



## Year 6 Spring 2

### Starter suggestions for Number

- Know by heart facts for all multiplication tables up to 12 x 12.
- Find pairs of numbers with a sum of 100, decimals with a sum of 0.1, 1, 10.
- To derive related facts from those already known (e.g.  $4 \times 0.8$  linked to  $4 \times 8$  or  $3 + 7 = 10$  linked to  $0.3 + 0.7 = 1$ )
- Mentally multiply and divide two-digit and single-digit numbers.
- Use partitioning to double or halve any number.
- Mentally multiply and divide pairs of multiples of 10 and 100.
- Mentally multiply and divide two-digit decimals by a single digit number, e.g.,  $(U.t \times U$  or  $U.t \div U)$ .
- Identify the multiples/factors of given numbers.
- Read and write any integer and use decimal notation for tenths, hundredths and thousandths and know what each digit represents.
- Compare and order two or more different positive and/or negative integers and/or decimal numbers with up to 3 decimal places, say which is the least / greatest; use the symbols  $<$ ,  $>$  and  $=$  correctly and place on a number line.
- Calculate differences in temperature, including those that involve a positive and negative temperature.
- Count forwards and backwards in steps of 0.001, 0.01, 0.1, 1, 10, 100, 1000, 25, 2.5, 0.2, 0.25 from any positive or negative integer or decimal.
- Recall and use addition and subtraction facts for 1 (with decimal numbers to two decimal places).
- Multiply and divide whole numbers and decimals mentally by 10 or 100, and integers by 1000 and use this to convert between units of measurement, e.g. cm to m, g to kg etc.
- Round whole numbers to the nearest 10, 100, 1000 or a number with up to three decimal places to the nearest integer or number of decimal places.
- Count in fraction steps (e.g. of  $\frac{1}{12}$ , i.e.  $\frac{1}{12}, \frac{1}{6}, \frac{1}{4}, \frac{1}{3}, \frac{5}{12}, \frac{1}{2}$ ).

### Starter suggestions for Measurement, Geometry and Statistics

- Know and use standard metric units of measure.
- Estimate and calculate length (including perimeter), mass, volume/capacity and area.
- Convert between units by multiplying and dividing by powers of 10.
- Know metric and imperial equivalences of feet, inches, pints and pounds.
- Convert between miles and kilometres using knowledge that 5 miles is roughly equivalent to 8km.
- Read, write and convert between units of time.
- Identify and describe properties of 2-D and 3-D shapes, including regular and irregular.
- Find missing angles and lengths using properties of shape.
- Estimate and identify acute, obtuse and reflex angles.
- Describe positions on the first quadrant of a coordinate grid.
- Solve comparison, sum and difference problems using information presented in all types of graph.
- Continue to complete and interpret information in a variety of sorting diagrams (including those used to sort properties of numbers and shapes).

	Main learning	Rationale
<b>Week 1</b> <b>Mental and written addition and subtraction</b>	<ul style="list-style-type: none"> <li>• Identify, represent and estimate numbers using the number line.</li> <li>• Add and subtract whole numbers and decimals using formal written methods (columnar addition and subtraction).</li> <li>• Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method).</li> <li>• Select a mental strategy appropriate for the numbers involved in the calculation.</li> <li>• Solve problems involving addition and subtraction.</li> <li>• Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.</li> <li>• Use their knowledge of the order of operations to carry out calculations involving the four operations.</li> </ul>	<p>Children learn when it is appropriate to use mental and written methods of calculation.</p> <p>Children make links with their knowledge of rounding numbers to estimate the answers to calculations. Calculations should be in contexts including, money, measures, real life problems and number enquiries.</p> <p>Children should also explore missing number problems using algebraic notation, including pairs of numbers to satisfy and equation with two unknowns and generalising the relationship between the two numbers.</p> <p>Written methods should be agreed by the school and shared in the progression in written calculations policy. Efficient written methods are required to be taught by the end of Key Stage 2.</p>
<b>Week 2</b> <b>Measurement, ratio and proportion</b>	<ul style="list-style-type: none"> <li>• Solve problems involving similar shapes where the scale factor is known or can be found.</li> <li>• Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places.</li> <li>• Solve problems involving the calculation and conversion of units of measure (including money and time), using decimal notation up to three decimal places where appropriate.</li> <li>• Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts.</li> <li>• Solve problems involving the calculation of percentages (for example, of measures, and such as 15% of 360) and the use of percentages for comparison.</li> <li>• Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.</li> </ul>	<p>Children should use the context of measures to solve problems that involve knowledge of scaling up and down by a given scale factor. This should be done in the context of length when looking at shapes that are mathematically similar i.e. the sides are of equal proportion to each other such as a triangle with sides of 2cm, 3cm and 4cm is similar to a triangle of side 4cm, 6cm and 8cm.</p> <p>Teachers should select from another measures context for children to explore proportion through scaling up and down, and converting between units of measure and using decimal notation.</p> <p>Children should also consider ratio as unequal sharing and grouping, using real life contexts such as recipes. Links should also be made with fractions and percentages as ways of describing proportions of amounts.</p>



	Main learning	Rationale
<b>Week 3</b> <b>Geometry</b> <b>(2-D and 3-D shape)</b>	<ul style="list-style-type: none"> <li>Draw 2-D shapes using given dimensions and angles.</li> <li>Recognise, describe and build simple 3-D shapes, including making nets.</li> <li>Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons.</li> <li><i>Continue to complete and interpret information in a variety of sorting diagrams (including those used to sort properties of numbers and shapes).</i></li> <li>Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius.</li> <li>Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.</li> </ul>	<p>Children gain practical experience of drawing and making shapes, in order to support their work on recognising, describing, comparing and classifying shapes.</p> <p>It is important that children see and use regular and irregular polygons and polyhedra and experience them in different orientations.</p> <p>Children's knowledge and understanding of circles is developed through the introduction of new language including radius, diameter and circumference, and understanding the relationships between any of these terms.</p> <p>Children should discover the angle sum of triangles and quadrilaterals and use this knowledge, and knowledge of the term 'regular' to find missing angles.</p>
<b>Week 4</b> <b>Area,</b> <b>perimeter and</b> <b>volume of</b> <b>shape</b>	<ul style="list-style-type: none"> <li>Recognise that shapes with the same areas can have different perimeters and vice versa.</li> <li>Recognise when it is possible to use the formulae for area and volume of shapes.</li> <li>Calculate the area of parallelograms and triangles.</li> <li>Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (<math>\text{cm}^3</math>) and cubic metres (<math>\text{m}^3</math>) and extending to other units (for example, <math>\text{mm}^3</math> and <math>\text{km}^3</math>).</li> </ul>	<p>Children investigate how shapes of the same area can have different perimeters and vice versa. They relate finding the area of triangles and parallelograms to finding the area of rectangles. Once the area of a given shape has been found, children link this to finding the volume of prisms that have this shape at opposite ends.</p> <p>Children understand volume as 'solid' volume (the amount of three dimensional space occupied by an object) and understand why cubic units are used.</p>
<b>Week 5</b> <b>Statistics</b> <b>(line graphs</b> <b>and pie charts)</b>	<ul style="list-style-type: none"> <li>Convert between miles and kilometres.</li> <li>Interpret and construct pie charts and line graphs and use these to solve problems.</li> <li><i>Solve comparison, sum and difference problems using information presented in all types of graph.</i></li> </ul>	<p>Children explore line graphs further by creating conversion graphs for miles to kilometres and vice versa. They use this graph to convert between the two units of distance and apply this knowledge to numbers beyond those covered on the graph. Children continue to construct and interpret different graphs and charts, including pie charts, however, the majority of the time should be focused on interpreting the data and solving problems, rather than the construction of graphs and charts.</p>
<b>Week 6</b> <b>Assess and</b> <b>review</b>	Assess and review week	It is useful at regular intervals for teachers to consider the learning that has taken place over a term (or half term), assess and review children's understanding of the learning and use this to inform where the children need to go next.