Challenge 1: Using the Dictionary

1. The Oxford Primary Illustrated Maths Dictionary contains over 600 words in alphabetical order. Look at the jumbled words below and list them in alphabetical order. Use the dictionary to check your answers.

   - set
   - quadrant
   - share
   - bearing
   - sequence
   - quadrilateral
   - year
   - shallow
   - adjacent
   - yard

   a) ..............................................................................................................
   b) ..............................................................................................................
   c) ..............................................................................................................
   d) ..............................................................................................................
   e) ..............................................................................................................
   f) ..............................................................................................................
   g) ..............................................................................................................
   h) ..............................................................................................................
   i) ..............................................................................................................
   j) ..............................................................................................................

2. Look up the definition of sequence in the dictionary. The words listed in the box underneath the definition, beginning with see also, are called link words. These are words that are linked to the headword and can be found in the dictionary. Look up the headwords below in the dictionary and then list their link words.

   a) Headword: discount
   b) Headword: numerator
   c) Headword: perpendicular

   LINK WORDS:
   LINK WORDS:
   LINK WORDS:
Super Challenge 1: Using the Dictionary

1. Look at pages 47-50 of the *Oxford Primary Illustrated Maths Dictionary* and answer the questions below.

   a. Name three different types of graph.

   ![Pie chart](image)

   b. What does geometry deal with?

   ![Triangle](image)

   c. How many grams are there in a kilogram?

   ![Kilogram](image)

   d. How many pints are equal to a gallon?

   ![Milk carton](image)

   e. What does the graph to the left show?

   ![Bar chart](image)
Challenge 2: Fractions

1. Fractions are used to show parts of something. Write the correct fraction next to each diagram to show the part of the circle that is shaded.

   a. 
   b. 
   c. 
   d. 
   e. 

   f. Which two fractions are equal to each other?

FRACTION OF A QUANTITY

2. When you find the fraction of a quantity, you divide by the denominator and multiply by the numerator. Complete the sums below to work out the answers to the maths stories.

   a) Eva had 8 slices of pizza but she shared the pizza with her sister who had \( \frac{1}{4} \) of it. How many slices of pizza did Eva's sister have?

   \[ \frac{1}{4} \text{ of } 8 = \boxed{ \quad } \]

   b) Max bought 12 cupcakes in the school cake sale but shared some of them with his friends. When Max got home he only had \( \frac{1}{3} \) of the cupcakes left. How many cupcakes did Max have left?

   \[ \frac{1}{3} \text{ of } 12 = \boxed{ \quad } \]
Super Challenge 2: Decimals

1. Look at the sums of money below. They all have decimal numbers. See if you can round the sums of money below to the nearest £.

   a. £22.19
   b. £10.47
   c. £13.86
   d. £27.51
   e. £13.23
   f. £25.99

Now order the sums of money on the line below from lowest to highest.

LOWEST  £  £  £  £  £  £  HIGHEST

2. Decimal points are also used in measurements. Convert the measurements below containing decimal numbers from metres to centimetres.

   HINT: 1 metre is equal to 100 centimetres.

   a. 2.67 metres = ................................ cm
   b. 4.95 metres = ................................ cm
   c. 3.5 metres = ................................ cm
Challenge 3: 2D and 3D Shapes

SHAPE

1. You can usually work out what a shape is called by counting the number of sides it has. A pentagon is any two-dimensional shape with five straight sides. Can you circle the shapes below that are pentagons?

Now write the correct shape names under each shape.

a.  
b.  
c.  
d.  

2. Look at the drawings of the two-dimensional shapes below. Write the name of the three-dimensional shape that has similar properties to the 2D shape below each drawing.

3D = cube  3D = pyramid  3D = sphere

See if you can describe the properties of each of the shapes.
Super Challenge 3: Angles

ANGLES

1. **Angles** have different names depending on the degrees of the turn.

   Draw lines to match the labels to the angles, then use a protractor to measure the angles and write the measurements next to the diagrams.

```
   obtuse angle
   acute angle
   right angle
```

   a. ............................................

   b. ............................................

   c. ............................................

2. When two things are the same distance apart, no matter how long they are, they are known as **parallel** to each other. When two things meet at right angles they are known as **perpendicular**. Use the correct term to describe the objects in the images below.

```
   perpendicular
   parallel
```

   a. The waves are ............................................

   b. The calculators are ............................................

   c. The cubes are .............................................
Challenge 4: Measuring Units

1. To measure something is to find out its size using a measuring unit. Different measuring units are used depending on what is being measured. Look at the measuring units below and sort them under the correct headings to show what they are used to measure.

<table>
<thead>
<tr>
<th>Mass</th>
<th>Capacity</th>
<th>Length</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>litres</td>
<td>minutes</td>
<td>milimetres</td>
<td>grams</td>
</tr>
<tr>
<td>tonnes</td>
<td>seconds</td>
<td>hours</td>
<td>metres</td>
</tr>
</tbody>
</table>

2. Read the two maths stories below. Decide which measuring units should be used in each situation.

   a) Katie is making a cushion cover in her technology lesson. She needs to buy some material to make her cushion. What measuring units should she use to measure the size of the piece of material she needs?

   b) Sanjay is practising for his school sports day and wants to time how long it takes him to run 100 metres. Which measuring unit should he use to time himself?
Super Challenge 4: Measures and Time

IMPERIAL UNITS

1. Imperial units are measurements such as feet and inches, pints and gallons, pounds and ounces. As well as metric units, some countries, such as the UK and US also use imperial units to measure things. Look at the imperial units listed below and draw lines to match them to the situations they might be used in.

- stone
- pint
- foot
- mile
- height (length)
- weight (mass)
- speed
- capacity

TIME

2. Time can be measured using either a 12-hour or a 24-hour clock. Read the times on the analogue and digital clocks below and record the times using a 12-hour clock. The first one has been done for you.

- 14.30
- 2.30pm
- 23.15

You can look up the words in bold in your Oxford Primary Illustrated Maths Dictionary to help you.
Challenge 5: Handling Data

1. One way of displaying findings gathered from **data** is to use a graph or a chart. See if you can correctly label the different types of graphs and charts below.

   - **block graph**
   - **pictogram**
   - **column graph**
   - **line graph**
   - **pie chart**

   a. 
   b. 
   c. 
   d. 
   e. 

2. Use the data in the table below to create a **bar chart** (on a separate sheet of paper) to show the number of animals in a pet shop.

   Anisha went to a pet shop to buy a pet. The table below shows the number of animals she found in the pet shop.

<table>
<thead>
<tr>
<th>Name of animal</th>
<th>Number of animals</th>
</tr>
</thead>
<tbody>
<tr>
<td>fish</td>
<td>40</td>
</tr>
<tr>
<td>birds</td>
<td>29</td>
</tr>
<tr>
<td>mice</td>
<td>38</td>
</tr>
</tbody>
</table>

   Remember to label your axes!

You can look up the words in bold in your **Oxford Primary Illustrated Maths Dictionary** to help you.
Super Challenge 5: Averages

1. There is more than one way to find an average. **Mode**, **mean**, **median** and **range** are all different types of average. The table shows how many times children in Class 4C at Littleleap Primary School have walked to school in the last month.

<table>
<thead>
<tr>
<th>Name</th>
<th>Number of times child has walked to school in one month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloe</td>
<td>10</td>
</tr>
<tr>
<td>Joshua</td>
<td>15</td>
</tr>
<tr>
<td>Adil</td>
<td>8</td>
</tr>
<tr>
<td>Harvey</td>
<td>20</td>
</tr>
<tr>
<td>Katie</td>
<td>12</td>
</tr>
<tr>
<td>Jacob</td>
<td>15</td>
</tr>
<tr>
<td>Olivia</td>
<td>4</td>
</tr>
<tr>
<td>Amari</td>
<td>15</td>
</tr>
<tr>
<td>Grace</td>
<td>12</td>
</tr>
<tr>
<td>Jay</td>
<td>3</td>
</tr>
<tr>
<td>Lila</td>
<td>0</td>
</tr>
<tr>
<td>Isaac</td>
<td>6</td>
</tr>
<tr>
<td>Dominic</td>
<td>10</td>
</tr>
</tbody>
</table>

a) What is the mode for the data in the table?

The mode is

b) What is the median for the data in the table?

The median is

c) What is the mean for the data in the table?

The mean is

d) What is the range for the data in the table?

The range is

2. Look at the data in the table again. Create a graph (on a separate sheet of paper) to show how many times each of the children in Class 4C walked to school last month. You will need to decide what type of graph will best display this information, e.g. **block graph**, **pie chart**, **pictogram**, etc.
Challenge 1: Using the Dictionary

1. a. adjacent f. set
   b. bearing g. shallow
   c. quadrant h. share
   d. quadrilateral i. yard
   e. sequence j. year

2. a. decrease, percent, reduction
   b. denominator, fraction
   c. horizontal, vertical

Challenge 2: Fractions

1. a. $\frac{1}{2}$ d. $\frac{2}{4}$
   b. $\frac{1}{4}$ e. $\frac{3}{8}$
   c. $\frac{1}{8}$ f. $\frac{1}{2}$ and $\frac{2}{4}$

2. a. 2 slices
   b. 4 cupcakes

Challenge 3: 2D and 3D Shapes

1. Shapes b, e and f should be circled.
   a. octagon e. pentagon
   b. pentagon f. pentagon
   c. hexagon g. hexagon
   d. octagon

2. a. 3D = sphere
   b. 3D = cube
   c. 3D = pyramid

   Children should then be able to explain their choices by describing the properties of the shapes.

Challenge 4: Measuring Units

1. a. metres and centimetres
   b. seconds

<table>
<thead>
<tr>
<th>Mass</th>
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</thead>
<tbody>
<tr>
<td>grams</td>
<td>kilograms</td>
<td>litres</td>
<td>metres</td>
</tr>
<tr>
<td></td>
<td></td>
<td>millilitres</td>
<td>centimetres</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>seconds</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>hours</td>
</tr>
</tbody>
</table>

2. a. bar-line graph, bar graph, block graph, column graph, line graph (other types of graph not listed in the dictionary should also be accepted)

3. Lines, curves, angles and shapes

4. 1000 grams

5. 8 pints

Challenge 5: Handling Data

1. a. pictogram
   b. line graph
   c. block graph
   d. pie chart
   e. column graph

2. The percentage of children's favourite sports

Super Challenge 1: Using the Dictionary

1. low: £10, high: £28

2. low: 1013 cm, high: 2628 cm

Super Challenge 2: Decimals

1. a. £22 b. £10 c. £14 d. £28 e. £13 f. £26

2. a. 267 cm b. 495 cm

Super Challenge 3: Angles

2. a. The waves are parallel.
   b. The calculators are parallel.
   c. The cubes are perpendicular.

Super Challenge 4: Measures and Time

2. a. 2.30pm b. 5.15pm c. 4.05pm d. 11.15pm

Super Challenge 5: Averages

1. a. The mode is 15
   b. The median is 10
   c. The mean is 10
   d. The range is 20