# Stage 8 Diagnostic Check Mark Scheme

The tests and mark schemes have been written by the authors. These may not fully reflect the approach of Cambridge Assessment International Education.

**B** marks: marks awarded for answers, independent of method.

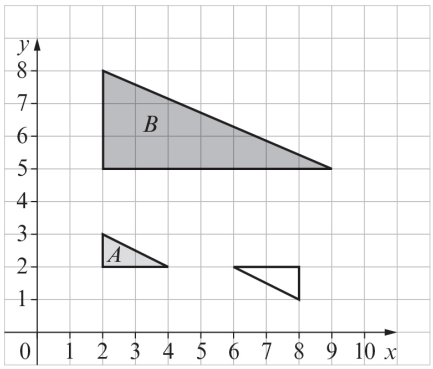
**M** marks: marks awarded for using a correct method.

**A** marks: marks awarded for a correct answer that must come from a correct method.

| Q | Answer | Mark | Comment |
|---|---|---|---|
| **1** | 3.009, 3.07, 3.206, 3.21 | **B1** | |
| **2** | 20 and −4 | **B1** | In this order only. |
| **3a** | 24 000 | **B1** | |
| **3b** | 37.43 | **B1** | |
| **3c** | 1.8 | **B1** | |
| **3d** | 3.0525 | **B1** | |
| **4** | $\frac{13}{21}=\frac{26}{42}$, $\frac{4}{7}=\frac{24}{42}$ | **M1** | Attempting to write both fractions with any common denominator. |
| | $\frac{13}{21}=\frac{26}{42}$ and $\frac{4}{7}=\frac{24}{42}$ and $\frac{13}{21}$ chosen | **A1** | Both fractions correct and correct choice. |
| **5** | 45 | **B1** | |
| **6** | $b = 136°$ | **B1** | Accept $b = 136$ without degree symbol. |
| | $360 - 72 - 168$ | **M1** | Accept any equivalent method to find $a$<br>e.g. $72 + 168 = 240$ and $360 - 240$<br>e.g. $a + 72 + 168 = 360$. |
| | $a = 120°$ | **A1** | Accept $a = 120$ without degree symbol. |
| | $b - a = 16°$ | **A1** | |

| Q | Answer | Mark | Comment |
|---|---|---|---|
| **7** | 300 | **B1** | |
| **8a** | $3\frac{13}{15}$ | **B1** | |
| **8b** | $\frac{9}{10}\times\frac{7}{3}$ | **M1** | May be implied by $\frac{63}{30}$ or $\frac{21}{10}$. |
| | $2\frac{1}{10}$ | **A1** | |
| **9** | Lines linking:<br>$7 + 3x$ to expression<br>$7 + 3x = 22$ to equation<br>$h = 7 + 3x$ to formula | **B1** | All correct. |
| **10a** | 5 and 13 | **B1** | In this order only. |
| **10b** | 3 and −9 | **B1** | In either order. |
| **10c** | 4 and 28 | **B1** | In this order only. |
| **10d** | 8 and −5 | **B1** | In this order only. |
| **11** | 30 | **B1** | |
| **12** | $3 \times x + 3 \times 2$ | **M1** | Correct method to multiply out bracket. Accept $3x + 6$ seen. |
| | $3x + 5$ | **A1** | |
| **13** | First term is 5<br>Second term is 7<br>Third term is 13 | **B2** | B2 all three correct.<br>B1 two correct. |
| **14a** | **A** cylinder<br>**B** square-based pyramid<br>**C** cuboid | **B2** | B2 all three correct.<br>B1 two correct. |
| **14b** | Top view  <br>Front view  <br>Side view  | **B1** | All three correct.<br>Side view and front view must be rectangles the same size. |

<table>
<tr><th>Q</th><th>Answer</th><th>Mark</th><th>Comment</th></tr>
<tr><td>15a</td><td>A</td><td>B1</td><td></td></tr>
<tr><td>15b</td><td>$s = 60m$</td><td>B1</td><td>Accept $s = 60 \times m$.</td></tr>
<tr><td>15c</td><td>300</td><td>B1</td><td></td></tr>
<tr><td>16</td><td>
<table>
<tr><td>Fraction</td><td>$\frac{1}{5}$</td><td>$\frac{4}{5}$</td><td>$1\frac{7}{10}$</td><td>$\frac{1}{20}$</td></tr>
<tr><td>Decimal</td><td>0.2</td><td>0.8</td><td>1.7</td><td>0.05</td></tr>
<tr><td>Percentage</td><td>20%</td><td>80%</td><td>170%</td><td>5%</td></tr>
</table>
</td><td>B3</td><td>B3 all entries correct.<br>B2 5, 6 or 7 entries correct.<br>B1 2, 3 or 4 entries correct.</td></tr>
<tr><td>17</td><td>$56 \div (5 + 3)$ or $56 \div 8$</td><td>M1</td><td></td></tr>
<tr><td></td><td>$5 \times 7$ and $3 \times 7$</td><td>M1</td><td>Follow through ‘their’ 7.</td></tr>
<tr><td></td><td>Jan $35 and Kai $21</td><td>A1</td><td>Must show names with amounts.</td></tr>
<tr><td>18a</td><td>
<table>
<tr><td>$y$</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr>
</table>
</td><td>B1</td><td>All values correct.</td></tr>
<tr><td>18b</td><td>All points correctly plotted</td><td>B1</td><td></td></tr>
<tr><td></td><td>Straight line drawn through all points</td><td>B1</td><td></td></tr>
<tr><td>18c</td><td>Using $x = 23$ and the equation of the line $y = x + 5$<br>e.g. $y = 23 + 5$<br>e.g. $28 - 5 = x$</td><td>M1</td><td></td></tr>
<tr><td></td><td>‘Yes’ and valid reason<br>e.g. when $x = 23$, $y = 28$ which matches the coordinates (23, 28)<br>e.g. when $y = 28$, $x = 23$ which matches the coordinates (23, 28)</td><td>A1</td><td></td></tr>
<tr><td>19</td><td>Output = 3<br>Input = 56</td><td>B2</td><td>B2 both correct.<br>B1 one correct.</td></tr>
<tr><td>20a</td><td>$\frac{5}{8}$</td><td>B1</td><td></td></tr>
</table>

| Q | Answer | Mark | Comment |
|---|---|---|---|
| **20b** | $\frac{1}{2}$ | **B1** | |
| **21a** | 3 | **B1** | |
| **21b** |  | **B1** | Vertices of additional triangle should be at (6, 2), (8, 2) and (8, 1). |
| **22** | $4 \times 4 \times 4$ or $5 \times 2 \times$ length or $64 \div (5 \times 2)$ | **M1** | Using the formula for the volume of a cuboid. |
| | 64 | **A1** | Correct volume of the cube. |
| | 6.4 cm | **A1** | Correct height of cuboid. |
| **23** | $11 \times 50\,000$ | **M1** | Correct use of scale. |
| | $550\,000 \div 100\,000$ | **M1** | Correct conversion of cm to km. |
| | 5.5 km | **A1** | |
| **24** | Women: $\frac{22}{120} \times 360$ or<br>Men: $\frac{31}{120} \times 360$ or<br>Girls: $\frac{38}{120} \times 360$ or<br>Boys $\frac{29}{120} \times 360$ | **M1** | Any correct method for finding the number of degrees for one sector. |
| | W: 66°, M: 93°, G: 114°, B: 87° | **A1** | All correct. |
| | All sectors of pie chart accurately drawn | **B1** | Allow ± 2°. |
| | All sectors correctly labelled 'women', 'men', 'girls' and 'boys' | **B1** | |
| | **Total marks:** | **60** | |