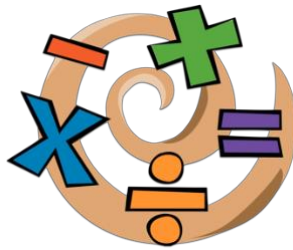




**St Andrew's Academy**

**Mathematics Department**

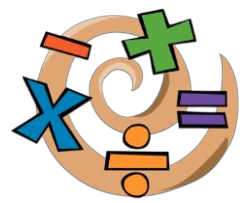


***COURSE 2 BLOCK 5***

***PRE-ASSESSMENT  
LEARNING EVALUATION***



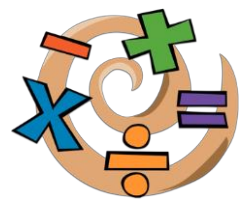
# S2 BLOCK 1 LEARNING EVALUATION



	Red	Amber	Green	Revision Exercise
<b>NUMBER</b>				
<p>○ I can state the place value of a number, e.g.</p> <p>Which value does the underlined number represent:</p> <p>a) 56 <u>4</u>43 → 400 or 4 hundred</p> <p>b) 0.<u>6</u>82 → <math>\frac{6}{10}</math> or 6 tenths</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	• Number Exercise 1 Q1
<p>○ I can round a decimal to the nearest whole number:</p> <p>a) 5.852 → 6</p> <p>b) 19.23 → 19</p> <p>c) 137.55555 → 138</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	• Number Exercise 1 Q2
<p>○ I can round a decimal to 1 or 2 decimal places:</p> <p><b>To 1 decimal place:</b></p> <p>a) 45.647 → 45.6</p> <p>b) 0.5896 → 0.6</p> <p>c) 1.85434 → 1.9</p> <p>d) 204.99999 → 205.0</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	• Number Exercise 1 Q3
<p><b>To 2 decimal places:</b></p> <p>a) 85.847 → 85.85</p> <p>b) 0.2196 → 0.22</p> <p>c) 12.83534 → 12.84</p> <p>d) 964.9999 → 965.00</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	• Number Exercise 1 Q4
<p>○ I can add and subtract two decimal numbers: e.g.</p> <p>a) <math>5.67 + 3.9 \rightarrow 5.67</math></p> $\begin{array}{r} 5.67 \\ + 3.90 \\ \hline 9.57 \\ 1 \end{array}$	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	• Number Exercise 2
<p>b) <math>13.8 - 4.15 \rightarrow 13.80</math></p> $\begin{array}{r} 13.80 \\ - 4.15 \\ \hline 09.65 \end{array}$	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	• Number Exercise 2



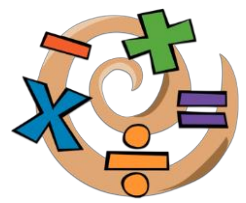
# S2 BLOCK 1 LEARNING EVALUATION



<ul style="list-style-type: none"><li>I can multiply decimals by a whole number: e.g. a) <math>3.83 \times 6 = 22.98</math> b) <math>0.4 \times 8 = 3.2</math> (mentally)</li></ul>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<ul style="list-style-type: none"><li>Number Exercise 3</li></ul>
<ul style="list-style-type: none"><li>I can divide decimals by a whole number: e.g. a) <math>127.68 \div 8 = 15.96</math> b) <math>2.7 \div 3 = 0.9</math> (mentally)</li></ul>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<ul style="list-style-type: none"><li>Number Exercise 3</li></ul>
<ul style="list-style-type: none"><li>I can multiply decimals by 10, 100 and 1000: e.g. a) <math>5.6 \times 10 = 56</math>      b) <math>0.78 \times 100 = 78</math>  c) <math>9.03 \times 1000 = 9030</math></li></ul>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<ul style="list-style-type: none"><li>Number Exercise 4</li></ul>
<ul style="list-style-type: none"><li>I can divide decimals by 10, 100 and 1000: e.g. a) <math>72 \div 10 = 7.2</math>      b) <math>89 \div 100 = 0.89</math>  c) <math>4.9 \div 1000 = 0.0049</math></li></ul>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<ul style="list-style-type: none"><li>Number Exercise 4</li></ul>
<ul style="list-style-type: none"><li>I can multiply decimals by multiples of 10, 100 and 1000: e.g. a) <math>2.5 \times 30 = 2.5 \times 10 \times 3 = 75</math> b) <math>0.78 \times 900 = 0.78 \times 100 \times 9 = 702</math> c) <math>1.96 \times 4000 = 1.96 \times 1000 \times 4 = 7840</math></li></ul>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<ul style="list-style-type: none"><li>Number Exercise 5 Q1</li></ul>
<ul style="list-style-type: none"><li>I can divide decimals by multiples 10, 100 and 1000: e.g. a) <math>32 \div 40 = 32 \div 10 \div 4 = 0.8</math> b) <math>460 \div 200 = 460 \div 100 \div 2 = 2.30</math> c) <math>4900 \div 7000 = 4900 \div 1000 \div 7 = 0.7</math></li></ul>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<ul style="list-style-type: none"><li>Number Exercise 5 Q2</li></ul>
<ul style="list-style-type: none"><li>I can multiply a decimal by another decimal: a) <math>0.6 \times 0.4 = 0.24</math>      b) <math>3.2 \times 0.5 = 1.60</math>  c) <math>0.003 \times 0.06 = 0.00018</math></li></ul>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<ul style="list-style-type: none"><li>Number Exercise 6 Q1</li></ul>
<ul style="list-style-type: none"><li>I can divide a decimal by another decimal: a) <math>0.72 \div 0.8 = 0.9</math>      b) <math>3.5 \div 0.7 = 5</math>  b) <math>0.0032 \div 0.04 = 0.08</math></li></ul>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<ul style="list-style-type: none"><li>Number Exercise 6 Q2</li></ul>
<ul style="list-style-type: none"><li>I can apply my knowledge of decimals to problem solving questions.</li></ul>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<ul style="list-style-type: none"><li>Mixed questions through the exercises</li></ul>



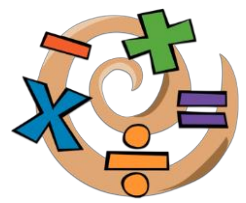
# S2 BLOCK 1 LEARNING EVALUATION



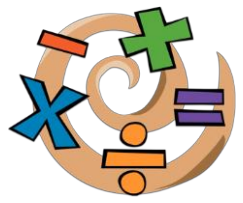
	Red	Amber	Green	Revision Exercise
<b>ALGEBRA</b>				
<p>○ I can simplify an algebraic expression by collecting like terms: e.g. a) <math>7d + 3d - d = 9d</math></p> <p>b) <math>8a + 4b - 2a + 3b = 6a + 7b</math></p> <p>c) <math>7m + 3n - 6 - 5m - 4n + 2 = 2m - 1n - 4</math></p> <p>d) <math>8 \times f = 8f</math></p> <p>e) <math>a \times c = ac</math></p> <p>f) <math>k \times k = k^2</math></p> <p>○ I can substitute values into an algebraic expression to gain a numerical answer: e.g. When <math>d = 3</math>, <math>e = 7</math> and <math>f = -4</math>, find the value of:</p> <p>a) <math>d + e</math> <math>= 7 + 3</math> <math>= 10</math></p> <p>b) <math>2e</math> <math>= 2 \times 7</math> <math>= 14</math></p> <p>c) <math>5d - 6</math> <math>= 5 \times 3 - 6</math> <math>= 15 - 6</math> <math>= 9</math></p> <p>d) <math>2e + f</math> <math>= 2 \times 7 + (-4)</math> <math>= 14 + (-4)</math> <math>= 10</math></p> <p>e) <math>2e + 4d</math> <math>= 2 \times 7 + 4 \times 3</math> <math>= 14 + 12</math> <math>= 26</math></p> <p>f) <math>f^2</math> <math>= (-4)^2</math> <math>= (-4) \times (-4)</math> <math>= 16</math></p> <p>g) <math>def - de</math> <math>= 3 \times 7 \times (-4) - 3 \times 7</math> <math>= -84 - 21</math> <math>= -105</math></p> <p>h) <math>\frac{ef}{2}</math> <math>= \frac{7 \times (-4)}{2}</math> <math>= \frac{-28}{2}</math> <math>= -14</math></p> <p>i) <math>\sqrt{-3df}</math> <math>= \sqrt{-3 \times 3 \times (-4)}</math> <math>= \sqrt{36}</math> <math>= 6</math></p>	○	○	○	<ul style="list-style-type: none"> <li>Algebra Exercise 1</li> </ul>
	○	○	○	<ul style="list-style-type: none"> <li>Algebra Exercise 2</li> </ul>
	○	○	○	<ul style="list-style-type: none"> <li>Algebra Exercise 2</li> </ul>
	○	○	○	<ul style="list-style-type: none"> <li>Algebra Exercise 2</li> </ul>



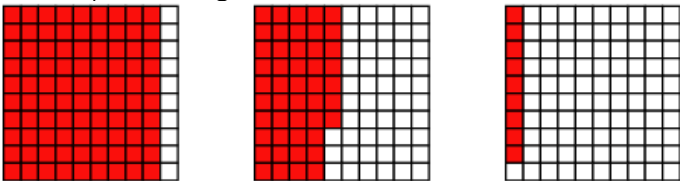
# S2 BLOCK 1 LEARNING EVALUATION



<p>o I can solve equations using the balance method:</p> <p>a) <math>7x + 2 = 23</math> <math>\quad -2 \quad -2</math> <math>7x = 21</math> <math>\div 7 \quad \div 7</math> <math>x = 3</math></p> <p>b) <math>3x - 7 = 11</math> <math>\quad +7 \quad +7</math> <math>3x = 18</math> <math>\div 3 \quad \div 3</math> <math>x = 6</math></p> <p>c) <math>13 = 5 + 2x</math> <math>\quad -5 \quad -5</math> <math>8 = 2x</math> <math>\div 2 \quad \div 2</math> <math>4 = x</math></p> <p>d) <math>8x + 3 = -21</math> <math>\quad -3 \quad -3</math> <math>8x = -24</math> <math>\div 8 \quad \div 8</math> <math>x = -3</math></p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<ul style="list-style-type: none"><li>Algebra Exercise 3</li></ul>
<p>o I can solve equations with letters and numbers on both sides:</p> <p>e.g. a) <math>8x + 4 = 2x + 40</math> <math>\quad -4 \quad -4</math> <math>8x = 2x + 36</math> <math>\quad -2x \quad -2x</math> <math>6x = 36</math> <math>\div 6 \quad \div 6</math> <math>x = 6</math></p> <p>b) <math>5y - 7 = 2y + 14</math> <math>\quad +7 \quad +7</math> <math>5y = 2y + 21</math> <math>\quad -2y \quad -2y</math> <math>3y = 21</math> <math>\div 3 \quad \div 3</math> <math>y = 7</math></p> <p>c) <math>3a + 5 = 6a - 19</math> <math>\quad -5 \quad -5</math> <math>3a = 6a - 24</math> <math>\quad -6a \quad -6a</math> <math>-3a = -24</math> <math>\div -3 \quad \div -3</math> <math>a = 8</math></p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<ul style="list-style-type: none"><li>Algebra Exercise 3</li></ul>
<p>o I can solve equations involving brackets:</p> <p>e.g. <math>3(x + 2) = 12</math> <math>3x + 6 = 12</math> <math>\quad -6 \quad -6</math> <math>3x = 6</math> <math>\div 3 \quad \div 3</math> <math>x = 2</math></p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<ul style="list-style-type: none"><li>Algebra Exercise 4</li></ul>

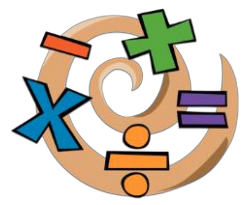


<b>Red</b>	<b>Amber</b>	<b>Green</b>	<b>Revision Exercise</b>
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Percentages				
<ul style="list-style-type: none"> <li>o I understand what a percentage means. "A percentage is a number out of 100"</li> <li>o Can use a 100 grid to shade in a specific percentage.</li> </ul>	○	○	○	
 <p>90% or 0.90                  47% or 0.47                  9% or 0.09</p>	○	○	○	
<ul style="list-style-type: none"> <li>o I can write a percentage as a fraction in its simplest form: e.g. a) <math>25\% = \frac{25}{100} = \frac{1}{4}</math></li> <li style="margin-left: 20px;">b) <math>3\% = \frac{3}{100}</math></li> <li style="margin-left: 20px;">c) <math>90\% = \frac{90}{100} = \frac{9}{10}</math></li> <li style="margin-left: 20px;">d) <math>2.5\% = \frac{2.5}{100} = \frac{25}{1000} = \frac{1}{40}</math></li> <li>o I can write a fraction as a percentage: e.g. <b>Without a calculator:</b></li> <li>a) <math>\frac{14}{100} = 14\%</math>                  b) <math>\frac{13}{20} = \frac{65}{100} = 65\%</math></li> <li style="margin-left: 20px;">c) <math>\frac{3}{4} = \frac{75}{100} = 75\%</math></li> <li><b>With a calculator:</b></li> <li>a) <math>\frac{8}{15} = 8 \div 15 \times 100 = 53.33 \dots \dots \%</math></li> <li>b) <math>\frac{47}{53} = 47 \div 53 \times 100 = 88.679 \dots \dots \%</math></li> </ul>	○	○	○	<ul style="list-style-type: none"> <li>• Percentages Exercise 2</li> </ul>
<ul style="list-style-type: none"> <li>a) <math>\frac{14}{100} = 14\%</math></li> <li style="margin-left: 20px;">b) <math>\frac{13}{20} = \frac{65}{100} = 65\%</math></li> <li style="margin-left: 20px;">c) <math>\frac{3}{4} = \frac{75}{100} = 75\%</math></li> </ul>	○	○	○	<ul style="list-style-type: none"> <li>• Percentages Exercise 3 Q1</li> </ul>
<ul style="list-style-type: none"> <li>a) <math>\frac{8}{15} = 8 \div 15 \times 100 = 53.33 \dots \dots \%</math></li> <li>b) <math>\frac{47}{53} = 47 \div 53 \times 100 = 88.679 \dots \dots \%</math></li> </ul>	○	○	○	<ul style="list-style-type: none"> <li>• Percentages Exercise 3 Q2</li> </ul>



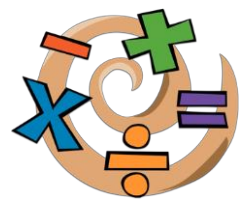
# S2 BLOCK 1 LEARNING EVALUATION



<p>○ I can write a percentage that is greater than 100% as an improper fraction: e.g a) <math>120\% = \frac{120}{100} = \frac{12}{10} = \frac{6}{5}</math></p> <p>b) <math>230\% = \frac{230}{100} = \frac{23}{10}</math></p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<ul style="list-style-type: none"><li>• Percentages Exercise 4</li></ul>
<p>○ I can express an amount as a percentage: e.g. John scored 36 out of 59 in his recent maths test, express this amount as a percentage. <math>(36 \div 59) \times 100 = 61.0169.....\%</math> John Scored = 62%</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<ul style="list-style-type: none"><li>• Percentages Exercise 5</li></ul>
<p>○ I can write a percentage as a decimal: e.g.</p> <p>a) <math>32\% = \frac{32}{100} = 0.32</math></p> <p>b) <math>8\% = \frac{8}{100} = 0.08</math></p> <p>c) <math>3.7\% = \frac{3.7}{100} = 0.037</math></p> <p>d) <math>120\% = \frac{120}{100} = 1.20</math></p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<ul style="list-style-type: none"><li>• Percentages Exercise 6 Q1</li></ul>
<p>○ I can write a decimal as a percentage: e.g.</p> <p>a) <math>0.89 = \frac{89}{100} = 89\%</math></p> <p>b) <math>0.02 = \frac{2}{100} = 2\%</math></p> <p>c) <math>0.076 = \frac{7.6}{100} = 7.6\%</math></p> <p>d) <math>1.80 = \frac{180}{100} = 180\%</math></p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<ul style="list-style-type: none"><li>• Percentages Exercise 6 Q2</li></ul>
<p>○ I can calculate a percentage of an amount without a calculator, using my links with fractions: e.g.</p> <p>a) <math>50\%</math> of 380ml = <math>\frac{1}{2}</math> of 380ml = 190ml</p> <p>b) <math>75\%</math> of £280 = <math>\frac{3}{4}</math> of £280 = £210</p> <p>c) <math>10\%</math> of 67cm = <math>\frac{1}{10}</math> of 67cm = 6.7cm</p> <p>d) <math>80\%</math> of 190kg = <math>\frac{4}{5}</math> of 190kg = 152kg</p> <p>e) <math>7\%</math> of \$350 = <math>\frac{7}{100}</math> of \$350 = \$24.50</p> <p>f) <math>140\%</math> of 900 = <math>\frac{140}{100}</math> of 900 = 1260</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<ul style="list-style-type: none"><li>• Percentages Exercise 7 Q1</li></ul>



# S2 BLOCK 1 LEARNING EVALUATION

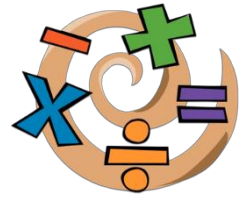


<ul style="list-style-type: none"> <li>I can calculate a percentage of an amount with a calculator: e.g. <math>13\% \text{ of } \pounds 200 = (13 \div 100) \times \pounds 200 = \pounds 26</math></li> </ul>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<ul style="list-style-type: none"> <li>Percentages Exercise 7 Q2</li> </ul>
<ul style="list-style-type: none"> <li>I can work out the value a percentage increase or decrease on an amount: e.g. a) The price of a 7 night holiday to Spain in January was <math>\pounds 450</math>. In June the same holiday has increased by 15%. What is the price of the holiday in June?  <b><math>15\% \text{ of } \pounds 450 = \pounds 67.50</math></b> <b>Price of holiday in June = <math>\pounds 450 + \pounds 67.50 = \pounds 517.50</math></b></li> </ul>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<ul style="list-style-type: none"> <li>Percentages Exercise 8</li> </ul>
<ul style="list-style-type: none"> <li>b) A pair of designer trainer cost <math>\pounds 80</math>. In the sale they were reduced by 25%. What was the cost of the trainers in the sale?  <b><math>25\% \text{ of } \pounds 80 = \pounds 20</math></b> <b>Sale price = <math>\pounds 80 - \pounds 20 = \pounds 60</math></b></li> </ul>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<ul style="list-style-type: none"> <li>Percentages Exercise 8</li> </ul>
<ul style="list-style-type: none"> <li>I can work using my percentage knowledge and apply it to real life context: e.g. Calculate the amount in your bank account on a sum of <math>\pounds 2500</math> at a rate of 6% per annum after 1 year.  <b><math>6\% \text{ of } \pounds 2500 = \pounds 150</math></b> <b>1 year = <math>\pounds 2500 + \pounds 150 = \pounds 2650</math></b></li> </ul>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<ul style="list-style-type: none"> <li>Percentages Exercise 9</li> </ul>
<ul style="list-style-type: none"> <li>I can express a rise or fall (increase or decrease) in value as a percentage: e.g. <b><math>\frac{\text{Increase/Decrease}}{\text{Original Amount}} \times 100 = \%</math></b>  The value of a painting rises from <math>\pounds 120,000</math> to <math>\pounds 192,000</math>. Work out the percentage increase in the value of the painting. Increase – 72 000 <b><math>\frac{72\ 000}{120\ 000} \times 100 = 60\%</math></b></li> </ul>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<ul style="list-style-type: none"> <li>Percentages Exercise 10</li> </ul>





## S2 BLOCK 1 Revision Exercises



### NUMBER REVISION

#### Exercise 1

1. State the place value of each of the underlined numbers:

- a) 5.24      b) 7.251      c) 0.92      d) 26 288      e) 1.73      f) 376.4  
g) 827 382      h) 0.4635      i) 655 012      j) 0.0025      k) 0.0329      l) 4 367 206

2. Round the following decimals to the nearest whole number:

- a) 4.6      b) 12.9      c) 1.3      d) 240.29      e) 0.87      f) 397.555

3. Round the following decimal numbers to 1 decimal place:

- a) 8.62      b) 19.14      c) 27.35      d) 15.826      e) 209.7547      f) 0.92736

4. Round the following decimal numbers to 2 decimal places:

- a) 4.163      b) 12.564      c) 57.3573      d) 5.92556      e) 129.72547      f) 0.62536

#### Exercise 2

1. Complete the following calculations:

- a)  $5.6 + 2.9$       b)  $13.4 + 7.56$       c)  $0.58 + 1.22$       d)  $25.645 + 12.104$   
e)  $9.7 - 2.8$       f)  $10.4 - 7.62$       g)  $2.67 - 0.98$       h)  $15 - 4.72$

2. Peter cuts a piece of string into 2 lengths. One is 4.2cm long, one is 3.5cm long. How long was the string before it was cut?

3. Mary joins 2 lengths of wood together. One is 17.4cm long, the other one is 2.2cm long. How long is that altogether?

4. Mrs. Warburton weighs her suitcases ready for her holidays. It weighs 7.3kg. She takes out shoes that weigh 2.6kg. How heavy is her suitcase now?

5. I have 2 bags of sweets. One weighs 64.1g; one weighs 8.9g. How much do they weigh altogether?
6. Reese collected 45.6ml of rain on Sunday. 6.7ml of water evaporated overnight. How much rain was left in the beaker on Monday?
7. Sarah has 2 friends. Lauren is 1.40m tall and Sophie is 1.50m tall. If they both stood on top of each other how high would they be?
8. Mrs. Warburton weighed 63.9kg after Christmas. She went on a diet and lost 4.2kg. How much does she weigh now?
9. In a school one corridor is 11m long, another is 14.3m long. What is the sum of all their lengths?
10. Allan runs 7.6km on Monday and 6.5km on Tuesday. Find the total of his runs.
11. In a gymnastics competition Lizzie scored 12.6 points on vault. Jaspreet scored 2.5 points fewer than Lizzie. What is Jaspreet's score?
12. Mrs. Wilkinson went on a diet. In week one she lost 2.5kg, in week two she lost 1.75kg, in week three she lost 2.75kg and in week four she got fed up, ate lots of chocolate and gained 0.66kg. How much did she lose altogether?

### **Exercise 3**

1. Calculate:
  - a)  $23.8 \times 6$
  - b)  $718.92 \times 4$
  - c)  $0.87 \times 5$
  - d)  $17.106 \times 8$
  - e)  $44.7 \div 3$
  - f)  $2980.6 \div 7$
  - g)  $76.14 \div 9$
  - h)  $37.524 \div 2$
2. Martin keeps a record of how far he hikes. On his last three hikes he walked 15.8km, 18.7km and 23.5km. How far did he walk in total?
3. A transport lorry weighs 10.87 tonnes when empty. When fully laden, it weighs 39.91 tonnes. How heavy is its load?
4. Eight pupils each bring their teachers £5.30 to pay for a trip. How much is this altogether?
5. Hana's mum pours juice from a jug into six tumblers. Each tumbler holds 0.58 litres. How much juice has she poured out?

6. Anna's total score for figure skating is 68.8. There are eight judges and each gave her the same score. What score did each judge give?

7. Sharjeel's dad bought eight identical panes of glass for his greenhouse. In total they cost £39.12. How much did one pane cost?

8. A physics teacher has electrical wire measuring 9.84m. What is the length of 10 pieces of wire?

9. A bag of coffee beans weighs 2.35kg. How much does one hundred bag of coffee weigh?

10. The total cost for 100 pupils to go on a school trip is £1346. How much did each pupil pay for the trip?

11. A tree trunk which measures 23.15 metres is cut into 10 equal section. What is the length of each section?

12. A small lorry is carrying seven crates. Each crate weighs 1096kg. The maximum the lorry can carry is 8000kg.

Can the lorry carry the crates safely? Explain your answer.

13. Bethany is going to see a film at the cinema. The bus will cost £0.90 each way and the cinema ticket is £2.25. How much change will she have from £5.00?

14. The weights of 2 parcels are 10.35kg and 8.69kg.

What is the difference in weight between the parcels?

#### **Exercise 4**

1. Calculate:

- |                        |                       |                        |                         |
|------------------------|-----------------------|------------------------|-------------------------|
| a) $5.62 \times 10$    | b) $0.936 \times 10$  | c) $4.07 \times 100$   | d) $63.205 \times 100$  |
| e) $0.0845 \times 100$ | f) $1.48 \times 1000$ | g) $72.97 \times 1000$ | h) $0.0456 \times 1000$ |
| i) $343 \div 10$       | j) $65.9 \div 10$     | k) $0.7 \div 10$       | l) $638 \div 100$       |
| m) $23.4 \div 100$     | n) $1.6 \div 100$     | o) $54.8 \div 1000$    | p) $6544 \div 1000$     |
| q) $8.5 \div 1000$     | r) $0.54 \div 1000$   |                        |                         |

#### **Exercise 5**

1. Calculate:

- |                      |                      |                      |                      |
|----------------------|----------------------|----------------------|----------------------|
| a) $60 \times 0.3$   | b) $80 \times 0.6$   | c) $0.8 \times 90$   | d) $0.6 \times 50$   |
| e) $300 \times 0.4$  | f) $600 \times 0.8$  | g) $0.5 \times 400$  | h) $0.9 \times 700$  |
| i) $4000 \times 0.3$ | j) $8000 \times 0.7$ | k) $0.9 \times 5000$ | l) $0.6 \times 9000$ |

2. Calculate:

- |                   |                   |                   |                   |
|-------------------|-------------------|-------------------|-------------------|
| a) $24 \div 30$   | b) $54 \div 60$   | c) $72 \div 80$   | d) $36 \div 90$   |
| e) $240 \div 600$ | f) $450 \div 500$ | g) $540 \div 900$ | h) $280 \div 700$ |

- |                    |                    |                    |                    |
|--------------------|--------------------|--------------------|--------------------|
| i) $2.7 \div 300$  | j) $3.5 \div 500$  | k) $4.8 \div 800$  | l) $1.8 \div 900$  |
| o) $3.6 \div 1000$ | p) $3.6 \div 2000$ | q) $3.6 \div 3000$ | r) $3.6 \div 4000$ |
| s) $7.5 \div 5000$ | t) $6.4 \div 8000$ | u) $8.1 \div 9000$ | v) $4.9 \div 7000$ |

### **Exercise 6**

1. Calculate:

- |                        |                         |                          |                      |                        |
|------------------------|-------------------------|--------------------------|----------------------|------------------------|
| a) $0.3 \times 0.9$    | b) $0.2 \times 0.4$     | c) $0.8 \times 0.3$      | d) $0.7 \times 0.6$  | e) $0.23 \times 0.5$   |
| f) $1.7 \times 0.2$    | g) $4.5 \times 0.6$     | h) $0.05 \times 0.3$     | i) $0.08 \times 0.4$ | j) $0.003 \times 0.04$ |
| k) $0.16 \times 0.004$ | l) $0.063 \times 0.002$ | m) $0.0007 \times 0.003$ |                      |                        |

2. Calculate:

- |                        |                       |                      |                      |                     |
|------------------------|-----------------------|----------------------|----------------------|---------------------|
| a) $8 \div 0.2$        | b) $16 \div 0.4$      | c) $25 \div 0.5$     | d) $48 \div 0.6$     | e) $56 \div 0.7$    |
| f) $81 \div 0.9$       | g) $100 \div 0.1$     | h) $99 \div 0.9$     | i) $1.4 \div 0.7$    | j) $2.6 \div 0.2$   |
| k) $5.6 \div 0.8$      | l) $5.4 \div 0.6$     | m) $2.55 \div 0.5$   | n) $9.24 \div 0.6$   | o) $22.26 \div 0.7$ |
| p) $37.36 \div 0.8$    | q) $8 \div 0.02$      | r) $40 \div 0.08$    | s) $4.2 \div 0.03$   | t) $6.3 \div 0.07$  |
| u) $0.024 \div 0.08$   | v) $0.081 \div 0.09$  | w) $0.005 \div 0.01$ | x) $0.015 \div 0.05$ |                     |
| y) $0.0153 \div 0.003$ | z) $0.906 \div 0.006$ |                      |                      |                     |

3. The forecast expected 2.05 centimetres of rain to fall every hour. What depth of rain fell during the 30 minutes the storm actually lasted?
4. A small paint pen for colour testing holds 0.08 litres of paint. How many pens can be filled from a drum which contains 1.6 litres?

## **ALGEBRA REVISION**

### **Exercise 1**

1. Simplify these expressions by collecting like terms :-

- |                        |                        |                             |
|------------------------|------------------------|-----------------------------|
| (a) $x + x$            | (b) $w + w + w$        | (c) $m + m + m + m + m$     |
| (d) $c - c + c$        | (e) $f + f - f + f$    | (f) $x + x + x - x - x$     |
| (g) $x + 4x + 3x - x$  | (h) $5e + 4e - 8e + e$ | (i) $2x + 2x + y + y$       |
| (j) $a + b - a + b$    | (k) $3p + 4q - 3p + q$ | (l) $5x + 3w - 2x$          |
| (m) $4g + h - 5g + 7h$ | (n) $v + 3w - v + 3w$  | (o) $a^2 + b^2 - a^2 + b^2$ |

2. Simplify by multiplying :-

- |                                    |                            |                             |                            |
|------------------------------------|----------------------------|-----------------------------|----------------------------|
| (a) $6 \times t$                   | (b) $p \times 4$           | (c) $a \times a$            | (d) $w \times w$           |
| (e) $7 \times f$                   | (f) $15 \times r$          | (g) $m \times 12$           | (h) $s \times 8$           |
| (i) $x \times x \times 3$          | (j) $x \times 4 \times 5$  | (k) $3 \times d \times 5$   | (l) $8m \times 3$          |
| (m) $a \times a \times 9$          | (n) $g \times 7 \times g$  | (o) $p \times q$            | (p) $m \times n \times 11$ |
| (q) $p \times 5 \times q$          | (r) $8 \times k \times k$  | (s) $5a \times 3b$          | (t) $9x \times 3x$         |
| (u) $2d \times 3d \times 4$        | (v) $5a \times a \times a$ | (w) $3w \times 2w \times w$ |                            |
| (x) $(4a)^2$ i.e. $(4a \times 4a)$ | (y) $(6x)^2$               | (z) $(2ab)^2$               |                            |

3. Simplify the following expressions :- :-

- |                      |                           |                               |                           |
|----------------------|---------------------------|-------------------------------|---------------------------|
| (a) $x^2 + 3x^2$     | (b) $x \times 2x$         | (c) $3p \times p$             | (d) $8v - 3v$             |
| (e) $6m \times 2m$   | (f) $3n \times 8n$        | (g) $3n + 8n$                 | (h) $4x \times 5y$        |
| (i) $5y \times 4x$   | (j) $7a + a$              | (k) $3y \times 2x \times y$   | (l) $20b - 18b + 2b$      |
| (m) $14t - t$        | (n) $15x - 14x + y$       | (o) $5a + 3a + 1$             | (p) $a^2 + 4a^2$          |
| (q) $3y^2 - 2y^2$    | (r) $3a + b + a$          | (s) $8p + 1 - p$              | (t) $9x^2 + 2x^2 - 10x^2$ |
| (u) $3d + 9 - 2d$    | (v) $7 + 3h + 5h$         | (w) $8 - 2x + 7x$             |                           |
| (x) $5a^2 - 4 + a^2$ | (y) $7v^2 - 6v^2 + 10v^2$ | (z) $2a^2 + 5b^2 + a^2 - b^2$ |                           |

4. Simplify the following expressions:

- |                            |                          |                               |
|----------------------------|--------------------------|-------------------------------|
| a) $3x + 6y + 5x - 2y$     | b) $6m - 2s + 11s + m$   | c) $2a + 3b - 2 + a + 3b + 4$ |
| d) $3a - 2b + a - 5b$      | e) $2x - 2y - 6x + 5y$   | f) $y - 4m - 3y - 5m$         |
| g) $7p - 2q - q + 3r + 4r$ | h) $11c + 8d - 6c - 11d$ |                               |

### Exercise 2

1. If  $a = 2$ ,  $b = 5$ ,  $c = 6$ ,  $d = 10$ , find the value of:

- |              |              |              |          |                   |                     |
|--------------|--------------|--------------|----------|-------------------|---------------------|
| a) $d - c$   | b) $a + c$   | c) $3b$      | d) $bc$  | e) $abc$          | f) $3d - 12$        |
| g) $4a + 3c$ | h) $abc - d$ | i) $cd - ab$ | j) $c^2$ | k) $\frac{bc}{a}$ | l) $\frac{3c+a}{4}$ |

2. If  $x = -2$ ,  $y = 4$  and  $z = -8$ , find the value of:

- |             |            |           |          |              |                |
|-------------|------------|-----------|----------|--------------|----------------|
| a) $x + z$  | b) $y - x$ | c) $3z$   | d) $yz$  | e) $xyz$     | f) $3x + 7$    |
| g) $6y - z$ | h) $z^2$   | i) $5y^2$ | j) $x^3$ | k) $5z + 6x$ | l) $\sqrt{xz}$ |

m)  $\frac{3z}{6}$       n)  $\frac{z-y}{3}$       o)  $y(x+z)$       p)  $(z+y)^2$       q)  $(x+y)(x+z)$

### **Exercise 3**

1. Solve the following equations:

a)  $6y = 54$       b)  $3y = 24$       c)  $2h = 48$       d)  $x + 8 = 13$       e)  $y - 5 = 16$   
 e)  $14 = d + 7$       h)  $20 = y - 6$

2. Solve the following equations:

a)  $2x + 3 = 11$       b)  $7y - 12 = 16$       c)  $5g + 7 = 47$       d)  $9p - 11 = 61$   
 e)  $4a + 6 = 22$       f)  $3r + 8 = 41$       g)  $6b - 19 = 11$       h)  $8x - 23 = 41$   
 i)  $12 + 2x = 24$       j)  $13 - 4x = 41$       k)  $2x - 3 = x + 2$       l)  $7x - 3 = 2x + 12$   
 m)  $7y - 8 = 5y + 2$       n)  $4x + 5 = 2x - 11$       o)  $5x - 6 = 2x - 15$       p)  $x + 2x = -15$   
 q)  $3x - 5 = 4x - 7$       r)  $2x + 7 = 5x - 3$       s)  $2m + 7 = 12 - 3m$   
 t)  $6g - 2 = 8g - 5$       u)  $8 - 4x = 10 - 2x$       v)  $9d - 16 = 2d - 51$

### **Exercise 4**

1. Remove the brackets and solve:

a)  $2(y + 2) = 8$       b)  $3(a + 2) = 12$       c)  $4(x - 4) = 40$   
 d)  $5(c - 3) = 35$       e)  $7(3 + a) = 49$       f)  $(-2 + x) = 36$   
 g)  $6(6 + p) = 48$       h)  $9(x + 4) = 18$       i)  $4(a + 6) = 4$   
 j)  $8(3 + m) = 8$

2. Remove the brackets and solve:

a)  $2(4x + 8) = 32$       b)  $5(7x - 4) = 15$       c)  $5(5x - 3) = 35$   
 d)  $4(6x + 3) = 36$       e)  $7(2x - 7) = 7$       f)  $6(2x - 3) = 42$

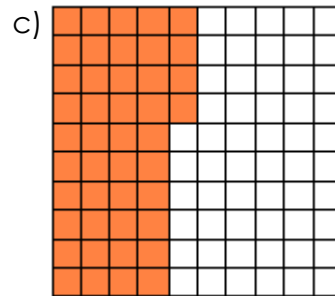
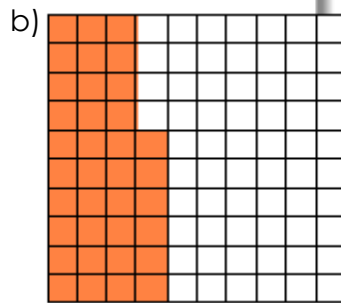
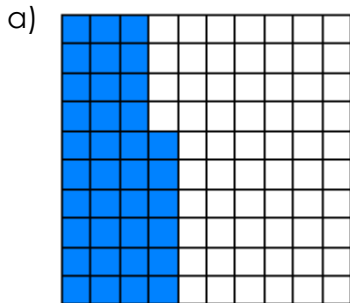
3. Remove the brackets and solve:

a)  $3(2x + 1) + 2(4x + 2) = 35$       b)  $2(x + 3) + 3(x + 1) = 24$   
 c)  $4(3x - 2) + 8(x + 1) = 100$

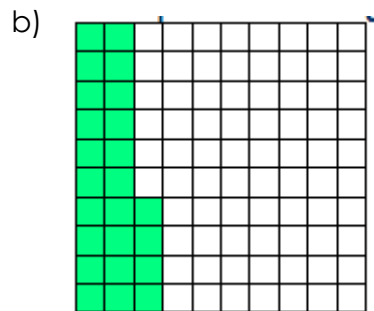
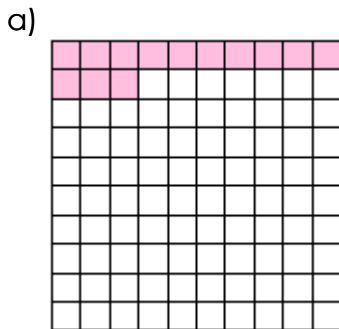
## PERCENTAGES REVISION

### Exercise 1

1. What percentage of the grid is shaded in each of the following diagrams:



2. What percentage of the grid is **not shaded** in each of the following diagrams:



### Exercise 2

1. Write the following percentages as a fraction in it's simplest form:

a) 50%      b) 10%      c) 25%      d) 20%      e) 75%

f) 5%      g) 30%      h) 1%      i) 40%      j) 60%

k) 90%      l) 3%      m) 80%      n) 100%      o) 70%

p) 3.5%      q) 19.3%      r) 0.8%      s)  $33\frac{1}{3}\%$       t)  $66\frac{2}{3}\%$

### **Exercise 3**

1. Change each of the following fractions to percentages(**no calculator**):

(a)  $\frac{7}{25}$       (b)  $\frac{32}{50}$       (c)  $\frac{1}{5}$       (d)  $\frac{1}{2}$

(e)  $\frac{3}{4}$       (f)  $\frac{8}{20}$       (g)  $\frac{6}{20}$       (h)  $\frac{28}{50}$

(i)  $\frac{3}{5}$       (j)  $\frac{11}{25}$       (k)  $\frac{48}{50}$       (l)  $\frac{14}{100}$

(m)  $\frac{13}{20}$       (n)  $\frac{4}{5}$       (p)  $\frac{8}{10}$       (q)  $\frac{1}{10}$

2. Convert each of the following fractions to percentages(**you may use a calculator**):

a)  $\frac{3}{8}$       b)  $\frac{1}{12}$       c)  $\frac{16}{35}$       d)  $\frac{27}{52}$       e)  $\frac{19}{28}$       f)  $\frac{34}{18}$

### **Exercise 4**

1. Write the following percentages as improper fractions:

a) 130%      b) 150%      c) 180%      d) 105%      e) 270%



### **Exercise 5**

- 1) A crisp packet weighing 25g contains 7g of fat. What percentage is this ?
- 2) 40 out of every 300 paperclips produced by a machine are faulty. What percentage is this ?
- 3) What percentage of this line is shaded grey ? (Use a ruler)



- 4) On Monday, 3 of my class of 29 students were late for school. What percentage were on time ?
- 5) In Year 8 there are 107 boys and 123 girls. What percentage are girls ?
- 6) Joey scores 37 out of 40 in a French test. What percentage is this ?

### **Exercise 6**

1. Write the following percentages as decimals:  
a) 40%      b) 25%      c) 73%      d) 2%      e) 17.5%      f) 140%
2. Write the following decimals as percentages:  
a) 0.9      b) 0.75      c) 0.24      d) 0.07      e) 0.125      f) 1.36

### **Exercise 7**

1. Work out each of the following percentages of amounts (**no calculator**):  
a) 70% of £120      b) 25% of 36ml      c) 10% of 350kg  
d) 30% of 280g      e) 50% of £6400      f) 1% of 450cm  
g) 75% of 136mm      h)  $33\frac{1}{3}\%$  of £9.30      i) 60% of \$45  
j) 20% of 720ml      k) 80% of £3500      l) 3% of £540  
m) 5% of 560m      n)  $66\frac{2}{3}\%$  of 4.5cm      o) 40% of £75  
p) 120% of 610kg      q) 90% of 32mm      r) 150% of £200  
s) 45% of £160      t) 35% of 280g      u) 12.5% of £120

2. Work out each of the following percentages of amounts (**you may use a calculator**):
- |                  |                 |                  |
|------------------|-----------------|------------------|
| a) 17% of £80    | b) 28% of 280g  | c) 11% of 90cm   |
| d) 44% of £12.50 | e) 85% of 7.6kg | f) 59% of \$2200 |
| g) 12.5% of £124 | h) 2.5% of £250 | i) 16% of 1350mm |
| j) 43% of 520ml  | k) 62% of 480kg | l) 98% of £900   |

### **Exercise 8**

1. A shirt costing £20 has 10% off in a sale. How much would you pay for the shirt?
2. A sofa costing £400 has 25% off in a sale. How much would you pay for the sofa?
3. A family meal costs £55 and your Dad leaves a 10% tip. How much money does he leave in total?
4. Tim measure 120cm in height. His brother Phil is 25% shorter. How tall is Phil?
5. Ben and Sam have a bag containing 48 sweets. Whilst watching a film they eat 75% of the sweets. How many sweets are left?
6. Trainers are usually £30 but this week they have been reduced by 10%. What is the price of the trainers this week?
7. Mr Smith wants to buy a new car. He finds a car he likes for £5500 and then manages to negotiate 10% off the price. How much does Mr Smith pay for his new car?
8. In 2012 Lucy did a week long survey to record the number of birds in her garden. Over the week she recorded 120 birds. In 2013 she carried out another survey, but this time she counted 25% **more** birds. How many birds did Lucy count in 2013?
9. There are 300 pupils in a school and 75% of the pupils are boys. **How many** girls are there in the school?
10. Bob's bedroom has an area of 24m<sup>2</sup>. The area of his sister's room is 75% bigger. What is the area of his sister's room?

### **Exercise 8**

1. Liam invests £2500 in a super savings account that has an interest rate of 4% per annum. If Liam leaves this amount in his account for 1 year, how much will he have in his account at the end of the year?
2. Stacey invests £800 in a savings account that has an interest rate of 3.7% per annum. If Stacey leaves this amount in her account untouched, how much will he have in his account at the end of the year?
3. Paul invests £450 in the Southern Rock Bank account that has an interest rate of 2.8% per annum. If Paul leaves this amount in his account for 1 year, how much will he have in his account at the end of the year?
4. Irfon invests £4000 at 3% per annum. Calculate the value of his investment after 1 year.

### **Exercise 9**

1. The value of a painting rises from £120,000 to £192,000. Work out the percentage increase in the value of the painting.
2. Peter's weight decreases from 80kg to 64kg. Calculate the percentage decrease in Peter's weight.
3. A puppy weighed 2kg. Eight weeks later the puppy weighed 3.5kg. What was the percentage increase in the puppy's weight?
4. Alice buys a book for £19.80 A year later she sells the book for £12.87 Calculate the percentage decrease in the value of the book.
5. In a sale the price of a sofa is reduced from £2500 to £1840. What is the percentage decrease?