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# Functional Skills Level 2 MATHEMATICS

## 8362/2

Paper 2 Calculator

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Mark scheme

January 2020

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Version: 1.0 Final

Mark schemes are prepared by the Lead Assessment Writer and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation events which all associates participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the students' responses to questions and that every associate understands and applies it in the same correct way. As preparation for standardisation each associate analyses a number of students' scripts. Alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, associates encounter unusual answers which have not been raised they are required to refer these to the Lead Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of students' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Further copies of this mark scheme are available from [aqa.org.uk](http://aqa.org.uk)

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## Glossary for Mark Schemes

GCSE examinations are marked in such a way as to award positive achievement wherever possible. Thus, for GCSE Mathematics papers, marks are awarded under various categories.

If a student uses a method which is not explicitly covered by the mark scheme the same principles of marking should be applied. Credit should be given to any valid methods. Examiners should seek advice from their senior examiner if in any doubt.

|                        |  |
|------------------------|--|
| <b>M</b>               | Method marks are awarded for a correct method which could lead to a correct answer.  |
| <b>A</b>               | Accuracy marks are awarded when following on from a correct method. It is not necessary to always see the method. This can be implied. |
| <b>B</b>               | Marks awarded independent of method.   |
| <b>ft</b>              | Follow through marks. Marks awarded for correct working following a mistake in an earlier step.  |
| <b>SC</b>              | Special case. Marks awarded for a common misinterpretation which has some mathematical worth.  |
| <b>M dep</b>           | A method mark dependent on a previous method mark being awarded.   |
| <b>B dep</b>           | A mark that can only be awarded if a previous independent mark has been awarded.   |
| <b>oe</b>              | Or equivalent. Accept answers that are equivalent.<br>eg accept 0.5 as well as $\frac{1}{2}$   |
| <b>[a, b]</b>          | Accept values between a and b inclusive.   |
| <b>[a, b)</b>          | Accept values $a \leq \text{value} < b$  |
| <b>3.14 ...</b>        | Accept answers which begin 3.14 eg 3.14, 3.142, 3.1416   |
| <b>Use of brackets</b> | It is not necessary to see the bracketed work to award the marks.  |

Examiners should consistently apply the following principles

### **Diagrams**

Diagrams that have working on them should be treated like normal responses. If a diagram has been written on but the correct response is within the answer space, the work within the answer space should be marked. Working on diagrams that contradicts work within the answer space is not to be considered as choice but as working, and is not, therefore, penalised.

### **Responses which appear to come from incorrect methods**

Whenever there is doubt as to whether a student has used an incorrect method to obtain an answer, as a general principle, the benefit of doubt must be given to the student. In cases where there is no doubt that the answer has come from incorrect working then the student should be penalised.

### **Questions which ask students to show working**

Instructions on marking will be given but usually marks are not awarded to students who show no working.

### **Questions which do not ask students to show working**

As a general principle, a correct response is awarded full marks.

### **Misread or miscopy**

Students often copy values from a question incorrectly. If the examiner thinks that the student has made a genuine misread, then only the accuracy marks (A or B marks), up to a maximum of 2 marks are penalised. The method marks can still be awarded.

### **Further work**

Once the correct answer has been seen, further working may be ignored unless it goes on to contradict the correct answer.

### **Choice**

When a choice of answers and/or methods is given, mark each attempt. If both methods are valid then M marks can be awarded but any incorrect answer or method would result in marks being lost.

### **Work not replaced**

Erased or crossed out work that is still legible should be marked.

### **Work replaced**

Erased or crossed out work that has been replaced is not awarded marks.

### **Premature approximation**

Rounding off too early can lead to inaccuracy in the final answer. This should be penalised by 1 mark unless instructed otherwise.

### **Continental notation**

Accept a comma used instead of a decimal point (for example, in measurements or currency), provided that it is clear to the examiner that the student intended it to be a decimal point.

**Section A**

| Q | Answer                     | Mark | Comments            |
|---|----------------------------|------|---------------------|
| 1 | C                          | B1   | accept plan circled |
|   | <b>Additional Guidance</b> |      |                     |

| Q | Answer                     | Mark | Comments |
|---|----------------------------|------|----------|
| 2 | ( 3 , -2 )                 | B1   |          |
|   | <b>Additional Guidance</b> |      |          |
|   |                            |      |          |

| Q | Answer  | Mark | Comments |
|---|---|------|----------|
| 3 | 1670 × 0.27 or 450.9<br>or<br>1670 × 1.27   | M1   | oe       |
|   | 2120.9  | A1   |          |
|   | <b>Additional Guidance</b>  |      |          |
|   | Build up methods need to be shown in full or be correct to access the method mark |      |          |

| Q | Answer                                     | Mark | Comments  |
|---|--|------|---|
| 4 | Horizontal line from 40 to the line        | M1   | oe eg reads across from 20 and multiplies by 2<br>implied by mark at correct point on line or horizontal axis |
|   | 18   | A1   |   |
|   | <b>Additional Guidance</b>                 |      |   |
|   | 18 with no, or incorrect, working on graph |      |   |

| Q | Answer                     | Mark | Comments                         |
|---|----------------------------|------|----------------------------------|
| 5 | $4\frac{11}{20}$           | B1   | oe<br>eg $\frac{91}{20}$ or 4.55 |
|   | <b>Additional Guidance</b> |      |                                  |
|   |                            |      |                                  |

| Q | Answer  | Mark | Comments   |
|---|---|------|--|
| 6 | 0.375 in middle row   | B1   |  |
|   | $\frac{3}{20}$ in bottom row  | B1   | oe fraction<br>eg $\frac{15}{100}$<br>SC1 correct answers reversed |
|   | <b>Additional Guidance</b>  |      |  |
|   | Two correct values in a cell, eg $\frac{15}{100} = \frac{3}{20}$                  |      | B1   |
|   | Two values in a cell, one of which is incorrect eg $\frac{15}{100} = \frac{1}{6}$ |      | B0   |

| Q        | Answer  | Mark | Comments  |
|----------|---|------|---|
| <b>7</b> | <b>Alternative method 1</b>   |      |   |
|          | $37 \times 42$ or 1554<br>or<br>$0.5 \times 37 \times (71 - 42)$ or 536.5 | M1   | oe<br>must be a correct method for either the rectangle or triangle |
|          | $37 \times 42 + 0.5 \times 37 \times (71 - 42)$<br>or<br>$1554 + 536.5$   | M1   | oe eg may be done in stages   |
|          | 2090.5  | A1   |   |
|          | <b>Alternative method 2</b>   |      |   |
|          | $37 \times 71$ or 2627<br>or<br>$0.5 \times 37 \times (71 - 42)$ or 536.5 | M1   | oe<br>must be a correct method for either the rectangle or triangle |
|          | $37 \times 71 - 0.5 \times 37 \times (71 - 42)$<br>or<br>$2627 - 536.5$   | M1   | oe eg may be done in stages   |
|          | 2090.5  | A1   |   |
|          | <b>Alternative method 3</b>   |      |   |
|          | $0.5 \times (42 + 71)$ or 56.5  | M1   | oe  |
|          | $0.5 \times (42 + 71) \times 37$<br>or<br>$56.5 \times 37$                | M1   | oe  |
|          | 2090.5  | A1   |   |
|          | <b>Additional Guidance</b>  |      |   |
|          | Ignore subsequent rounding or truncation once 2090.5 seen                 |      |   |

**Section B**

| Q           | Answer   | Mark  | Comments  |
|-------------|--|-------|---|
| <b>8(a)</b> | <p><b>Alternative method 1</b></p> <p>15 000 × 5 or 75 000<br/>and<br/>45 000 × 9 or 405 000<br/>and<br/>75 000 × 12 or 900 000<br/>and<br/>105 000 × 4 or 420 000</p> | M1    | <p>may be seen in the table<br/>condone consistent use of lower or upper boundaries for this mark<br/>condone one omission or error (of any nature)</p> |
|             | <p>(15 000 × 5 + 45 000 × 9 + 75 000 × 12 + 105 000 × 4)<br/>or (75 000 + 405 000 + 900 000 + 420 000)<br/>or 1 800 000</p>  | M1    | <p>oe<br/>must be using mid-class values<br/>condone one error in fx's</p>  |
|             | <p>1 223 600 ÷ 23 or 53 200<br/>and<br/>their 1 800 000 ÷ 30 or 60 000<br/>or<br/>their 1 800 000 ÷ 30 × 23<br/>or 1 380 000</p>                                       | M1dep | dep on M2   |
|             | <p>60 000 and 53 200 and (company) A<br/>or<br/>1 380 000 and (company) A</p>  | A1    |   |

**Mark scheme and additional guidance continue on next page**

|  |  |    |  |
|--|--|----|--|
| <b>8(a)</b>                                | <b>Alternative method 2</b>  |    |  |
|  | 15 000 × 5 or 75 000<br>and<br>45 000 × 9 or 405 000<br>and<br>75 000 × 12 or 900 000<br>and<br>105 000 × 4 or 420 000 | M1 | may be seen in the table<br>condone consistent use of lower or upper boundaries for this mark<br>condone one omission or error (of any nature) |
|  | (15 000 × 5 + 45 000 × 9 + 75 000 × 12 + 105 000 × 4)<br>or (75 000 + 405 000 + 900 000 + 420 000)<br>or 1 800 000     | M1 | oe<br>must be using mid-class values<br>condone one error in fx's  |
|  | 1 223 600 ÷ 23 × 30 or 1 596 000   | M1 |  |
| 1 800 000 and 1 596 000<br>and (company) A | A1   |    |  |

|  |  |
|--|--|
| <b>Additional Guidance</b>   |  |
| If work is in the table and they start again in the working space, mark the work that leads to their answer. If there is no answer then apply the usual rules of choice. |  |

| Q    | Answer   | Mark | Comments  |
|------|--|------|---|
| 8(b) | $\frac{34}{53}$  | B1   | oe fraction, decimal or percentage<br>eg 0.64(1)... or 64(.1...)% |
|      | <b>Additional Guidance</b>   |      |   |
|      | Ignore subsequent cancelling or conversion to decimal or percentage once 34/53 has been seen |      |   |
|      | Ignore additional probability words such as likely, etc                                      |      |   |
|      | Do not accept ratio or expressions such as 34 out of 53                                      |      |   |

| Q    | Answer                     | Mark | Comments   |
|------|----------------------------|------|--|
| 8(c) | $\frac{9}{53}$             | B1   | oe fraction decimal or percentage<br>eg 0.1698... or 0.17<br>or 16.98(...)% or 17%<br>SC1 $\frac{34}{n}$ in 8(b) and $\frac{9}{n}$ in 8(c),<br>where $34 < n < 64$ |
|      | <b>Additional Guidance</b> |      |  |
|      |                            |      |  |

| Q    | Answer  | Mark  | Comments |
|------|---|-------|----------|
| 8(d) | $36\,000 \div 75$ or 480<br>or<br>$75 \times 1460$ or 109500  | M1    | oe       |
|      | $(36\,000 \div 75) \div 1460 (\times 100)$<br>or<br>$36\,000 \div (75 \times 1460) (\times 100)$<br>or 0.32(8..) ( $\times 100$ )<br>or 0.329 ( $\times 100$ ) or 0.33 ( $\times 100$ ) | M1dep | oe       |
|      | 32 or 32.(8...) or 32.9 or 33   | A1    |          |
|      | <b>Additional Guidance</b>  |       |          |
|      |   |       |          |

| Q    | Answer                               | Mark | Comments   |
|------|--------------------------------------|------|--|
| 9(a) | 300 ÷ (3 + 2) or 60                  | M1   | $\frac{300}{(3+2)} \times 3 \times 240 \div 1000$ gains M4<br>steps may be done in any order |
|      | their 60 × 3 or 180                  | M1   |  |
|      | their 180 × 240 or 43 200            | M1   |  |
|      | their 43 200 ÷ 1 000 or 43 kg 200(g) | M1   |  |
|      | 43.2                                 | A1   |  |
|      | <b>Additional Guidance</b>           |      |  |
|      |                                      |      |  |

| Q   | Answer   | Mark | Comments   |
|---|--|------|--|
| 9(b)  | $9 \times 2.8^2 \times \pi$ or [221.4, 221.7]<br>or<br>$9 \div 6$ or 1.5                       | M1   | volume   |
|   | their [221.4, 221.7] $\div 6$<br>or<br>their $1.5 \times 2.8^2 \times \pi$<br>or<br>[36.9, 37] | M1   | division by 6  |
|   | $425 \times 1000$ or 425 000<br>or<br>$1000 \div$ their [36.9, 37] or [27, 27.1]               | M1   | multiplies by 1000   |
|   | their 425 000 $\div$ their [36.9, 37]<br>or<br>$425 \times$ their [27, 27.1]                   | M1   | division of water by volume of water in each tin<br>their 425 000 must be digits 425 |
|   | [11 475, 11 518]   | A1   |  |
|   | <b>Additional Guidance</b>   |      |  |
| Using $2 \pi r$ instead of $\pi r^2$ may score up to M0 M1 M1 M1 A0   |  |      |  |
| [16100, 16114] from using $2 \pi r = 158.256$ , $158.256 \div 6 = 26.376$ then $425\,000 \div 26.376$ implies 3 marks |  |      |  |
| [2683, 2684] from using $2 \pi r = 158.256$ , then $425\,000 \div 158.256$ implies 2 marks                            |  |      |  |
| [2.683, 2.684] from using $2 \pi r = 158.256$ , then $425 \div 158.256$ implies 1 mark                                |  |      |  |
| Missing out 9 for the volume of the cylinder may score up to M0 M1 M1 M1 A0   |  |      |  |
| Allow up to M2 even if not subsequently used  |  |      |  |
| Further work after [11 475, 11 518] M4 A0   |  |      |  |

| Q     | Answer   | Mark  | Comments    |
|-------|--|-------|-------------|
| 10(a) | <b>Alternative Method 1</b>  |       |             |
|       | $589 + 186 + 65 + 87.50$ or $927.5(0)$   | M1    |             |
|       | their $927.5(0) \times 12$ or 11 130   | M1dep |             |
|       | $8700 + 4800$ – their 11 130   | M1dep | oe          |
|       | 2370   | A1    |             |
|       | <b>Alternative method 2</b>  |       |             |
|       | $589 \times 12$ or 7068<br>or<br>$186 \times 12$ or 2232<br>or<br>$65 \times 12$ or 780<br>or<br>$87.5(0) \times 12$ or 1050 | M1    |             |
|       | $589 \times 12 + 186 \times 12 + 65 \times 12 + 87.5(0) \times 12$<br>or $7068 + 2232 + 780 + 1050$<br>or 11 130             | M1dep |             |
|       | $8700 + 4800$ – their 11 130   | M1dep | oe          |
|       | 2370   | A1    |             |
|       | <b>Alternative method 3</b>  |       |             |
|       | $589 + 186 + 65 + 87.50$ or $927.5(0)$   | M1    |             |
|       | $(8700 + 4800) \div 12$ or 1125  | M1    | oe          |
|       | (their 1125 – their 927.50) $\times 12$  | M1dep | dep on M1M1 |
|       | 2370   | A1    |             |
|       | <b>Additional Guidance</b>   |       |             |
|       | 2370 followed by answer 11130 gains M2 only  |       |             |

| Q  | Answer  | Mark               | Comments  |      |     |            |   |    |      |   |    |         |   |    |                    |   |    |                    |   |    |                    |   |    |                    |   |    |                    |
|--|---|--------------------|---|------|-----|------------|---|----|------|---|----|---------|---|----|--------------------|---|----|--------------------|---|----|--------------------|---|----|--------------------|---|----|--------------------|
| <b>10(b)</b>   | 1.015 seen or implied   | M1                 | implied by any annual value<br>eg 2030 or 2060.45 etc |      |     |            |   |    |      |   |    |         |   |    |                    |   |    |                    |   |    |                    |   |    |                    |   |    |                    |
|  | $2000 \times 1.015^7$<br>or [2219.67, 2219.70]  | M1dep              | oe  |      |     |            |   |    |      |   |    |         |   |    |                    |   |    |                    |   |    |                    |   |    |                    |   |    |                    |
|  | [2219.67, 2219.70] to 2 dp  | A1                 |   |      |     |            |   |    |      |   |    |         |   |    |                    |   |    |                    |   |    |                    |   |    |                    |   |    |                    |
|  | <b>Additional Guidance</b>  |                    |   |      |     |            |   |    |      |   |    |         |   |    |                    |   |    |                    |   |    |                    |   |    |                    |   |    |                    |
|  | Working out values by year gives  |                    |   |      |     |            |   |    |      |   |    |         |   |    |                    |   |    |                    |   |    |                    |   |    |                    |   |    |                    |
|  | <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Year</th> <th>Age</th> <th>Amount (£)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>15</td> <td>2030</td> </tr> <tr> <td>2</td> <td>16</td> <td>2060.45</td> </tr> <tr> <td>3</td> <td>17</td> <td>[2091.35, 2091.36]</td> </tr> <tr> <td>4</td> <td>18</td> <td>[2122.72, 2122.73]</td> </tr> <tr> <td>5</td> <td>19</td> <td>[2154.56, 2154.58]</td> </tr> <tr> <td>6</td> <td>20</td> <td>[2186.87, 2186.90]</td> </tr> <tr> <td>7</td> <td>21</td> <td>[2219.67, 2219.70]</td> </tr> </tbody> </table> |                    |   | Year | Age | Amount (£) | 1 | 15 | 2030 | 2 | 16 | 2060.45 | 3 | 17 | [2091.35, 2091.36] | 4 | 18 | [2122.72, 2122.73] | 5 | 19 | [2154.56, 2154.58] | 6 | 20 | [2186.87, 2186.90] | 7 | 21 | [2219.67, 2219.70] |
|  | Year  | Age                | Amount (£)  |      |     |            |   |    |      |   |    |         |   |    |                    |   |    |                    |   |    |                    |   |    |                    |   |    |                    |
|  | 1   | 15                 | 2030  |      |     |            |   |    |      |   |    |         |   |    |                    |   |    |                    |   |    |                    |   |    |                    |   |    |                    |
|  | 2   | 16                 | 2060.45   |      |     |            |   |    |      |   |    |         |   |    |                    |   |    |                    |   |    |                    |   |    |                    |   |    |                    |
|  | 3   | 17                 | [2091.35, 2091.36]                                    |      |     |            |   |    |      |   |    |         |   |    |                    |   |    |                    |   |    |                    |   |    |                    |   |    |                    |
| 4  | 18  | [2122.72, 2122.73] |   |      |     |            |   |    |      |   |    |         |   |    |                    |   |    |                    |   |    |                    |   |    |                    |   |    |                    |
| 5  | 19  | [2154.56, 2154.58] |   |      |     |            |   |    |      |   |    |         |   |    |                    |   |    |                    |   |    |                    |   |    |                    |   |    |                    |
| 6  | 20  | [2186.87, 2186.90] |   |      |     |            |   |    |      |   |    |         |   |    |                    |   |    |                    |   |    |                    |   |    |                    |   |    |                    |
| 7  | 21  | [2219.67, 2219.70] |   |      |     |            |   |    |      |   |    |         |   |    |                    |   |    |                    |   |    |                    |   |    |                    |   |    |                    |
| Going to the 8th year (answer $\approx 2252.99$ ) scores a maximum of M1 |   |                    |   |      |     |            |   |    |      |   |    |         |   |    |                    |   |    |                    |   |    |                    |   |    |                    |   |    |                    |
| 2000 + 210 or 2210 implies M1  |   |                    |   |      |     |            |   |    |      |   |    |         |   |    |                    |   |    |                    |   |    |                    |   |    |                    |   |    |                    |
| 210 on its own is M0   |   |                    |   |      |     |            |   |    |      |   |    |         |   |    |                    |   |    |                    |   |    |                    |   |    |                    |   |    |                    |

| Q   | Answer   | Mark  | Comments   |  |
|---|--|-------|--|--|
| 11(a)   | $6 \times \sqrt{\left(\frac{6.4}{4}\right)^2 + \left(\frac{5.5}{2}\right)^2}$ or $6 \times [3.18, 3.2]$        | M1    | oe<br>substitute values into formula   |  |
|   | [19.08, 19.2]  | A1    |  |  |
|   | $4 \times 100 \div \text{their } [19.08, 19.2]$<br>or<br>$4 \div (\text{their } [19.08, 19.2] \div 100)$       | M1dep | dep on 1 <sup>st</sup> M mark  |  |
|   | [20.8, 20.97]  | A1ft  | ft their [19.08, 19.2]   |  |
|   | 20   | B1ft  | correct truncation from their [20.8, 20.97]<br>ft their [20.8, 20.97], must be a value with at least 1 decimal place |  |
|   | <b>Additional Guidance</b>   |       |  |  |
|   | 20 with no working   |       | zero   |  |
|   | When substituting into the formula condone missing brackets if recovered                                       |       |  |  |
|   | Eg Correct substitution into the fomula evaluated to 19.089... followed by answer 19 gains M1 A1 M0 A0 B1ft    |       |  |  |
|   | Eg Correct substitution into the fomula without showing 19.089... followed by answer 19 gains M1 A1 M0 A0 B1ft |       |  |  |
| Eg Correct substitution into the fomula evaluated to 19.089... followed by truncation to 19 then $400 \div 19$ evaluated to 21.05... (which may not be shown) with answer 21 gains M1 A1 M1 A0ft B1ft |  |       |  |  |

| Q            | Answer   | Mark  | Comments  |
|--------------|--|-------|---|
| <b>11(b)</b> | <b>Alternative method 1</b>  |       |   |
|              | $1 - \frac{2}{11}$ or $\frac{9}{11}$   | M1    | oe fractions  |
|              | their $\frac{9}{11} \div (2 + 1)$ or $\frac{3}{11}$  | M1dep | oe eg $\frac{9}{33}$                                      |
|              | their $\frac{3}{11} \times 2$  | M1dep | oe  |
|              | $\frac{6}{11}$   | A1    | oe fraction eg $\frac{18}{33}$                            |
|              | <b>Alternative method 2</b>  |       |   |
|              | Chooses a multiple of 11 as the number of pendants and finds the number of red pendants or total of blue and yellow pendants | M1    | eg<br>22 chosen and $22 \times \frac{2}{11} = 4$          |
|              | Finds the number of yellow pendants for their chosen multiple of 11  | M1dep | eg<br>22 chosen and $(22 - 4) \div (2 + 1) = 6$           |
|              | Finds the number of blue pendants for their chosen multiple of yellow  | M1dep | eg<br>22 chosen and $(22 - 4) \div (2 + 1) \times 2 = 12$ |
|              | $\frac{6}{11}$   | A1    | oe fraction eg $\frac{12}{22}$                            |
|              | <b>Additional Guidance</b>   |       |   |
|              | In alt 2 a multiple of 11 may be 11  |       |   |
|              | Answer 6:3 or 6 (blue) gains M3 from alt 2   |       |   |
|              | R : B : Y<br>2 : 6 : 3   |       | M3  |

| Q     | Answer   | Mark     | Comments                            |
|-------|--|----------|-------------------------------------|
| 12(a) | <b>Alternative method 1</b>  |          |                                     |
|       | 108 ÷ 48 (× 60) or 2.25 (hours)<br>or 2 hours 15 minutes<br>or 135 (minutes)     | M1       | driving time                        |
|       | their 135 + 34 + 25 or 194 (minutes)<br>or 3 hours 14 minutes                    | M1       | oe their 135 must be a driving time |
|       | 2.30 – their 3 hours 14 minutes  | M1dep    | dep on previous mark                |
|       | 11.16 (am)   | A1       | SC3 11.16 pm                        |
|       | <b>Alternative method 2</b>  |          |                                     |
|       | 108 ÷ 48 (× 60) or 2.25 (hours)<br>or 2 hours 15 minutes<br>or 135 (minutes)     | M1       | driving time                        |
|       | 2.30 – their 135 minutes or 12.15  | M1       | oe their 135 must be a driving time |
|       | their 12.15 – (34 minutes + 25 minutes)  | M1dep    | oe<br>dep on previous mark          |
|       | 11.16 (am)   | A1       | SC3 11.16 pm                        |
|       | <b>Additional Guidance</b>   |          |                                     |
|       | 108 ÷ 48 = 2.25, and then 2.25 used as 2 hours 25 minutes with answer 11.06 (am) | M1M1M1A0 |                                     |
|       | 2.25 without working shown used as 2 hours 25 minutes with answer 11.06 (am)     | M1M1M1A0 |                                     |
|       | 2h25min or 145 minutes without division or 2.25 seen may gain up to M0 M1 M1 A0  |          |                                     |
|       | For 2nd M mark their 135 may be in hours or minutes.                             |          |                                     |

| Q   | Answer  | Mark | Comments                                 |  |
|---|---|------|--|--|
| <b>12(b)</b>  | 108 ÷ 12.5 or 8.64  | M1   | number of litres used                    |  |
|   | their 8.64 × 128.8 or [1112, 1113]  | M1   | their 8.64 must be a number of litres    |  |
|   | their [1112, 1113] ÷ 100<br>or [11.12, 11.13]   | M1   | conversion from p to £                   |  |
|   | their [11.12, 11.13] × 2<br>or [22.24, 22.26]   | M1   | double for return journey                |  |
|   | their [22.24, 22.26] ÷ 4 or [5.56, 5.57]  | M1   | value per person                         |  |
|   | 46.56 or 46.57  | A1   | SC4 43.78 or 43.79<br>SC4 48.41 or 48.42 |  |
|   | <b>Additional Guidance</b>  |      |  |  |
|   | The five steps above may be done in any order, but 128.8 or 1.288 must be multiplied by a number of litres.   |      |  |  |
|   | Example<br>108 × 2 = 216            M1<br>216 ÷ 4 = 54            M1<br>54 ÷ 12.5 = 4.32       M1<br>128.8 ÷ 100 = 1.288   M1<br>4.32 × 1.288 = 5.56   M1<br>5.56 + 41 = 46.57     A1   |      |  |  |
|   | Example<br>108 × 2 = 216            M1<br>216 ÷ 12.5 = 17.28       M1<br>17.28 × 128.8 = 2225.664 M1<br>2225.664 ÷ 4 = 556.4     M1<br>556.4 ÷ 100 = 5.56       M1<br>5.56 + 41 = 46.57       A1                                      |      |  |  |
|   | Example<br>108 × 12.5 = 1350       M0<br>1350 × 128.8 = 173880 M0 1350 is not a number of litres<br>173880 ÷ 100 = 1738.8   M1<br>1738.8 ÷ 4 = 434.7       M1<br>M0 no doubling for the return journey<br>434.7 + 41 = 475.7       A0 |      |  |  |
| The SC is for those who forget to include the return journey or divide by 3 |   |      |  |  |

| Q            | Answer   | Mark  | Comments                        |
|--------------|--|-------|---------------------------------|
| <b>12(c)</b> | <b>Alternative method 1</b>                                      |       |                                 |
|              | 12 and 59 identified   | M1    | eg $\frac{12}{59}$              |
|              | $12 \div 59 \times 100$ or 20.3...                               | M1dep |                                 |
|              | 20.3(%)... and Yes   | A1    |                                 |
|              | <b>Alternative method 2</b>                                      |       |                                 |
|              | 12 and 59 identified   | M1    |                                 |
|              | $12 \div 59$ or 0.203...<br>and<br>$20 \div 100$ or $20\% = 0.2$ | M1dep |                                 |
|              | 0.203... and 0.2 and Yes   | A1    |                                 |
|              | <b>Alternative method 3</b>                                      |       |                                 |
|              | 12 and 59 identified   | M1    |                                 |
|              | $59 \times 0.2$ or 11.8  | M1dep | oe method to work out 20% of 59 |
|              | 11.8 and Yes   | A1    |                                 |
|              | <b>Alternative method 4</b>                                      |       |                                 |
|              | 12 and 59 identified   | M1    |                                 |
|              | $\frac{12}{59}$ and $(20\% =) \frac{12}{60}$                     | M1dep |                                 |
|              | $\frac{12}{59}$ and $(20\% =) \frac{12}{60}$ and Yes             | A1    |                                 |
|              | <b>Alternative method 5</b>                                      |       |                                 |
|              | 12 and 59 identified   | M1    |                                 |
|              | $\frac{60}{295}$ and $\frac{59}{295}$                            | M1dep | oe common denominators          |
|              | $\frac{60}{295}$ and $\frac{59}{295}$ and Yes                    | A1    |                                 |

**Additional guidance on next page**

| <b>Additional Guidance</b> |  |
|----------------------------|--|
|                            | <p>If all 3 probabilities found, ie <math>12/59</math>, <math>32/59</math>, <math>15/59</math> first M1 is still awarded as <math>12/59</math> identified.</p> <p>If <math>12/59</math> is then chosen then all the other marks are available.</p> |



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