

Mark Scheme (Results)

Summer 2015

Pearson Edexcel GCSE
In Mathematics A (1MA0)
Higher (Calculator) Paper 2H

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NOTES ON MARKING PRINCIPLES

- 1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- 2 Mark schemes should be applied positively.
- 3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Note that in some cases a correct answer alone will not score marks unless supported by working; these situations are made clear in the mark scheme. Examiners should be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- 4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- 5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.
- 6 Mark schemes will award marks for the quality of written communication (QWC).
The strands are as follows:
 - i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labelling conventions.
 - ii) *select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.
 - iii) *organise information clearly and coherently, using specialist vocabulary when appropriate.*
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

With working

If there is a wrong 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.

If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.

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, and discuss each of these situations with your Team Leader.

If there is no answer on the answer line then check the working for an obvious answer.

Partial answers shown (usually indicated in the ms by brackets) can be awarded the method mark associated with it (implied).

Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks; transcription errors may also gain some credit. Send any such responses to review for the Team Leader to consider.

If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, 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.

9 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: e.g. incorrect cancelling of a fraction that would otherwise be correct

It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

10 Probability

Probability answers must be given a fractions, percentages or decimals. 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 answer is given on the answer line using both incorrect and correct notation, award the marks.

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

Linear equations

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated 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).

12 Parts of questions

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 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 includes all numbers within the range (e.g 4, 4.1)

14 The detailed notes in the mark scheme, and in practice/training material for examiners, should be taken as precedents over the above notes.

Guidance on the use of codes within this mark scheme

M1 – method mark for appropriate method in the context of the question
A1 – accuracy mark
B1 – Working mark
C1 – communication mark
QWC – quality of written communication
oe – or equivalent
cao – correct answer only
ft – follow through
sc – special case
dep – dependent (on a previous mark or conclusion)
indep – independent
isw – ignore subsequent working

PAPER: 1MA0_2H							
Question		Working		Answer	Mark	Notes	
1	(a)			$\frac{1}{30}$	1	B1 for $\frac{1}{30}$ oe	
	(b)			$\frac{3}{10}$	2	M1 for method to sum the number of white chocolates in the bag, eg $4 + 4 + 1 (= 9)$, A1 for $\frac{3}{10}$ or $\frac{9}{30}$ oe	
	(c)			0.48	2	M1 for $1 - (0.35 + 0.17)$ oe A1 for 0.48 oe	
2			x	$x^3 - x^2$	3.5	4	B2 for a trial $3.4 \leq x \leq 3.5$ evaluated correctly (B1 for a trial evaluated correctly for $3 \leq x \leq 4$) B1 for a different trial evaluated correctly for $3.45 \leq x < 3.5$ B1 (dep on at least one previous B1) for 3.5 [Note: Trials should be evaluated to at least accuracy shown in table, truncated or rounded] [NB No working scores 0 marks]
			3	18			
			3.1	20.(181)			
			3.2	22.(528)			
			3.3	25.(047)			
			3.4	27.(744)			
			3.5	30.(625)			
			3.6	33.(696)			
			3.7	36.(963)			
			3.8	40.(432)			
			3.9	44.(109)			
			4	48			
			3.45	29.1(61125)			
			3.46	29.4(50136)			
		3.47	29.7(41023)				
		3.48	30.0(33792)				
		3.49	30.3(28449)				

PAPER: 1MA0_2H					
Question		Working	Answer	Mark	Notes
3	(a)		4.58006(9567)	2	M1 for 1.83 or 8.381(527307) or 4.6 or 4.58 or 4.580 or 4.5801 A1 for 4.58006(9567)
	(b)		4.5801	1	B1 ft provided at least 5 decimal places in (a)
4			Enlargement	2	B2 for fully correct triangle (B1 for 2 vertices correct or enlargement scale factor 2 in the wrong position or enlargement, centre A, with a different scale factor)
*5		$1155 \div 15 = 77$ $x + 2x + x - 7 = 77$ $4x - 7 = 77$ $4x = 84; x = 21$ OR $15x + (15 \times 2x) + 15(x - 7) = 1155$ $60x - 105 = 1155$ $60x = 1260$ $x = 21$	Redlands 21 St Samuels 42 Francis Long 14	5	M1 for $2x$ or $x-7$ M1 for $1155 \div 15 (= 77)$ M1 (dep M2) for equation summing their three expressions to "77" A1 for 21, 42 and 14 C1 for fully correct answer with correct labels OR M1 for an expression for the cost of the pupils from Redlands M1 for expression for the cost of the pupils from either St Samuels or Francis Long M1 (dep M2) for equation summing their three expressions to 1155 A1 for 21, 42, and 14 C1 for fully correct answer with correct labels

PAPER: 1MA0_2H				
Question	Working	Answer	Mark	Notes
*6		Large box	4	<p>M1 for a complete method to find the cost per sachet or the number of sachets per £1 for one size of box</p> <p>M1 for a complete method to find all three comparable figures</p> <p>A1 for 0.47(08. .), 0.46, 0.45 or 2.12(3...), 2.17(..), 2.22 (2..) oe</p> <p>C1(dep on M2) for a comparison of their answers leading to a correct deduction</p> <p>OR</p> <p>M1 for 3 multiples of each of 12, 20 and 35 or a common multiple of 12, 20 and 35, eg 420 or multipliers to compare the same number of sachets from each box, eg $\times \frac{35}{12}$ and $\times \frac{35}{20}$</p> <p>M1 for a complete method to find three comparable costs</p> <p>A1 for three correct costs, eg 197.75 and 193.20 and 189.00</p> <p>C1(dep on M2) for a comparison of their answers leading to a correct deduction</p>
7	(a)	$7x + 35$	1	B1 cao
	(b)	$12y^2 - 9y$	1	B1 cao
	(c)	$t^2 + 2t + 4t + 8$	2	<p>M1 for all 4 terms (and no additional terms) correct with or without signs or 3 out of no more than 4 terms correct with signs</p> <p>A1 for $t^2 + 6t + 8$</p>
8		68 34 51	3	<p>M1 for $153 \div (4 + 2 + 3)$ (=17) or for a correct method to scale up to at least 44:22:33 without error</p> <p>M1 (dep M1) for “17” \times 4 or “17” \times 2 or “17” \times 3 or for a complete method to build up to 68:34:51 with at least two of these values correct</p> <p>A1 for 68, 34, 51 in any order (If M0,SC B2 for two correct lengths)</p>

PAPER: 1MA0_2H					
Question		Working	Answer	Mark	Notes
9	(a)		Polygon drawn	2	B2 for correct plotting of 5 points and joining with line segments (B1 for points plotted correctly at midpoints of intervals OR joining points with line segments at the correct heights and consistent within the class interval (including end values) OR correct frequency polygon with one point incorrect OR correct frequency polygon with first and last point joined) NB Ignore any histogram drawn and any part of frequency polygon outside range of first and last points plotted
	*(b)		Yes with reason	2	M1 for finding a quarter of 51 and for finding how many teachers sent more than 30 emails C1 for 12.75 or 13 compared to 15 and yes she is correct OR M1 for finding how many teachers sent more than 30 emails and '15' × 4 C1 for comparing 60 with 51 and yes she is correct OR M1 for $15 \div 51 (= 0.29\dots)$ or $\frac{15}{51} \times 100 (= 29\dots\%)$ C1 for comparing 0.29.. with $\frac{1}{4}$ or 0.25 OR 29....% with 25% and yes she is correct
10			Loci drawn	3	B1 for line parallel to BC and 3 cm from BC B1 for arc drawn, centre C , with radius 4 cm B1 ft for shading a region below their horizontal line and inside their arc

PAPER: 1MA0_2H				
Question	Working	Answer	Mark	Notes
*11		No supported by working	4	<p>M1 for $\pi \times 7$ (= 21.9 to 22) or $\pi \times 7 \times 2.54$ = (55.5 to 56) M1 (dep) for a complete method that could lead to two figures that are comparable eg $\pi \times 7 \times 2.54$; $\pi \times 7$ and $50 \div 2.54$ A1 for correct comparable figures eg 55.5 to 56 (cm); 21.9 to 22 (in) and 19.6 to 19.7 (in) C1 (dep M2) for a correct conclusion based on their comparable figures</p> <p>OR</p> <p>M1 for eg $50 \div \pi$ (= 15.9 to 15.92) or $50 \div 2.54\pi$ (=6.26 to 6.27) M1 (dep) for a complete method that could lead to two figures that are comparable eg $(50 \div \pi) \div 2.54$; $50 \div \pi$ and 7×2.54 A1 for correct comparable figures eg 6.26 to 6.27 (in); 15.9 to 15.92 (cm) and 17.7 to 17.8 (cm) C1 (dep M2) for a correct conclusion based on their comparable figures</p>
12		$p = 8, q = 10$	3	<p>M1 for finding the difference between the x or y coordinates eg $4 - 2$ (= 2) or $17 - 5$ (= 12) M1 for a complete method to find the value of p or the value of q A1 cao</p>
13		245	2	<p>M1 for method to identify the angle required, including on a diagram A1 cao</p>
14	$10 \times 75 + 14 \times 105 + 9 \times 135 + 5 \times 165 + 2 \times 195$ $750 + 1470 + 1215 + 825 + 390$ $4650 \div 40$	116.25	4	<p>M1 for finding at least 4 products ft consistently within interval (including end points) M1 (dep) for use of at least 4 correct midpoints. M1 (dep on 1st M) for 'Σft' $\div 40$ A1 for 116.25</p>

PAPER: 1MA0_2H					
Question		Working	Answer	Mark	Notes
15	(a)		0.000064	1	B1 for 0.000064 or $\frac{1}{15625}$ or 6.4×10^{-5} oe
	(b)		4.2875×10^7	2	B2 cao (B1 for digits 42875 or 4.3×10^7 or 4.29×10^7 or 4.288×10^7)
16		Volume of A = $\frac{140}{0.7} = 200$ Volume of B = $\frac{128}{1.6} = 80$ Mass of C = $140 + 128 = 268$ Density of C = $\frac{268}{280}$	0.957	4	M1 for finding the volume of either liquid A or B or the mass of liquid C M1 for a complete method to find the volume AND mass of liquid C M1 (dep M2) for “total mass” ÷ “total volume” A1 for 0.957 to 0.96
17		Gradient of N = 3 Gradient of perpendicular to line N = $-\frac{1}{3}$	$y = -\frac{1}{3}x + 1$	3	M1 for complete method to find gradient of line N or for drawing a perpendicular line M1 for method to find the gradient of a perpendicular line A1 $y = -\frac{1}{3}x + 1$ oe

PAPER: 1MA0_2H					
Question		Working	Answer	Mark	Notes
18	(a)		Diagram type	1	B1 for box plot or box and whisker or cumulative frequency
	*(b)		Comparison given	2	C1 for a correct comparison of medians C1 for a correct comparison of a measure of spread with correct figures NB for the award of both marks at least one of the comparisons must be in context
19		$BC = \frac{12}{\tan 60} = 6.92(8\dots)$ $DE = 6.92(\dots) \times \tan 30 = 4$ $CE = 12 + 4$ $AC = \frac{12}{\sin 60} = 13.8(5\dots)$ $CE = \frac{13.8(5\dots)}{\cos 30}$	16 with supporting working	4	M1 for a method to find BC or AC or AD B1 for angle EAD = 30° or AED = 60° or ACD = 30° or CAD = 60° M1 for a method to find CE A1 for 15.9-16.1 with supporting working

PAPER: 1MA0_2H				
Question	Working	Answer	Mark	Notes
20		Shown	3	<p>M1 for correct expansion of $(n + 3)^2$ or $(n - 3)^2$ eg $(n + 3)^2 = n^2 + 6n + 9$ or $(n - 3)^2 = n^2 - 6n + 9$ M1 for correct expansion of complete expression, eg $(n^2 + 6n + 9) - (n^2 - 6n + 9)$ A1 for $12n$ and conclusion</p> <p>OR</p> <p>M1 for $[n + 3 + n - 3][n + 3 - (n - 3)]$ M1 for $2n \times 6$ A1 for conclusion</p>
21	$3^2 \times 180$	1620	2	<p>M1 for using a scale factor of $3^2 (= 9)$ A1 cao</p>
22		1.25	3	<p>M1 $100 - 12 (= 88)$ or 0.88 or $1.1 \div 88 (= 0.0125)$ M1 for complete method, eg $1.1 \div 0.88$ A1 cao (SC B2 for 1250 as answer)</p>
23		22.5	3	<p>M1 for $\frac{1}{2} \times 7 \times 5 \times \sin 40$ or $\frac{1}{2} \times 7 \times 5 \times \sin(180 - 40)$ M1 (dep M1) for doubling the area of the triangle A1 for 22.4 – 22.5</p> <p>OR</p> <p>M1 for complete method to find height of parallelogram, eg $5 \sin 40^\circ$ M1 (dep M1) for complete method to find the area of the parallelogram, eg $7 \times 5 \sin 40^\circ$ A1 for 22.4 – 22.5</p>

PAPER: 1MA0_2H				
Question	Working	Answer	Mark	Notes
24	$\frac{232.5}{202.5} \times 60$	68.9	4	<p>M1 for 232.5 or 237.5 or 197.5(=3.29... hours) or 202.5 (= 3.375 hours)</p> <p>M1 for correct conversion of “upper bound of time” from minutes to hours, (202.5 to 205) ÷ 60</p> <p>M1 for “lower bound of distance” ÷ “upper bound of time” (230 to 232.5) ÷ (3.375 to 3.41(6...))</p> <p>A1 for 68.8 to 69 from correct working</p> <p>OR</p> <p>M1 for 232.5 or 237.5 or 197.5(=3.29... hours) or 202.5 (= 3.375 hours)</p> <p>M1 for “lower bound of distance” ÷ “upper bound of time” (230 to 232.5) ÷ (202.5 to 205)</p> <p>M1 for correct conversion of “lower bound of speed” from miles per minute to miles per hour, ((1.12(1...) to 1.14(8...)) × 60</p> <p>A1 for 68.8 to 69 from correct working</p>
25	$\frac{-4 \pm \sqrt{4^2 - 4 \times 3 \times -12}}{2 \times 3}$	1.44 and -2.77	3	<p>M1 for substitution of $a = 3$, $b = 4$, $c = -12$ into the formula (condone one sign error) or for completing the square</p> <p>M1 for $\frac{-4 \pm \sqrt{160}}{6}$ or in simplified form</p> <p>A1 for answers in the ranges 1.43 to 1.45 and -2.76 to -2.78</p>

PAPER: 1MA0_2H					
Question		Working	Answer	Mark	Notes
26	(a)		(4), 9, 8, 10, 12	2	M1 for correct calculation to find one frequency e.g. 0.9×10 or 1.6×5 or 1×10 or 0.8×15 or for one frequency correct or shows that $1 \text{ cm}^2 = 1$ A1 for all frequencies correct
	(b)		$\frac{8}{43}$	2	M1 for 8 (people) or $\frac{2}{3}$ of "12" A1ft for 8 out of 43 stated as a percentage or fraction or decimal
	(c)		26000	2	M1 ft for finding the interval in which the "21.5 th " or "22 nd " value lies or 26 or 25.5 A1 for 26000 or 25500
27		$\overrightarrow{AB} = \overrightarrow{AO} + \overrightarrow{OB}$ $= \mathbf{a} + \mathbf{b}$ $\overrightarrow{AC} = \frac{7}{2}\overrightarrow{AB}$ $\overrightarrow{OC} = \overrightarrow{OA} + \overrightarrow{AC}$ $= 2\mathbf{a} + \mathbf{b} + \frac{7}{2}(\mathbf{a} + \mathbf{b})$	$\frac{11}{2}\mathbf{a} + \frac{9}{2}\mathbf{b}$	4	M1 for $\overrightarrow{AB} = \overrightarrow{AO} + \overrightarrow{OB}$ ($= -(2\mathbf{a} + \mathbf{b}) + (3\mathbf{a} + 2\mathbf{b})$) or $\mathbf{a} + \mathbf{b}$ M1 for $\overrightarrow{AC} = \frac{7}{2}\overrightarrow{AB}$ or $\overrightarrow{BC} = \frac{5}{2}\overrightarrow{AB}$, may be in terms of \mathbf{a} and \mathbf{b} M1 (dep M2) for complete method to find \overrightarrow{OC} in terms of \mathbf{a} and \mathbf{b} A1 for $\frac{11}{2}\mathbf{a} + \frac{9}{2}\mathbf{b}$ or equivalent simplest form (SCB2 for $\frac{11}{2}\mathbf{a} + \frac{23}{2}\mathbf{b}$ or $\frac{11}{2}\mathbf{a} + \frac{19}{2}\mathbf{b}$)

PAPER: 1MA0_2H				
Question	Working	Answer	Mark	Notes
28	(a)		2	B2 fully correct circle drawn (B1 for circle drawn with centre (0,0) or circle drawn with radius 4) OR M1 at least 5 correct points calculated and plotted A1 fully correct circle drawn
	(b)		3	M1 for $y = 2x + 1$ drawn or for elimination of one variable A1 for one correct pair of values given or for $x = 1.4, -2.2 (\pm 0.2)$ or ft from graph provided 2 marks in (a) A1 for second correct pair of values given (± 0.2) or ft from graph provided 2 marks in (a)
		$x = 1.4, y = 3.8$ $x = -2.2, y = -3.4$		

Modifications to the mark scheme for Modified Large Print (MLP) papers.

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

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:

Angles: $\pm 5^\circ$

Measurements of length: ± 5 mm

PAPER: 1MA0_2H		
Question	Modification	Notes
Q4	Grid is enlarged. 2 rows at the top and 2 columns on the right are removed. The enlargement is drawn on the diagram and the question is reversed. 'Describe fully the single transformation that maps shape P onto shape Q.'	B2 for enlargement, scale factor 2, centre A (B1 for enlargement, or scale factor 2)

PAPER: 1MA0_2H		
Question	Modification	Notes
Q6	Diagrams removed.	<p>M1 for a complete method to find the cost per sachet or the number of sachets per £1 for one size of box</p> <p>M1 for a complete method to find all three comparable figures</p> <p>A1 for 0.47(08. .), 0.46, 0.45 or 2.12(3...), 2.17(..), 2.22 (2..) oe</p> <p>C1(dep on M2) for a comparison of their answers leading to a correct deduction</p> <p>OR</p> <p>M1 for 3 multiples of each of 12, 20 and 35</p> <p>or a common multiple of 12, 20 and 35, eg 420</p> <p>or multipliers to compare the same number of sachets from each box, eg $\times \frac{35}{12}$ and $\times \frac{35}{20}$</p> <p>M1 for a complete method to find three comparable costs</p> <p>A1 for three correct costs, eg 197.75 and 193.20 and 189.00</p> <p>C1(dep on M2) for a comparison of their answers leading to a correct deduction</p>
Q7	(a) MLP only: x changed to p.	B1 cao

PAPER: 1MA0_2H		
Question	Modification	Notes
Q9	(a) In text 51 is changed to 55. Frequencies changed to : 5, 20, 15, 10, 5. Grid is simplified and enlarged. Both axes – 3cm grid with an intermediate line. Label for horizontal axis left aligned. Label for vertical axis placed above the axis.	B2 for correct plotting of 5 points and joining with line segments (B1 for points plotted correctly at midpoints of intervals OR joining points with line segments at the correct heights and consistent within the class interval (including end values) OR correct frequency polygon with one point incorrect OR correct frequency polygon with first and last point joined) NB Ignore any histogram drawn and any part of frequency polygon outside range of first and last points plotted
Q9	(b) In text 51 is changed to 55. Frequencies changed to : 5, 20, 15, 10, 5. Grid is simplified and enlarged. Both axes – 3cm grid with an intermediate line. Label for horizontal axis left aligned. Label for vertical axis placed above the axis.	M1 for finding a quarter of 55 and for finding how many teachers sent more than 30 emails C1 for 13.75 or 14 compared to 15 and yes she is correct OR M1 for finding how many teachers sent more than 30 emails and '15' × 4 C1 for comparing 60 with 55 and yes she is correct OR M1 for $15 \div 55 (= 0.27\dots)$ or $\frac{15}{55} \times 100 (= 27\dots\%)$ C1 for comparing 0.27.. with $\frac{1}{4}$ or 0.25 OR 27....% with 25% and yes she is correct
Q10	Rectangle has been widened so that AD and BC are 12 cm. In text, 8 metres has been changed to 10 metres.	B1 for line parallel to <i>BC</i> and 3 cm from <i>BC</i> B1 for arc drawn, centre <i>C</i> , with radius 5 cm B1 ft for shading a region below their horizontal line and inside their arc

PAPER: 1MA0_2H		
Question	Modification	Notes
Q11	Diagram is enlarged.	<p>M1 for $\pi \times 7$ (= 21.9 to 22) or $\pi \times 7 \times 2.54$ = (55.5 to 56) M1 (dep) for a complete method that could lead to two figures that are comparable eg $\pi \times 7 \times 2.54$; $\pi \times 7$ and $50 \div 2.54$ A1 for correct comparable figures eg 55.5 to 56 (cm); 21.9 to 22 (in) and 19.6 to 19.7 (in) C1 (dep M2) for a correct conclusion based on their comparable figures OR M1 for eg $50 \div \pi$ (= 15.9 to 15.92) or $50 \div 2.54\pi$ (=6.26 to 6.27) M1 (dep) for a complete method that could lead to two figures that are comparable eg $(50 \div \pi) \div 2.54$; $50 \div \pi$ and 7×2.54 A1 for correct comparable figures eg 6.26 to 6.27 (in); 15.9 to 15.92 (cm) and 17.7 to 17.8 (cm) C1 (dep M2) for a correct conclusion based on their comparable figures</p>
Q14	Frequency column has been widened to allow for working.	<p>M1 for finding at least 4 products ft consistently within interval (including end points) M1 (dep) for use of at least 4 correct midpoints. M1 (dep on 1st M) for 'Σft' \div 40 A1 for 116.25</p>
Q17	Diagram is enlarged.	<p>M1 for complete method to find gradient of line N or for drawing a perpendicular line M1 for method to find the gradient of a perpendicular line A1 $y = -\frac{1}{3}x + 1$ oe</p>
Q19	Diagram is enlarged. Angle arc put inside the angle size.	<p>M1 for a method to find BC or AC or AD B1 for angle EAD = 30° or AED = 60° or ACD = 30° or CAD = 60° M1 for a method to find CE A1 for 15.9-16.1 with supporting working</p>

PAPER: 1MA0_2H		
Question	Modification	Notes
Q23	Diagram is enlarged. Angle arc put inside the angle size.	M1 for $\frac{1}{2} \times 7 \times 5 \times \sin 40$ or $\frac{1}{2} \times 7 \times 5 \times \sin(180 - 40)$ M1 (dep M1) for doubling the area of the triangle A1 for 22.4 – 22.5 OR M1 for complete method to find height of parallelogram, eg $5 \sin 40^\circ$ M1 (dep M1) for complete method to find the area of the parallelogram, eg $7 \times 5 \sin 40^\circ$ A1 for 22.4 – 22.5
Q26	(a) Braille only: (i) to(iv) put in the spaces in the frequency table. Diagram enlarged. Label for horizontal axis left aligned. Label for vertical axis placed above the axis. Top row of grid removed.	M1 for correct calculation to find one frequency e.g. 0.9×10 or 1.6×5 or 1×10 or 0.8×15 or for one frequency correct or shows that $1 \text{ cm}^2 = 1$ A1 for all frequencies correct
Q26	(b) Diagram enlarged. Label for horizontal axis left aligned. Label for vertical axis placed above the axis. Top row of grid removed.	M1 for 8 (people) or $\frac{2}{3}$ of “12” A1ft for 8 out of 43 stated as a percentage or fraction or decimal
Q26	(c) Diagram enlarged. Label for horizontal axis left aligned. Label for vertical axis placed above the axis. Top row of grid removed.	M1 ft for finding the interval in which the “21.5 th ” or “22 nd ” value lies or 26 or 25.5 A1 for 26000 or 25500

PAPER: 1MA0_2H		
Question	Modification	Notes
Q27	Diagram enlarged. Lowercase vectors are increased further in size for emphasis.	<p>M1 for $\overrightarrow{AB} = \overrightarrow{AO} + \overrightarrow{OB} (= -(2\mathbf{a} + \mathbf{b}) + (3\mathbf{a} + 2\mathbf{b}))$ or $\mathbf{a} + \mathbf{b}$</p> <p>M1 for $\overrightarrow{AC} = \frac{7}{2}\overrightarrow{AB}$ or $\overrightarrow{BC} = \frac{5}{2}\overrightarrow{AB}$, may be in terms of \mathbf{a} and \mathbf{b}</p> <p>M1 (dep M2) for complete method to find \overrightarrow{OC} in terms of \mathbf{a} and \mathbf{b}</p> <p>A1 for $\frac{11}{2}\mathbf{a} + \frac{9}{2}\mathbf{b}$ or equivalent simplest form</p> <p>(SCB2 for $\frac{11}{2}\mathbf{a} + \frac{23}{2}\mathbf{b}$ or $\frac{11}{2}\mathbf{a} + \frac{19}{2}\mathbf{b}$)</p>
Q28	(a) Grid enlarged and simplified.	<p>B2 fully correct circle drawn (B1 for circle drawn with centre (0,0) or circle drawn with radius 4)</p> <p>OR</p> <p>M1 at least 5 correct points calculated and plotted</p> <p>A1 fully correct circle drawn</p>
Q28	(b) Grid enlarged and simplified.	<p>M1 for $y = 2x + 1$ drawn or for elimination of one variable</p> <p>A1 for one correct pair of values given or for $x = 1.4, -2.2 (\pm 0.2)$ or ft from graph provided 2 marks in (a)</p> <p>A1 for second correct pair of values given (± 0.2) or ft from graph provided 2 marks in (a)</p>

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