$	P1	for process to find a probability of 2 cards of different colours, eg $\frac{3}{11}\times\frac{7}{10}$ or $\frac{3}{11}\times\frac{1}{10}$ or $\frac{7}{11}\times\frac{3}{10}$ or $\frac{7}{11}\times\frac{1}{10}$ or $\frac{1}{11}\times\frac{3}{10}$ or $\frac{1}{11}\times\frac{7}{10}$ oe or $\frac{3}{11}\times\frac{8}{10}$ oe or $\frac{7}{11}\times\frac{4}{10}$ oe or $\frac{1}{11}\times\frac{10}{10}$ oe	May see fraction with denominator 110
		P1	for a complete process, eg $\frac{3}{11}\times\frac{7}{10}+\frac{3}{11}\times\frac{1}{10}+\frac{7}{11}\times\frac{3}{10}+\frac{7}{11}\times\frac{1}{10}+\frac{1}{11}\times\frac{3}{10}+\frac{1}{11}\times\frac{7}{10}$ oe or $\frac{3}{11}\times\frac{8}{10}+\frac{7}{11}\times\frac{4}{10}+\frac{1}{11}\times\frac{10}{10}$ oe	
		A1	for $\frac{62}{110}$ oe	Accept equivalent fraction, decimal form 0.56(36…) or percentage form 56(.36…)%
			OR	
		P1	for process to find a probability of 2 cards of the same colour, eg $\frac{3}{11}\times\frac{2}{10}$ or $\frac{7}{11}\times\frac{6}{10}$ or $\frac{1}{11}\times\frac{0}{10}$ oe	
		P1	for a complete process, eg $1-\frac{3}{11}\times\frac{2}{10}-\frac{7}{11}\times\frac{6}{10}\left(-\frac{1}{11}\times\frac{0}{10}\right)$ oe	
		A1	for $\frac{62}{110}$ oe	Accept equivalent fraction, decimal form 0.56(36…) or percentage form 56(.36…)%
			SC B1 for answer of $\frac{62}{121}$ (replacement)	

Paper: 1MA1/1H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
21	(180, –1)	B1 B1	for $180^{(o)}$ for –1 SC B1 if B0 scored for answer of (–1, 180)	
22	$\frac{65}{214}$	B1 P1 P1 A1	for sin 30 = 0.5 for use of the sine rule with values substituted, eg $\frac{6.5}{\sin ABC} = \frac{10.7}{\sin 30}$ oe for (sin *ABC* =) $\frac{6.5 \times \sin 30}{10.7}$ oe **or** for a complete process to find sin *ABC*, eg (sin *ABC* =) $\frac{6.5 \times [0.5]}{10.7}$ oe for $\frac{65}{214}$ oe eg $\frac{325}{1070}$	Answer of $\frac{3.25}{10.7}$ or $\frac{6.5}{21.4}$ gets 3 marks Where [0.5] is their value of sin30 Answer must be in the form $\frac{m}{n}$ where *m* and *n* are integers

Paper: 1MA1/1H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
23 (a)	4000	P1	for process to identify the common ratio, eg $400\sqrt{5} \div 200$ (= $2\sqrt{5}$) or $200 \div 400\sqrt{5}$ (= $\frac{1}{2\sqrt{5}}$) **or** for a process to find the next term of the sequence, eg 200 × (200 ÷ 10)	May use any 2 consecutive terms
		A1	cao	
(b)	5	P1	for process to find the ratio of the 4th and 6th terms, eg $\frac{5\sqrt{2}}{8} \div \frac{5\sqrt{2}}{4} (= \frac{1}{2})$ or $\frac{5\sqrt{2}}{4} \div \frac{5\sqrt{2}}{8}$ (= 2) **or** for finding that the 2nd term is $\frac{5\sqrt{2}}{2}$	
		P1	for complete process to find 1st term, eg $\frac{5\sqrt{2}}{4} \div \left(\frac{1}{\sqrt{2}}\right)^3$	
		A1	cao	Award 0 marks for a correct answer with no supportive working
24 (a)	1 : 4	P1	for process to equate the two volumes, $\frac{4}{3}\pi r^3 = \frac{1}{3}\pi r^2 h$	
		A1	cao	
(b)	$1 : \sqrt{8}$	P1	for process to equate surface areas, eg $4\pi r^2 = \pi r^2 + \pi r l$	Can be implied by $3r = l$
		P1	for process to substitute $l = \sqrt{h^2 + r^2}$, eg $4\pi r^2 = \pi r^2 + \pi r\sqrt{h^2 + r^2}$	
		P1	for process to isolate term in r^2 after substituting for l, eg $8r^2 = h^2$	
		A1	for $1 : \sqrt{8}$	

Question 9(b)



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. Notes apply to both MLP papers and Braille papers unless otherwise stated.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5º
Measurements of length: ±5 mm

PAPER: 1MA1_1H			
Question		**Modification**	**Mark scheme notes**
5		Wording added 'Look at the table for Question 5 in the Diagram Booklet.' Wording added 'in the Diagram Booklet'. Table enlarged.	Standard mark scheme
6	(a)	Text left aligned. Values changed: *a* to *p*; *b* to *q*; *c* to *r*	Standard mark scheme but note change of letter
6	(b)	Text left aligned. Values changed: *m* to *w*; *n* to *x*; *p* to *y*	Standard mark scheme but note change of letter
7		Wording added 'Look at Diagram 1 and Diagram 2 for Question 7 in the Diagram Booklet. You may be provided with a model. It is not accurate.' Wording added 'Diagram 1 and the model show'. Wording added 'that'. Diagram enlarged. Base view added with measurements. Wording added 'Diagram 2 shows the base view.' Frame removed from formula and moved above the diagram to the left	Standard mark scheme
9	(a)	Wording added 'below'. Wording added 'There are four spaces to fill.' Table turned vertical and enlarged.	Standard mark scheme
9	(b)	Wording added 'Look at the diagram for Question 9(b) in the Diagram Booklet.' Wording added 'in the Diagram Booklet'. Diagram enlarged. Axes labels moved above the vertical axis and right on the horizontal axis. Open headed arrows. Black grid lines. Small squares removed.	Standard mark scheme
10		Wording added 'Look at the diagram and table for Question 10 in the Diagram Booklet.' The word 'a' removed and replaced with 'the'. Wording added 'in the Diagram Booklet'. Diagram enlarged. Spinner straightened and spike removed. Dot added to the centre. Table turned vertical and enlarged. The wording 'Here are her results' removed and replaced with 'Her results are shown in the table in the Diagram Booklet.'	Standard mark scheme
11		Wording added 'Look at the diagram for Question 11 in the Diagram Booklet. It shows Shape P and Shape Q.' Labels moved above the shapes. Shapes relabelled as 'Shape P' and 'Shape Q'. Wording added 'in the Diagram Booklet'. Diagram enlarged. Shading changed. Axes labels moved above the vertical axis and right on the horizontal axis. Open headed arrows. Black grid lines.	Standard mark scheme
13		Wording added 'Look at the table for Question 13 in the Diagram Booklet.' Wording added 'There are three spaces to fill.' Table turned vertical and enlarged.	Standard mark scheme

PAPER: 1MA1_1H			
Question		**Modification**	**Mark scheme notes**
14		Wording added 'Look at the diagram for Question 14 in the Diagram Booklet. It shows a grid.' Wording added 'in the Diagram Booklet'. Diagram enlarged. Axes labels moved above the vertical axis and left on the horizontal axis.	Standard mark scheme
15		Wording added 'Look at the diagram for Question 15 in the Diagram Booklet.' Diagram enlarged. Angle moved outside the angle arc. Angle arc made smaller.	Standard mark scheme
18		Wording added 'Look at the diagram for Question 18 in the Diagram Booklet. It shows a circle with centre O' Diagram enlarged. Angle moved outside the angle arc. Angle arc made smaller. The wording 'a circle, centre O.' removed and replaced with 'the circle.' Wording added 'The lines AB, OB and OA form the triangle AOB.' The word 'point' added. Dot at O enlarged.	Standard mark scheme
21		Wording added 'Look at the diagram for Question 21 in the Diagram Booklet. It shows' The wording 'The diagram' removed. Diagram enlarged. Axes labels moved above the vertical axis and right on the horizontal axis. Open headed arrows. Change cross to solid dot.	Standard mark scheme
22		Wording added 'Look at the diagram for Question 22 in the Diagram Booklet.' The wording 'Here is' removed and replaced with 'It shows'. Diagram enlarged. Angle moved outside the angle arc. Angle arc made smaller. Wording added: 'AC = 6.5cm'; 'BC = 10.7 cm'; 'Angle BAC = 30º'	Standard mark scheme

PAPER: 1MA1_1H			
Question		**Modification**	**Mark scheme notes**
24	(a)	Wording added 'Look at Diagram 1, Diagram 2, Diagram 3, Diagram 4 and Diagram 5 for Question 24(a) in the Diagram Booklet. You may be provided with models. They are not accurate.' Diagrams enlarged and added for 2D representation of sphere, cone side and cone base. The wording 'Here is a solid sphere and a solid cone' removed and replaced with 'Diagram 1 and model 1 show a solid sphere. Diagram 2 shows a 2D representation of the sphere. Diagram 3 and Model 2 show a solid cone. Diagram 4 shows a 2D representation of the cone. Diagram 5 shows the base of the cone.' Wording added 'radius of the sphere = radius of the base of the cone = r'. Wording added 'vertical height of the cone = h'; Wording added 'Volume of sphere = $\frac{4}{3}\Pi r^3$' Wording added 'Volume of cone = $\frac{1}{3}\Pi r^2 h$' Dashed lines made longer and thicker. Diagram headings moved above the diagrams. Labels moved to the left side. Models provided.	Standard mark scheme
24	(b)	Wording added 'Look at Diagram 1, Diagram 2, Diagram 3, Diagram 4 and Diagram 5 for Question 24(b) in the Diagram Booklet. You may be provided with models. They are not accurate. They show a different solid sphere and solid cone.' The wording 'Here is a different solid sphere and a different solid cone.' Removed. Diagrams enlarged and added for 2D representation of sphere, cone side view and cone base' Wording added 'Diagram 1 and model 1 show a solid sphere. Diagram 2 shows a 2D representation of the sphere. Diagram 3 and Model 2 show a solid cone. Diagram 4 shows a 2D representation of the cone. Diagram 5 shows the base of the cone.' Wording added 'radius of the sphere = radius of the base of the cone = r'. Wording added 'slant height of the cone = l'; 'Surface area of sphere = $4\Pi r^2$' Wording added 'Curved area of cone = Πrl' Dashed lines made longer and thicker. Diagram headings moved above the diagrams. Labels moved to the left side. Models provided.	Standard mark scheme

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