



## Year 5 Spring 1

### Starter suggestions for Number

- Read and write any integer and use decimal notation for tenths, hundredths and thousandths and know what each digit represents.
- Count forwards and backwards in steps of 0.01, 0.1, 1, 10, 100, 1000 from any positive integer or decimal.
- Count forwards and backwards in equal steps and describe any patterns in the sequence.
- Order and compare whole numbers up to 1 000 000, negative numbers and decimals with up to two decimal places.
- Know by heart facts for all multiplication tables up to  $12 \times 12$ .
- Complete and interpret information in a variety of sorting diagrams (including those used to sort properties of numbers).
- Recall and use addition and subtraction facts for 1 and 10 (with decimal numbers to one decimal place).
- Derive and use addition and subtraction facts for 1 (with decimal numbers to two decimal places).
- Derive related facts from those already known (e.g.  $4 \times 8$  or  $3 + 7 = 10$  linked to  $0.3 + 0.7 = 1$ )
- Use partitioning to double or halve any number, including decimals to two decimal places.
- Multiply and divide whole numbers and decimals with up to two decimal places 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 two decimal places to the nearest integer or number of decimal places.
- Count in fraction steps and convert equivalent fractions (e.g. count in steps of  $\frac{1}{12}$  converting to  $\frac{1}{12}, \frac{1}{6}, \frac{1}{4}, \frac{1}{3}, \frac{5}{12}, \frac{1}{2}, \dots$ ).

### Starter suggestions for Measurement, Geometry and Statistics

- Convert between metric units of measure by multiplying and dividing by powers of 10.
- Read, write and convert between units of time.
- Identify and describe properties of 2-D and 3-D shapes, including regular and irregular.
- Complete and interpret information in a variety of sorting diagrams (including those used to sort properties of shapes).
- Identify angles which are acute, obtuse and reflex.
- Estimate the size of angles.
- Compare and classify geometric shapes based on their properties.
- Read scales to an appropriate degree of accuracy.
- Read and plot coordinates in the first quadrant.
- Read and interpret information in all types of graph and table, including line graphs and timetables.

	Main learning	Rationale
<b>Week 1</b> <b>Place value (counting including negative numbers)</b>	<ul style="list-style-type: none"> <li>Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers through zero.</li> <li>Calculate difference in temperature, including those that involve a positive and negative temperature.</li> <li>Describe and extend number sequences including those with multiplication and division steps and those where the step size is a decimal.</li> <li>Continue to order temperatures including those below <math>0^{\circ}\text{C}</math>.</li> <li>Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.</li> </ul>	<p>Children's understanding of negative numbers is developed from Year 4. It is useful to introduce these in ways children can easily identify, such as floors below ground level in a building or steps into a swimming pool some above and some below the surface of the water. This understanding can then be applied to more abstract concepts such as temperature. Children should use number lines to support their understanding of moving through zero.</p> <p>All work on reading and recognising Roman numerals could be carried out in History lessons on this period.</p>
<b>Week 2</b> <b>Addition and subtraction including problem solving</b>	<ul style="list-style-type: none"> <li>Add and subtract numbers mentally with increasingly large numbers and decimals to two decimal places.</li> <li>Add and subtract whole numbers with more than 4 digits and decimals with two decimal places, including using formal written methods (columnar addition and subtraction).</li> <li>Use estimation and inverse to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.</li> <li>Calculate difference in temperature, including those that involve a positive and negative temperature.</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 addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.</li> <li>Use all four operations to solve problems involving measure (for example, length, mass, volume, money) using decimal notation.</li> </ul>	<p>Children learn and explain when it is appropriate to use mental and written methods of calculation.</p> <p>Children make links with their knowledge of rounding numbers to the nearest 10, 100 and 1000 to estimate the answers to calculations. Calculations should be in contexts including, money, measures, real life problems and number enquiries.</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>



	Main learning	Rationale
<b>Week 3</b> <b>Mental and written multiplication</b>	<ul style="list-style-type: none"> <li>Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.</li> <li>Multiply and divide numbers mentally drawing upon known facts.</li> <li>Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers.</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 multiplication including using their knowledge of factors and multiples, cubes and squares.</li> <li>Solve problems involving multiplication, including scaling by simple fractions and problems involving simple rates.</li> </ul>	<p>Children should be given a variety of calculations and encouraged to select the most appropriate method for finding a solution, whether that is relying on multiplication facts, using a mental method or using a written method. They should apply their knowledge of multiplication facts up to <math>12 \times 12</math> to larger numbers. When learning about multiplication, children need to maintain the understanding that it is repeated addition or scaling up or down i.e. making an amount a number of times larger (if the scale factor is a fraction then the amount will decrease in size).</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 4</b> <b>Measurement: length, mass and capacity</b>	<ul style="list-style-type: none"> <li>Use, read and write standard units of length and mass to a suitable degree of accuracy.</li> <li>Estimate (and calculate) capacity.</li> <li>Multiply and divide numbers and those involving decimals by 10, 100 and 1000.</li> <li>Convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre).</li> </ul>	<p>Children's work in Measurement should be predominantly practical and purposeful. It can be linked to other areas of the curriculum e.g. science, D&amp;T, PE or other real life situations. Pupils use their knowledge of place value and multiplication and division to convert between standard units. Children should be taught precise definitions of terms so that they are able to distinguish between mass and weight. This may fit in when children learn about Earth and Space or Forces in science.</p>
<b>Week 5</b> <b>Geometry (shape, reflection and translation)</b>	<ul style="list-style-type: none"> <li>Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.</li> <li>Describe positions on the first quadrant of a coordinate grid.</li> <li>Plot specified points and complete shapes.</li> <li>Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed.</li> </ul>	<p>Children should compare lengths and angles to decide if a polygon is regular or irregular. They then apply this knowledge (as well as other knowledge about the properties of shapes) when plotting coordinates of the vertices of 2-D shapes in the first quadrant, and also when reflecting and translating shapes. Reflection should be in lines parallel to the axes.</p>
<b>Week 6</b> <b>Geometry (angles)</b>	<ul style="list-style-type: none"> <li>Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles.</li> <li>Draw given angles, and measure them in degrees (<math>^{\circ}</math>).</li> <li>Identify angles at a point and one whole turn (total <math>360^{\circ}</math>).</li> <li>Identify angles at a point on a straight line and a turn (total <math>180^{\circ}</math>).</li> <li>Identify other multiples of <math>90^{\circ}</math>.</li> </ul>	<p>Building on their knowledge that an angle is a measure of a turn and can be static or dynamic, pupils become accurate in measuring with a protractor. They use conventional markings for right angles. Pupils use the term diagonal and make conjectures about the angles formed between sides, and between diagonals and parallel sides, and other properties of quadrilaterals, for example using dynamic geometry ICT tools including the ITP Fixing Points. Pupils use angle sum facts and other properties to make deductions about missing angles and relate these to missing number problems. The ITP Calculating Angles can be used for this. When calculating angles around a point, children could explore this when finding shapes that tessellate.</p>