

Mark Scheme (Results)

Summer 2014

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

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Summer 2014

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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. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- 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. Examiners should also 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 indicate within the table where, and which strands of QWC, are being assessed. 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.

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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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

Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.

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.

Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

**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.

**11 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.

**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)

**Guidance on the use of codes within this mark scheme**

M1 – method mark  
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              |         | $(4, 5\frac{1}{2})$                                 | 2    | M1 for $\frac{2+6}{2}$ or $\frac{3+8}{2}$ or 4, 5½ without brackets<br>A1 for $(4, 5\frac{1}{2})$ oe<br>NB: $(4,5)$ gets 0 without working                                                                      |
| 2              | (a)     | Points plotted                                      | 1    | B1 for points plotted at $(12, 6)$ and $(13, 2)$                                                                                                                                                                |
|                | (b)     | Description                                         | 1    | B1 for description; accept negative correlation.                                                                                                                                                                |
|                | (c)     | 5 – 7                                               | 2    | M1 for evidence of use of graph eg a single straight line segment with negative gradient that could be used as a line of best fit <b>or</b> an indication on the diagram from 12 on the y axis.<br>A1 for 5 – 7 |
| 3              |         | 2.064(285714...)                                    | 2    | M1 for substitution of 0.7 into expression or 2.89 or 2.06 seen<br>A1 for 2.064(285714...) or $\frac{289}{140}$                                                                                                 |
| 4              |         | 28.3                                                | 2    | M1 for $\pi \times 9$ or $2 \times \pi \times 4.5$ oe<br>A1 for 28.25 – 28.3                                                                                                                                    |
| 5              |         | Translation $\begin{pmatrix} 5 \\ -3 \end{pmatrix}$ | 2    | B1 for translation<br>B1 for $\begin{pmatrix} 5 \\ -3 \end{pmatrix}$<br>NB No marks if more than one transformation given.                                                                                      |
| 6              |         | 2.15 pm                                             | 3    | M1 for $240 \div 60$ (=4)<br>M1 for adding at least 3 of the 4 periods of time eg 20 (mins) + “4 (hrs)” + 25 (mins) + 30 (mins) (=5 h 15 min) oe or 2.15 without units<br>A1 for 2.15 pm 14 15 (h or pm) oe     |

| PAPER: 1MA0_2H |         |                  |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------|---------|------------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Working | Answer           | Mark | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| *7             |         | 54 with reasons  | 3    | <p>M1 for angle <math>RWY</math> or angle <math>TWZ = 180 - 126 (= 54)</math> or angle <math>TWR</math> or angle <math>WRS = 126</math> (may be marked on diagram)<br/> A1 for 54<br/> C1 for appropriate reasons for method shown eg.<br/> <u>Angles</u> on a straight <u>line</u> add up to <u>180</u> and <u>Alternate</u> angles are equal<br/> OR<br/> <u>Corresponding</u> angles are equal and<br/> <u>Angles</u> on a straight <u>line</u> add up to <u>180</u><br/> OR<br/> Vertically <u>opposite</u> angles are equal and<br/> <u>Allied</u> angles / <u>Co-interior</u> angles add up to <u>180</u><br/> OR<br/> <u>Angles</u> at a <u>point</u> add up to <u>360</u> with other reasons as above.</p> |
| 8              | (a)     | $\frac{29}{100}$ | 2    | <p>M1 for <math>13 + 11 + 5 (=29)</math><br/> A1 for <math>\frac{29}{100}</math> oe<br/> (SC B1 for <math>\frac{16}{100}</math> oe)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                | (b)     | 195              | 2    | <p>M1 for <math>1500 \times \frac{13}{100}</math> oe<br/> A1 for 195</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                | (c)     | reasons          | 2    | <p>B2 for 2 valid reasons<br/> eg sample too small, customers at this time may not be representative of ages of all customers<br/> (B1 for 1 reason)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |



| PAPER: 1MA0_2H |         |                |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------|---------|----------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Working | Answer         | Mark | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 9              |         | $5\frac{2}{3}$ | 4    | M1 for $AB = 2x$ or $DC = 2x + 4$ or for $38 - 4$<br>M1(dep) for $x + "x" + "2x" + "2x + 4"$ or for $"38 - 4" \div 6$<br>M1 for $"6x + 4" = 38$<br>A1 for $5\frac{2}{3}$ oe<br>NB: Accept answers in the range 5.6 to 5.7 if M3 scored.<br>SC if M0 then B2 for answer in range 5.6 – 5.7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 10             | (a)     | $p^6$          | 1    | B1 cao                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                | (b)     | $t^5$          | 1    | B1 cao                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                | (c)     | 6              | 1    | B1 cao                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                | (d)     | 4              | 1    | B1 cao                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 11             |         | 186.20         | 5    | M1 for use of consistent units to find volume, $11 \times 4 \times 0.06 (=2.64)$ or $1100 \times 400 \times 6 (=2640000)$<br>M1 (dep on vol calculation) for attempt to find number of bags needed, eg $"2.64" \div 0.4 (=6.6 \rightarrow 7)$<br>M1 for the cost of gravel before discount eg $"6.6" \times 38$ or $"7" \times 38$<br>M1 for attempt to find the total cost after discount $"266" \times 0.7$ oe<br>A1 for 186.2(0)<br>OR<br>M1 for cost of gravel per bag after discount, $38 \times 0.7 (=26.60)$<br>M1 for use of consistent units to find volume, $11 \times 4 \times 0.06 (=2.64)$ or $1100 \times 400 \times 6 (=2640000)$<br>M1 (dep on vol calculation) for attempt to find number of bags needed, eg $"2.64" \div 0.4$<br>M1 for total cost of gravel after discount $"7" \times "26.6"$<br>A1 for 186.2(0) |

| PAPER: 1MA0_2H |     |                                                                          |                     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------|-----|--------------------------------------------------------------------------|---------------------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       |     | Working                                                                  | Answer              | Mark | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 12             | (a) |                                                                          | $5n - 1$            | 2    | B2 for $5n - 1$ oe<br>(B1 for $5n + c$ ( $c \neq -1$ or absent) or $n = 5n - 1$ )                                                                                                                                                                                                                                                                                                                                                                                   |
|                | (b) |                                                                          | $2(3n - n^2)$       | 1    | B1 for $2(3n - n^2)$ oe                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 13             | (a) |                                                                          | $-4, -3, -2, -1, 0$ | 2    | B2 for all 5 correct values; ignore repeats, any order<br>(B1 for 4 correct (and no incorrect) values or all 5 correct values and $-5$ )                                                                                                                                                                                                                                                                                                                            |
|                | (b) |                                                                          | $x > 4\frac{1}{2}$  | 2    | M1 for an attempt to expand brackets (eg $6 \times x - 6 \times 2$ ) or $6x - 12$ or for an intention to divide both sides by 6 as the first step or for $4\frac{1}{2}$ oe seen<br>A1 for $x > 4\frac{1}{2}$ oe                                                                                                                                                                                                                                                     |
| 14             |     | 12, 24, 36, 48, 60, 72, ....<br>8, 16, 24, 32, 40, 48, 56, 64,<br>72,... | 25.80               | 5    | M1 for listing at least 3 multiples of each of 12 and 8 or 24 in two lists of multiples or from factor trees<br>M1 (dep) for attempt to find a common multiple of 12 and 8 above 60 (=72)<br>M1 (dep M2) for method to find the number of boxes <b>and</b> the number of packs $72 \div 12$ (=6) and $72 \div 8$ (=9)<br>M1 for finding the total cost by multiplying numbers by cost and adding eg " $6$ " $\times$ 2.50 + " $9$ " $\times$ 1.20<br>A1 for 25.8(0) |

| PAPER: 1MA0_2H |         |                     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------|---------|---------------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Working | Answer              | Mark | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 15             | (a)     | 7.5                 | 3    | M1 for $4.5^2 + 6^2 (=56.25)$<br>M1 for $\sqrt{56.25}$ or $\sqrt{(4.5^2 + 6^2)}$<br>A1 for 7.5                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                | (b)     | 217                 | 4    | M1 for use of appropriate trig ratio eg $\tan CAB = \frac{4.5}{6} (= 0.75)$ ,<br>$\sin CAB = \frac{4.5}{\text{"7.5"}} (= 0.6)$ , $\cos CAB = \frac{6}{\text{"7.5"}} (= 0.8)$<br>M1 for inverse trig shown correctly eg $CAB = \tan^{-1} \frac{4.5}{6} (= 0.75)$ ,<br>$CAB = \sin^{-1} \frac{4.5}{\text{"7.5"}} (= 0.6)$ , $CAB = \cos^{-1} \frac{6}{\text{"7.5"}} (= 0.8)$<br>A1 for 36.8 to 37 (or 53 to 53.2 if identified as <i>ACB</i> )<br>B1ft for bearing $180 + \text{"36.8"}$ if "36.8" is not 40-50 eg 216.8 to 217 |
| 16             |         | $1.875 \times 10^8$ | 2    | M1 for digits 1875<br>A1 cao                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 17             | (a)     | 7.5                 | 2    | M1 for sight of $\frac{9}{6} (=1.5)$ oe or $\frac{6}{9} (=0.66..)$ oe or $\frac{5}{6} (=0.83..)$ oe or<br>$\frac{6}{5} (=1.2)$ oe or a ratio, eg 6:9 oe or decimal, eg 1.5 oe<br>A1 cao                                                                                                                                                                                                                                                                                                                                       |
|                | (b)     | 8                   | 2    | M1 for $12 \times \frac{6}{9}$ oe or $12 \div \frac{9}{6}$ oe or $\frac{12}{\text{"7.5"}} \times 5$ oe<br>A1 cao                                                                                                                                                                                                                                                                                                                                                                                                              |

| PAPER: 1MA0_2H |         |                                                                                                                                                                                                                                                                                                                             |       |                                                                                                                                                                                                                                                                                    |      |     |     |     |     |     |        |      |    |       |  |  |     |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----|-----|-----|-----|-----|--------|------|----|-------|--|--|-----|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Working | Answer                                                                                                                                                                                                                                                                                                                      | Mark  | Notes                                                                                                                                                                                                                                                                              |      |     |     |     |     |     |        |      |    |       |  |  |     |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 18             | (a)     | 209.69 or 209.70                                                                                                                                                                                                                                                                                                            | 3     | M1 for $200 \times \frac{3.3}{100}$ oe or $200 \times 1.033$ or 6.6(0) or 206.6(0)<br><br>M1 (dep) for $(200 + "6.6") \times \frac{1.5}{100}$ oe or $200 \times 1.033 \times 1.015$ oe or 3.099 or 3.09 or 3.10 or an answer between 209.69 and 209.7<br>A1 for 209.69 or 209.7(0) |      |     |     |     |     |     |        |      |    |       |  |  |     |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                | (b)     | <table style="margin-left: auto; margin-right: auto;"> <tr> <td>Train</td> <td>Pay</td> <td>Diff</td> </tr> <tr> <td>Old</td> <td>200</td> <td>510</td> </tr> <tr> <td>New</td> <td>225</td> <td>535.50</td> </tr> <tr> <td>Diff</td> <td>25</td> <td>25.50</td> </tr> <tr> <td></td> <td></td> <td>50p</td> </tr> </table> | Train | Pay                                                                                                                                                                                                                                                                                | Diff | Old | 200 | 510 | New | 225 | 535.50 | Diff | 25 | 25.50 |  |  | 50p | 3 | Comparison<br><br>M1 for method to find cost of tickets before increase eg $\frac{225}{1.125}$<br><br>(=200) oe or $\frac{225}{112.5} \times 12.5$ oe or pay before increase, $\frac{535.50}{1.05}$<br><br>(=510) oe<br>A1 for 25 (train) <b>and</b> 25.5(0) (pay) or 310 <b>and</b> 310.5(0)<br>C1 (dep on M1) ft for statement comparing rises leading to conclusion based on two comparable amounts eg pay increase greater than train increase |
| Train          | Pay     | Diff                                                                                                                                                                                                                                                                                                                        |       |                                                                                                                                                                                                                                                                                    |      |     |     |     |     |     |        |      |    |       |  |  |     |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Old            | 200     | 510                                                                                                                                                                                                                                                                                                                         |       |                                                                                                                                                                                                                                                                                    |      |     |     |     |     |     |        |      |    |       |  |  |     |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| New            | 225     | 535.50                                                                                                                                                                                                                                                                                                                      |       |                                                                                                                                                                                                                                                                                    |      |     |     |     |     |     |        |      |    |       |  |  |     |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Diff           | 25      | 25.50                                                                                                                                                                                                                                                                                                                       |       |                                                                                                                                                                                                                                                                                    |      |     |     |     |     |     |        |      |    |       |  |  |     |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                |         | 50p                                                                                                                                                                                                                                                                                                                         |       |                                                                                                                                                                                                                                                                                    |      |     |     |     |     |     |        |      |    |       |  |  |     |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 19             |         | (2, 1½, 1)                                                                                                                                                                                                                                                                                                                  | 2     | M1 for finding coordinates of P ( 6, 4, 3) or $OT = \frac{1}{3} OP$ or 2 correct coordinate values<br>A1 oe                                                                                                                                                                        |      |     |     |     |     |     |        |      |    |       |  |  |     |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 20             |         | 75.5                                                                                                                                                                                                                                                                                                                        | 3     | M1 for $25 \times 67.8 (= 1695)$ or $55 \times 72.0 (= 3960)$<br>M1 (dep) for $( "3960" - "1695" ) \div 30$<br>A1 cao                                                                                                                                                              |      |     |     |     |     |     |        |      |    |       |  |  |     |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

| PAPER: 1MA0_2H |      |                                                                                             |                 |      |                                                                                                                                                                                                                                                                                                                         |
|----------------|------|---------------------------------------------------------------------------------------------|-----------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       |      | Working                                                                                     | Answer          | Mark | Notes                                                                                                                                                                                                                                                                                                                   |
| 21             | (a)  | $y^2 - 2y - 5y + 10$                                                                        | $y^2 - 7y + 10$ | 2    | M1 for all 4 terms correct (condone incorrect signs) or 3 out of 4 terms correct with correct signs<br>A1 cao                                                                                                                                                                                                           |
|                | *(b) | $(4n^2 + 2n + 2n + 1)$ $- (2n + 1)$ $= 4n^2 + 4n + 1 - 2n - 1$ $= 4n^2 + 2n$ $= 2n(2n + 1)$ | Proof           | 3    | M1 for 3 out of 4 terms correct in the expansion of $(2n + 1)^2$ or $(2n + 1)\{(2n + 1) - 1\}$<br>A1 for $4n^2 + 2n$ or equivalent expression in factorised form<br>C1 for convincing statement using $2n(2n + 1)$ or $2(2n^2 + n)$ or $4n^2 + 2n$ to prove the result                                                  |
| *22            |      |                                                                                             | Yes             | 3    | M1 for $1 - 0.6 (=0.4)$<br>M1 for $(“0.4”)^3$ oe<br>C1 (dep on M1) for 0.064 oe leading to a correct deduction<br>OR<br>M1 for $1 - \text{Pr}(3H, 0T) - \text{Pr}(2H, 1T) - \text{Pr}(1H, 2T)$ oe<br>M1 for $1 - (0.6)^3 - 3(0.6)^2(0.4) - 3(0.6)(0.4)^2$<br>C1 (dep on M1) for 0.064 oe leading to a correct deduction |
| 23             | (a)  |                                                                                             | Explanation     | 1    | B1 for appropriate explanation eg “a sample in the same proportions as the population”                                                                                                                                                                                                                                  |
|                | (b)  |                                                                                             | 26              | 2    | M1 for $\frac{314}{“599”} \times 50 (=26.2\dots)$<br>A1 cao                                                                                                                                                                                                                                                             |

| PAPER: 1MA0_2H |                                                   |                                     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------|---------------------------------------------------|-------------------------------------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Working                                           | Answer                              | Mark | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 24             |                                                   | 8                                   | 3    | <p>M1 for <math>p = \frac{k}{t}</math> oe (<math>k \neq 1</math>) or <math>12 = \frac{k}{4}</math></p> <p>M1 for correct method to find <math>k</math> or <math>p = \frac{48}{t}</math> oe or (dep on M1) for <math>k=48</math></p> <p>A1 cao</p> <p>OR</p> <p>M1 for <math>\frac{6}{4}</math> oe</p> <p>M1 for <math>12 \div \frac{6}{4}</math> oe</p> <p>A1 cao</p>                                                                                                                                                                                                                  |
| 25             |                                                   | 302                                 | 3    | <p>M1 for <math>\frac{1}{2} \times \frac{4}{3} \times \pi \times 4^3</math> oe (= 133.9 – 134.2)</p> <p>M1 for <math>\frac{1}{3} \times \pi \times 4^2 \times 10</math> oe (= 167.4 – 167.7)</p> <p>A1 for 301 – 302 (or <math>96\pi</math> or <math>\frac{288}{3}\pi</math>)</p>                                                                                                                                                                                                                                                                                                      |
| 26             | $y(5y + 24) = 0$ $\frac{-24 \pm \sqrt{24^2}}{10}$ | $x = 6, y = 0$ $x = -3.6, y = -4.8$ | 5    | <p>M1 for substitution for elimination eg <math>(2y + 6)^2 + y^2 = 36</math></p> <p>M1 (dep on M1) for expansion eg <math>4y^2 + 12y + 12y + 36</math> (3 out of 4 terms correct)</p> <p>A1 for <math>4y^2 + 24y + 36 + y^2 = 36</math> oe</p> <p>M1 for a correct attempt to solve a 2 or 3 term quadratic equation eg by factorising or correct substitution into a quadratic formula</p> <p>A1 for <math>x = 6, y = 0</math> and <math>x = -3.6</math> oe, <math>y = -4.8</math> oe</p> <p>SC: B1 (if M0 scored) for all 4 values mis-associated or one correct pair of values.</p> |

| PAPER: 1MA0_2H |         |        |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------|---------|--------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Working | Answer | Mark | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 27             |         | 43.9   | 5    | <p>M1 for <math>\frac{11}{\sin 100} = \frac{9}{\sin D}</math> oe</p> <p>M1 for <math>\sin D = \frac{9 \sin 100}{11}</math> (=0.80575...) or <math>D = 53.68...</math></p> <p>M1 for angle <math>DCA = 180 - 100 - "D"</math> (=26.317..)</p> <p>M1 for area of <math>ABCD = 2 \times \frac{1}{2} \times 11 \times 9 \times \sin "26.317"</math></p> <p>A1 for 43.8 – 43.9</p> <p><b>OR</b></p> <p>M1 for <math>\frac{11}{\sin 100} = \frac{9}{\sin D}</math> oe</p> <p>M1 for <math>\sin D = \frac{9 \sin 100}{11}</math> (=0.80575...) or <math>D = 53.68...</math></p> <p>M1 for (height=) <math>9 \times \sin (180 - 100 - "D")</math> or height = 3.990...</p> <p>M1 for area of <math>ABCD = (2 \times \frac{1}{2}) \times 11 \times \text{"height"}</math></p> <p>A1 for 43.8 – 43.9</p> <p><b>OR</b></p> <p>M1 for <math>11^2 = AD^2 + 9^2 - 2 \times AD \times 9 \times \cos 100</math></p> <p>M1 for <math>AD = \frac{18 \cos 100 + \sqrt{(18 \cos 100)^2 - 4(1)(-40)}}{2(1)}</math></p> <p>M1 for <math>AD = \frac{18 \cos 100 + \sqrt{169.7(69795...)}}{2(1)}</math> (= 4.95195(...))</p> <p>M1 for area of <math>ABCD = 2 \times \frac{1}{2} \times "4.95195" \times 9 \times \sin 100</math></p> <p>A1 for 43.8 – 43.9</p> |





## 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:  $\pm 5$  mm

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| PAPER: 1MA0_2H |     |                                                                |                      |
|----------------|-----|----------------------------------------------------------------|----------------------|
| Question       |     | Modification                                                   | Notes                |
| Q02            |     | 1 ½cm grid (Crosses changed to solid circles )                 | Standard mark scheme |
| Q03            | (a) | MLP only: $x$ changed to $y$ .                                 | Standard mark scheme |
| Q09            | (b) | On the diagram, AD is labelled as $x$ cm                       | Standard mark scheme |
| Q19            |     | model provided as well as diagram<br>OP joined                 | Standard mark scheme |
| Q25            |     | model provided as well as a diagram                            | Standard mark scheme |
| Q27            |     | Wording inserted “AB is parallel to DC. AD is parallel to BC”. | Standard mark scheme |





