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# GCSE MARKING SCHEME

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**SUMMER 2024**

**GCSE  
MATHEMATICS – COMPONENT 1  
(FOUNDATION TIER)  
C300U10-1**

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## About this marking scheme

The purpose of this marking scheme is to provide teachers, learners, and other interested parties, with an understanding of the assessment criteria used to assess this specific assessment.

This marking scheme reflects the criteria by which this assessment was marked in a live series and was finalised following detailed discussion at an examiners' conference. A team of qualified examiners were trained specifically in the application of this marking scheme. The aim of the conference was to ensure that the marking scheme was interpreted and applied in the same way by all examiners. It may not be possible, or appropriate, to capture every variation that a candidate may present in their responses within this marking scheme. However, during the training conference, examiners were guided in using their professional judgement to credit alternative valid responses as instructed by the document, and through reviewing exemplar responses.

Without the benefit of participation in the examiners' conference, teachers, learners and other users, may have different views on certain matters of detail or interpretation. Therefore, it is strongly recommended that this marking scheme is used alongside other guidance, such as published exemplar materials or Guidance for Teaching. This marking scheme is final and will not be changed, unless in the event that a clear error is identified, as it reflects the criteria used to assess candidate responses during the live series.

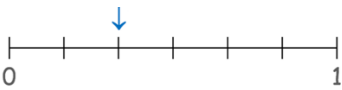
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## EDUQAS GCSE MATHEMATICS

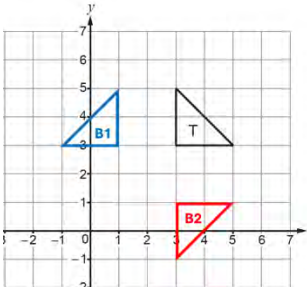
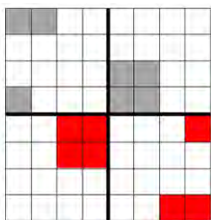
## SUMMER 2024 MARK SCHEME

| GCSE (9-1) Mathematics<br>Component 1: Foundation Tier | Mark     | Comment                                                                                                            |
|--------------------------------------------------------|----------|--------------------------------------------------------------------------------------------------------------------|
| 1.(a)<br>0.2 OR $\frac{2}{10}$ oe                      | B1       | Accept two tenth(s).<br>Allow tenth(s) but not 0.1.                                                                |
| 1.(b)<br>33 000                                        | B1       |                                                                                                                    |
| 1.(c)<br>64                                            | B1       |                                                                                                                    |
| 1.(d)<br>21                                            | B1       |                                                                                                                    |
| 1.(e)<br>0.61                                          | B1       |                                                                                                                    |
| 1.(f)<br>-7.5 -7 3.2 5                                 | B1       |                                                                                                                    |
| 1.(g)<br>-4 is less than $x$ .                         | B1       | Accept $x$ is greater than -4.<br>Allow equivalent wording to less/greater than.                                   |
|                                                        | (7)      |                                                                                                                    |
| 2.(a)<br>5                                             | B1       | Allow '5 out of 10'.                                                                                               |
| 2.(b)<br>0                                             | B1       | Allow 'none' or '0 out of 10'.                                                                                     |
| 2.(c)<br>1                                             | B1       | Allow '1 out of 10'.<br>If no marks in (a),(b) and (c), award SC1 in (c)<br>for answers of 5/10, 0/10 and 1/10 oe. |
|                                                        | (3)      |                                                                                                                    |
| 3.(a)<br>6(%)                                          | B1       |                                                                                                                    |
| 3.(b)<br>$20 \div 5 \times 3$ oe<br>=12                | M1<br>A1 | May be seen in stages.<br>Mark final answer.<br>Award M1A0 for a final answer of $\frac{12}{20}$ .                 |
| 3.(c)<br>$50 \div 10 \times 7$ oe<br>=35               | M1<br>A1 | May be seen in stages.<br>Mark final answer.<br>A0 for 35%.                                                        |
|                                                        | (5)      |                                                                                                                    |

|                                                                                                                                                                                                                                                                                                                                             |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
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| <p>4.(a)<br/>(Money left =)<br/> <math>180 - 40 - (2 \times 15 + 3 \times 10 + 2 \times 12 + 3 \times 7)</math><br/> <math>(180 - 40 - (30 + 30 + 24 + 21))</math></p> <p>OR</p> <p> <math>180 - 40 - (2 \times (15 + 12) + 3 \times (10 + 7))</math><br/> <math>(180 - 40 - 54 - 51)</math><br/> <math>(180 - 145)</math></p> <p>(£)35</p> | <p>M3</p> <p>A1</p> | <p>May be seen in stages.</p> <p>Award M2 and a possible A1 for a calculation that would be awarded M3 except for:</p> <ul style="list-style-type: none"> <li>an error in, or omission of, one of the calculations <math>2 \times 15</math>, <math>3 \times 10</math>, <math>2 \times 12</math>, <math>3 \times 7</math></li> <li>OR the omission of the 40</li> </ul> <p>M2 (A0) for one of the following</p> <ul style="list-style-type: none"> <li><math>(40 +) 2 \times 15 + 3 \times 10 + 2 \times 12 + 3 \times 7</math></li> <li><math>(40 +) + 30 + 30 + 24 + 21 (= 40 + 105)</math></li> <li><math>(40 +) 2 \times (15 + 12) + 3 \times (10 + 7)</math></li> <li><math>(40 +) + 54 + 51 (= 40 + 105)</math></li> <li>Appropriate sight of 105 or 145</li> </ul> <p>M1 for any one of the following (which may be embedded in a further (possibly incorrect) calculation):</p> <ul style="list-style-type: none"> <li>(Tickets) <math>2 \times 15 + 3 \times 10 (= 30 + 30 = £60)</math></li> <li>(Lunch) <math>2 \times 12 + 3 \times 7 (= 24 + 21 = £45)</math></li> <li>(Adults) <math>2 \times (15 + 12) (= 2 \times 27 = £54)</math></li> <li>(Children) <math>3 \times (10 + 7) (= 3 \times 17 = £51)</math></li> <li><math>180 -</math> one of 30, 24 or 21</li> </ul> <p>FT only from M2 as identified above</p> |
| <p>4.(b)<br/> <math>650\,000 \div 10</math> oe</p> <p>= 65 000</p>                                                                                                                                                                                                                                                                          | <p>M1</p> <p>A1</p> | <p>Mark final answer.<br/>A0 for 65 000%.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <p>5.(a)<br/> <math>4 + y</math></p>                                                                                                                                                                                                                                                                                                        | <p>B1</p>           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <p>5.(b)<br/> <math>24</math></p>                                                                                                                                                                                                                                                                                                           | <p>B1</p>           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <p>6.(a)<br/>Point correctly plotted at (5, -2)</p>                                                                                                                                                                                                                                                                                         | <p>B1</p>           | <p>Award unlabelled if unambiguous.<br/>B0 if labelled incorrectly.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <p>6.(b)<br/>Point correctly plotted.<br/> <math>(1, -2)</math> <math>(5, 4)</math><br/> <math>(0, -1)</math> <math>(6, 3)</math> <math>(0, 3)</math> or <math>(6, -1)</math></p>                                                                                                                                                           | <p>B1</p>           | <p>Strict FT for 'their B' provided not in first quadrant.<br/>Award unlabelled if unambiguous.<br/>Allow incorrect labelling provided the points form a right-angled triangle.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <p>6.(c)<br/> <math>(3, 1)</math></p>                                                                                                                                                                                                                                                                                                       | <p>B2</p>           | <p>Strict FT for 'their B' <u>provided not in first quadrant</u>.<br/>B1 for either of the following:</p> <ul style="list-style-type: none"> <li>one correct coordinate,</li> <li>a clear indication of the correct position of the midpoint of AB.</li> </ul> <p>If no marks, award SC1 for either:</p> <ul style="list-style-type: none"> <li>reversed coordinates - <math>(1, 3)</math> or on FT</li> <li>the correct coordinates of their midpoint for 'their B' in the first quadrant, provided 'their B' is not <math>(1, p)</math> or <math>(q, 4)</math>.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                                                                                                                                                                                                                                                                                                                             | <p>(4)</p>          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

|                                                                                               |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------------------------------------------------------------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7.(a)<br>B                                                                                    | B1  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 7.(b)(i)<br> | B1  | Allow any unambiguous indication.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 7.(b)(ii)<br>$\frac{1}{6}$                                                                    | B1  | B0 for '1 out of 6' oe.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 7.(c)<br>$2 : 3$                                                                              | B1  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                                                                                               | (4) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 8.(a)<br>12 <sub>wy</sub> OR 12 <sub>yw</sub>                                                 | B1  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 8.(b)<br>Any two terms with a difference of $5f$<br>e.g. $6f$ and $(1)f$                      | B1  | Allow $5f$ and $0(f)$ OR $0(f)$ and $-5f$<br>B0 if either space is blank.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 8.(c)(i)<br>$(x =) 8$                                                                         | B1  | Allow B1 for embedded answers provided not contradicted.<br>e.g. B1 for $6 \times 8 = 48$ .<br>B0 for $6 \times 8 = 48$ $x = 48$ .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 8.(c)(ii)<br>$(a =) 160$                                                                      | B1  | Allow B1 for embedded answers provided not contradicted.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 8.(d)<br>$(150 - 20) \div 15$                                                                 | M2  | May be seen in stages.<br>M2 may be implied by one of the following: <ul style="list-style-type: none"> <li><math>130 \div 15</math></li> <li><math>20 + 15 \times 8 = 140</math></li> <li><math>20 + 15 \times 8</math> AND <math>20 + 15 \times 9</math></li> <li><math>150 - 20 = 130</math> with <math>8 \times 15 = 120</math></li> </ul> M1 for one of the following: <ul style="list-style-type: none"> <li><math>20 + 15 \times n</math> where <math>n &gt; 1</math> (see M0)</li> <li><math>20 + 15 + 15 + \dots</math></li> <li><math>150 - 20 - 15 - 15 - \dots</math> (with at least two 15's seen)</li> <li><math>150 - 20 \div 15 (= 148.666\dots)</math></li> </ul> M0 for either: <ul style="list-style-type: none"> <li><math>20 + 15 \times n = 35n</math><br/>e.g. multiples of 35 is M0.</li> <li><math>150 - 35</math></li> <li><math>150 - 20 - 15</math></li> </ul> |
| 8 (days)                                                                                      | A1  | CAO<br><br>An answer of $8\cdot6(6\dots)$ or $8 \text{ r } 10$ implies M2 A0.<br>Award M0 A0 for an unsupported answer of 9.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                                                                                               | (7) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

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|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9.(a)<br>Answer in the range 11.0 to 11.2 (acres)                                                                                                                                                                         | B1           |                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 9.(b)<br>A clear method shown e.g.<br>$2 \times 13 \text{ acres} = 2 \times 5.25 \text{ hectares}$<br>$14 \text{ acres} + 12 \text{ acres} = 5.65 + 4.85 \text{ hectares}$<br>Answer in the range 10.4 to 10.6 (hectares) | M1<br><br>A1 | Allow $\pm 0.05$ in their readings for the M1 if the method is clear.                                                                                                                                                                                                                                                                                                                                                       |
|                                                                                                                                                                                                                           | (3)          |                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 10.<br>No indicated or unambiguously implied, with convincing reason e.g.<br><ul style="list-style-type: none"> <li>she can buy 25 not 24.</li> <li>25 is not double 12.</li> </ul>                                       | B2           | B1 for any one of the following: <ul style="list-style-type: none"> <li>12 (candles) cost £36</li> <li>she can buy 12 candles (for £38).</li> <li>24 (candles) cost £36</li> <li>25 (candles) cost £37.50</li> <li>she can buy 25 candles (for £38).</li> </ul>                                                                                                                                                             |
|                                                                                                                                                                                                                           | (2)          |                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 11.(a)<br>73 (minutes)                                                                                                                                                                                                    | B2           | ISW if 73 minutes seen and spoilt (e.g. converting to hours and minutes).<br>B1 for one of the following: <ul style="list-style-type: none"> <li>1 hour 13 minutes</li> <li>1.13</li> <li>1:13</li> <li>working to calculate the difference between 19:48 and 21:01 in minutes<br/>e.g. <math>12 + 60 + 1</math> OR <math>60 + 13</math></li> </ul> B0 for 113 (minutes) or 1 hour 53 minutes from $21.01 - 19.48 = 1.53$ . |
| 11.(b)<br>4 (minutes)                                                                                                                                                                                                     | B3           | B2 for correct arrival time at the event (19:49 or 7:49)<br><br>B1 for selecting the correct train (18:43 or 6:43).<br>Allow if unambiguously seen in table.<br>May be implied by an answer of '8 minutes early' or appropriate sight of 19:37 or 7:37.<br><br>If no marks, award SC1 for a final answer of 37 minutes (from the use of 19:18 train).                                                                       |
|                                                                                                                                                                                                                           | (5)          |                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 12.(a)<br>1 : 4 : 2                                                                                                                                                                                                       | B2           | B1 for sight of 4 : 16 : 8 or 2 : 8 : 4 oe                                                                                                                                                                                                                                                                                                                                                                                  |

|                                                                                                                                |                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>12.(b)<br/>Correct explanation e.g.<br/>'she hasn't considered one length was in m and the other length was in cm'.</p>     | E1                                           | <p>Accept 'it should be 20 : 3'.<br/>Allow</p> <ul style="list-style-type: none"> <li>'they have different units'</li> <li>'they should be in the same units'</li> <li>'it should be 100 : 15'</li> <li>'it should be 1 : 0.15'</li> <li>'she has not converted from metres to cm'</li> <li>'1 m = 100 cm'</li> <li>'2 m = 200 cm'</li> <li>'cm and m are different things'</li> <li>'the conversion between m and cm is not correct'</li> </ul> <p>Accept equivalent wording.</p> <p>Do not allow 'she has just simplified the numbers'.</p> <p>Do not ignore contradictory comments or incorrect working.</p> |
|                                                                                                                                | (3)                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <p>13.(a)</p>                                | B2                                           | <p>B1 for one of the following:</p> <ul style="list-style-type: none"> <li>sight of the line <math>y = 2</math> only.</li> <li>reflection in the line <math>x = 2</math></li> <li>the correct three points plotted but not joined</li> </ul> <p>B0 if more than one triangle drawn or reflection in an axis.</p>                                                                                                                                                                                                                                                                                                |
| <p>13.(b)</p>                               | B2                                           | B1 for one correct quadrant.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                                                                                                                                | (4)                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <p>14.(a)<br/><math>52 \times 2.5</math> oe<br/>130 (miles)</p>                                                                | M1<br>A1                                     | May be seen in stages.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <p>14.(b)<br/><math>3 \times 200\,000 \div 100 \div 1000</math> oe<br/><br/><br/><br/><br/><br/><br/><br/><br/><br/>6 (km)</p> | M2<br><br><br><br><br><br><br><br><br><br>A1 | <p>May be seen in stages.<br/>M1 for sight of any one of the following:</p> <ul style="list-style-type: none"> <li><math>3 \times 200\,000</math> (cm)</li> <li>600 000</li> <li>1 cm represents 2 km</li> <li><math>3 \times 2000</math> (m)</li> </ul> <p>Allow this M1 for use of incorrect units.<br/>e.g. <math>3 \times 200 = 600</math> (m)</p> <p>CAO</p>                                                                                                                                                                                                                                               |
|                                                                                                                                | (5)                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |





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| 21.(b)(i)<br>2652                                                                                                                                                                                                                                                                                                                                        | B1                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 21.(b)(ii)<br>0.78                                                                                                                                                                                                                                                                                                                                       | B1                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                                                                                                                                                                                                                                                                                                                                          | (4)                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <p>22.*(a)</p> <p>Method to find prime factors with two correct prime factors seen from the set {3, 3, 5, 5, 11} before the second error.</p> <p>3, 3, 5, 5, 11</p> <p><math>3^2 \times 5^2 \times 11</math></p>                                                                                                                                         | <p>M1</p> <p>A1</p> <p>B1</p> | <p>Note:<br/>2475 = 3 x 825 or 5 x 495 or 11 x 225 or 15 x 165 or 25 x 99</p> <p>C.A.O. Ignore 1s.<br/>Primes may only be seen in factor tree.</p> <p>FT 'their derived primes' provided at least one index form used with at least one square.</p> <p>Do not FT non-primes.</p> <p>Allow <math>(3^2)(5^2)(11)</math> and <math>3^2.5^2.11</math><br/>Do not allow <math>3^2, 5^2, 11</math>.<br/>Inclusion of 1 as a factor gets B0.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <p>22.(b)</p> <p><math>2^3 \times 5^2 \times 7^2</math></p>                                                                                                                                                                                                                                                                                              | B2                            | <p>B1 for sight of</p> <ul style="list-style-type: none"> <li>8 x <math>5^2 \times 7^2</math></li> <li>8 x 25 x 49</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                                                                                                                                                                                                                                                                                                                                                          | (5)                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <p>23*.(a)</p> <p>An appropriately worded question</p> <p>e.g.<br/>How much do you spend each month on gym membership?<br/>AND<br/>An appropriate set of response boxes</p> <p>e.g.<br/><math>c = £0</math>, <math>£0 &lt; c \leq £10</math>, <math>£10 &lt; c \leq £20</math>, <math>c &gt; £20</math></p> <p>less than £10, £10-£20, more than £20</p> | B2                            | <p>Question must include 'each month',</p> <p>There must be a <b>minimum of 3 response boxes</b> which:</p> <ul style="list-style-type: none"> <li>do not overlap</li> <li>cover all amounts including £0 and no upper limit with the exception of allowing a <u>consistent £1 gap</u> e.g. £0 £1 to £10, £11 to £20, £21 or more</li> </ul> <p><i>Note: If inequalities are used then allow e.g. &lt; 5, 5 - 10, 11 - 15, &gt; 15<br/>OR 5 &gt;, 5 - 10, 11 - 15, 15 &lt;<br/>OR 0 ≤ 10, 11 ≤ 20, 21 ≤ 30, ≥ 31<br/>where the inequalities are in the correct directions and the groups are clear.</i></p> <p><i>Treat as one error incorrect use e.g. 0 ≥ 10, 11 ≥ 20, 21 ≥ 30, 31 ≥</i></p> <p>B1 for one of the following:</p> <ul style="list-style-type: none"> <li>an appropriately worded question with no more than 'one identified error' from above response boxes.</li> <li>a question that does not include 'per month' but with no errors in the response boxes.</li> </ul> |

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| 23(b)(i)<br><br>Appropriate explanation e.g.<br>'The mean is affected by the few people who spent a long time (in the leisure centre).' <p>'The mean can be significantly affected by outliers or skew'</p> <p>'It would be more accurate to use the mode'</p> <p>'Most people spent less than 7 hours (in the leisure centre).'</p> <p>'The modal time (or median time) is 0 – 4 hours.'</p> | E1                     | Do not accept:<br>'The mean is not the best average.'                                                                                                                                                                                                                                                                                                                                                                                                  |
| 23(b)(ii)<br><br>Appropriate reason e.g.<br>'Not enough people asked.' <p>'Many responding 0-4 hours probably didn't go to the leisure centre'</p>                                                                                                                                                                                                                                            | E1                     | Do not accept:<br>'Some people spend longer than 24 hours' <p>'He only asked in one area'</p> <p>'Only collected data for one week'</p> <p>'They may spend different amounts of hours each week'</p>                                                                                                                                                                                                                                                   |
|                                                                                                                                                                                                                                                                                                                                                                                               | (4)                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 24*.<br><br>$30x = 40x - 80$ or better<br><br>$x = 8$<br><br>(Capacity =) 240 (litres)                                                                                                                                                                                                                                                                                                        | B3<br><br>B1<br><br>B1 | B2 for $30x = 40(x - 2)$ OR $\frac{30x}{x-2} = 40$<br><br>B1 for sight of one of the following: <ul style="list-style-type: none"> <li>• <math>30x</math></li> <li>• <math>40(x - 2)</math></li> <li>• <math>30 = k/x</math> and <math>40 = k/(x+2)</math></li> </ul><br>An answer of 240 (litres) implies the previous B1<br><br>If B2 awarded and $x \neq 8$ award a further SC2 for a correctly evaluated answer to $30 \times$ 'their positive 8'. |
|                                                                                                                                                                                                                                                                                                                                                                                               | (5)                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 25*.(a)<br><br>$\frac{11}{21}$                                                                                                                                                                                                                                                                                                                                                                | B1                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 25.(b)<br><br>5 parts = (£)45 OR 1 part = (£)9<br>OR 11 parts – 2x3 parts = 45 oe<br>OR $\frac{11}{21} - 45 = \frac{6}{21}$<br><br>$45 \div 5 \times 7$ oe OR $9 \times 7$<br><br>(£)63                                                                                                                                                                                                       | B1<br><br>M1<br>A1     | May be implied by M1<br><br>FT an arithmetic error in 'their 11 – 2x3' for M1 A0                                                                                                                                                                                                                                                                                                                                                                       |
|                                                                                                                                                                                                                                                                                                                                                                                               | (4)                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

| <p>26*.</p> <p>36</p> $\times \frac{6}{9} \text{ oe}$ $\times \frac{1}{2}$ <p>12 (minutes)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <p>M1</p> <p>M1</p> <p>A1</p> | <p><u>A table method altering all 3 values in the same ratio at the same time is M0</u></p> <p>M marks may be seen in either order<br/>e.g. <math>\frac{\text{Printers}}{9} \quad \frac{\text{Booklets}}{n} \quad \frac{\text{Time}}{24}</math></p> <p><b>FT from M0 previously awarded</b></p> <p>Must be from use of 36<br/>e.g. if this calculation is performed first<br/><math>\frac{\text{Printers}}{6} \quad \frac{\text{Booklets}}{0.5n} \quad \frac{\text{Time}}{18}</math></p> <p>CAO</p> |      |   |     |    |              |              |            |   |                |     |            |          |          |   |                |     |                               |                                                                                                                                  |          |   |                |    |                               |                                                                                                                                                                   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---|-----|----|--------------|--------------|------------|---|----------------|-----|------------|----------|----------|---|----------------|-----|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------|----------|---|----------------|----|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><u>Alternative method 1</u><br/>Printers first then booklets</p> <table border="1"> <thead> <tr> <th>Printers</th><th>Booklets</th><th>Time</th></tr> </thead> <tbody> <tr> <td>6</td><td><math>n</math></td><td>36</td></tr> <tr> <td><math>\times 1.5</math></td><td><math>\times 1.5</math></td><td></td></tr> <tr> <td>9</td><td><math>1.5n</math></td><td>36</td></tr> <tr> <td></td><td><math>\div 3</math></td><td><math>\div 3</math></td></tr> <tr> <td>9</td><td><math>\frac{1}{2}n</math></td><td>12</td></tr> </tbody> </table>                                                                                                                               | Printers                      | Booklets                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Time | 6 | $n$ | 36 | $\times 1.5$ | $\times 1.5$ |            | 9 | $1.5n$         | 36  |            | $\div 3$ | $\div 3$ | 9 | $\frac{1}{2}n$ | 12  | <p>M1</p> <p>M1</p> <p>A1</p> | <p><i>Note: the number of booklets may be an assumed number</i></p> <p>FT 9 and 'their 36'</p> <p>CAO</p>                        |          |   |                |    |                               |                                                                                                                                                                   |
| Printers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Booklets                      | Time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |      |   |     |    |              |              |            |   |                |     |            |          |          |   |                |     |                               |                                                                                                                                  |          |   |                |    |                               |                                                                                                                                                                   |
| 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | $n$                           | 36                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |      |   |     |    |              |              |            |   |                |     |            |          |          |   |                |     |                               |                                                                                                                                  |          |   |                |    |                               |                                                                                                                                                                   |
| $\times 1.5$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | $\times 1.5$                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |   |     |    |              |              |            |   |                |     |            |          |          |   |                |     |                               |                                                                                                                                  |          |   |                |    |                               |                                                                                                                                                                   |
| 9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | $1.5n$                        | 36                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |      |   |     |    |              |              |            |   |                |     |            |          |          |   |                |     |                               |                                                                                                                                  |          |   |                |    |                               |                                                                                                                                                                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | $\div 3$                      | $\div 3$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |      |   |     |    |              |              |            |   |                |     |            |          |          |   |                |     |                               |                                                                                                                                  |          |   |                |    |                               |                                                                                                                                                                   |
| 9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | $\frac{1}{2}n$                | 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |      |   |     |    |              |              |            |   |                |     |            |          |          |   |                |     |                               |                                                                                                                                  |          |   |                |    |                               |                                                                                                                                                                   |
| <p><u>Alternative method 2</u><br/>Booklets first then printers</p> <table border="1"> <thead> <tr> <th>Printers</th><th>Booklets</th><th>Time</th></tr> </thead> <tbody> <tr> <td>6</td><td><math>n</math></td><td>36</td></tr> <tr> <td><math>\div 2</math></td><td><math>\div 2</math></td><td></td></tr> <tr> <td>3</td><td><math>\frac{1}{2}n</math></td><td>36</td></tr> <tr> <td><math>\times 3</math></td><td></td><td><math>\div 3</math></td></tr> <tr> <td>9</td><td><math>\frac{1}{2}n</math></td><td>12</td></tr> </tbody> </table>                                                                                                                             | Printers                      | Booklets                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Time | 6 | $n$ | 36 | $\div 2$     | $\div 2$     |            | 3 | $\frac{1}{2}n$ | 36  | $\times 3$ |          | $\div 3$ | 9 | $\frac{1}{2}n$ | 12  | <p>M1</p> <p>M1</p> <p>A1</p> | <p><i>Note: the number of booklets may be an assumed number</i></p> <p>FT <math>\frac{1}{2}n</math> and 'their 3'</p> <p>CAO</p> |          |   |                |    |                               |                                                                                                                                                                   |
| Printers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Booklets                      | Time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |      |   |     |    |              |              |            |   |                |     |            |          |          |   |                |     |                               |                                                                                                                                  |          |   |                |    |                               |                                                                                                                                                                   |
| 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | $n$                           | 36                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |      |   |     |    |              |              |            |   |                |     |            |          |          |   |                |     |                               |                                                                                                                                  |          |   |                |    |                               |                                                                                                                                                                   |
| $\div 2$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | $\div 2$                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |   |     |    |              |              |            |   |                |     |            |          |          |   |                |     |                               |                                                                                                                                  |          |   |                |    |                               |                                                                                                                                                                   |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | $\frac{1}{2}n$                | 36                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |      |   |     |    |              |              |            |   |                |     |            |          |          |   |                |     |                               |                                                                                                                                  |          |   |                |    |                               |                                                                                                                                                                   |
| $\times 3$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                               | $\div 3$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |      |   |     |    |              |              |            |   |                |     |            |          |          |   |                |     |                               |                                                                                                                                  |          |   |                |    |                               |                                                                                                                                                                   |
| 9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | $\frac{1}{2}n$                | 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |      |   |     |    |              |              |            |   |                |     |            |          |          |   |                |     |                               |                                                                                                                                  |          |   |                |    |                               |                                                                                                                                                                   |
| <p><u>Alternative method 3</u><br/>(using 1 printer)</p> <table border="1"> <thead> <tr> <th>Printers</th><th>Booklets</th><th>Time</th></tr> </thead> <tbody> <tr> <td>6</td><td><math>n</math></td><td>36</td></tr> <tr> <td><math>\div 6</math></td><td></td><td><math>\times 6</math></td></tr> <tr> <td>1</td><td><math>n</math></td><td>216</td></tr> <tr> <td><math>\times 9</math></td><td></td><td><math>\div 9</math></td></tr> <tr> <td>9</td><td><math>n</math></td><td>24</td></tr> <tr> <td></td><td><math>\div 2</math></td><td><math>\div 2</math></td></tr> <tr> <td>9</td><td><math>\frac{1}{2}n</math></td><td>12</td></tr> </tbody> </table>             | Printers                      | Booklets                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Time | 6 | $n$ | 36 | $\div 6$     |              | $\times 6$ | 1 | $n$            | 216 | $\times 9$ |          | $\div 9$ | 9 | $n$            | 24  |                               | $\div 2$                                                                                                                         | $\div 2$ | 9 | $\frac{1}{2}n$ | 12 | <p>M1</p> <p>M1</p> <p>A1</p> | <p><i>Note: the number of booklets may be an assumed number</i></p> <p>Two steps needed for M1</p> <p>FT 9 and 'their 24'</p> <p>CAO</p>                          |
| Printers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Booklets                      | Time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |      |   |     |    |              |              |            |   |                |     |            |          |          |   |                |     |                               |                                                                                                                                  |          |   |                |    |                               |                                                                                                                                                                   |
| 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | $n$                           | 36                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |      |   |     |    |              |              |            |   |                |     |            |          |          |   |                |     |                               |                                                                                                                                  |          |   |                |    |                               |                                                                                                                                                                   |
| $\div 6$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                               | $\times 6$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |      |   |     |    |              |              |            |   |                |     |            |          |          |   |                |     |                               |                                                                                                                                  |          |   |                |    |                               |                                                                                                                                                                   |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | $n$                           | 216                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |   |     |    |              |              |            |   |                |     |            |          |          |   |                |     |                               |                                                                                                                                  |          |   |                |    |                               |                                                                                                                                                                   |
| $\times 9$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                               | $\div 9$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |      |   |     |    |              |              |            |   |                |     |            |          |          |   |                |     |                               |                                                                                                                                  |          |   |                |    |                               |                                                                                                                                                                   |
| 9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | $n$                           | 24                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |      |   |     |    |              |              |            |   |                |     |            |          |          |   |                |     |                               |                                                                                                                                  |          |   |                |    |                               |                                                                                                                                                                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | $\div 2$                      | $\div 2$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |      |   |     |    |              |              |            |   |                |     |            |          |          |   |                |     |                               |                                                                                                                                  |          |   |                |    |                               |                                                                                                                                                                   |
| 9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | $\frac{1}{2}n$                | 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |      |   |     |    |              |              |            |   |                |     |            |          |          |   |                |     |                               |                                                                                                                                  |          |   |                |    |                               |                                                                                                                                                                   |
| <p><u>Alternative method 4</u><br/>(using 1 printer)</p> <table border="1"> <thead> <tr> <th>Printers</th><th>Booklets</th><th>Time</th></tr> </thead> <tbody> <tr> <td>6</td><td><math>n</math></td><td>36</td></tr> <tr> <td><math>\div 6</math></td><td></td><td><math>\times 6</math></td></tr> <tr> <td>1</td><td><math>n</math></td><td>216</td></tr> <tr> <td></td><td><math>\div 2</math></td><td><math>\div 2</math></td></tr> <tr> <td>1</td><td><math>\frac{1}{2}n</math></td><td>108</td></tr> <tr> <td><math>\times 9</math></td><td></td><td><math>\div 9</math></td></tr> <tr> <td>9</td><td><math>\frac{1}{2}n</math></td><td>12</td></tr> </tbody> </table> | Printers                      | Booklets                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Time | 6 | $n$ | 36 | $\div 6$     |              | $\times 6$ | 1 | $n$            | 216 |            | $\div 2$ | $\div 2$ | 1 | $\frac{1}{2}n$ | 108 | $\times 9$                    |                                                                                                                                  | $\div 9$ | 9 | $\frac{1}{2}n$ | 12 | <p>M1</p> <p>M1</p> <p>A1</p> | <p><i>Note: the number of booklets may be an assumed number</i></p> <p>Two steps needed for M1</p> <p>FT <math>\frac{1}{2}n</math> and 'their 108'</p> <p>CAO</p> |
| Printers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Booklets                      | Time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |      |   |     |    |              |              |            |   |                |     |            |          |          |   |                |     |                               |                                                                                                                                  |          |   |                |    |                               |                                                                                                                                                                   |
| 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | $n$                           | 36                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |      |   |     |    |              |              |            |   |                |     |            |          |          |   |                |     |                               |                                                                                                                                  |          |   |                |    |                               |                                                                                                                                                                   |
| $\div 6$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                               | $\times 6$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |      |   |     |    |              |              |            |   |                |     |            |          |          |   |                |     |                               |                                                                                                                                  |          |   |                |    |                               |                                                                                                                                                                   |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | $n$                           | 216                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |   |     |    |              |              |            |   |                |     |            |          |          |   |                |     |                               |                                                                                                                                  |          |   |                |    |                               |                                                                                                                                                                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | $\div 2$                      | $\div 2$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |      |   |     |    |              |              |            |   |                |     |            |          |          |   |                |     |                               |                                                                                                                                  |          |   |                |    |                               |                                                                                                                                                                   |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | $\frac{1}{2}n$                | 108                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |   |     |    |              |              |            |   |                |     |            |          |          |   |                |     |                               |                                                                                                                                  |          |   |                |    |                               |                                                                                                                                                                   |
| $\times 9$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                               | $\div 9$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |      |   |     |    |              |              |            |   |                |     |            |          |          |   |                |     |                               |                                                                                                                                  |          |   |                |    |                               |                                                                                                                                                                   |
| 9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | $\frac{1}{2}n$                | 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |      |   |     |    |              |              |            |   |                |     |            |          |          |   |                |     |                               |                                                                                                                                  |          |   |                |    |                               |                                                                                                                                                                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | (3)                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |   |     |    |              |              |            |   |                |     |            |          |          |   |                |     |                               |                                                                                                                                  |          |   |                |    |                               |                                                                                                                                                                   |

|                                                                                                                                                                                                                                                                                                                                                      |                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 27*. (a)<br>(£)72                                                                                                                                                                                                                                                                                                                                    | B2                                                   | B1 for $54 \div 3 \times 4$ OR $54 \div 0.75$ oe                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 27.(b) (i)<br>0.67                                                                                                                                                                                                                                                                                                                                   | B1                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 27.(b) (ii)<br>1.06 <sup>3</sup>                                                                                                                                                                                                                                                                                                                     | B1                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                                                                                                                                                                                                                                                                                                                      | (4)                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 28*.<br><br>3a + 4b = 2(. )70. AND<br>2a + 3b = 1(. )95<br><br>Method to eliminate one variable<br>e.g. equal coefficients with intention to subtract<br><br>OR rearranges one equation and<br>substitutes into the other<br><br>First variable correct<br><br>Method to calculate second variable<br><br>Second variable found<br>(£)2.10 or 210(p) | B1<br><br>M1<br><br>A1<br><br>m1<br><br>A1<br><br>A1 | Both equations given, a & b may be other letters, words are accepted.<br><br>FT provided at least one equation is correct and consistent place value, with equivalent level of difficulty.<br><br>Allow 1 error in one term, not one with equal coefficients<br><br>C.A.O. Accept in £ or p <b>apple = 30p</b><br>or <b>banana = 45p</b><br><br>FT their '1 <sup>st</sup> variable' provided M1 previously awarded.<br><br>FT Accept in £ or p (provided > 0)<br><br>FT 'their a and b' provided B1 M1 m1 previously awarded and both greater than 0. If units are given they must be correct.<br><br>No marks for trial and improvement.<br>No marks for an unsupported answer. |
| <i>Alternative method (for candidates who do not find the values of both variables)</i><br><br>3a + 4b = 2(. )70. AND<br>2a + 3b = 1(. )95<br><br>(£)2.10 or 210(p)                                                                                                                                                                                  | B1<br><br>SC5                                        | Both equations given, a & b may be other letters, words are accepted.<br><br>Award SC5 for a <b>complete algebraic method</b> , with <u>no errors</u> , leading to a final answer of (£)2.10 or 210(p). Method may include adding/subtracting/scaling/substituting into equations.                                                                                                                                                                                                                                                                                                                                                                                               |
|                                                                                                                                                                                                                                                                                                                                                      | (6)                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

|                      |     |                                                                                                                                                                                                                                                                                          |
|----------------------|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 29*. (a)             |     |                                                                                                                                                                                                                                                                                          |
| $4.3 \times 10^{11}$ | B2  | B1 for sight of the correct value not in standard form<br>e.g. $0.43 \times 10^{12}$ or 430 000 000 000                                                                                                                                                                                  |
| 29. (b)              |     |                                                                                                                                                                                                                                                                                          |
| $7.9 \times 10^5$    | B2  | Be aware of correct answer from incorrect work. Award B0.<br>B1 for the correct value not in standard form<br>e.g. $79 \times 10^4$ or 790 000<br><br>If no marks, award SC1 for 760000 + 30000 seen with a slip in the addition but their answer correctly converted into standard form |
|                      | (4) |                                                                                                                                                                                                                                                                                          |