

| Question | Answer | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------|---|----------------|----------------|------|-------|-------|-------|---------|-----------------|------|----------|--------|------|-------|--------|-------|-------|---|------|-------|-----------------|-------|-------|---------|------|-------|--------|-------|-------|----|------|-------|-----------------|-------|-------|---------|------|
| 1 | <p>a) 60 600 2,400</p> <p>b) 160 1,600 80</p> <p>c) 450 1,350 30</p> <p>To find the number of items, multiply the number in one box by the number of boxes. To find the number of boxes, divide the total number of items by the number in one box.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | <p>a)</p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 5px; width: 45%;"> <p style="text-align: center; background-color: #FFD700; margin: 0;">Cupcakes (makes 4)</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td style="border: 1px solid black; padding: 2px; text-align: center;">50 g</td><td>butter</td></tr> <tr><td style="border: 1px solid black; padding: 2px; text-align: center;">50 g</td><td>sugar</td></tr> <tr><td style="border: 1px solid black; padding: 2px; text-align: center;">1</td><td>eggs</td></tr> <tr><td style="border: 1px solid black; padding: 2px; text-align: center;">0.5 tsp</td><td>vanilla extract</td></tr> <tr><td style="border: 1px solid black; padding: 2px; text-align: center;">60 g</td><td>flour</td></tr> <tr><td style="border: 1px solid black; padding: 2px; text-align: center;">2 tbsp</td><td>milk</td></tr> </table> </div> <div style="border: 1px solid black; padding: 5px; width: 45%;"> <p style="text-align: center; background-color: #ADD8E6; margin: 0;">Cupcakes (makes 24)</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td style="border: 1px solid black; padding: 2px; text-align: center;">300 g</td><td>butter</td></tr> <tr><td style="border: 1px solid black; padding: 2px; text-align: center;">300 g</td><td>sugar</td></tr> <tr><td style="border: 1px solid black; padding: 2px; text-align: center;">6</td><td>eggs</td></tr> <tr><td style="border: 1px solid black; padding: 2px; text-align: center;">3 tsp</td><td>vanilla extract</td></tr> <tr><td style="border: 1px solid black; padding: 2px; text-align: center;">360 g</td><td>flour</td></tr> <tr><td style="border: 1px solid black; padding: 2px; text-align: center;">12 tbsp</td><td>milk</td></tr> </table> </div> </div> <div style="margin-top: 10px; border: 1px solid black; padding: 5px; width: fit-content; margin: auto;"> <p style="text-align: center; background-color: #90EE90; margin: 0;">Cupcakes (makes 64)</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td style="border: 1px solid black; padding: 2px; text-align: center;">800 g</td><td>butter</td></tr> <tr><td style="border: 1px solid black; padding: 2px; text-align: center;">800 g</td><td>sugar</td></tr> <tr><td style="border: 1px solid black; padding: 2px; text-align: center;">16</td><td>eggs</td></tr> <tr><td style="border: 1px solid black; padding: 2px; text-align: center;">8 tsp</td><td>vanilla extract</td></tr> <tr><td style="border: 1px solid black; padding: 2px; text-align: center;">960 g</td><td>flour</td></tr> <tr><td style="border: 1px solid black; padding: 2px; text-align: center;">32 tbsp</td><td>milk</td></tr> </table> </div> <p>b) 40</p> | 50 g | butter | 50 g | sugar | 1 | eggs | 0.5 tsp | vanilla extract | 60 g | flour | 2 tbsp | milk | 300 g | butter | 300 g | sugar | 6 | eggs | 3 tsp | vanilla extract | 360 g | flour | 12 tbsp | milk | 800 g | butter | 800 g | sugar | 16 | eggs | 8 tsp | vanilla extract | 960 g | flour | 32 tbsp | milk |
| 50 g | butter | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 g | sugar | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | eggs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.5 tsp | vanilla extract | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60 g | flour | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 tbsp | milk | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 300 g | butter | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 300 g | sugar | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | eggs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 tsp | vanilla extract | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 360 g | flour | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 tbsp | milk | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 800 g | butter | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 800 g | sugar | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | eggs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 tsp | vanilla extract | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 960 g | flour | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 32 tbsp | milk | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | <p>a) £90 b) £36 c) £3 d) 30 litres e) 3 litres</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr style="background-color: #FFFF00;"> <th style="padding: 5px;">Length of rope</th> <th style="padding: 5px;">Weight of rope</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">80 m</td> <td style="padding: 5px;">5 kg</td> </tr> <tr> <td style="padding: 5px; color: blue;">480 m</td> <td style="padding: 5px;">30 kg</td> </tr> <tr> <td style="padding: 5px;">20 m</td> <td style="padding: 5px; color: blue;">1.25 kg</td> </tr> <tr> <td style="padding: 5px;">2 m</td> <td style="padding: 5px; color: blue;">0.125 kg</td> </tr> </tbody> </table> | Length of rope | Weight of rope | 80 m | 5 kg | 480 m | 30 kg | 20 m | 1.25 kg | 2 m | 0.125 kg | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Length of rope | Weight of rope | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 80 m | 5 kg | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 480 m | 30 kg | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 m | 1.25 kg | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 m | 0.125 kg | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

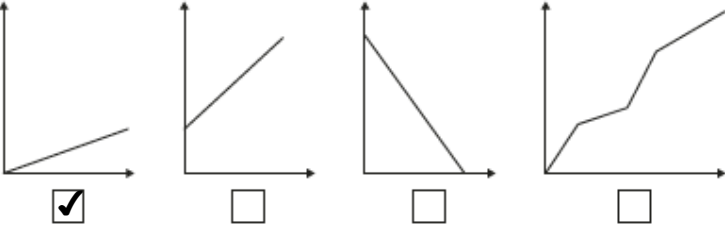
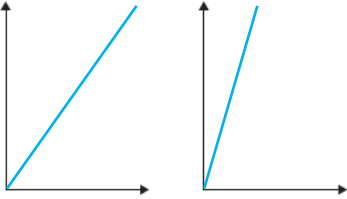
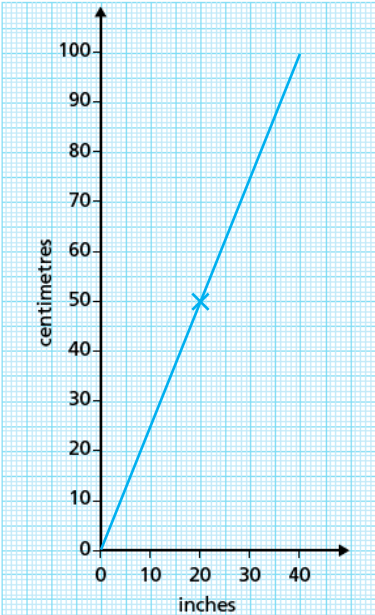
Y8 – Autumn – Block 2 – Step 1 – Solve problems involving direct proportion Answers (continued)

| Question | Answer |
|----------|---|
| 5 | a) true $5 \times 5 = 25$ and $8 \times 5 = 40$ b) false 4 chocolate bars cost £2.50 2 chocolate bars cost £1.25 c) false This is not a proportion problem. d) true $12 \times 20 = 240$ $132 \text{ cm} \times 20 = 2640 \text{ cm} = 26.4 \text{ m}$ |
| 6 | 40 g of ginger for 16 gingerbread men 10 g of ginger for 4 gingerbread men 150g for 60 gingerbread men No, she needs another 10g of ginger. |

| Question | Answer | | |
|--|--|--|---|
| 1 | a) 10 miles = 16 kilometres 40 miles = 64 kilometres 40 kilometres = 25 miles 80 kilometres = 50 miles b) 500 miles | | |
| 2 | a) 40 pints = 23 litres 40 litres = 70 pints 20 litres = 35 pints 35 pints = 20 litres b) <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>Jack's method</p> <p>100 pints = 70 pints + 30 pints</p> <p>70 pints = 40 litres</p> <p>30 pints = 17 litres</p> <p>So 100 pints = 57 litres</p> </td> <td style="width: 50%; vertical-align: top;"> <p>Dora's method</p> <p>100 pints = 2 × 50 pints</p> <p>50 pints = 28.5 litres</p> <p>So 100 pints = 57 litres</p> </td> </tr> </table> c) 100 litres = 175 pints | <p>Jack's method</p> <p>100 pints = 70 pints + 30 pints</p> <p>70 pints = 40 litres</p> <p>30 pints = 17 litres</p> <p>So 100 pints = 57 litres</p> | <p>Dora's method</p> <p>100 pints = 2 × 50 pints</p> <p>50 pints = 28.5 litres</p> <p>So 100 pints = 57 litres</p> |
| <p>Jack's method</p> <p>100 pints = 70 pints + 30 pints</p> <p>70 pints = 40 litres</p> <p>30 pints = 17 litres</p> <p>So 100 pints = 57 litres</p> | <p>Dora's method</p> <p>100 pints = 2 × 50 pints</p> <p>50 pints = 28.5 litres</p> <p>So 100 pints = 57 litres</p> | | |
| 3 | <p>a) 75 lbs = 34 kg 82 kg = 180 lbs</p> <p>b) Students need to do conversions both from lbs to kg and from kg to lbs.</p> | | |
| 4 | 41°F = 5°C change for Oslo = 10°C 32°F = 0°C change for New York = 8°C The temperature changes more between midnight and midday in Oslo . | | |

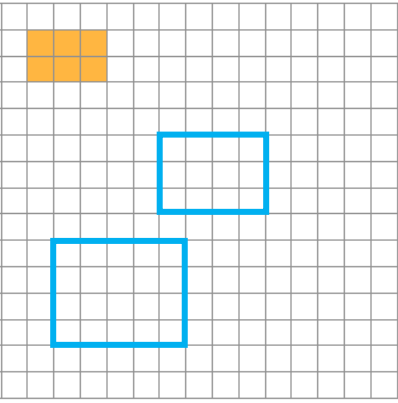
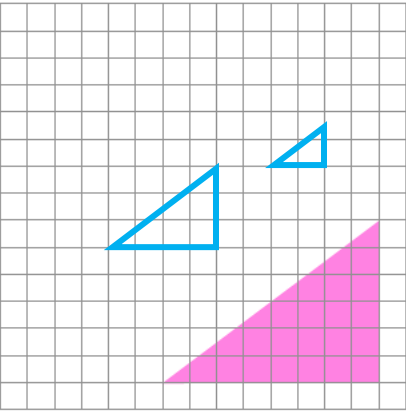
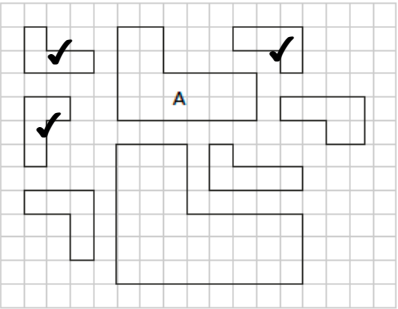
Y8 – Autumn – Block 2 – Step 3 – Convert between currencies Answers

| Question | Answer | | | | | | | | | | |
|----------------------|--|----------------------|-----------------------------|----------|--------|-----------|----------------|-------|--------------|----------|---------------|
| 1 | a) 800 kr b) 3,200 kr c) 11,680 kr d) £10 e) £25 f) £0.50 g) 1 krona is not worth the same as £1. 800 krona is worth £5, so is worth less than £80 | | | | | | | | | | |
| 2 | a) £5 b) £11 c) £24.20 d) \$60 e) \$800 f) \$12 g) Australia \$90 = £49.50, which is less than £50 | | | | | | | | | | |
| 3 | <table border="1"> <thead> <tr> <th>Answer on calculator</th> <th>Answer to the nearest penny</th> </tr> </thead> <tbody> <tr> <td>18.36846</td> <td>£18.37</td> </tr> <tr> <td>419.51289</td> <td>£419.51</td> </tr> <tr> <td>3.718</td> <td>£3.72</td> </tr> <tr> <td>18.98721</td> <td>£18.99</td> </tr> </tbody> </table> | Answer on calculator | Answer to the nearest penny | 18.36846 | £18.37 | 419.51289 | £419.51 | 3.718 | £3.72 | 18.98721 | £18.99 |
| Answer on calculator | Answer to the nearest penny | | | | | | | | | | |
| 18.36846 | £18.37 | | | | | | | | | | |
| 419.51289 | £419.51 | | | | | | | | | | |
| 3.718 | £3.72 | | | | | | | | | | |
| 18.98721 | £18.99 | | | | | | | | | | |
| 4 | a) €33.90 b) £26.55 c) £88.50 d) €14.13 | | | | | | | | | | |
| 5 | £86.33 | | | | | | | | | | |
| 6 | a) £66.93 b) £811.02 | | | | | | | | | | |
| 7 | 34,117,647 (to the nearest Ugandan shilling) | | | | | | | | | | |

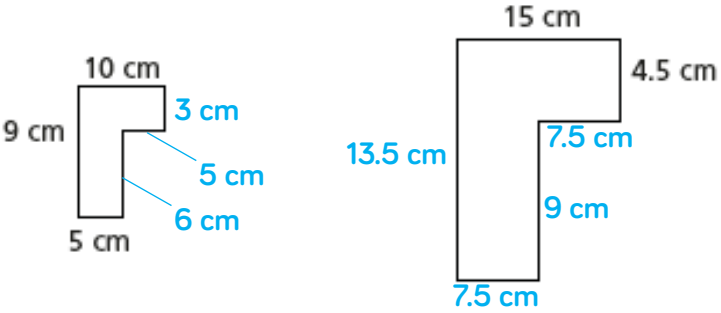
| Question | Answer |
|----------|--|
| 1 | <p>a) £20 = \$35 £35 = \$60 \$80 = £47 \$25 = £14</p> <p>b) \$85 £100 = \$170 £250 = \$425 \$8,500 = £5,000 \$4,250 = £2,500</p> |
| 2 | <p>a) </p> <p>None of the other graphs are a single straight line through the origin.</p> <p>b) two graphs showing a straight line through the origin, e.g.:</p>  |
| 3 | <p>a) (0, 0) (1, 2.5) (10, 25) (20, 50)</p> <p>b) </p> <p>c) The graph is a straight line through the origin.</p> |

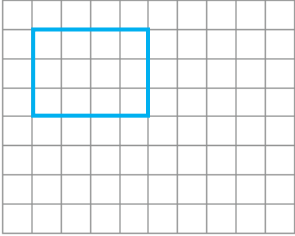
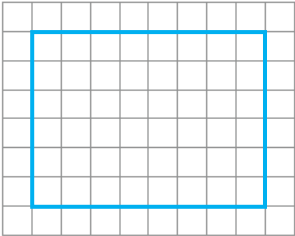
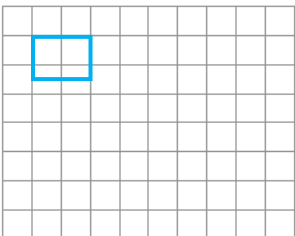
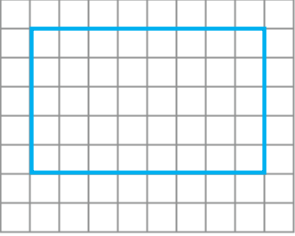
Y8 – Autumn – Block 2 – Step 4 – Explore direct proportion graphs Answers (continued)

| Question | Answer | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------|--|------------|-----|-----|----------------|---------------|----|----|----|---------------|---|----|----|----------|---|----|----|----------|---|----|-----|-----|----------------|----------|----|----|-----|-----|----|
| 4 | <p>a)</p> <table border="1"> <tr> <td>Time (hrs)</td> <td>2</td> <td>4</td> <td>10</td> </tr> <tr> <td>Distance (km)</td> <td>18</td> <td>36</td> <td>90</td> </tr> </table> <p style="text-align: center;"><input checked="" type="checkbox"/></p> <table border="1"> <tr> <td>Distance (km)</td> <td>5</td> <td>10</td> <td>15</td> </tr> <tr> <td>Cost (£)</td> <td>8</td> <td>13</td> <td>18</td> </tr> </table> <p style="text-align: center;"><input type="checkbox"/></p> <p>In the lefthand table, when the time doubles the distance doubles, and when the time increase by a factor of 5 the distance also increases by a factor of 5 In the righthand table, when the time doubles the cost does not double.</p> <p>b)</p> <table border="1"> <tr> <td><i>x</i></td> <td>5</td> <td>15</td> <td>150</td> <td>0.5</td> <td>$\frac{50}{3}$</td> </tr> <tr> <td><i>y</i></td> <td>12</td> <td>36</td> <td>360</td> <td>1.2</td> <td>40</td> </tr> </table> | Time (hrs) | 2 | 4 | 10 | Distance (km) | 18 | 36 | 90 | Distance (km) | 5 | 10 | 15 | Cost (£) | 8 | 13 | 18 | <i>x</i> | 5 | 15 | 150 | 0.5 | $\frac{50}{3}$ | <i>y</i> | 12 | 36 | 360 | 1.2 | 40 |
| Time (hrs) | 2 | 4 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Distance (km) | 18 | 36 | 90 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Distance (km) | 5 | 10 | 15 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Cost (£) | 8 | 13 | 18 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>x</i> | 5 | 15 | 150 | 0.5 | $\frac{50}{3}$ | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>y</i> | 12 | 36 | 360 | 1.2 | 40 | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 90.9 chains | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Question | Answer |
|----------|---|
| 1 | a) $a = 9$ cm b) $b = 2$ cm c) $c = 15$ cm d) $d = 10$ cm |
| 2 | two rectangles with sides in ratio 3:2, e.g.:  |
| 3 | two similar right-angled triangles with two shorter sides in ratio 3:4, e.g.:  |
| 4 |  |
| 5 | a) 20 cm b) 80 cm The ratio between the larger perimeter and the smaller perimeter is the same as the ratio between a side of the larger rectangle and the corresponding side of the smaller rectangle. |

| Question | Answer |
|----------|--|
| 6 | a) PR:SU $2:3$ RQ:UT $2:3$ PQ:ST $2:3$ b) They are all the same. c) PR:RQ $4:3$ SU:UT $4:3$ d) $YZ = 97.5$ |

| Question | Answer |
|----------|--|
| 1 | a) 3 b) 0.25 c) 0.5 d) 2.5 |
| 2 | a) length = 36 cm, width = 27 cm b) length = 6 cm, width = 4.5 cm c) length = 48 cm, width = 36 cm d) length = 4 cm, width = 3 cm e) length = 8 cm, width = 6 cm |
| 3 | a) 1.5 b) <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 10px;">  </div> |
| 4 | a) 3 b) 1:3 c) 1:3 d) 1:3 e) 1:3 f) The answers to parts b), c), d) and e) should all be the same. g) All the ratios are 1:3 because the scale of enlargement is 3 |
| 5 | a) length = 150 cm, width = 60 cm b) length = 108 cm, width = 43.2 cm c) 33.6 cm d) 11.25 m |

| Question | Answer |
|----------|---|
| 1 | <p>a) </p> <p>b) </p> <p>c) </p> |
| 2 | <p>a) 4 m b) 6 m c) 0.5 m d) 3.3 m e) rectangle 6 cm wide and 2cm tall</p> |
| 3 | <p>a) </p> <p>b) 32 squares by 20 squares</p> |
| 4 | <p>a) 1 m b) 1.5 m by 1 m c) 0.7 m by 0.4 m d) rectangle 1.6 cm by 1.2 cm</p> |
| 5 | <p>a) 5 cm b) 25 cm and 20 cm c) There are two masts on the real boat.</p> |

| Question | Answer | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------|---|----------|----------|----------|----------|--------|--------|--|-----|----|-----|----------|-----|--|-----|-----|----------|----|-----|--|-----|--------|-----|-----|-----|--|
| 1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | <p>Student's answers may differ slightly from these. All distances in miles.</p> <table border="1"> <thead> <tr> <th></th> <th>Harton</th> <th>Mayville</th> <th>Southley</th> <th>Grange</th> </tr> </thead> <tbody> <tr> <th>Harton</th> <td></td> <td>108</td> <td>84</td> <td>204</td> </tr> <tr> <th>Mayville</th> <td>108</td> <td></td> <td>108</td> <td>189</td> </tr> <tr> <th>Southley</th> <td>84</td> <td>114</td> <td></td> <td>117</td> </tr> <tr> <th>Grange</th> <td>204</td> <td>195</td> <td>120</td> <td></td> </tr> </tbody> </table> | | Harton | Mayville | Southley | Grange | Harton | | 108 | 84 | 204 | Mayville | 108 | | 108 | 189 | Southley | 84 | 114 | | 117 | Grange | 204 | 195 | 120 | |
| | Harton | Mayville | Southley | Grange | | | | | | | | | | | | | | | | | | | | | | |
| Harton | | 108 | 84 | 204 | | | | | | | | | | | | | | | | | | | | | | |
| Mayville | 108 | | 108 | 189 | | | | | | | | | | | | | | | | | | | | | | |
| Southley | 84 | 114 | | 117 | | | | | | | | | | | | | | | | | | | | | | |
| Grange | 204 | 195 | 120 | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | <p>a)</p> <div style="border: 1px solid black; padding: 10px; margin-bottom: 10px;"> <p>1 cm represents 20,000 cm</p> <p>So 2 cm represents 40,000 cm</p> <p>$40,000 \div 100 = 400$</p> <p>So 2 cm represents 400 m</p> </div> <div style="border: 1px solid black; padding: 10px;"> <p>1 cm represents 20,000 cm</p> <p>So 5 cm represents 100,000 cm</p> <p>$100,000 \div 100 = 1,000$</p> <p>So 5 cm represents 1,000 m</p> <p>This is the same as 1 km.</p> </div> <p>b) 10 cm c) 1.5 km</p> | | | | | | | | | | | | | | | | | | | | | | | | | |

Y8 – Autumn – Block 2 – Step 8 – Interpret maps using scale factors and ratios Answers (continued)

| Question | Answer |
|----------|--|
| 5 | <div style="display: flex; justify-content: space-between; align-items: center; margin-bottom: 5px;"> <div style="border: 1px solid black; padding: 2px 10px;">1 cm represents 0.5 m</div> <div style="border: 1px solid black; padding: 2px 5px;">✓</div> </div> <div style="display: flex; justify-content: space-between; align-items: center; margin-bottom: 5px;"> <div style="border: 1px solid black; padding: 2px 10px;">4 cm represents 2 m</div> <div style="border: 1px solid black; padding: 2px 5px;">✓</div> </div> <div style="display: flex; justify-content: space-between; align-items: center; margin-bottom: 5px;"> <div style="border: 1px solid black; padding: 2px 10px;">5 inches represents 250 inches</div> <div style="border: 1px solid black; padding: 2px 5px;">✓</div> </div> <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px 10px;">1 km is represented by 20 m</div> <div style="border: 1px solid black; padding: 2px 5px;">✓</div> </div> |
| 6 | <p>always true On 1:20,000, 1 cm represents 20,000 cm. On 1:40,000, 0.5 cm represents 20,000 cm.</p> <p>never true The scale is $1:1 \times 1,000 \times 100 = 1:100,000$</p> <p>always true The dimension will increase from the object to the drawing.</p> |