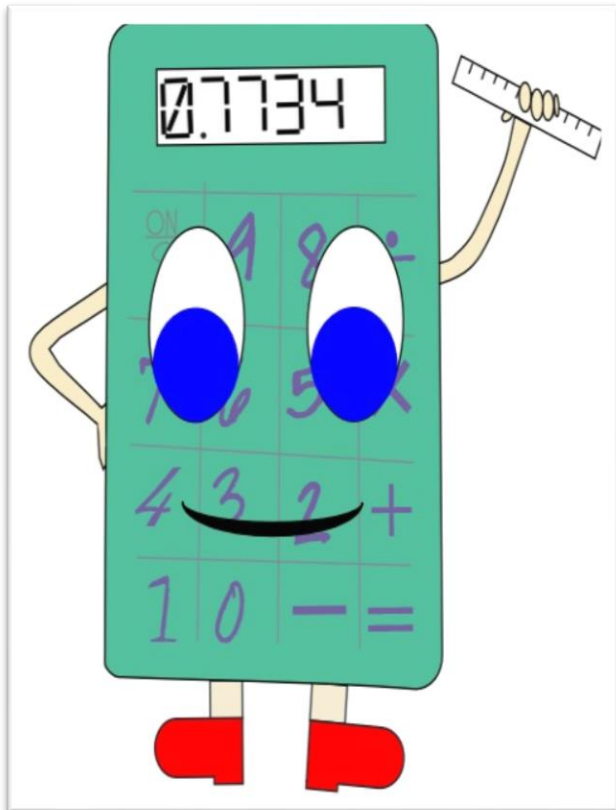


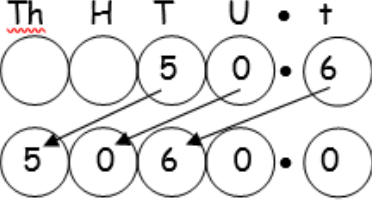
Craigmount High School



Helping your child achieve
Level 3 Numeracy

Rounding	
I can round decimals up to three decimal places.	<p>254.125874</p> <p>Nearest 100: 300</p> <p>Nearest 10: 250</p> <p>Nearest whole number: 254</p> <p>One decimal place: 254.1</p> <p>Two decimal places: 254.13</p> <p>Three decimal places: 254.126</p>
I can use rounding to help estimate the answers to calculations.	<p>A bar of chocolate weighs 42g. There are 48 bars of chocolate in a box. What is the total weight of chocolate in the box?</p> <p>Estimate = $50 \times 40 = 2000\text{g}$</p> <p>Calculate: $42 \times 48 = 2016\text{g}$</p>

Number and number processes																																																																																																																										
I can recall my times tables up to the twelve times table and use them to support with division.	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th>X</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> <th>6</th> <th>7</th> <th>8</th> <th>9</th> <th>10</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> <td>9</td> <td>10</td> </tr> <tr> <td>2</td> <td>2</td> <td>4</td> <td>6</td> <td>8</td> <td>10</td> <td>12</td> <td>14</td> <td>16</td> <td>18</td> <td>20</td> </tr> <tr> <td>3</td> <td>3</td> <td>6</td> <td>9</td> <td>12</td> <td>15</td> <td>18</td> <td>21</td> <td>24</td> <td>27</td> <td>30</td> </tr> <tr> <td>4</td> <td>4</td> <td>8</td> <td>12</td> <td>16</td> <td>20</td> <td>24</td> <td>28</td> <td>32</td> <td>36</td> <td>40</td> </tr> <tr> <td>5</td> <td>5</td> <td>10</td> <td>15</td> <td>20</td> <td>25</td> <td>30</td> <td>35</td> <td>40</td> <td>45</td> <td>50</td> </tr> <tr> <td>6</td> <td>6</td> <td>12</td> <td>18</td> <td>24</td> <td>30</td> <td>36</td> <td>42</td> <td>48</td> <td>54</td> <td>60</td> </tr> <tr> <td>7</td> <td>7</td> <td>14</td> <td>21</td> <td>28</td> <td>35</td> <td>42</td> <td>49</td> <td>56</td> <td>63</td> <td>70</td> </tr> <tr> <td>8</td> <td>8</td> <td>16</td> <td>24</td> <td>32</td> <td>40</td> <td>48</td> <td>56</td> <td>64</td> <td>72</td> <td>80</td> </tr> <tr> <td>9</td> <td>9</td> <td>18</td> <td>27</td> <td>36</td> <td>45</td> <td>54</td> <td>63</td> <td>72</td> <td>81</td> <td>90</td> </tr> <tr> <td>10</td> <td>10</td> <td>20</td> <td>30</td> <td>40</td> <td>50</td> <td>60</td> <td>70</td> <td>80</td> <td>90</td> <td>100</td> </tr> </tbody> </table>	X	1	2	3	4	5	6	7	8	9	10	1	1	2	3	4	5	6	7	8	9	10	2	2	4	6	8	10	12	14	16	18	20	3	3	6	9	12	15	18	21	24	27	30	4	4	8	12	16	20	24	28	32	36	40	5	5	10	15	20	25	30	35	40	45	50	6	6	12	18	24	30	36	42	48	54	60	7	7	14	21	28	35	42	49	56	63	70	8	8	16	24	32	40	48	56	64	72	80	9	9	18	27	36	45	54	63	72	81	90	10	10	20	30	40	50	60	70	80	90	100
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<p>I can add, subtract, multiply and divide decimals.</p>	<p>Subtract 6.9 from 145.97</p> $\begin{array}{r} 31 \\ 145.97 \\ - 6.90 \\ \hline 139.07 \end{array}$ <p>Multiply 50.6 by 100</p>  <p>50.6 × 100 = 5060</p>
<p>I can add, subtract, multiply and divide negative numbers.</p>	<p>The temperature outside at 2pm was 3°C. During the next 12 hours, it falls by 6°C. What is the temperature at 2am?</p> $3 - 6 = -3^{\circ}\text{C}$
<p>I can identify multiples and factors.</p>	<p>Multiples of a number are all the numbers which it fits into exactly.</p> <p>For example, the multiples of 6 are 6, 12, 18, 24, 30, 36, ...</p> <p>Factors of a number are all the numbers which fit into it exactly.</p> <p>For example, the factors of 12 are 1, 2, 3, 4, 6 and 12.</p>

I can identify prime numbers to 100 and can explain the method used.

Q: What is a prime number.

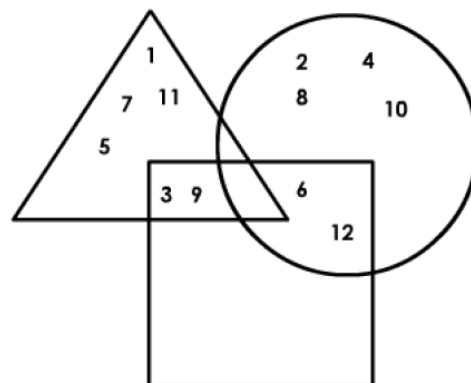
A: A prime number can be divided evenly only by 1 or itself.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

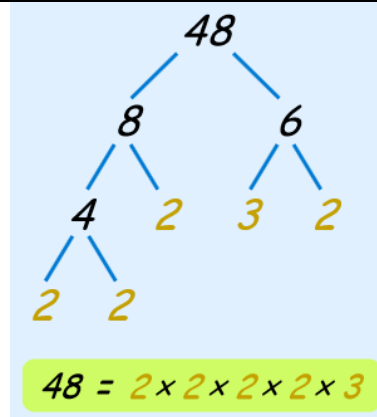
I can solve problems using multiples and factors.

Put the numbers 1 to 12 in the below diagram.

- Odd numbers must go into the triangle.
- Even numbers must go into the circle.
- Multiples of 3 must go into the square.



I can write a given number as a product of its prime factors.



Powers and roots

I can define index, exponent and power.

Index, exponent and power all refer to the number of times a number is multiplied by itself.

I can evaluate whole number powers and express whole numbers as powers.

$$2^3 = 2 \times 2 \times 2 = 8$$

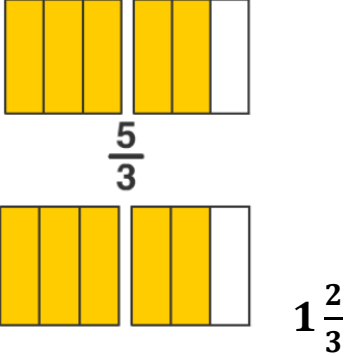
$$4^2 = 4 \times 4 = 16$$

Fractions, decimal fractions and percentages

Convert fractions, decimal fractions and percentages to equivalent fractions, decimal fractions or percentages.

$\frac{1}{10}$	$\frac{1}{5}$	$\frac{3}{10}$	$\frac{2}{5}$	$\frac{1}{2}$
0.1	0.2	0.3	0.4	0.5
10%	20%	30%	40%	50%

$\frac{3}{5}$	$\frac{7}{10}$	$\frac{4}{5}$	$\frac{9}{10}$	1
0.6	0.7	0.8	0.9	1.0
60%	70%	80%	90%	100%

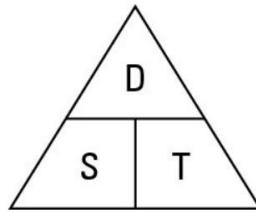
<p>I can add and subtract whole numbers and fractions, including when changing a denominator.</p>	<p>the original fractions: $\frac{1}{3} + \frac{1}{2}$</p> <p>with a common denominator: $\frac{2}{6} + \frac{3}{6}$</p> <p>result: $\frac{5}{6}$</p>
<p>I can convert between whole or mixed numbers, improper fractions and decimal fractions.</p>	
<p>Using my knowledge of fractions, decimal fractions and percentages, I can carry out calculations with and without a calculator.</p>	<p>Example</p> <p>25% of £640</p> <p>= $\frac{1}{4}$ of £640</p> <p>= £640 ÷ 4</p> <p>= £160</p>
<p>I can solve problems in which related quantities are increased or decreased proportionally.</p>	<p>Value Added Tax (VAT) = 20% (from 4th January 2010)</p> <p>Example Calculate the total price of a computer which costs £650 excluding VAT</p> <p>20% of £650</p> <p>= $\frac{1}{5}$ of 650</p> <p>= 650 ÷ 5</p> <p>= 130</p> <p>Total price = 650 + 130 = £780</p>

<p>I can express quantities as a ratio and where appropriate, simplify.</p>	<p>If there are 6 teachers and 60 children in a school, find the ratio of teachers to the total amount of teachers and children.</p> <p style="text-align: center;">Teachers: Teachers and Children</p> <p style="text-align: center;">6 : 66</p> <p style="text-align: center;">1: 11</p>
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Money	
<p>I can identify the best value when comparing products and justify my choice.</p>	
<p>I can budget effectively.</p>	<p>Income: Money received/earned.</p> <p>Expenditure: Money spent.</p> <p>Surplus: Money left over. Occurs when income is greater than expenditure.</p>
<p>I can demonstrate knowledge of financial terms.</p>	<p>Debit card: draws money directly from your account when you make a purchase.</p> <p>Credit card: borrows pre-approved funds when you make a purchase. Money is paid back with interest.</p> <p>APR: annual percentage rate</p> <p>pa: per annum</p> <p>Interest rate: the percentage charged by a lender when borrowing money.</p>
<p>I can convert between different currencies.</p>	<p>£ → \$ multiply by the exchange rate.</p> <p>\$ → £ divide by the exchange rate.</p>

Time

I can apply knowledge of the relationship between speed, distance and time to find each of the three variables.



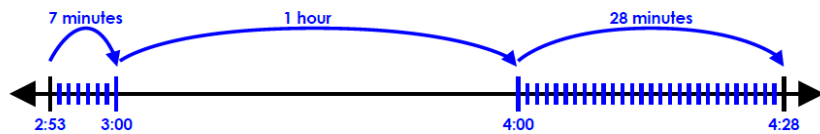
$$D = S \times T$$

$$S = D \div T$$

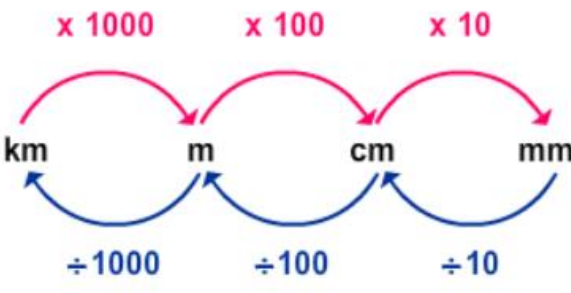
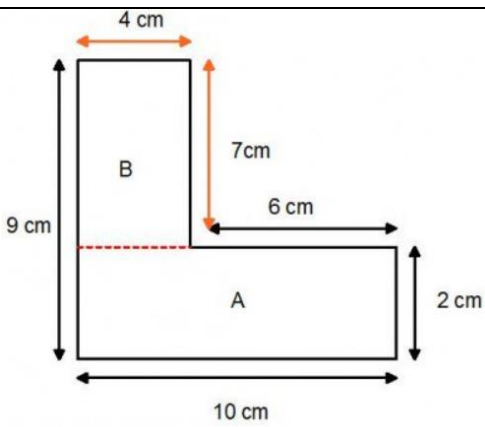
$$T = D \div S$$

I can calculate time durations across hours and days.

Start Time	End Time
2:53 pm	4:28 pm



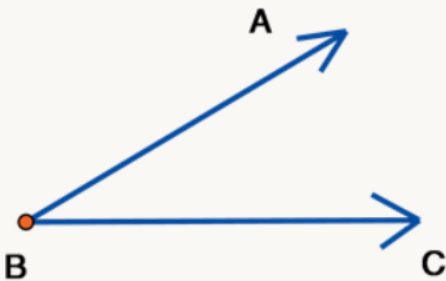
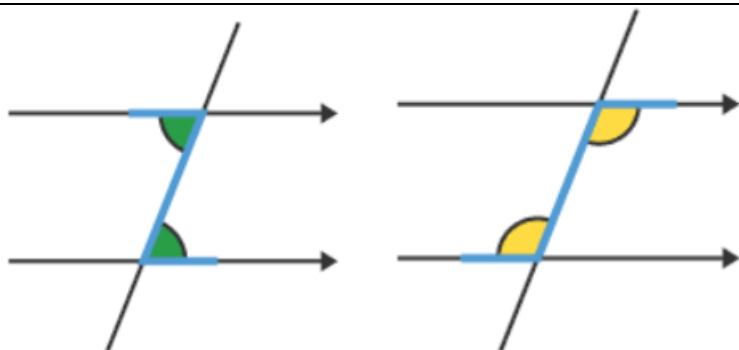
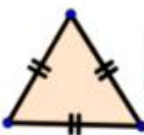
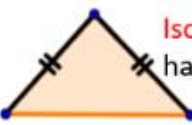
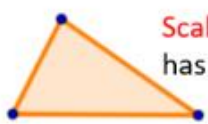
elapsed time: 1 hour and 35 minutes

Measurement	
I can identify appropriate units for length, area and volume.	<p>Length: mm, cm, m and km.</p> <p>Area: mm^2, cm^2, m^2</p> <p>Volume: cm^3, mL, L</p>
I can convert between standard units.	
I can calculate the area of 2D shapes.	$A_{rectangle} = L \times B$ $A_{triangle} = \frac{1}{2} \times B \times H$ $A_{circle} = \pi r^2$
I can calculate the area and volume of compound 2D and 3D shapes.	 $Area_A = L \times B = 10 \times 2 = 20cm^2$ $Area_B = L \times B = 4 \times 7 = 28cm^2$ $Total\ Area = 20 + 28 = 48cm^2$

Patterns and relationships	
I can generate a number sequences from a given rule and vice versa.	<p>Rule: $T = 4n + 6$ Number Sequence: 10, 14, 18, 22...</p> <p>Rule: $T = 2n - 1$ Number Sequence: 1, 3, 5, 7, 9...</p>
I can use algebra to express a sequence.	<p>The cost of hiring a car is £75 plus a charge of £0.05 per mile.</p> <p style="text-align: center;">$C = 75 + 0.05m$</p>

Expressions and equations	
I can collect like terms.	$2x + y - x + 3y = x + 4y$ $a^2 + 2a + 4a^2 = 5a^2 + 2a$
I can solve linear equations.	$2x + 3 = 12$ $2x = 9$ $x = 4.5$
I can evaluate a simple formula.	<p>Use the formula $P = 2L + 2B$ to evaluate P when $L = 12$ and $B = 7$.</p> <p>$P = 2L + 2B$ Step 1: write formula</p> <p>$P = 2 \times 12 + 2 \times 7$ Step 2: substitute</p> <p>$P = 24 + 14$ Step 3: start to evaluate</p> <p>$P = 38$ Step 4: write answer</p>

Properties of 2D and 3D objects	
I can use mathematical instruments to accurately draw a variety of 2D shapes.	Accurate use of protractor and ruler.

Angle, symmetry and transformation	
I can name angles.	 <p><i>Look Out: when naming an angle using three letters, the vertex must always be the middle letter!</i></p> <p style="text-align: center;">$\angle ABC$</p>
I can identify corresponding and alternate angles.	 <p style="display: flex; justify-content: space-around;"> Alternate Angles Corresponding Angles </p>
I can list properties of triangles and quadrilaterals.	 <p>Equilateral Triangle has three equal sides</p>  <p>Isosceles Triangle has two equal sides</p>  <p>Scalene Triangle has no equal sides</p>

I can enlarge and reduce objects in size, showing understanding of linear scale factor.

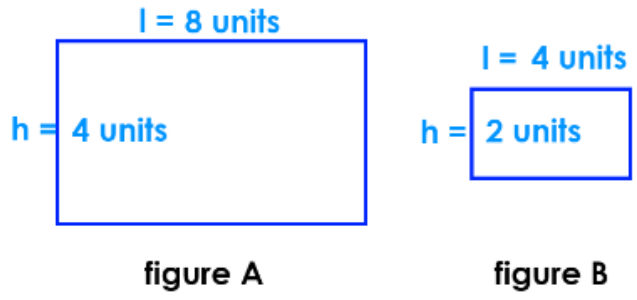
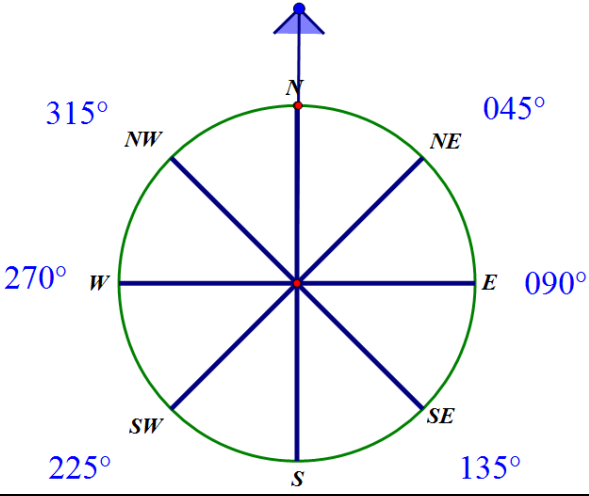


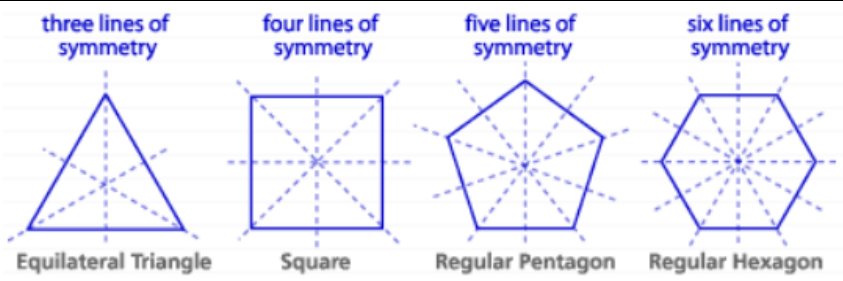
Figure A and Figure B are similar.

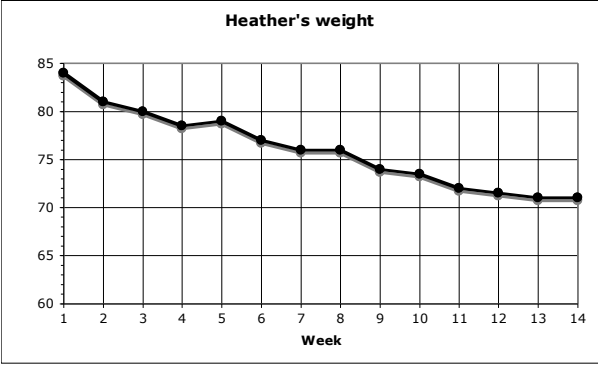
$$\text{Linear Scale Factor} = \frac{8}{4} = 2$$

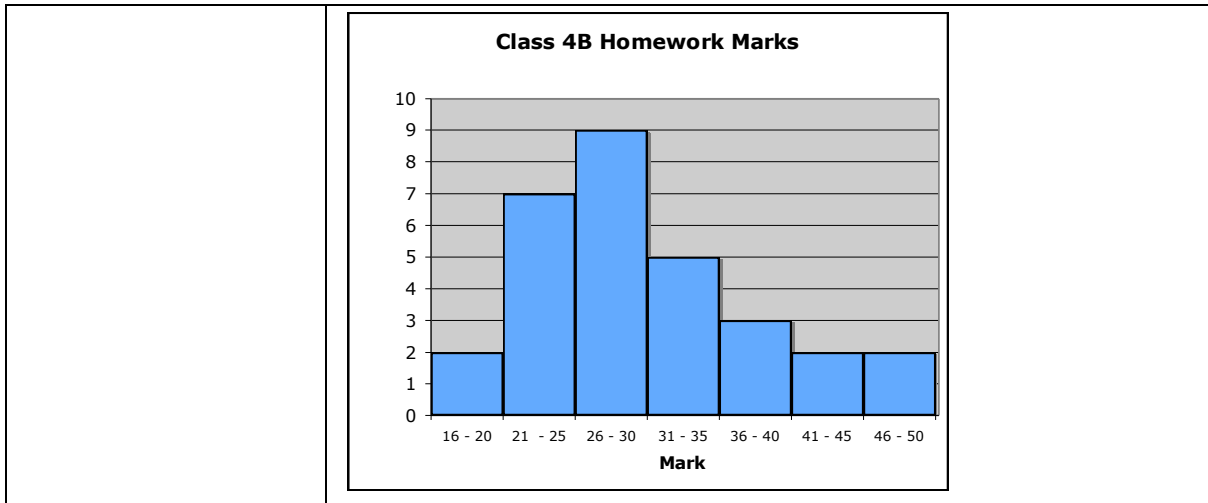
I can use bearings.



I can identify all lines of symmetry in 2D shapes.



Data and analysis																															
I can describe a method of collecting data.	Survey.																														
I can describe trends in data.	<p>Example The graph below shows Heather's weight over 14 weeks as she follows an exercise programme.</p> <div style="text-align: center;">  <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <caption>Heather's weight data</caption> <thead> <tr> <th>Week</th> <th>Weight (kg)</th> </tr> </thead> <tbody> <tr><td>1</td><td>84</td></tr> <tr><td>2</td><td>81</td></tr> <tr><td>3</td><td>80</td></tr> <tr><td>4</td><td>79</td></tr> <tr><td>5</td><td>79</td></tr> <tr><td>6</td><td>77</td></tr> <tr><td>7</td><td>76</td></tr> <tr><td>8</td><td>76</td></tr> <tr><td>9</td><td>74</td></tr> <tr><td>10</td><td>73.5</td></tr> <tr><td>11</td><td>72</td></tr> <tr><td>12</td><td>71.5</td></tr> <tr><td>13</td><td>71</td></tr> <tr><td>14</td><td>71</td></tr> </tbody> </table> </div> <p>The trend of the graph is that her weight is decreasing.</p>	Week	Weight (kg)	1	84	2	81	3	80	4	79	5	79	6	77	7	76	8	76	9	74	10	73.5	11	72	12	71.5	13	71	14	71
Week	Weight (kg)																														
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12	71.5																														
13	71																														
14	71																														
I can determine if data is robust, vague or misleading.	<p>I consider:</p> <ol style="list-style-type: none"> 1. Validity of the source. 2. Scale used. 3. Sample size. 4. Method of presentation. 5. Appropriateness of how the data was collected. 																														
I can describe bias.	<p>If data collected is described as biased, this means it does not give a fair representation.</p> <p>Examples:</p> <ul style="list-style-type: none"> • Using leading questions. • Having a small sample size. 																														
I can organize and display data appropriately.	<p>Bar graphs are often used to display data.</p> <p>The horizontal axis should show the categories or class intervals, and the vertical axis the frequency.</p> <p>All graphs should have a title, and each axis must be labelled.</p> <p>Example:</p>																														



Ideas of chance and uncertainty	
<p>I can use the probability scale of 0 to 1 showing probability as a fraction or decimal fraction.</p>	
<p>I can calculate the probability of an event occurring.</p>	<p>Question: What is the probability of throwing a prime number on a 12 sided dice?</p> <p>Answer: $P(\text{prime}) = \frac{\text{Number of favourable outcomes}}{\text{Number of possible outcomes}}$</p> $= \frac{5}{12}$
<p>I can use a given probability to calculate an expected outcome.</p>	<p>Question: The probability of rain in June is 0.2, so how many days do we expect it to rain?</p> <p>Answer: $30 \times 0.2 = 6$ days</p>
<p>I can describe mutually exclusive events.</p>	<p>Events are mutually exclusive if both cannot be true.</p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid lightblue; padding: 5px; text-align: center;"> <p style="color: red; font-size: small;">Mutually Exclusive Events</p> </div> <div style="border: 1px solid lightblue; padding: 5px; text-align: center;"> <p style="color: red; font-size: small;">Non-Mutually Exclusive Events</p> </div> </div>

