Pearson
Edexcel

Mark Scheme (Results)

November 2023

Pearson Edexcel GCSE (9 – 1)
In Mathematics (1MA1)
Higher (Calculator) Paper 3H

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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.

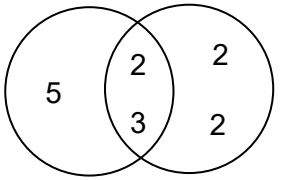
14 Misread

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

<table>
<tr><th colspan="5">Paper: 1MA1/3H</th></tr>
<tr><th colspan="2">Question</th><th>Answer</th><th>Mark</th><th>Mark scheme</th><th>Additional guidance</th></tr>
<tr><td>1</td><td>(a)</td><td>4.68×10^5</td><td>B1</td><td>cao</td><td></td></tr>
<tr><td></td><td>(b)</td><td>0.000 503 7</td><td>B1</td><td>cao</td><td></td></tr>
<tr><td>2</td><td></td><td>80</td><td>M1</td><td>for complete method, eg 200×0.4
or for $\frac{80}{200}$ for the answer</td><td></td></tr>
<tr><td></td><td></td><td></td><td>A1</td><td>cao</td><td></td></tr>
<tr><td>3</td><td>(a)</td><td>24.6</td><td>M1</td><td>for finding 5 products within intervals (including end points) with not more than one error, may be seen near table.
eg 2×12.5 (= 25), 8×17.5 (= 140), 13×22.5 (=292.5),
21×27.5 (= 577.5), 6×32.5 (= 195)
or for 1230</td><td><table><tr><th>Min fx</th><th>Max fx</th></tr><tr><td>20</td><td>30</td></tr><tr><td>120</td><td>160</td></tr><tr><td>260</td><td>325</td></tr><tr><td>525</td><td>630</td></tr><tr><td>180</td><td>210</td></tr></table></td></tr>
<tr><td></td><td></td><td></td><td>M1</td><td>for $\Sigma fx \div \Sigma f$
eg (“25” + “140” + “292.5” + “577.5” + “195”) ÷ “50”
or “1230” ÷ “50”</td><td>Σfx must come from 5 products,
fx within intervals (including end points)</td></tr>
<tr><td></td><td></td><td></td><td>A1</td><td>for 24.6 oe</td><td></td></tr>
</table>

Paper: 1MA1/3H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
(b)	No, with reason	C1	for No **and** reason **Acceptable examples** No, the median is in the interval $25 < T \leq 30$ No, the median is in the group containing the 25(.5)th temperature No, she did not take into account frequency No, the frequencies are not the same for each group. **Not acceptable examples** No, the median is 27.5 No, the median is higher than 22.5 $25 < T \leq 30$ Yes, …	Any incorrect statement as part of a correct response can be ignored unless it contradicts the statement.
4 (a)	Explanations	C2 (C1	for two different correct explanations **Acceptable examples** She should have a solid/full/shaded/coloured circle at 4 It does not show that x could be equal to 4 She should have marked/drawn a (clear/empty) circle at −3 The line should be drawn to –3 Jenna started from –2 not –3 **Not acceptable examples** Both circles should be black One circle should be filled in (needs to say which circle) She shouldn't have to reach number 4 Jenna has made no mistakes for one correct mistake described)	Any incorrect statement as part of a correct response can be ignored unless it contradicts the statement,

Paper: 1MA1/3H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
(b)	4	M1	for a correct first step, eg for adding 7 to both sides $5y - 7 + 7 < 16 + 7$ or for dividing throughout by 5 eg $\frac{5y}{5} - \frac{7}{5} < \frac{16}{5}$ **or** for showing 4.6 (oe) as the critical value **or** for $5 \times 4 - 7$ with 13 seen as answer	Allow use of any inequality or as an equation for the first mark Award 1 mark for 4.6 oe, eg $y = \frac{23}{5}$ or $y < 4.6$
		A1	for 4 or $y = 4$ with no incorrect working	An answer of 4 from incorrect working can score 1 mark at most.
5	4 packs and 5 boxes,	P1	for start of a process to find common multiples of 30 and 24, eg writes down at least 3 multiples of 30 and at least 3 multiples of 24 **or** draws factor trees for both 30 and 24 with no more than 1 error in total **or** draws a correct Venn diagram	30, 60, 90, 120, 150, 180, 210, 240 … 24, 48, 72, 96, 120, 144, 168, 192, 216, 240, … Condone the inclusion of 1 in factor trees or Venn diagrams for this mark 
		P1	for identifying a common multiple eg 120 or 240 or $5 \times 3 \times 2 \times 2 \times 2$ oe	May use any common multiple, 120, 240, 360...
		A1	for 4 packs and 5 boxes or any multiple of this pairing eg 8, 10	Award 0 marks for a correct answer without correct supportive working.

Paper: 1MA1/3H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
6	20	M1 A1	for $30 \times 4 \div 6$ oe cao	
7	7 hours 56 minutes	P1 P1 A1	for process to begin to work with speed, eg $143 \div 55$ (= 2.6) for process to work in minutes, eg "2.6" × 60 (= 156 mins) **and** 5 × 60 + 20 (= 320 mins) or for 476 (mins) **or** for process to work in hours eg "2.6" **and** $5\frac{20}{60}$ (= 5.33...)...or for 7.93... **or** for process to work in hours and minutes, eg "2" + ("0.6" × 60) (= 2 hrs 36 mins) cao	May work in minutes or hours and minutes Accept 2 or more decimal places for this mark
8	Shown	M1 M1 C1	for substitution to find area of face, eg $3.5 = \frac{504}{\text{area}}$ or 3.5 × area = 504 or area = 504 ÷ 3.5 (= 144) **or** for working from surface area eg $900 \div 6$ (= 150) for method to find comparable figures, eg "144" × 6 (= 864) or "150" × 3.5 (= 525) or $504 \div$ "150" (=3.36…) **or** for $504 \div 3.5$ (= 144) **and** $900 \div 6$ (= 150) **or** for $900 \div 144$ (= 6.25) **and** 6 for correct comparable figures, eg 864 (and 900) **or** 144 and 150 **or** 525 (and 504) **or** 3.36… (and 3.5) **or** 6.25 and 6	Other equivalent methods should be credited accordingly Condone incorrect units given.

Paper: 1MA1/3H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
9	$y = -2x + 3$	M1	for a correct method to find the gradient of the line, eg $\frac{-1-3}{2-0}$ $(= -2)$ **or** uses 3 as the intercept in $y = mx + c$, eg $y = mx + 3$ oe, $y = 1.5x + 3$	
		M1	for $y = [-2]x + c$, $c \neq 0$ or for (L=) $3 - 2x$ or uses their gradient and a point on the line, eg $y - -1 = [-2](x - 2)$	$[-2]$ must be identifiable as their gradient
		A1	for $y = -2x + 3$ oe	Any correct equation gets 3 marks
10	$m = \frac{5(k-p)}{2}$	M1	for a correct first step, eg $k - p = \frac{2m}{5}$ or $5k = 5p + 2m$ or $\frac{k}{2} = \frac{p}{2} + \frac{m}{5}$	Steps must be carried out not just intention seen
		M1	for a correct statement isolating $2m$, $-2m$, $\frac{m}{5}$ or $-\frac{m}{5}$ eg $5(k - p) = 2m$ or $5k - 5p = 2m$ or $\frac{m}{5} = \frac{k}{2} - \frac{p}{2}$	
		A1	for $m = \frac{5(k-p)}{2}$ oe	Accept statements with m on the right hand side, eg $\frac{5(k-p)}{2} = m$

Paper: 1MA1/3H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
11	12	P1 P1 A1	for process of working with area scale factor, eg area SF = 50^2 (= 2500) or 0.5 × 0.5 (= 0.25) or 48 × 50 × 50 (= 120 000) **or** for process which uses 1 (m^2) = 10 000 (cm^2), eg $\frac{48}{10\,000}$ for complete process, eg $\frac{"120\,000"}{100\times100}$ or "0.25" × 48 cao	
12	246	P1 A1	for start of process to find angle inside sector eg $\frac{x}{360} \times \pi \times 6.2^2 = 82.6$ or $\frac{82.6}{\pi \times 6.2^2} \times 360$ **or** for an answer in the range 113 to 114 for answer in range 246 to 247	The size of the angle in the unshaded sector is 114 If an answer is shown in the range in working and then incorrectly rounded award full marks.

Paper: 1MA1/3H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
13 (a)	$\frac{6}{80}$	M1	for correct method using the graph at 90 cm, eg 80 – 74 (= 6)	Accept 80 – 75 (= 5)
		A1	for $\frac{6}{80}$ oe, accept $\frac{5}{80}$ oe	Accept any equivalent fraction, decimal (0.075) or percentage (7.5%)
(b)	60	B1	for answer in the range 58.5 – 61.5	
(c)	35	M1	for UQ = 75 or LQ = 40	Allow UQ in range 74 to 76 Allow LQ in range 39 to 41 Value(s) may be seen on graph
		A1	for answers in the range 34 to 36 or ft acceptable readings from the graph	
(d)	Comparison made	C1	(ft) for a correct comparison of the IQRs eg the heights of the plants grown outside are more varied or the IQR of the plants grown outside is 35 cm but the IQR of the plants grown inside is only 30 cm.	The comparison must include some context (eg refers to heights or cm) Ignore any additional information provided there is no contradiction. Figures need not be seen but if given they must be correct.
14	$2n^2 + 3$	M1	for a correct start to a method to find the nth term eg constant 2nd differences of 4 and the term $2n^2$ **or** states $an^2 + bn + c$ (where bn may be missing) and $2a = 4$ **or** gives the sequence 2, 8, 18, ...	Need to see constant second difference found and $2n^2$ Condone use of different variable throughout
		A1	oe	

<table>
<tr><th colspan="4">Paper: 1MA1/3H</th></tr>
<tr><th>Question</th><th>Answer</th><th>Mark</th><th>Mark scheme</th><th>Additional guidance</th></tr>
<tr><td>15</td><td>Shown</td><td>M1

C1</td><td>for method to find comparable ratios
eg (21.6 + 58.4) ÷ 32 (= 2.5) and (32 + 22) ÷ 21.6 (= 2.5)

or 32 ÷ (21.6 + 58.4) (= 0.4) and 21.6 ÷ (32 + 22) (= 0.4)

or 21.6 ÷ 32 (= 0.675) and (32 + 22) ÷ (21.6 + 58.4) (= 0.675)

or 32 ÷ 21.6 (= 1.4̇8̇) and (21.6 + 58.4) ÷ (32 + 22) (= 1.4̇8̇)

for correct conclusion supported by the correct evaluation of 2 ratios to show they are equal</td><td>Fractions may be used.

Accept 3 sf or more.

We do not require reference to the common angle.</td></tr>
<tr><td>16</td><td>$\frac{1}{120}$</td><td>P1

P1

A1</td><td>for correctly identifying at least two of the number of options,
eg 2 options for 1st digit, 4 options for 2nd digit

for process to multiply the four numbers of options with at least three correct,
eg 2 × 4 × 3 × 5 (= 120)

or

for process to multiply 4 fractions with at least 3 correct $\frac{1}{2}\times\frac{1}{4}\times\frac{1}{3}\times\frac{1}{5}$ oe

for $\frac{1}{120}$ oe</td><td>May be seen as part of a calculation

<table><tr><td>Position of digit</td><td>Number of options</td></tr><tr><td>1st</td><td>2</td></tr><tr><td>2nd</td><td>4</td></tr><tr><td>3rd</td><td>3</td></tr><tr><td>4th</td><td>5</td></tr></table></td></tr>
</table>

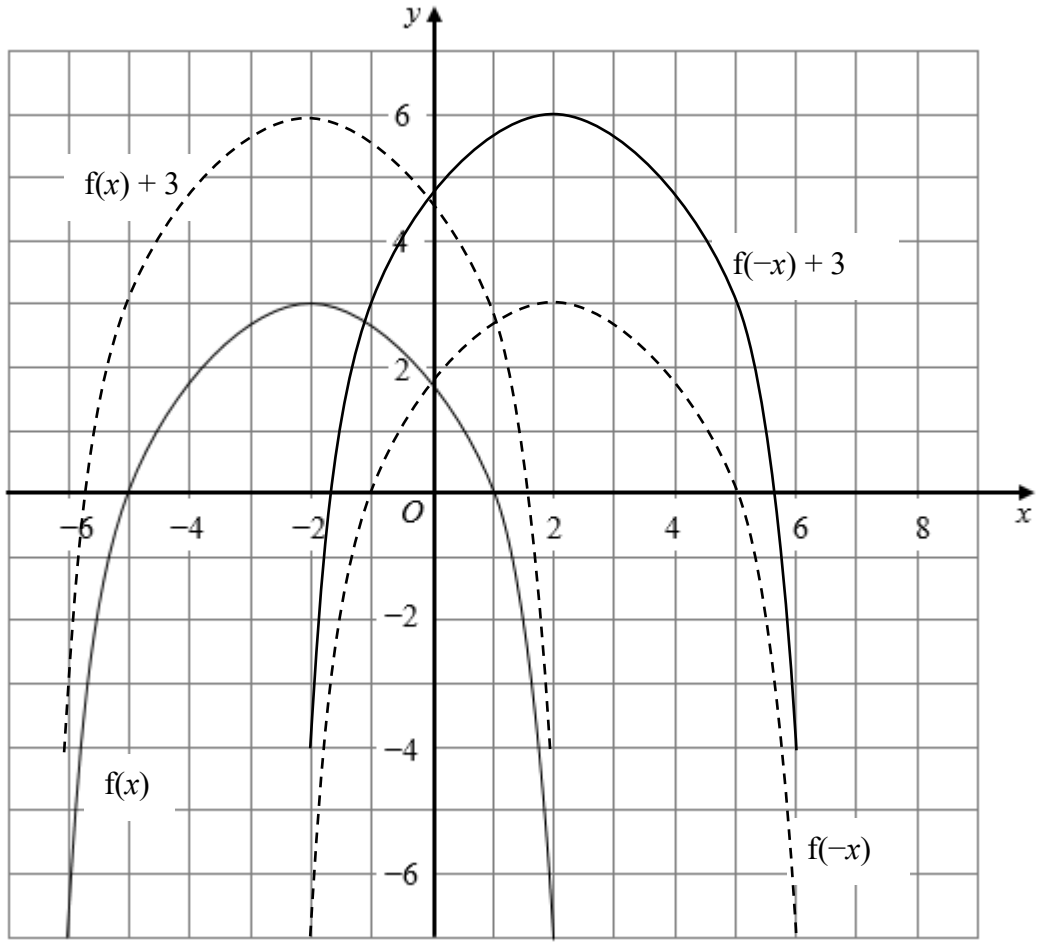
Paper: 1MA1/3H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
17 (a)(i)	$(x-4)^2-13$	M1	for start to method of completing the square, eg $(x-4)^2$...	
		A1	cao	
(ii)	$(4, -13)$	B1	ft from answer of form $(x-a)^2-b$	This mark is dependent on a completed square form given in (a)(i)
(b)	0.449 and −1.59	M1	for substitution into quadratic formula, eg $\frac{-8 \pm \sqrt{8^2-4\times7\times-5}}{2\times7}$ oe	Condone one sign error
		M1	for simplification to $\frac{-8 \pm \sqrt{204}}{14}$ or $\frac{-4 \pm \sqrt{51}}{7}$ oe or for one correct solution in decimal form.	One correct solution in the required form out of two solutions given scores 2 marks.
		A1	for 0.448 to 0.449 and −1.59 to −1.6(0)	If an answer is shown in the range in working and then incorrectly rounded award full marks.
(c)	Explanation	C1	for explanation **Acceptable** He hasn't considered the coefficient of 3 He forgot about the 3 The answer $x = 2$ should be $x = \frac{2}{3}$ The first bracket was not $k-2$ $k = 2$ is wrong, he should have divided by 3 **Not acceptable** One of the answers is wrong The solutions are not correct He should have written $3(k-2)(k+4)$ The $3k$ should not be inside the bracket 2 added to –4 does not give 10 $k = 2$ is wrong	

Paper: 1MA1/3H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
18 (a)	Triangle drawn	B2 (B1	for correct enlargement at (7, −10) (4, −4) (7, −4) for triangle of correct size and orientation in the wrong position **or** for 2 vertices correct)	Label not necessary provided intention is clear
(b)	Correct vector	C1	for $\begin{pmatrix}-5\\7\end{pmatrix}$ or $\begin{pmatrix}-7\\9\end{pmatrix}$ or $\begin{pmatrix}-3\\13\end{pmatrix}$	
19	2030	P1	for process to find diameter of base of small cone, eg 16 seen as diameter or 8 seen as radius **or** for scale factor (length) is $\frac{2}{3}$ oe or $\frac{3}{2}$ oe	
		P1	for process to find the volume of one cone, eg $\frac{1}{3} \times \pi \times 12^2 \times 15$ (= 720π or 2261.946…) or $\frac{1}{3} \times \pi \times$ "8"$^2 \times 10$ (= $\frac{640}{3}\pi$ or 670.206...) or for process to find the volume of the hemisphere, eg $\frac{2}{3} \times \pi \times 12^3$ (= 1152π or 3619.114…) **or** for scale factor (volume) is $\left(\frac{2}{3}\right)^3$ oe	
		P1	for full process to find volume of frustum **and** hemisphere, eg "2261.946…" – "670.206…" (= $\frac{1520}{3}\pi$ or 1591.740…) or "2261.946…" × $\left(1-\left(\frac{2}{3}\right)^3\right)$ **and** ($\frac{4}{3} \times \pi \times 12^3$) ÷ 2 oe (= 1152$\pi$ or 3619.114…)	
		A1	for answer in the range 2026 to 2030	If an answer is shown in the range in working and then incorrectly rounded award full marks.

Paper: 1MA1/3H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
20 (a)	(4, 6)	B1	cao	
(b)	Sketch	B2	for a fully correct sketch including points (2, 6), (–2, –4), (6, –4)	see end of mark scheme
		(B1	for a correct sketch of f(–x) **or** f(x) + 3 including the maximum point and the endpoints)	
21	27	M1	for start by finding one missing angle, eg angle CBD = 35 or angle ADC = 90 or angle ACE = 117	Angles clearly identified on the diagram or in the working space may be awarded marks provided there is no ambiguity or contradiction.
		M1	for making progress by finding a second angle, eg angle BDE = 117 or angle DCE = 62 or angle BCA = 63	
		A1	for angle BDC = 27	
		C1	(dep on M1) for stating one correct circle theorem used eg Angles in a semicircle are 90 **or** Angles in the same segment are equal **or** Angles at the circumference subtended from the same arc of a circle are equal **or** The angle at the centre of a circle is twice the angle at the circumference	Underlined words need to be shown; circle theorems stated need to be linked to their method, which can be implied from correctly identified angles (stated or written on the diagram).

Paper: 1MA1/3H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
22	(£)9.37(9…) and conclusion	B1	for stating at least one bound 187.5 or 192.5 or 192.499… or 872.5 or 877.5 or 877.499… or 71.5 or 72.5 or 72.499…	May be seen in calculations Accept 192.499... or 192.4$\dot{9}$ or 877.499... or 877.4$\dot{9}$ or 72.499… or 72.4$\dot{9}$
		P1	for correct use of LB and UB find the lower bound for profit, eg [LB of selling price] – [UB of costs] (= 872.5 – 192.5 (= 680))	872.5 ≤ [LB selling price] < 875 190 < [UB costs] ≤ 192.5
		P1	(dep P1) for correct use of LB and UB to find the lower bound for hourly rate, eg [LB of profit] ÷ [UB of hours]	LB profit = "680" 72 < [UB hours] ≤ 72.5
		C1	for (£)9.37(9…) and conclusion that Ebony does earn more than minimum wage with value from working with correct bounds	$\frac{872.5 - 192.5}{72.5}$ Accept bounds truncated or rounded to at least 2 dp
23	3 : 5	P1	for process to eliminate fractions, eg $11(2x^2 + y^2) = 43(4x^2 - y^2)$ **or** $22x^2 + 11y^2 = 172x^2 - 43y^2$	Alternative methods are acceptable
		P1	for process to isolate terms in x^2 and y^2, eg $54y^2 = 150x^2$ **or** $y^2 = \frac{25x^2}{9}$	
		P1	for full process to find a correct relationship between x and y eg $y = \frac{5x}{3}$ oe	Accept square roots, eg $\sqrt{54}$ but not decimal approximations.
		A1	cao	

Paper: 1MA1/3H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
24	12.2	P1	for process to find AP, eg $\frac{5}{7} \times 14.7$ (= 10.5) **or** for showing the required angle on a diagram eg with an arc	Check diagram for working
		P1	for process to find MP, eg $\sqrt{"10.5"^2 + 1.9^2}$ oe (= 10.6...) or for a process to find TP, eg $\sqrt{"10.5"^2 + 1.9^2 + 2.3^2}$ oe (= 10.9...)	
		P1	for using appropriate trigonometry ratio to find angle TPM , eg $\tan TPM = \frac{2.3}{"10.6..."}$ or $\sin TPM = \frac{2.3}{"10.9..."}$ or $\cos TPM = \frac{"10.6..."}{"10.9..."}$	
		A1	for answer in the range 12.1 to 12.2	If an answer is shown in the range in working and then incorrectly rounded award full marks.


y
x
O
6
4
2
−2
−4
−6
−6
−4
−2
2
4
6
8
f(x) + 3
f(−x) + 3
f(x)
f(−x)

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. 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_3H			
Question		**Modification**	**Mark scheme notes**
2		Wording added 'Look at the diagram for Question 2 in the Diagram Booklet. It shows'. Wording removed 'Here is'. Spike removed. Spinner straightened up. Centre dot added. Spinner enlarged. Wording added 'below'. Table turned vertically, enlarged and left aligned.	Standard mark scheme
3		Wording added 'Look at the table for Question 3 in the Diagram Booklet.' Wording added 'in the Diagram Booklet'. Table enlarged.	Standard mark scheme
4		Wording added 'Look at the diagram for Question 4 in the Diagram Booklet. It shows a number line.' Wording 'a' removed and replaced with 'the'. Wording 'Here is her answer' removed and replaced with 'Her answer in shown in the Diagram Booklet.' Diagram enlarged. Open headed arrows.	Standard mark scheme
8		Wording added 'Look at the diagram for Question 8 in the Diagram Booklet. You may be provided with a model. They show'. Wording removed 'The diagram shows'. Diagram enlarged. Table added to the diagram. Frame removed from the formula.	Standard mark scheme
9		Wording added 'Look at the diagram for Question 9 in the Diagram Booklet. It shows'. Wording removed 'is shown'. Wording 'the' removed and replaced with 'a'. Axis labels moved to the top of the vertical axis and to the right of the horizontal axis. Diagram enlarged. Open headed arrows. L label moved up.	Standard mark scheme

PAPER: 1MA1_3H			
Question		**Modification**	**Mark scheme notes**
12		Wording added 'Look at the diagram for Question 12 in the Diagram Booklet. It'. Wording removed 'The diagram'. Diagram enlarged. Shading changed. Angle moved outside of the angle arc and angle arc made smaller. Radius label moved to the left. Wording added 'PO = OQ = 6.2 cm An angle is marked on the diagram.'	Standard mark scheme
13		Wording added 'Look at the diagram for Question 13 in the Diagram Booklet. It is a cumulative frequency graph.' Wording added 'in the Diagram Booklet'. Diagram enlarged. Grid lines changes on the grid to go up in increments of 20 on the x axis. Graph line changed to go through the points, (0,0), (40, 20), (50, 30), (60, 40), (70, 50), (80, 60), (90, 70), and (130, 80). Open headed arrows. Axis labels moved to the top of the vertical axis and to the left of the horizontal axis. Right axis labelled.	(a) M1 for a correct method eg 80 – 70 (= 10) A1 for 10/80 or 1/8 or 0.125 or 12.5% (b) B1 for 60 (no tolerance) (c) M1 for UQ=80 or LQ=40 A1 for 40 (d) standard mark scheme using their figures for "40"
15		Wording added 'Look at the diagram for Question 15 in the Diagram Booklet. It'. Wording removed 'The diagram'. Wording added 'BD = 22 cm DA = 32 cm AE = 21.6 cm EC = 58.4 cm' Diagram enlarged.	Standard mark scheme
16		Wording removed 'The diagram shows'. Wording added 'is shown below.' Numbers left aligned and circles removed.	Standard mark scheme
18	(a)	Wording added 'Look at the diagram for Question 18(a) in the Diagram Booklet. It shows triangle P and triangle Q on a grid.' Triangle P moved. Triangle Q added to the diagram. Diagram enlarged. Shading changed. Triangles labelled 'triangle P' and 'triangle Q'. Axis labels moved to the top of the vertical axis and to the right of the horizontal axis. Grid cut at $x = 7$. Cut out shapes provided. Wording removed 'Enlarge triangle P by a scale factor -1½ with centre of enlargement (-2, 1)'. Wording added 'Describe the single transformation that maps triangle P onto triangle Q. Two cut out shapes may be available if you wish to use them.'	B2 for all three aspects: enlargement, scale factor -1½ , centre (-2, 0) (B1 for two aspects) Award B0 for more than one transformation described.

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Question		**Modification**	**Mark scheme notes**
18	(b)	Wording added 'Look at the diagram for Question 18(b) in the Diagram Booklet. It shows triangle P and triangle R on a grid.' Wording removed 'a combined transformation of'. Wording 'followed by a translation to give triangle R.' removed and replaced with 'to give triangle R. Triangle R is then translated.' Wording added 'A cut out shape is provided if you wish to use it.' Diagram repeated from part (a) but with triangle P and triangle R only. Shading changed. Triangles labelled 'triangle P' and 'triangle R'. Diagram enlarged. Axis labels moved to the top of the vertical axis and to the right of the horizontal axis. Grid cut at $x = 7$. Cut out shape provided.	Standard mark scheme
19		Wording added 'Look at the diagrams for Question 19 in the Diagram Booklet. You may be provided with three models for this question and an additional two formulae models.' Diagrams added to show 2D view of frustum F and solid S. Diagrams enlarged. Small cone labelled on diagrams 1 and 2. Dashed lines made longer and thicker. Open headed arrows. Labels moved to the left. Frame removed from the formulae. Wording changed to 'The frustum F of a cone is made by removing a small cone with height 10 cm from a larger solid cone with height 15 cm and base diameter 24 cm as shown by Diagram 1, Diagram 2 and the models. Diagram 3 and Diagram 4 show the solid S made by removing the frustum F from a solid hemisphere.'	Standard mark scheme
20	(b)	Wording added 'Look at the diagram for Question 20(b) in the Diagram Booklet. It shows'. Wording 'is shown on the grid' removed and replaced with 'on a grid'. Diagram enlarged. Axis labels moved to the top of the vertical axis and to the right of the horizontal axis. Wording added 'in the Diagram Booklet'. Grid cut at x=8.	Standard mark scheme
21		Wording added 'Look at the diagram for Question 21 in the Diagram Booklet. It shows'. Wording removed 'are'. Diagram enlarged. Angles moved outside of the angle arcs and angle arcs made smaller. Wording added 'Angle DAC = 35° Angle AEB = 28°'	Standard mark scheme
22		Wording added 'Look at the information for Question 22 in the Diagram Booklet.' Information moved to the Diagram Booklet. Wording added 'Use the information shown in the Diagram Booklet.'	Standard mark scheme

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Question		**Modification**	**Mark scheme notes**
24		Wording added 'Look at the Diagram 1 and Diagram 2 for Question 24 in the Diagram Booklet. You may be provided with a model. Diagram 1 and the model show'. Wording removed 'The diagram shows'. Wording added 'Diagram 2 shows face TAD of the triangular prism.' Diagram enlarged. Diagram added to show face TAD. Dashed lines made longer and thicker. Point P added on the diagram. Angle arc for TPM added. Side lengths added to the diagram. Wording 'AB = 14.7 cm' and 'BC= 3.8 cm' removed and replaced with 'AB = DC = 14.7 cm' and 'DA = BC = 3.8 cm'. Dotted lines added for PT and PM.	Standard mark scheme

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