Pearson Edexcel

Mark Scheme (Results)

Summer 2024

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

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General marking guidance

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

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

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

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

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

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

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

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

7 Ignoring subsequent work

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

8 Probability

Probability answers must be given as a fraction, percentage or decimal. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

9 Linear equations

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

10 Range of answers

Unless otherwise stated, when an answer is given as a range (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: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
1	16.2	M1	for a correct first step to find *BC*, eg $19^2 = 10^2 + BC^2$ or $19^2 - 10^2$ $(= 261)$ or $\sqrt{19^2 - 10^2}$ or $\sqrt{261}$ or $3\sqrt{29}$	Can use alternative letter for *BC* provided intention is clear If using an alternative method using trigonometry must have *BC* as the only unknown
		A1	for answer in the range 16.1 to 16.2	ISW incorrect rounding if answer given in range
2 (a)	$2 \times 3 \times 3 \times 5$	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 **or** for 2, 3, 3, 5	Condone the inclusion of 1 for this mark
		A1	for $2 \times 3 \times 3 \times 5$ oe	Accept $2 \times 3^2 \times 5$
(b)	36	B1	for 36	Accept $2^2 \times 3^2$ or $2 \times 2 \times 3 \times 3$
3	4	M1	for method to use formula, eg $72 \div 6$ $(= 12)$ or $72 \div 9$ $(= 8)$	Can be implied by $\frac{72}{6}$ or $\frac{72}{9}$
		A1	cao	

Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
4	70	P1	for process to find number of discs in the bag, eg $24 \div 0.16$ $(=150)$ **or** for process to find the total probability of red or blue, eg $1-0.16$ $\left(=0.84 \text{ or } \frac{21}{25}\text{oe}\right)$	May be implied by 126
		P1	for process to work with the ratio eg $([\text{total}]-24)\div(5+4)$ $(=14)$ **or** for a process to find the probability of red, eg $[\text{probability}]\div(5+4)\times 5$ $\left(=0.46... \text{ or } \frac{7}{15}\right)$	0.46 or better or 0.47 may imply P2 [total] can be any integer [probability] can be any value less than 1
		P1	for a complete correct process to find the number of red discs eg $"14"\times 5$ **or** $"0.46..."\times 24\div 0.16$ **or** an answer of $\frac{70}{150}$	If correct processes seen to find the total for both red and blue or 70 : 56 award P3 Must come from correct use of probability and ratio in either order
		A1	for 70	If the values for red and blue are found, the value for red must be clearly identified as the answer to gain A1

Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
5 (a)	(6) 2 (0) 0 (2) 6	B2	for all 3 values correct	
		(B1	for 1 or 2 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 drawn outside the required range
		(B1	ft (dep on B1 in (a)) for plotting at least 5 of the points from their table correctly)	
(c)	–1.7 to –1.5 and 2.5 to 2.7	M1	for drawing the line $y = 4$ or reading off intersections where $y = 4$ **or** one correct solution **or** both solutions given as coordinates, eg (–1.6, 2.6) or (–1.6, 4) **and** (2.6, 4)	ft their graph for this mark Accept these coordinates reversed
		A1	for answers in the range –1.7 to –1.5 **and** 2.5 to 2.7 **or** ft their graph with at least 2 solutions	Algebraic methods score 0 marks

Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
6	Yes, supported by correct figures	P1	for a process to find the number of sweets Tina gives to Andy, eg $14 \div 7 \times 3\ (=6)$ **or** for a process to work with fractions of the total to find fraction given to Andy, eg $\frac{14}{21} \times \frac{3}{7}\ \left(=\frac{2}{7}\right)$ **or** for dividing a given number (eg 441) in the ratio 1 : 6 : 14 (= 21 : 126 : 294)	May work with an equivalent ratio, eg 21 : 126 : 294 and do $294 \div 7 \times 3 (=126)$ as a first step May work in multiples of *x* for all marks
		P1	for a process to find number for Andy and Tina after first exchange, eg A = 1 + “6” (=7) **and** T = 14 – “6” (=8) **or** for a process to find the number of sweets Tina gives to Luke eg $(14 - "6") \times \frac{12.5}{100}\ (=1)$ **or** for a process to work with fractions of the total to find fraction given to Luke, eg for $\frac{(14 - "6")}{21} \times \frac{12.5}{100}$ **or** process to work out the number of sweets given to Andy **and** Luke for their total, eg “294” ÷ 7 × 3 (= 126) **and** $("294" - "126")\ \times \frac{12.5}{100}$ (= 21)	
		P1	for a process to find the final amounts or final shares for at least **two** of Andy, Luke and Tina eg two of 1 + “6” (= 7) , 6 + “1” (= 7) , 14 – “6” – “1” (= 7) **or** $\frac{1}{21} + \frac{"2"}{7}\ \left(=\frac{7}{21}\right)$, $\frac{6}{21} + "\frac{1}{21}"\ \left(=\frac{7}{21}\right)$, $\frac{14}{21} - "\frac{2}{7}" - "\frac{1}{21}"\ \left(=\frac{7}{21}\right)$ **or** “21” + “126” (= 147) , “126” + “21” (= 147) , “294” – “126” – “21” (= 147)	
		C1	Yes, supported by full working and accurate figures for Andy, Luke and Tina	Accurate figures with no supportive working scores 0

Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
7	Shown	M1	for deriving a suitable equation, eg $4x + 15 + 2x + 15 + 4x + 8 + 3x - 3 = 360$ $(13x + 35 = 360)$ or $4x + 15 + 2x + 15 = 180$ $(6x + 30 = 180)$ or $4x + 8 + 3x - 3 = 180$ $(7x + 5 = 180)$	
		M1	(dep) for a method to isolate terms in x, eg $4x + 2x + 4x + 3x = 360 - 15 - 15 - 8 + 3$ or $4x + 2x = 180 - 15 - 15$ or $4x + 3x = 180 - 8 + 3$	
		A1	for solving equation to $x = 25$	
		C1	for substituting $x = 25$ into $A + B$ or $C + D$ and showing = 180, and gives a suitable statement, eg co-interior/allied angles (sum to 180), **or** since $A + B = 180$ the lines are parallel	If starting with an equation = 180 need to substitute into the opposite pair.
			Alternative solution assuming it is a trapezium	
7	Shown	M1	for deriving a suitable equation, eg $4x + 15 + 2x + 15 = 4x + 8 + 3x - 3$ $(6x + 30 = 7x + 5)$	
		M1	(dep) for a method to isolate terms in x, eg $15 + 15 - 8 + 3 = 4x + 3x - 4x - 2x$	
		A1	for solving equation to $x = 25$	
		C1	for a fully correct statement, eg since $A + B = 180$ the lines are parallel	

Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
8	35	P1	for one correct use of the given scale, eg 40 ÷ 5 (= 8) **or** 28×5^2 (= 700)	Can award these marks in either order
		P1	for process to use area of triangle, eg $28 = \frac{1}{2} \times PQ \times [QR]$ **or** $[\text{area}] = \frac{1}{2} \times PQ \times 40$	[*QR*] must be clearly identified as the drawing length, and cannot be 40 [area] must be clearly identified as the real area, and cannot be 28
		A1	cao	
9 (a)	7.25	B1	oe	
(b)	No with supporting reason	C1	No with supporting reason **Acceptable reasons:** No, the 9 should be recurring No, 7.3491 is greater No, there are numbers between 7.349 and 7.350 **Not acceptable reasons:** Yes with any reason given Leila is correct … 7.350 would round down She has rounded to 3sf and should only round to 2sf 7.349 rounds to 7.4	

Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
10	1.25	B1	for (sin a =) $\frac{7-2x}{8}$ or (tan b =) $\frac{1+x}{4}$	
		P1	for start of a process to solve $\frac{7-2x}{8} = \frac{1+x}{4}$, eg $4(7-2x) = 8(1+x)$ or $28-8x=8+8x$ or $7-2x=2(1+x)$ or $7-2x=2+2x$ or $\frac{7-2x}{8}=\frac{2(1+x)}{8}$ or $\frac{7-2x}{8}=\frac{2x+2}{8}$	Must come from a correct equation
		A1	for 1.25 oe	

Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
11 (a)	7, 28, 43, 54, 60	B1	cao	
(b)	cf graph	M1	for 4 or 5 of their points plotted correctly from a cf table	Ignore any histograms
		A1	for a fully correct graph SCB1 if 4 or 5 of their points plotted not at the end but consistent within each interval and joined; providing no gradient is negative	Ignore anything drawn to the left of the first point Accept a smooth curve or line segments
(c)	3.4 to 4	M1	for at least one correct quartile, eg (UQ =) value in the range 6.2 to 6.4 or (LQ =) value in the range 2.6 to 2.8 **or** ft their cf graph	CF graph must have no negative gradient to award ft
		A1	for answer in the range 3.4 to 4 **or** ft their cf graph	
(d)	7 to 10	M1	for cf reading at weight = 7.4 in the range 50 to 53 **or** ft their cf graph	CF graph must have no negative gradient to award ft
		A1	for answer in the range 7 to 10 **or** ft their cf graph	

Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
12 (a)	$f = \frac{224}{d^2}$	M1	for $3.5 = \frac{k}{8^2}$ oe (k = 224)	Accept use of $\propto$ for the M mark
		A1	for $f = \frac{224}{d^2}$ oe	
(b)	4.73	M1	for $10 = \frac{"224"}{d^2}$ or d^2 = "224" ÷ 10 **or** ft their value for k provided $f = \frac{k}{d^2}$ is used	
		A1	for answer in range 4.73 to 4.733	
13	Correct region **R**	M1	for at least two correct boundaries, eg $y = -3$ or $x = 2$ or $y = 2x + 1$ or $3x + 2y = 6$	
		M1	for the remaining two correct boundaries **or** a third correct boundary with shading correct with the inequalities for at least two correct boundaries	
		C1	for a correct region (**R**) clearly identified	

Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
14 (a)	–2.5	M1	for drawing a tangent at $t = 5$	No tangent drawn score 0 marks
		M1	(dep on M1) for a complete method to find the gradient eg tangent at $t = 5$ and "10" ÷ "4" **or** an answer in the range 2.0 to 2.8	Working may be seen on the diagram
		A1	for answer in the range –2.0 to –2.8 dependent on tangent drawn	Accept answers in the form $\frac{a}{b}$ where a and b are integers
(b)	79	M1	for a method to find an estimate for the area of at least 1 trapezium under the curve, eg $\frac{1}{2}\times 2\times(25+16)$ $(=41)$ oe or $\frac{1}{2}\times 2\times(16+9)$ $(=25)$ oe or $\frac{1}{2}\times 2\times(9+4)$ $(=13)$ oe **or** for a method to find an estimate for the area of at least 1 rectangle with heights at intersection of midpoint and curve, eg 2×20.5 $(=41)$ oe or 2×12.5 $(=25)$ oe or 2×6 $(=12)$ oe	May be seen as a rectangle added to a triangle Allow consistent use of incorrect width for both M marks
		M1	for a complete method, eg $\frac{1}{2}\times 2\times(25+16)+\frac{1}{2}\times 2\times(16+9)+\frac{1}{2}\times 2\times(9+4)$ oe or $\frac{1}{2}\times 2\times(25+4+2(16+9))$ **or** $(2\times 20.5)+(2\times 12.5)+(2\times 6)$	Allow 1 error in y values used
		A1	For 79 or 78	Allow 78 only if it comes from rectangle/midpoint method

Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
15	$\frac{\sqrt{a}-1}{a-1}$	M1 A1	for a correct method to rationalise the denominator, eg, $\frac{1}{\sqrt{a}+1}\times\frac{\sqrt{a}-1}{\sqrt{a}-1}$ or $\frac{1}{\sqrt{a}+1}\times\frac{1-\sqrt{a}}{1-\sqrt{a}}$ for $\frac{\sqrt{a}-1}{a-1}$ or $\frac{1-\sqrt{a}}{1-a}$	Condone use of a prime number in place of *a* for the M1 Do not ISW
16	$-5 < x < \frac{3}{4}$	M1 A1	for critical values –5 **and** $\frac{3}{4}$ oe oe	Could be written as two separate expressions, eg $x > -5$ **and** $x < \frac{3}{4}$ oe

Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
17	12 : 15 : 5	P1	for process to find ratio of heights of **L** and **M** eg $\sqrt[3]{64} : \sqrt[3]{125}$ (= 4 : 5) oe or $\sqrt[3]{\frac{64}{64}} : \sqrt[3]{\frac{125}{64}}$ $(=1:1.25)$ oe or $\sqrt[3]{\frac{64}{125}} : \sqrt[3]{\frac{125}{125}}$ $(=0.8:1)$ oe	Condone not written as a ratio as long as clear $\frac{125}{64} = 1.953...$ $\frac{64}{125} = 0.512$
		P1	for process to find ratio of heights of **M** and **P** eg $\sqrt{144} : \sqrt{16}$ (= 12 : 4 = 3 : 1) oe or $\sqrt{\frac{144}{16}} : \sqrt{\frac{16}{16}}$ $(=3:1)$ oe or $\sqrt{\frac{144}{144}} : \sqrt{\frac{16}{144}}$ $\left(=1:0.\dot{3}\right)$ oe	Condone not written as a ratio as long as clear $\frac{144}{16} = 9$ $\frac{16}{144} = 0.\dot{1}$
		P1	(dep on P2) for process to find ratio of heights of all 3, eg "(4 : 5)" × 3 and "(3 : 1)" × 5 or $(1:1.25)\times 12$ and $(3:1)\times 5$ or $(0.8:1)$ and $\left(1:0.\dot{3}\right)$	
		A1	for 12 : 15 : 5 oe	Can ISW incorrect simplification of a correct ratio

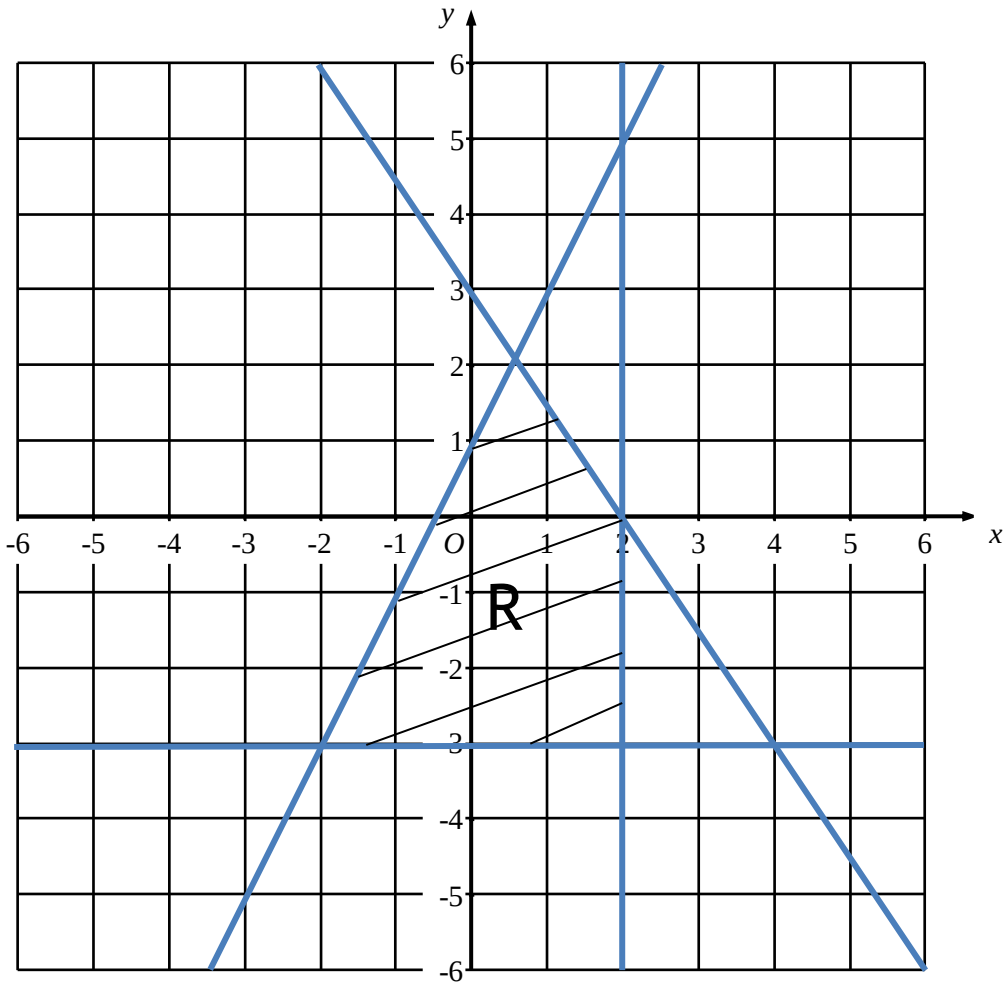
Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
18	$\frac{5}{28}$	P1	for a correct probability for 2nd or 3rd counter, eg $\frac{3}{7}$ or $\frac{4}{7}$ or $\frac{1}{7}$ or $\frac{1}{6}$ or $\frac{2}{6}$ or $\frac{3}{6}$	
		P1	for a correct product for 2 red and 1 green eg, (P(RRG) =) $\frac{4}{8}\times\frac{3}{7}\times\frac{1}{6}$ $\left(=\frac{12}{336}\text{ or }\frac{1}{28}\right)$ or (P(RGR) =) $\frac{4}{8}\times\frac{1}{7}\times\frac{3}{6}$ $\left(=\frac{12}{336}\text{ or }\frac{1}{28}\right)$ or (P(GRR) =) $\frac{1}{8}\times\frac{4}{7}\times\frac{3}{6}$ $\left(=\frac{12}{336}\text{ or }\frac{1}{28}\right)$	
		P1	for a correct product for 3 red, eg (P(RRR) =) $\frac{4}{8}\times\frac{3}{7}\times\frac{2}{6}$ $\left(=\frac{24}{336}\text{ or }\frac{2}{28}\right)$	
		P1	for a complete process, eg $\left(\frac{4}{8}\times\frac{3}{7}\times\frac{1}{6}\right)+\left(\frac{4}{8}\times\frac{1}{7}\times\frac{3}{6}\right)+\left(\frac{1}{8}\times\frac{4}{7}\times\frac{3}{6}\right)+\left(\frac{4}{8}\times\frac{3}{7}\times\frac{2}{6}\right)$	
		A1	for $\frac{60}{336}$ oe eg $\frac{5}{28}$ SCB2 if P0 scored for answer of $\frac{112}{512}$ oe (replacement)	Accept equivalent fractions, decimals (0.17... or 0.18) or percentages (17% or 18%)

Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
19 (a)	$\frac{1}{18}(8k\mathbf{b}+10\mathbf{b}-\mathbf{a})$	P1	for a correct expression for $\overrightarrow{CB}$ or $\overrightarrow{BC}$ eg, $\overrightarrow{CB}=-k\mathbf{b}-\mathbf{a}+\mathbf{b}$ or $\overrightarrow{BC}=-\mathbf{b}+\mathbf{a}+k\mathbf{b}$	All vectors must be clearly identified
		P1	for a correct expression for $\overrightarrow{CN}$ or $\overrightarrow{BN}$ or $\overrightarrow{NC}$ or $\overrightarrow{NB}$ eg, $\overrightarrow{CN}=\frac{5}{9}(-k\mathbf{b}-\mathbf{a}+\mathbf{b})$ or $\overrightarrow{BN}=\frac{4}{9}(-\mathbf{b}+\mathbf{a}+k\mathbf{b})$ or $\overrightarrow{NC}=\frac{5}{9}(-\mathbf{b}+\mathbf{a}+k\mathbf{b})$ or $\overrightarrow{NB}=\frac{4}{9}(-k\mathbf{b}-\mathbf{a}+\mathbf{b})$	This mark implies the previous one
		P1	for a correct unsimplified expression for $\overrightarrow{MN}$ eg $\frac{1}{2}\mathbf{a}+k\mathbf{b}+\frac{5}{9}(-k\mathbf{b}-\mathbf{a}+\mathbf{b})$ oe or $-\frac{1}{2}\mathbf{a}+\mathbf{b}+\frac{4}{9}(-\mathbf{b}+\mathbf{a}+k\mathbf{b})$ oe	
		A1	for $\frac{1}{18}(8k\mathbf{b}+10\mathbf{b}-\mathbf{a})$ oe eg $\frac{5}{9}\mathbf{b}+\frac{4}{9}k\mathbf{b}-\frac{1}{18}\mathbf{a}$	Must have a maximum of 3 vector terms, **a**, **b**, and k**b**
(b)	No, with explanation	C1	No with supporting reason ft (a) **Acceptable reasons:** No, since $\frac{1}{18}(8k\mathbf{b}+10\mathbf{b}-\mathbf{a})$ is not a multiple of **b** No, as *N* is not the midpoint of *BC* No, they are not multiples of each other No, does not factorise to **b** Not a multiple of *OB* *OB* doesn't have an **a** **Not acceptable reasons:** Yes… No, they don't share the same multiples *OB* doesn't go into *MN*	

Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
20	3, – 11	P1	for start of a process to complete the square, eg $2\left(x^2-6x\right)...$ or $2\left(x^2-6x...\right)$ or $(x-3)^2$ … **or** an x coordinate of 3	… can be any constant term, but not a term in x
		P1	for completing the square (y =) $2(x-3)^2-11$ or substitutes their value of x into the equation to find y	
		A1	cao	
21	Graph	C2	for a fully correct transformation	
		(C1	for a correct translation of g(x) of 2 units in the positive y-direction **or** a correct reflection of g(x) in the y-axis **or** for at least 2 of the points (–1, 1), (1, –2), (3, 1) transformed to the correct final position, eg (1, 3), (–1, 0), (–3, 3))	

Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
22	Proof	C1 C1 C1 C1	for angle OAP = angle OBP = 90 angle between <u>radius</u> and <u>tangent</u> is 90° for $OA = OB$ both <u>radii</u> OP is <u>common</u> (dep on C3) for a complete proof with all reasons given, eg triangles OAP and OBP are congruent RHS so $AP = BP$ or $AP = \sqrt{OP^2 - OA^2}$ and $BP = \sqrt{OP^2 - OB^2}$ and $OA = OB$ so $AP = BP$	May be seen as 2 separate diagrams All reasons given must be clearly linked to the appropriate statement Underlined words need to be shown
22 **ALT**	Proof	C1 C1 C1 C1	for $\cos AOP = \frac{AO}{OP} = \frac{r}{OP}$ or $\cos BOP = \frac{BO}{OP} = \frac{r}{OP}$ angle between <u>radius</u> and <u>tangent</u> is 90° for $\cos AOP = \frac{AO}{OP} = \frac{r}{OP}$ **and** $\cos BOP = \frac{BO}{OP} = \frac{r}{OP}$ **and** $AOP = BOP$ both <u>radii</u> OP is <u>common</u> (dep on C3) for a complete proof with all reasons given, eg triangles OAP and OBP are congruent SAS so $AP = BP$	May be seen as 2 separate diagrams Underlined words need to be shown

13



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. 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_2H			
Question		**Modification**	**Mark scheme notes**
1		Diagram enlarged. Wording added 'Look at the diagram for Question 1 in the separate Diagram Booklet. The diagram is NOT accurately drawn. The diagram shows a right-angled triangle labelled ABC. In the diagram: AB = 10 cm AC = 19 cm'	Standard mark scheme
2	(b)	Word 'When' added Letters changed: A changed to T and B changed to U	Standard mark scheme
5	(a)	Word 'below' added to the sentence 'Complete the table below of values for …' For Braille: answer lines added Ans: (i) _____ (ii) _____ (iii) _____	Standard mark scheme
	(b)	Diagram enlarged. Wording added 'Look at the diagram for Question 5 (b) in the separate Diagram Booklet. The diagram shows a grid.' For Braille sentence added 'A spare tactile diagram and bumpons are provided for this question.'	Standard mark scheme
7		Diagram enlarged. Labelling of trapezium changed from ABCD to DABC. Top left now A – top right now B – bottom right now C and bottom left now D. Letter changed: x changed to y Wording added 'Look at the diagram for Question 7 in the separate Diagram Booklet. The diagram is NOT accurately drawn. The diagram shows a quadrilateral labelled ABCD. In the diagram: All angles are measured in degrees. Angle ABC = 4y + 8 Angle BCD = 3y – 3 Angle CDA = 2y + 15 Angle DAB = 4y + 15'	Standard mark scheme but note the changes in the vertices and the change from x to y

PAPER: 1MA1_2H			
Question		**Modification**	**Mark scheme notes**
8		Diagram enlarged. Labelling of the triangle changed – Now P at the top, Q same at bottom right, R now at bottom left. Wording added 'Look at the diagram for Question 8 in the separate Diagram Booklet. The diagram is NOT accurately drawn. The diagram shows a playground in the shape of a right-angled triangle labelled PQR.' Wording changed 'The real length of PQ is 40 m. (changed from QR) Work out the real length of RQ.' (changed from PQ)	Standard mark scheme but note the changes in the vertices
10		Diagram enlarged. Letter changed: x changed to y Wording added 'Look at the diagram for Question 10 in the separate Diagram Booklet. The diagram is NOT accurately drawn. The diagram shows two right-angled triangles labelled PQR and STU. In the diagram: All lengths are measured in centimetres. In triangle PQR: PR = 8 cm RQ = (7 – 2y) cm Angle RPQ is marked a In triangle STU: SU = (1 + y) cm UT = 4 cm Angle STU is marked b'	Standard mark scheme but note the change of letter from x to y

PAPER: 1MA1_2H			
Question		**Modification**	**Mark scheme notes**
11		Wording changed 'Look at the frequency table for Question 11 in the separate Diagram Booklet. It gives information about the weights of **60** parcels.' Word 'below' added 'The frequency table below gives…' Frequency values in the table changed from 7, 21, 15, 11, 6 to 5, 25, 15, 10, 5.	B1 for 5, 30, 45, 55, 60
	(b)	Wording changed 'Look at the grid for Question 11 (b) in the separate Diagram Booklet. On the grid, draw a cumulative frequency graph for your table.' For Braille: sentence added 'A spare tactile diagram, bumpons and Wikki Stix are provided for this question.'	Standard mark scheme but points plotted at heights 5, 30, 45, 55, 60
	(c)		M1 for at least one correct quartile, eg (UQ =) 6 or (LQ =) value in the range 2.5 to 3 **or** ft their cf graph A1 for answer in the range 3.4 to 3.8
	(d)	Value changed: 7.4 kg changed to 7 kg	M1 for cf reading at weight = 7 in the range 47 to 53 **or** ft their cf graph A1 for answer in the range 7 to 13
13		Diagram enlarged. Wording added 'Look at the diagram for Question 13 in the separate Diagram Booklet. The diagram shows a coordinate grid.' For Braille: sentence added 'A spare tactile diagram, Wikki Stix, drawing film and sticky label R are available for this question.'	Standard mark scheme
14	(a)	Diagram enlarged. Wording added 'Look at the diagram for Question 14 (a) in the separate Diagram Booklet. The diagram is a graph.' For Braille: sentence added 'A spare tactile diagram, Wikki Stix are available for this question.'	Standard mark scheme
	(b)	For Braille: sentence added 'A spare tactile diagram, Wikki Stix are available for this question.'	Standard mark scheme

PAPER: 1MA1_2H			
Question		**Modification**	**Mark scheme notes**
15		Letter changed: a changed to p	Standard mark scheme but note the change of letter from a to p
16		Letter changed: x changed to y	Standard mark scheme but note the change of letter from x to y
17		Wording changed to 'Look at the diagrams for Question 17 in the separate Diagram Booklet. The diagrams are NOT accurately drawn. The diagrams show three similar solid cylinders made from the same material. The cylinders are labelled cylinder L, cylinder M and cylinder P. You may also be given three models.' For Braille: wording changed to 'Ask for the models for Question 17. The models are NOT accurately made. The models represent three similar solid cylinders made from the same material. The models are labelled Cylinder L, Cylinder M and Cylinder P. Cylinder L has a mass of 64 g. Cylinder M has a mass of 125 g. Cylinder M has a total surface area of 144 cm^2 Cylinder P has a total surface area of 16 cm^2'	Standard mark scheme
19		Diagram enlarged. Wording added 'Look at the diagram for Question 19 in the separate Diagram Booklet. The diagram is NOT accurate. The diagram shows a quadrilateral labelled OACB. In the diagram:'	Standard mark scheme
21		Diagram enlarged. Sentence added 'Look at the diagram for Question 21 in the separate Diagram Booklet.' For Braille: sentence added 'A spare tactile diagram, Wikki Stix and drawing film are available for this question.'	Standard mark scheme
22		Diagram enlarged. Sentence added 'Look at the diagram for Question 22 in the separate Diagram Booklet. The diagram is NOT accurately drawn. In the diagram:'	Standard mark scheme

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