

Pearson
Edexcel

Mark Scheme (Results)

November 2020

Pearson Edexcel GCSE
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 (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and all numbers within the range.

11 Number in brackets after a calculation

Where there is a number in brackets after a calculation E.g. 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 E.g. "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 E.g. [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: 1MA1/3H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
1 (a)	n^8	B1	cao	
(b)	cd^3	M1	for partial simplification, eg c or d^3	May be seen as simplification in original fraction
		A1	for cd^3	Accept c^1d^3
(c)	$x > \frac{14}{5}$	M1	for $5x > 14$ or $5x = 14$ or critical value, $\frac{14}{5}$ oe	Must see carried out correctly, ie at least $5x > 7 \times 2$ not just intention seen. Allow other signs for this mark.
		A1	$x > \frac{14}{5}$ or $x > 2\frac{4}{5}$ or $x > 2.8$	
2	2 hours 45 minutes	P1	for $30 \div 24$ (= 1.25) or $12 \div 8$ (= 1.5)	May be written in hours and/or minutes
		P1	for finding the sum of their two times eg "1.25" + "1.5" (= 2.75) or 165 (minutes)	or 3 h 15 min or 2 h 75 min
		A1	cao	
3	9.35, 9.45	B1	for 9.35 in the correct position	
		B1	for 9.45 in the correct position	Accept $9.44\dot{9}$ oe or 9.4499…oe

Paper: 1MA1/3H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
4 (a)	Yes (supported)	P1	for start of process, eg 5 × 9 (= 45) **or** 10 × 14 (= 140) **or** 5 × 2 (= 10 (kg)) **or** 3 ÷ 2 (= 1.5 (boxes))	Accept values rounded or truncated to 1dp in both (a) and (b). Ignore units
		P1	for process using ratio of areas, eg "140" ÷ "45" (= 3.1...) **or** for using ratio of amount of seed eg "10" ÷ 3 (= 3.3...) **or** for finding coverage for 1 kg of grass seed, eg "45" ÷ 3 (= 15 (m^2))	
		P1	for process to find amount of seed needed, eg "140" ÷ "45" × 3 (= 9.3...kg) **or** "140" ÷ "45" × "1.5" (= 4.6...(boxes)) oe **or** "15" × 2 (= 30 (m^2 per box)) **and** "140" ÷ "30" (= 4.6...(boxes)) **or** for process to find area that can be seeded, eg "10" ÷ 3 × "45" (= 150 (m^2)) **or** "140" ÷ "10" (= 14 (m^2)) oe	Accept 9.4 Accept 4.7
		C1	for "Yes" supported by correct figures eg 4.6...(and 5), **or** 9.3...and 10 **or** 150 and 140 (or 140 to 148.5) **or** 15 and 14	
(b)	Yes, (does not have enough) (supported)	C1	for reasoning supported with correct figures, eg does not have enough seed and compares 9 (kg) with 9.3…(kg) or 4.5 (boxes) with 4.6… (boxes) or 135 (m^2) with 140 (m^2) ft from (a)	Values used in (a) do not need repeating in (b) as long as intention is clear

Paper: 1MA1/3H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
5 (a)	$\frac{1}{3}, \frac{2}{3}$ $\frac{1}{3}, \frac{2}{3}, \frac{1}{3}, \frac{2}{3}$	B2	six fully correct probabilities	Accept any equivalent fraction, decimal form 0.33(3...) and 0.66(6...) or 0.67 or percentage form 33(.3...)% and 66(.6...)% or 67%
		(B1	at least 2 correct probabilities)	
(b)	$\frac{2}{9}$	M1	for $\frac{1}{3} \times \frac{2}{3}$ oe or ft probabilities from diagram	
		A1	for $\frac{2}{9}$ oe	Accept any equivalent fraction, decimal form 0.22(2...) or percentage form 22(.2...)%
6 (a)	−2, 4	B1	cao	
(b)	0.55 to 0.65, 3.35 to 3.45	M1	for correct method, eg marking intercepts with *x*-axis or one correct answer or both solutions given as a coordinate eg (0.6, 3.4) or (0.6, 0) (3.4, 0)	If answers are stated as coordinates, award M1 for both coordinates and M0 for one coordinate.
		A1	for answers in the ranges 0.55 to 0.65 and 3.35 to 3.45	With no extras
7	16.5	M1	for method to find total of ages of boys, eg 18 × 16.2 (= 291.6) or total of ages of girls, eg 27 × 16.7 (= 450.9) or total of ages of boys and girls, eg 742.5	May use an equivalent method with number of boys and girls used in the ratio 2 : 3 $\frac{16.2+16.7}{2}$ scores 0 marks
		M1	for complete method, eg $\frac{"291.6"+"450.9"}{45}$ $(= \frac{742.5}{45})$	
		A1	cao	

Paper: 1MA1/3H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
8	24	P1	for start to process of working out the unknown probabilities, eg $1 - 0.32 - 0.20$ (= 0.48) **or** assigning probabilities as $5x$ and x **or** process to work out the number of blue or green counters, eg 0.32×300 (= 96) or 0.20×300 (= 60) or 0.52×300 (= 156)	Award for P(R) + P(Y) = 0.48, may be seen in table
		P1	for process to find the probability, eg $5x + x =$ "0.48" or "0.48" ÷ 6 (= 0.08) **or** process to find the number of red or yellow counters, eg 300 – "96" – "60" or $300 \times$ "0.48"	
		A1	cao	

Paper: 1MA1/3H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
9	2820	P1	for start to process to find height of triangle, eg $\tan(40) = \frac{h}{5}$ oe **or** equivalent process to find the height of the triangle **or** start to process to find slant height, eg $\frac{10}{\sin 100} = \frac{x}{\sin 40}$	
		P1	for complete process to find height of triangle, eg 5tan 40 (= 4.19...) **or** complete process to find the slant height, eg $\frac{10}{\sin 100} \times \sin 40$ (= 6.5...)	Accept 4.2
		P1	for start of process to find volume of prism, eg 10 × 20 × 12 (= 2400) or 0.5 × 10 × "4.19..."× 20 (= 419....) or $\frac{1}{2}$ × 10 ×"6.52..." ×sin 40 × 20 (419....) **or** process to find total area of cross section, eg 0.5 × 10 × "4.19..." + 10 × 12 (= 140.9...) or $\frac{1}{2}$ × "6.52..." ×"6.52..." × sin 100 + 10 × 12 (= 140.9...)	10 × 20 × 12 may be seen as part of a calculation to find the volume of the prism
		P1	for complete process to find total volume, eg (0.5 × 10 × "4.19..." + 10 × 12) × 20	
		A1	for an answer in the range 2810 to 2820	If an answer is given in the range in working and then rounded incorrectly award full marks.

Paper: 1MA1/3H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
10 (a)	3.0×10^9	P1	for correct process, eg $10^5 \times 365 \times 81$ or for a correct answer not written in standard form, eg 2956500000 or $2.9(565) \times 10^n$ where $n \neq 9$ oe	Values may be rounded. Allow 350, 360, 366, 370, 400 and 80, 100
		A1	for an answer in the range 2.8×10^9 to 4.0×10^9	
(b)	4.5×10^{-11}	P1	for correct process, eg $\frac{90}{2 \times 10^{12}}$ **or** for correct answer not written in standard form, eg 45×10^{-12} or 0.45×10^{-10} **or** 4.5×10^n where $n \neq -11$	Allow $90 \div 2 \times 10^{12}$
		A1	cao	
11 (a)	rotation of 180° about (2.5, −1)	M1	for method to find position of **Q**, eg shape drawn at $(-1, -2)$, $(-1, -5)$ and $(-2, -5)$ **or** for method to find position of **R**, eg shape drawn at $(4, -4)$, $(4, -7)$ and $(3, -7)$ **or** for method to translate their **Q** correctly	The method mark is awarded if no working is shown but at least 2 of the 3 aspects are correct in the description
		A2	for rotation of 180° about (2.5, −1) or enlargement by scale factor −1, centre (2.5, −1)	Cannot award A marks for a combination of transformations With no extra incorrect aspects
		(A1	for any 2 of the 3 aspects)	
(b)	(2.5, −1)	B1	for (2.5, −1) ft from rotation or enlargement in (a)	No follow through from a combined transformation in part (a)

Paper: 1MA1/3H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
12 (a)	$\dfrac{3x^2}{(x-4)(x+2)}$	M1	for method to identify a common denominator, eg $(x-4)(x+2)$	
		M1	for method to combine the fractions, eg $\dfrac{2x(x+2)+x(x-4)}{(x-4)(x+2)}$	Accept $\frac{2x(x+2)}{(x-4)(x+2)} + \frac{x(x-4)}{(x-4)(x+2)}$
		A1	for $\dfrac{3x^2}{(x-4)(x+2)}$ or $\dfrac{3x^2}{x^2-2x-8}$	
(b)	$8x^3 - 2x^2 - 51x - 45$	M1	for method to find the product of two linear expressions, eg 3 correct terms out of 4 terms or 4 terms ignoring signs	Note that, for example, $-3x - 9$ in expansion of $(x - 3)(2x + 3)$ is to be regarded as 3 correct terms.
		M1	for a complete method to obtain all terms, half of which are correct (ft their first product) eg $8x^3 - 12x^2 - 15x + 10x^2 - 36x - 45$	First product must be quadratic with at least 3 terms but need not be simplified or may be simplified incorrectly
		A1	cao.	
13 (a)	region identified	M1	for 2 of lines $x = 2$, $y = x + 3$, $2x + 3y = 6$ correctly drawn	Accept use of full or broken lines for all marks
		M1	for all 3 lines $x = 2$, $y = x + 3$, $2x + 3y = 6$ correctly drawn	
		M1	for region which satisfies at least 2 of the inequalities $x \leq 2$, $y \leq x + 3$, $2x + 3y \geq 6$	Award for clear intention, shading not needed.
		A1	for correct region identified	Award for clear intention, shading not needed.
(b)	no supported with reason	B1	for no and reason, eg (2, 4) does satisfy $x + y \leq 6$ or (2, 4) lies on the boundary of the region satisfying the equality sign.	

Paper: 1MA1/3H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
14	60 (supported)	M1 M1 A1 C1	for angle *DBF*, eg 180 – 100 (= 80) for angle *BFD*, eg 180 – "80" – 40 (= 60) or for angle *CBF* = 40 for angle *ABD* = 60 (dep M2) for at least 2 reasons from Opposite angles of a cyclic quadrilateral add up to 180 Angles in a triangle add up to 180 Alternate segment theorem **OR** Opposite angles of a cyclic quadrilateral add up to 180 Alternate segment theorem Angles on a straight line add up to 180	Angles may be shown on the diagram or in working Underlined words need to be shown; reasons need to be linked to their method
15	Proof	M1 A1	for $10x = 7.333\ldots$ ($7.\dot{3}$) and for finding difference that would lead to a terminating decimal for completing algebra to reach $\frac{11}{15}$	$100x$ and $1000x$, etc could also be used

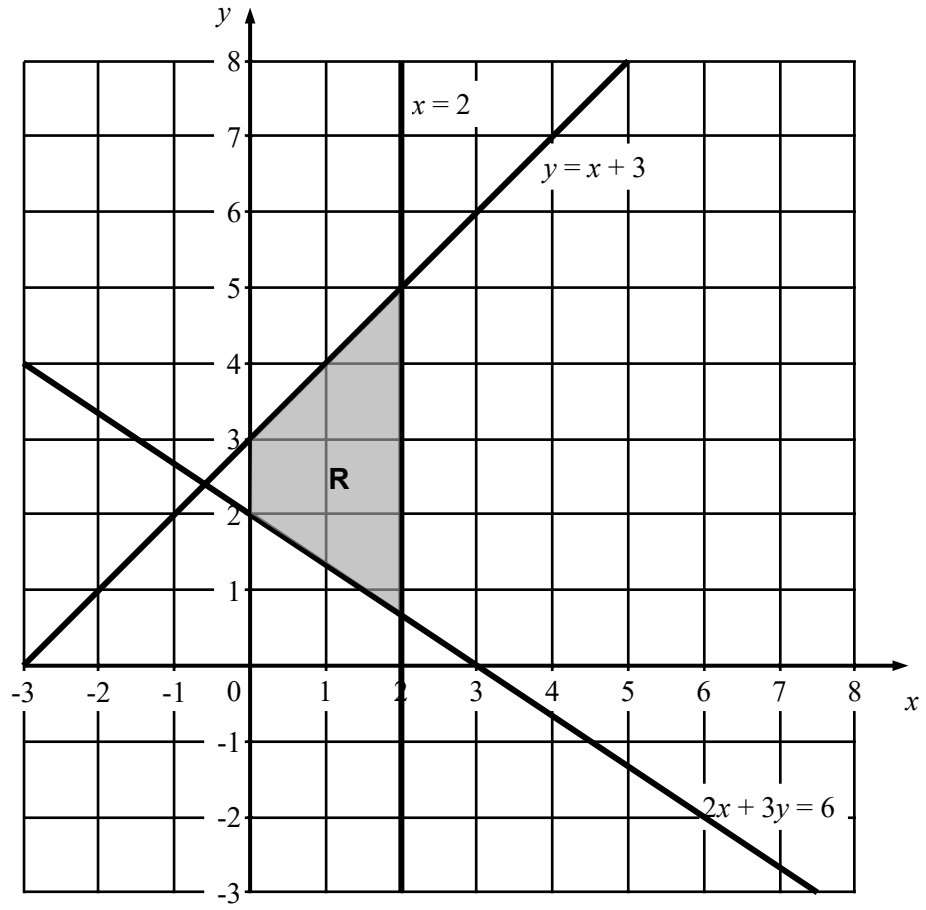
Paper: 1MA1/3H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
16 (a)	129 to 160	M1	for a method to find an estimate for the area under the curve eg $0.5 \times 30 \times 9$	Do not accept 30×9
		A1	for value in the range 129 to 160 (If M0, SC B1for 126 or 127.5)	Award full marks for any correct method leading to a better estimate.
(b)	underestimate with reason	C1	(dep M1) for "underestimate" and appropriate reason linked to their method, eg area between triangle and curve not included	
(c)	Explanation	C1	for explanation, **Acceptable examples** method gives average acceleration (in first 60 seconds) he has not used/drawn a tangent (at time 60 seconds) he has not worked out the gradient (at time 60 seconds) **Not acceptable examples** he has not used strips he has calculated it accurately rather than using an estimate the estimate of 13 should be about 4.4 the answer should be approximately 0.073	
17	7.645	P1	for process to use area to find at least one frequency, eg for first frequency $(7.2 - 6.4) \times 10$ (= 8) or $(7.2 - 6.4) \times 5$ (= 4) or $4 \times 5 \times 5$ (= 100)	Frequencies could be written on the graph
		P1	for process to find all frequencies, eg 8, 20, 40, 12 or multiples eg 4, 10, 20, 6 or 100, 250, 500, 150	Marks are for correct processes, one or more frequencies may be incorrect
		P1	(dep P2) for process to estimate mean, eg $((6.8 \times [8]) + (7.4 \times [20]) + (7.8 \times [40]) + (8.1 \times [12])) \div ([8] + [20] + [40] + [12])$	
		A1	for 7.645 (accept 7.65)	Award full marks if a correct answer is seen in working and is then incorrectly rounded.

Paper: 1MA1/3H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
18	6.495190528	B1	for 11.25 or 11.35	
		M1	use $a^2 + a^2 + a^2$ oe for the square of the length of a diagonal	
		M1	for writing an equation to find the length of a side, eg $a^2 + a^2 + a^2 = [LB]^2$ where $11.25 \leq LB < 11.3$ oe	
		A1	for an answer in the range 6.49 to 6.50	If the answer is given in the range 6.49 to 6.5 without supportive evidence award 0 marks.

Paper: 1MA1/3H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
19	Proof	P1	for start to process to find area of *ABCDEF*, eg area of equilateral triangle $= \frac{1}{2} \times x \times x \times \sin 60$ $(= \frac{\sqrt{3}}{4}x^2)$ **OR** for start to process to find area of *FGHIJK*, eg area of equilateral triangle $= \frac{1}{2} \times px \times px \times \sin 60$ $(= \frac{\sqrt{3}}{4}p^2x^2)$	Any correct process to find the area of part of the hexagon is acceptable for this mark, eg $\frac{1}{2} \times x \times x \times \sin 120$ or $\frac{1}{2} \times (x + 2x) \times \frac{\sqrt{3}}{2}x$ Allow sin 60 left in expressions for the first 3 marks.
		P1	for complete process of finding area of *ABCDEF*, eg $6 \times \frac{1}{2} \times x \times x \times \sin 60$ or $6 \times \frac{1}{2} \times x \times x \times \frac{\sqrt{3}}{2}$ $\left(= \frac{3\sqrt{3}}{2}x^2\right)$ oe **OR** for complete process of finding area of *FGHIJK*, eg $6 \times \frac{1}{2} \times px \times px \times \frac{\sqrt{3}}{2}$ $\left(= \frac{3\sqrt{3}}{2}p^2x^2\right)$ oe	
		P1	for process of finding area of *ABCDEF* eg $\frac{3\sqrt{3}}{2}x^2$ oe **AND** for process of finding area of *FGHIJK*, eg $p^2 \times \frac{3\sqrt{3}}{2}x^2$ oe	
		C1	correct algebra leading to given result, $\frac{3\sqrt{3}}{2}(p^2 - 1)x^2$	Accept $\frac{3\sqrt{3}}{2}x^2(p^2 - 1)$ as final result.

Paper: 1MA1/3H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
20	98^{91}	B1	cao	Must be clear and unambiguous
21 (a)	3 : 4	P1	for start of process, eg isolate terms in c, eg $4c = 3d$ **or** divide all terms by d, eg $\frac{5c}{d}+1=\frac{c}{d}+4$	
		A1	for 3 : 4	Accept any equivalent ratio or $c = 3$, $d = 4$
(b)	5 : 2	P1	for start of process: to take all terms to one side eg $6x^2 - 7xy - 20y^2 (= 0)$ **or** divide all terms by y^2, eg $\frac{6x^2}{y^2}=\frac{7xy}{y^2}+\frac{20y^2}{y^2}$ **or** substitute a value of x ($x > 0$) or a value of y ($y > 0$) into the equation, eg $x = 5$, $150 = 35y + 20y^2$	
		P1	for second step in process, eg $(2x - 5y)(3x + 4y) (= 0)$ **or** $6p^2 - 7p - 20 (= 0)$ (where $p=\frac{x}{y}$) **or** $20y^2 + 35y - 150 (= 0)$	
		A1	5 : 2	Accept $x = 5$, $y = 2$ or equivalent ratios,eg, $1 : \frac{2}{5}$

Q13(a)

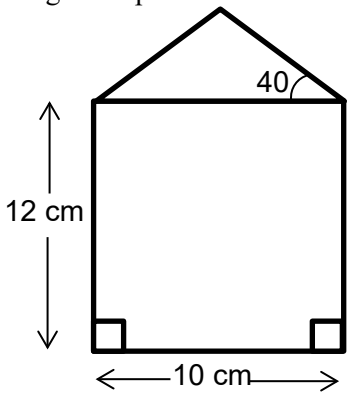


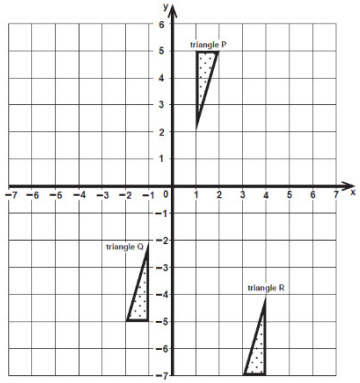
Modifications to the mark scheme for Modified Large Print (MLP) papers: 1MA1 3H

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

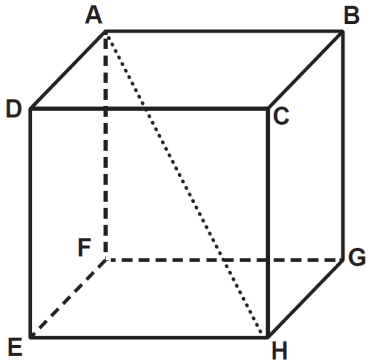
The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5º
Measurements of length: ±5 mm

PAPER: 1MA1/3H			
Question		**Modification**	**Mark scheme notes**
1	(b)	The letter c changed to p. The letter d changed to q.	Standard mark scheme but note the change in letters.
5		Wording added 'Look at the diagrams for Question 27 in the Diagram Book.' Diagrams enlarged. Spinner headings moved above the spinners. Spinners straightened, stick replaced with black dot. Wording added 'There are six spaces to fill.'	Standard mark scheme
6	(a)	Wording added 'Look at the diagram for Question 28(a) in the Diagram Book. It shows the graphs of $5x - 9y = -46$ and $y = -2x$' Diagram enlarged and turned landscape. Label '$y = -2x$' moved to the other end of the graph line.	Standard mark scheme
6	(b)	Wording added 'Look at the diagram for Question 28(b) in the Diagram Book. It shows the graph of $y = x^2 - 4x + 2$.' Diagram enlarged. Grid cut at y=8. Small squares removed. Graph line made thicker.	Standard mark scheme but for answers in the ranges 0.5 to 0.7 and 3.3 to 3.5

PAPER: 1MA1/3H			
Question		**Modification**	**Mark scheme notes**
8		Wording added ‘Look at the table for Question 8 in the Diagram Book.’ Table turned vertical.	Standard mark scheme
9		Wording added ‘Look at Diagram 1 and Diagram 2 for Question 9 in the Diagram Book. You may be provided with a model.’ Wording ‘The diagram shows a prism’ removed and replaced by ‘Diagram 1 and the model represent a prism.’ Wording added ‘One angle is marked 40°. The prism has length 20 cm’; ‘as shown in Diagram 2’. Diagram enlarged, angle moved outside angle arc and the angle arc made smaller. Diagram 2 provided below Diagram 1 as shown:  	Standard mark scheme

PAPER: 1MA1/3H			
Question		**Modification**	**Mark scheme notes**
11		Shape provided for all candidates. Wording added 'Look at the diagram for Question 11 in the Diagram Book.' The wording 'The diagram shows a…' removed and replaced by 'It shows triangle P, triangle Q and triangle R on a grid'. Wording added 'A cut out shape may be available if you wish to use it.' Triangle Q and triangle R added to the diagram. Diagram enlarged, shading removed and changed to dotty shading. Open headed arrows. Labels added to the diagrams 'triangle P' etc.  The question split into 3 separate parts: (a)(i) Describe fully the single transformation that maps triangle P onto triangle Q. (ii) Describe fully the single transformation that maps triangle Q onto triangle R. (iii) Describe fully the single transformation that maps triangle P onto triangle R.	New mark scheme: (a)(i) B1 for "Rotation 180 about (0,0) [or origin]" (a)(ii) B1 for "Translation of $\begin{pmatrix}5\\-2\end{pmatrix}$" (a)(iii) B1 for "Rotation 180 about (2.5, –1)" (b) B1 for (2.5, –1) ft from rotation stated in (a)(iii)
12		Change *x* to *y*.	Standard mark scheme but note letter change.

PAPER: 1MA1/3H			
Question		**Modification**	**Mark scheme notes**
13	(a)	Grid cut at x=7 and y=7. Diagram enlarged. Wording added "Look at the diagram for Q13(a) in the Diagram Book.'	Standard mark scheme
13	(b)	Wording added 'Look at the diagram for Question 13(b) in the Diagram Book.' Wording 'The diagram below shows…' changed to 'It is a grid showing…'. Diagram enlarged. Shading changed to dotty shading. Right axis labelled.	Standard mark scheme
14		Wording added 'Look at the diagram for Question 14 in the Diagram Book.' Diagram enlarged. Angle labels moved outside angle arcs and the angle arcs made smaller. Wording added 'Angle BDF = 40° Angle DEF = 100°'	Standard mark scheme
16		Wording added 'Look at the diagram for Question 16 in the Diagram Book.' The wording 'Here is a…' removed and replaced by 'It shows a…'. Diagram enlarged. Axis labels moved above the vertical axis and to the left of the horizontal axis. Right axis labelled. Small squares removed. Intermediates added at every 1 m/s. In part (c) box removed from around information.	Standard mark scheme Apply a greater tolerance in reading off and therefore arriving at the answer for part (a).
17		Wording added 'Look at the diagram for Question 17 in the Diagram Book. It shows a histogram.' Axis labels moved above the vertical axis and to the left of the horizontal axis. Right axis labelled. Shading changed to dotty shading. Small squares removed.	Standard mark scheme

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Question		**Modification**	**Mark scheme notes**
18		Wording added 'Look at the diagram for Question 18 in the Diagram Book. You may be provided with a model.' Wording 'The diagram shows a cube.' changed to 'The diagram and the model show a cube ABCDEFGH.' A dotty line joining A to H. Diagram enlarged. Model provided with AH joined.  	Standard mark scheme
19		Wording added 'Look at the diagram for Question 19 in the Diagram Book.' Diagram enlarged. Shading removed, ABCDEF shaded instead with dotty shading. Add wording 'ABCDEF is a shaded regular…'. Wording 'shaded' changed to 'unshaded'. 'x' labelled in between AF and FE.	Standard mark scheme
20		Options stacked vertically.	Standard mark scheme
21		Wording added 'Given that'. The letter c changed to p. The letter d changed to q.	Standard mark scheme but note the changes in letters.

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