



# Mark Scheme (Results)

November 2021

Pearson Edexcel GCSE  
In Mathematics (1MA1)  
Foundation (Calculator) Paper 2F

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November 2021

Question Paper Log Number P64631A

Publications Code 1MA1\_2F\_2111\_MS

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## General marking guidance

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

- 1** All candidates must receive the same treatment. Examiners must mark the last candidate in exactly the same way as they mark the first. Where some judgement is required, mark schemes will provide the principles by which marks will be awarded; exemplification/indicative content will not be exhaustive. When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the response should be sent to review.
- 2** All the marks on the mark scheme are designed to be awarded; mark schemes should be applied positively. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme. If there is a wrong answer (or no answer) indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.

**Questions where working is not required:** In general, the correct answer should be given full marks.

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

- 3** **Crossed out work**  
This should be marked **unless** the candidate has replaced it with an alternative response.
- 4** **Choice of method**  
If there is a choice of methods shown, mark the method that leads to the answer given on the answer line.  
If no answer appears on the answer line, mark both methods **then award the lower number of marks.**
- 5** **Incorrect method**  
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review for your Team Leader to check.
- 6** **Follow through marks**  
Follow through marks which involve a single stage calculation can be awarded without working as you can check the answer, but if ambiguous do not award.  
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

**7 Ignoring subsequent work**

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

It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect (eg. incorrect algebraic simplification).

**8 Probability**

Probability answers must be given as a fraction, percentage or decimal. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).

Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.

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

**9 Linear equations**

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

**10 Range of answers**

Unless otherwise stated, when an answer is given as a range (eg 3.5 – 4.2) then this is inclusive of the end points (eg 3.5, 4.2) and all numbers within the range

**11 Number in brackets after a calculation**

Where there is a number in brackets after a calculation eg  $2 \times 6 (=12)$  then the mark can be awarded **either** for the correct method, implied by the calculation **or** for the correct answer to the calculation.

**12 Use of inverted commas**

Some numbers in the mark scheme will appear inside inverted commas eg “12”  $\times$  50 ; the number in inverted commas cannot be any number – it must come from a correct method or process but the candidate may make an arithmetic error in their working.

**13 Word in square brackets**

Where a word is used in square brackets eg [area]  $\times$  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

|              |                                                                                                                                                                                          |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>M</b>     | method mark awarded for a correct method or partial method                                                                                                                               |
| <b>P</b>     | process mark awarded for a correct process as part of a problem solving question                                                                                                         |
| <b>A</b>     | 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) |
| <b>C</b>     | communication mark awarded for a fully correct statement(s) with no contradiction or ambiguity                                                                                           |
| <b>B</b>     | unconditional accuracy mark (no method needed)                                                                                                                                           |
| <b>oe</b>    | or equivalent                                                                                                                                                                            |
| <b>cao</b>   | correct answer only                                                                                                                                                                      |
| <b>ft</b>    | follow through (when appropriate as per mark scheme)                                                                                                                                     |
| <b>sc</b>    | special case                                                                                                                                                                             |
| <b>dep</b>   | dependent (on a previous mark)                                                                                                                                                           |
| <b>indep</b> | independent                                                                                                                                                                              |
| <b>awrt</b>  | answer which rounds to                                                                                                                                                                   |
| <b>isw</b>   | ignore subsequent working                                                                                                                                                                |

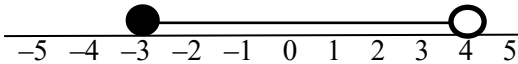
| Paper: 1MA1/2F |                            |                        |                                                                                                                                                           |                                                                                                                                                                        |
|----------------|----------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer                     | Mark                   | Mark scheme                                                                                                                                               | Additional guidance                                                                                                                                                    |
| 1              | $\frac{31}{100}$ oe        | B1                     | for $\frac{31}{100}$ or any equivalent fraction                                                                                                           | Ignore any attempt at simplification of $\frac{31}{100}$                                                                                                               |
| 2              | 300                        | B1                     | cao                                                                                                                                                       |                                                                                                                                                                        |
| 3              | 0.12, 0.21, 1.02, 1.20     | B1                     | accept 1.20, 1.02, 0.21, 0.12                                                                                                                             |                                                                                                                                                                        |
| 4 (a)          | 4m                         | B1                     | cao                                                                                                                                                       |                                                                                                                                                                        |
| (b)            | 3p                         | B1                     | cao                                                                                                                                                       |                                                                                                                                                                        |
| 5              | 7cm by 4cm rectangle drawn | M1<br><br>A1           | for a rectangle drawn with one correct dimension<br><b>or</b> $35 \div 5 (=7)$ and $20 \div 5 (=4)$<br><br>for a fully correct 7cm by 4cm rectangle drawn | Correct calculations/measurements seen the method mark can be awarded even if the drawing is incorrect or not present<br>Accept any orientation of a correct rectangle |
| 6 (a)          | 25                         | B1                     | cao                                                                                                                                                       |                                                                                                                                                                        |
| (b)            | 24                         | B1                     | cao                                                                                                                                                       |                                                                                                                                                                        |
| 7              | 780                        | P1<br><br>P1<br><br>A1 | for $2500 - 940 (= 1560)$<br><b>or</b> $2500 \div 2 (=1250)$ and $940 \div 2 (=470)$<br><br>for “1560” $\div 2$ <b>or</b> “1250” – “470”<br><br>cao       |                                                                                                                                                                        |

| Paper: 1MA1/2F |                 |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                          |
|----------------|-----------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| Question       | Answer          | Mark                   | Mark scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Additional guidance                                                                                      |
| 8              | 7               | P1<br><br>P1<br><br>A1 | for $6 + 4 + 5 + 8 + 7 + 5 (= 35)$<br><br>for “35” $\div 5$<br><br>cao                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Working may be seen on the diagram<br>Allow one error in the 6 readings; intention to add must be clear. |
| 9              | Explanation     | C1                     | for explanation,<br><br><b>Acceptable examples</b><br>Answer should be 14<br>Should work out $3 \times 4$ first<br>Alec should times first instead of adding<br>Not used BIDMAS/BODMAS<br>BIDMAS/BODMAS<br>He has done it in the wrong order<br>Alec needs to use brackets so $2 + (3 \times 4)$<br>Because you always do multiplication or division first<br><br><b>Not acceptable examples</b><br>Because the answer is wrong<br>It is $2 + (3 \times 4) = 15$<br>It needs brackets<br>Because working out should only be one sum |                                                                                                          |
| 10             | $\frac{17}{30}$ | B1                     | for $\frac{17}{30}$ or any equivalent fraction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                          |
| 11             | Reflection      | M1<br><br>A1           | for a correct reflection of the shape in any horizontal line other than the given mirror line<br><br>for a fully correct reflection                                                                                                                                                                                                                                                                                                                                                                                                 | Allow free hand drawing                                                                                  |

| Paper: 1MA1/2F |                                                      |      |                                                                                                                                                                             |                                                                                                                                         |
|----------------|------------------------------------------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer                                               | Mark | Mark scheme                                                                                                                                                                 | Additional guidance                                                                                                                     |
| 12 (a)         | 1.844977205                                          | M1   | for 3.403(940887) or 3.717(526059) or 2.014(944168) or 1.84(...) or 1.8(...)                                                                                                | Accept consistent use of a comma to indicate a decimal point                                                                            |
|                |                                                      | A1   | for 1.844(977205)                                                                                                                                                           | Answer must be given to at least 3 decimal places rounded or truncated                                                                  |
| (b)            | 1.84                                                 | B1   | for 1.84 or ft from (a) provided answer to (a) has at least 3 dp                                                                                                            |                                                                                                                                         |
| 13 (i)         | 21                                                   | M1   | for $180 - 75 - 84$                                                                                                                                                         | Angle may be indicated on the diagram                                                                                                   |
|                |                                                      | A1   | cao                                                                                                                                                                         |                                                                                                                                         |
| (ii)           | Reason given                                         | C1   | for reason that <u>Angles</u> on a straight <u>line</u> add up to 180                                                                                                       | The key words underlined must be present<br>There should be no incorrect reasons given                                                  |
| 14 (a)         | 15                                                   | B1   | 14 to 16                                                                                                                                                                    |                                                                                                                                         |
| (b)            | 540                                                  | M1   | for a complete method,<br>eg $30 \times (36 \div 2)$ <b>or</b> $45 \times (36 \div 3)$ <b>or</b> $60 \times (36 \div 4)$<br><b>or</b> ft “hourly rate from (a)” $\times 36$ | May be seen using a complete build up method<br>for “45” allow 44 to 46 ft for accuracy                                                 |
|                |                                                      | A1   | for 540 <b>or</b> ft (a)                                                                                                                                                    | Condone use of mixed rates<br>eg $75 \times 7 + 16 = 541$                                                                               |
| 15             | $\frac{4}{9}, \frac{3}{5}, \frac{5}{8}, \frac{2}{3}$ | M1   | converts into decimals or percentages or equivalent fractions,<br>at least 2 conversions correct<br><b>or</b> for any 3 fractions in correct order                          | 0.44(...), 0.6, 0.625, 0.66(...)                                                                                                        |
|                |                                                      | A1   | for $\frac{4}{9}, \frac{3}{5}, \frac{5}{8}, \frac{2}{3}$                                                                                                                    | Accept in reverse order for this mark<br>Accept expressed in equivalent decimals or percentages or fractions or in mixed numerical form |

| Paper: 1MA1/2F |                  |      |                                                                                                                                                                                                                                                                 |                                                                                         |
|----------------|------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| Question       | Answer           | Mark | Mark scheme                                                                                                                                                                                                                                                     | Additional guidance                                                                     |
| 16 (a)         | 120              | M1   | for sensible use of proportion eg $\frac{135}{90} (= 1.5)$ <b>or</b> $\frac{90}{135} (= \frac{2}{3})$ <b>or</b><br>$135 \times 4 (= 540)$ <b>or</b> $135 \div 9 (=15)$ <b>or</b> $80 \div 90 (= 0.888...)$                                                      | ie $135 \div 9$ but not $135 \div 10$ without $80 \div 9$                               |
|                |                  | M1   | for a complete method eg $80 \times "1.5"$ <b>or</b> $80 \div "\frac{2}{3}"$ <b>or</b> $"540" \times \frac{80}{360}$<br><b>or</b> $"15" \times 8$ <b>or</b> $"0.888..." \times 135$                                                                             |                                                                                         |
|                |                  | A1   | cao                                                                                                                                                                                                                                                             |                                                                                         |
| (b)            | $\frac{50}{540}$ | M1   | for method to find total number of cars,<br>eg $135 \times \frac{360}{90} (= 540)$ <b>or</b> for $\frac{50}{135} \times \frac{1}{4}$ oe<br><b>or</b> begins to work with probability by using a numerator of 50 eg $\frac{50}{a}$<br>where a >50 and an integer |                                                                                         |
|                |                  | A1   | for $\frac{50}{540}$ oe ft "540" from part (a)                                                                                                                                                                                                                  | Accept any equivalent fraction, decimal<br>form 0.09(25..) or percentage form 9(.25..)% |

| Paper: 1MA1/2F |                              |                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                  |
|----------------|------------------------------|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer                       | Mark                                       | Mark scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Additional guidance                                                                                                                                                                                                                                                              |
| 17             | 7<br>22 15<br><br>38 29<br>9 | C1<br><br>M1<br><br>M1<br><br>M1<br><br>A1 | for correctly placing one of the given values in the diagram eg 38 women or 15 men email<br><br>for 60 – 38 (=22) <b>or</b> 22 (men) correctly placed in the diagram <b>or</b> 60 – 38 – 15 (=7) <b>or</b> 7 (men texting) correctly placed in the diagram<br><br>for a method to find 60% of 60, eg. $60 \times 0.6$ (= 36)<br><br>for calculating with 60% of 60 eg “36” – (“22” – 15) (= 29) <b>or</b> “36” – “7” (=29) <b>or</b> (60 – “36”) – 15 (= 9)<br><br>for a fully correct frequency diagram | May be implied by the total number of texts in the frequency diagram being 36<br>9 or 29 on the diagram (women branch) gets the two M marks for finding and calculating with 60% of 60<br>If probabilities used instead of frequencies then maximum of C1M1M1M1A0 can be awarded |
| 18             | 13                           | P1<br><br>P1<br><br>A1                     | for at least two of $3 \times 5$ (=15) or $2.5 \times 8$ (=20) or $1.5 \times 14$ (=21) or $1 \times 10$ (=10) <b>or</b> for $3 \times 5 + 2.5 \times 8 + 1.5 \times 14 + 1 \times 10$ (=66)<br><br>for process to find length of all 2m planks, eg. $92 - (3 \times 5 + 2.5 \times 8 + 1.5 \times 14 + 1 \times 10)$ (= 26) or $92 - “15” - “20” - “21” - “10”$ (= 26)<br><br>cao                                                                                                                       | Note 66 on its own will score this mark<br><br>If no calculations are seen for products allow one error in “15”, “20”, “21”, “10”<br><br>13 in the correct place in the table should be accepted as the final answer                                                             |
| 19             | No (supported)               | P1<br>P1<br>P1<br><br>C1                   | for a process to find Rachel’s share, eg $600 \div 5 \times 2$ (= 240)<br><br>for process to find Samina’s share eg $(600 - “240”) \div 4$ (= 90)<br><br>for a process to find either of Tom’s share, eg $600 - “240” - “90”$ (= 270) <b>or</b> $3 \times “90”$ (=270) <b>or</b> $600 \div 3$ (= 200) for comparison purposes<br><br>for “No” and accurate figures eg 270 and 200 <b>or</b> 270 and 70 (difference)                                                                                      | Note This mark, if awarded for 200, may be the only mark awarded<br><br>“No” may be implied by a statement<br>Answer only with no working, no marks                                                                                                                              |

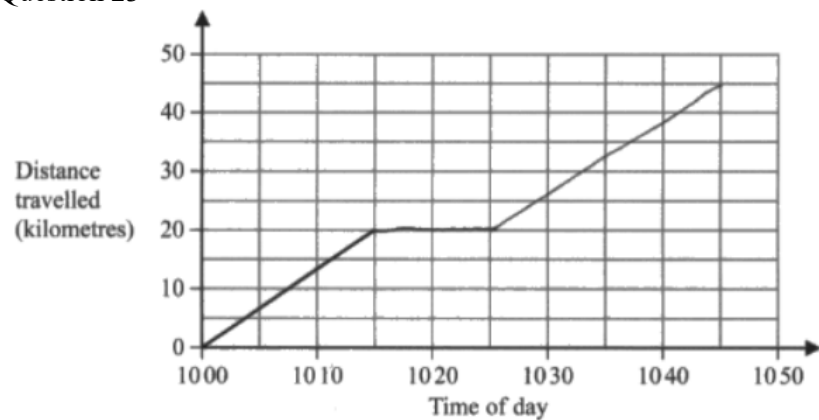
| Paper: 1MA1/2F |     |               |      |                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                |
|----------------|-----|---------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       |     | Answer        | Mark | Mark scheme                                                                                                                                                                                                                                                                                                                             | Additional guidance                                                                                                                                                                                            |
| 20             | (a) | $c^3$         | B1   | cao                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                |
|                | (b) | $d^{12}$      | B1   | cao                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                |
| 21             | (a) | $x > -1$      | B1   | cao                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                |
|                | (b) | Diagram drawn | C2   | for a fully correct diagram,<br><br>eg                                                                                                                                                                                                                | Condone arrow heads or line ending to denote the 'end' of the line                                                                                                                                             |
|                |     |               | (C1  | for drawing a line from $-3$ to $4$<br><b>or</b> (indep) for an open circle at $4$<br><b>or</b> (indep) for a closed circle at $-3$ )                                                                                                                                                                                                   |                                                                                                                                                                                                                |
| 22             | (a) | 12            | M1   | for a correct factor tree for either 60 <b>or</b> 84 with no more than one arithmetic error<br><b>or</b> for listing factors of 60 <b>or</b> 84, at least 4 correct for either (with no more than 1 incorrect in either list), could be in factor pairs<br><b>or</b> for the prime factors of 60 (2, 2, 3, 5) <b>or</b> 84 (2, 2, 3, 7) | Condone the use of 1 in any factor tree<br>60: 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60<br>84: 1, 2, 3, 4, 6, 7, 12, 14, 21, 28, 42, 84                                                                        |
|                |     |               | A1   | for 12 or $2 \times 2 \times 3$ oe<br>SC B1 for answer of 4 or 6, if M0 scored                                                                                                                                                                                                                                                          | 2,2,3 is not enough, it must be a product                                                                                                                                                                      |
|                | (b) | 120           | M1   | for a correct factor tree for either 24 <b>or</b> 40 with no more than one arithmetic error<br><b>or</b> for at least 3 multiples of both 24 and 40 (can include 24 and 40)<br><b>or</b> for the prime factors of either 24 (2, 2, 2, 3) <b>or</b> 40 (2, 2, 2, 5) <b>or</b> for a common multiple from their lists ( $\neq 120$ )      | Condone the use of 1 in any factor tree<br>24: 24, 48, 72, 96, 120, ...<br>40: 40, 80, 120, ...<br>For the list not containing 120, accept the first 3 correct multiples or one error in the first 4 multiples |
|                |     |               | A1   | for 120 or $2 \times 2 \times 2 \times 3 \times 5$ oe                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                |

| Paper: 1MA1/2F |                               |      |                                                                                                                                                                                                      |                                                                                                                                                                  |
|----------------|-------------------------------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer                        | Mark | Mark scheme                                                                                                                                                                                          | Additional guidance                                                                                                                                              |
| 23 (a)         | 80                            | M1   | for a complete method eg $\frac{20}{15} \times 60$ <b>or</b> $20 \times 4$ <b>or</b> $20 \div \frac{1}{4}$                                                                                           | Can be implied by a distance of 25km drawn on the graph                                                                                                          |
|                |                               | A1   | cao                                                                                                                                                                                                  |                                                                                                                                                                  |
| (b)            | Travel graph                  | M1   | for method to find distance travelled in last 20 minutes, eg $75 \times \frac{20}{60}$ (= 25)                                                                                                        |                                                                                                                                                                  |
|                |                               | C2   | for a fully correct travel graph                                                                                                                                                                     |                                                                                                                                                                  |
|                |                               | (C1  | for horizontal straight line from (10 15, 20) to (10 25, 20) <b>or</b> for a line of the correct length and gradient to indicate a speed of 75km/h eg straight line from (10 25, 20) to (10 45, 45)) |                                                                                                                                                                  |
| 24 (a)         | (10), 5, (2), 1, 2, (5), 10   | B2   | for all 4 values correct                                                                                                                                                                             | Accept a freehand curve drawn that is not made of line segments<br><br>If answers stated as coordinates, award M1 for both coordinates and M0 for one coordinate |
|                |                               | (B1  | for 2 or 3 correct values)                                                                                                                                                                           |                                                                                                                                                                  |
| (b)            | Graph                         | M1   | ft (dep on B1) for plotting at least 5 of their points correctly                                                                                                                                     |                                                                                                                                                                  |
|                |                               | A1   | for a fully correct curve drawn                                                                                                                                                                      |                                                                                                                                                                  |
| (c)            | −0.65 to −0.8 and 2.65 to 2.8 | M1   | for $y = 4$ drawn <b>or</b> intersection with $y = 4$ <b>or</b> $y = x^2 - 2x - 2$ drawn <b>or</b> 1 correct value (ft a quadratic)                                                                  |                                                                                                                                                                  |
|                |                               | A1   | ft a quadratic graph <b>or</b> for answers in the range 2.65 to 2.8 <b>and</b> −0.65 to −0.8                                                                                                         |                                                                                                                                                                  |

| Paper: 1MA1/2F |        |      |                                                                                                                                                          |                                                                                                                                                                                                                           |
|----------------|--------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer | Mark | Mark scheme                                                                                                                                              | Additional guidance                                                                                                                                                                                                       |
| 25             | 41.6   | P1   | for start of process to find the length of the hypotenuse,<br>eg $(\text{hyp}^2 =) 8^2 + 10^2 (= 164)$                                                   | Note lengths may be seen on the diagram<br><br>8 + 8 + “12.8” + “12.8” oe is acceptable for this mark<br><br>If an answer in the range 41 to 42 is given in the working space then incorrectly rounded, award full marks. |
|                |        | P1   | for complete process to find hypotenuse,<br>eg $\sqrt{8^2 + 10^2}$ <b>or</b> $\sqrt{64 + 100}$ <b>or</b> $2\sqrt{41}$ <b>or</b> $\sqrt{164}$ (= 12.8...) |                                                                                                                                                                                                                           |
|                |        | P1   | (dep P2) for complete process to find the required perimeter,<br>eg $8 + 8 + 10 + \text{“12.8”} + \text{“12.8 - 10”}$ <b>or</b> $16 + 4\sqrt{41}$        |                                                                                                                                                                                                                           |
|                |        | A1   | for answer in the range 41 to 42                                                                                                                         |                                                                                                                                                                                                                           |
| 26 (a)         | 17.8   | M1   | for $\tan 56 = \frac{x}{12}$ or $(BC) = 12 \times \tan 56$ oe<br><b>or</b> alternative method to find $BC$                                               | For any alternative method candidates must arrive at an equation with $BC$ as the only unknown                                                                                                                            |
|                |        | A1   | for an answer in the range 17.7 to 17.8                                                                                                                  | If an answer in the range 17.7 to 17.8 is given in the working space then incorrectly rounded, award full marks.                                                                                                          |
| (b)            | 33.6   | M1   | for $\cos x = \frac{15}{18}$ <b>or</b> $\cos x = 0.83\ldots$ <b>or</b> $x = \cos^{-1} \frac{15}{18}$<br><b>or</b> alternative method to find $x$         | For any alternative method candidates must arrive at an equation with $x$ as the only unknown                                                                                                                             |
|                |        | A1   | for an answer in the range 33.5 to 33.91                                                                                                                 | If an answer in the range 33.5 to 33.91 is given in the working space then incorrectly rounded, award full marks.                                                                                                         |

| Paper: 1MA1/2F |         |      |                                                                                                 |                                                                                           |
|----------------|---------|------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| Question       | Answer  | Mark | Mark scheme                                                                                     | Additional guidance                                                                       |
| 27             | -2, 9   | M1   | for $(x \pm 2)(x \pm 9)$ <b>or</b> for $(x + a)(x + b)$ where either $ab = -18$ or $a + b = -7$ | Sight of one correct answer as the final answer can gain one mark with or without working |
|                |         |      | <b>or</b> one correct answer                                                                    |                                                                                           |
|                |         | M1   | for $(x + 2)(x - 9)$                                                                            |                                                                                           |
|                |         | A1   | cao                                                                                             |                                                                                           |
| 28             | 320 000 | M1   | for a complete method eg $272\ 000 \div (\frac{100-15}{100})$                                   |                                                                                           |
|                |         | A1   | cao                                                                                             |                                                                                           |

Question 23



## Modifications to the mark scheme for Modified Large Print (MLP) papers: 1MA1 2F

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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|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| Question       | Modification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Mark scheme notes    |
| 3              | Wording added 'Write the following four numbers...'.<br>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Standard mark scheme |
| 5              | Wording added 'Look at the diagram and the grid for Question 5 in the Diagram Booklet.'<br>Wording added 'The diagram shows a rectangle with length 35 metres and width 20 metres.'<br>Diagram enlarged.<br>Wording 'On the centimetre grid below...' removed and replaced with 'On the grid in the Diagram Booklet, draw an accurate scale drawing of the rectangle.'<br>Wording 'Use a scale of 1 cm...' removed and replaced with 'Use a scale of 1 square length on the grid represents 5 metres.'<br>Braille has chosen to use some alternative wording:<br>'The diagram shows a rectangle and a grid of squares. The rectangle has a length of 35 m and a width of 20 m. Each square on the grid represents a one centimetre square.'; 'Use a scale of 1 cm to represent 5 m'; a spare diagram is also provided, with Wikki Stix and drawing film,<br> | Standard mark scheme |
| 6              | Wording added 'Below is a list of ten whole numbers.'<br>For Braille this is: 'Look at the list of ten whole numbers from 21 to 30 shown below.'<br>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Standard mark scheme |
| 8              | Wording added 'Look at the diagram for Question 8 in the Diagram Booklet. It shows a vertical line graph.' The number 5 changed to the word 'five'.<br>Diagram enlarged. The graph lines made slightly thicker. Right axis labelled.<br>Axes labels moved to the top of the vertical axis and to the left of the horizontal axis.<br>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Standard mark scheme |

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| <b>Question</b> |  | <b>Modification</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Mark scheme notes</b> |
|-----------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| 11              |  | Wording added 'Look at the diagram for Question 11 in the Diagram Booklet. It shows shape A on a grid.' The shape of the triangle changed to a $2 \times 2$ right-angled triangle.<br>Diagram enlarged. Shading changed to dotted shading.<br>'mirror line' labelled on both sides of the diagram.<br>A shape may be provided. Wording added 'A cut out shape may be available if you wish to use it.'                                                                                                             | Standard mark scheme     |
| 13              |  | Wording added 'Look at the diagram for Question 13 in the Diagram Booklet. It shows the straight line $RST$ .' For Braille the levels $U$ and $V$ have been added to the ends of the unmarked lines.<br>Wording added 'The angles $x^\circ$ , $75^\circ$ and $84^\circ$ are marked on the straight line.'<br>Diagram enlarged. Angles moved outside of the angle arcs and the angle arcs made smaller.<br>Also for Braille: 'In the diagram, angle $VST = 84^\circ$ angle $VSU = 75^\circ$ angle $USR = x^\circ$ ' | Standard mark scheme     |
| 14              |  | Wording added 'Look at the diagram for Question 14 in the Diagram Booklet. Nazima uses the graph...'.<br>Diagram enlarged. Right axis labelled. Small squares removed. Open headed arrows.<br>Axes labels moved to the top of the vertical axis and to the left of the horizontal axis.                                                                                                                                                                                                                            | Standard mark scheme     |
| 15              |  | Wording added 'Write the following four fractions...'.<br>                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Standard mark scheme     |
| 16              |  | Wording added 'Look at the diagram for Question 16 in the diagram book. It shows a pie chart which gives...'.<br>Wording added 'There are black cars, white cars and cars in other colours.'<br>Diagram enlarged. Right angle made more obvious.<br>Angle moved outside of the angle arc and the angle arc made smaller.<br>Also for Braille: 'The black sector makes a right angle at the centre. The white sector makes an angle of $80^\circ$ at the centre.'                                                   | Standard mark scheme     |

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| <b>Question</b> |     | <b>Modification</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>Mark scheme notes</b>                       |
|-----------------|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| 17              |     | Wording added 'Look at the diagram for Question 17 in the Diagram Booklet. It shows an incomplete frequency tree.'<br>Wording added 'Complete the frequency tree in the Diagram Booklet for this information. There are six spaces to fill.'<br>Diagram enlarged. The labels moved above the circles.<br>Braille: Alternative sentence "The diagram shows an incomplete frequency tree."<br>Letters added: (i), (ii), (iii), (iv), (v) & (vi) in the blank spaces.<br>'Ans: (i) __ (ii) __ (iii) __ (iv) __ (v) __ (vi) __' | Standard mark scheme.                          |
| 18              |     | Wording added 'Look at the incomplete table for Question 18 in the Diagram Booklet. It gives...'.<br>The 'Number of planks' column widened if candidate wants to use it for working out space.<br>Table enlarged.<br>Braille: Alternative wording "The incomplete table below gives..."<br>Letters added: (i) in the blank space on the table. 'Ans: (i) __ planks'                                                                                                                                                         | Standard mark scheme                           |
| 20              | (a) | The letter $c$ changed to $p$ .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Standard mark scheme but note change of letter |
| 20              | (b) | The letter $d$ changed to $q$ .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Standard mark scheme but note change of letter |
| 21              | (a) | Wording added 'Look at the diagram for Question 21(a) in the Diagram Booklet. It shows a number line.'<br>Wording 'shown on this number line' removed and replaced with 'shown on the number line.'<br>Diagram enlarged. The scale cut at $-3$ , but $-3$ still marked.<br>Axis label moved to the right. Scale markings moved above and below.<br>Open headed arrows and shortened at the end of the scale.                                                                                                                | Standard mark scheme                           |

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| <b>Question</b> |     | <b>Modification</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>Mark scheme notes</b>                                                                             |
|-----------------|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| 21              | (b) | <p>Wording added ‘Look at the diagram for Question 21(b) in the Diagram Booklet. It shows a blank number line.’</p> <p>Diagram enlarged. The scale cut at <math>-4</math>, but <math>-4</math> still marked.</p> <p>Open headed arrow and shortened at the end of the scale.</p> <p>Axis label moved to the right. Scale markings moved above and below.</p> <p>Braille: a spare diagram is provided with 4 round bumpons, 4 square bumpons, Wikki Stix and drawing film.</p>                                                                                                                                                                                                                                                                                     | Standard mark scheme                                                                                 |
| 23              |     | <p>Wording added ‘Look at the diagram for Question 23 in the Diagram Booklet.’</p> <p>Wording added ‘The travel graph for the first 15 minutes of his journey is shown in the Diagram Booklet.’</p> <p>Diagram enlarged. Right axis labelled. Open headed arrows.</p> <p>Axes labels moved to the top of the vertical axis and to the left of the horizontal axis.</p> <p>In (b) Wording added ‘On the grid in the Diagram Booklet,...’.</p> <p>Braille: time shown with colons.</p> <p>Braille alternative wording: ‘The diagram shows an incomplete travel graph for Sam’s car journey.’ ‘The first 15 minutes of his journey is represented on the graph.’</p> <p>In part (b) for Braille a spare diagram is provided with 6 round bumpons and Wikki Stix.</p> | Standard mark scheme                                                                                 |
| 24              | (a) | <p>Table enlarged and turned vertical. Wording added ‘There are four spaces to fill.’</p> <p>Braille: In the table (i), (ii), (iii), &amp; (iv) in the blank spaces, then ‘Ans: (i) __ (ii) __ (iii) __ (iv) __’</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Standard mark scheme                                                                                 |
| 24              | (b) | <p>Wording added ‘Look at the diagram for Question 24(b) in the Diagram booklet. It shows a grid.’</p> <p>Diagram enlarged. Small squares removed. Open headed arrows.</p> <p>Axes labels moved to the top of the vertical axis and to the right of the horizontal axis.</p> <p>Braille: a spare diagram is provided with 16 round bumpons and Wikki Stix.</p>                                                                                                                                                                                                                                                                                                                                                                                                    | Standard mark scheme but in part (c) answers in the ranges<br>2.6 to 2.9 <b>and</b> $-0.6$ to $-0.9$ |

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| <b>Question</b> |     | <b>Modification</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>Mark scheme notes</b> |
|-----------------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| 25              |     | Wording added 'Look at Diagram 1 and Diagram 2 for Question 25 in the Diagram Booklet. Diagram 1 shows a right-angled triangle labelled shape A with a base length of 10 mm and a vertical height of 8 mm.'<br>Diagrams enlarged. Right angles made more obvious.<br>Wording added 'Diagram 2 is a shaded shape made from two shape A triangles.'<br>'shape A' wording added inside the triangles.<br>Wording 'Work out the perimeter of the shaded shape in Diagram 2.' | Standard mark scheme     |
| 26              | (a) | Wording added 'Look at the diagram for Question 26(a) in the Diagram Booklet. It shows a right-angled triangle, $ABC$ .'<br>Wording added: ' $AC = 12$ cm, Angle $BAC = 56^\circ$ , Angle $CAB$ is a right angle.'<br>Diagram enlarged. Right angle made more obvious.<br>Angle moved outside of the angle arc and the angle arc made smaller.                                                                                                                           | Standard mark scheme     |
| 26              | (b) | Wording added 'Look at the diagram for Question 26(b) in the Diagram Booklet. It shows a right-angled triangle, $PQR$ .'<br>Wording added: ' $PR = 18$ cm, $RQ = 15$ cm , Angle $PQR$ is a right angle , Angle $PRQ$ is marked $x$ '<br>Diagram enlarged. Right angle made more obvious.<br>Angle moved outside of the angle arc and the angle arc made smaller.                                                                                                         | Standard mark scheme     |





