

# Key Learning in Mathematics – Year 6

Number – number and place value	Number – addition and subtraction	Number – multiplication and division
<ul style="list-style-type: none"> <li>Count forwards or backwards in steps of integers, decimals, powers of 10</li> <li>Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit</li> <li>Identify the value of each digit to three decimal places</li> <li>Identify, represent and estimate numbers using the number line</li> <li>Order and compare numbers including integers, decimals and negative numbers</li> <li>Find 0.001, 0.01, 0.1, 1, 10 and powers of 10 more/less than a given number</li> <li>Round any whole number to a required degree of accuracy</li> <li>Round decimals with three decimal places to the nearest whole number or one or two decimal places</li> <li>Multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places</li> <li>Use negative numbers in context, and calculate intervals across zero</li> <li>Describe and extend number sequences including those with multiplication and division steps, inconsistent steps, alternating steps and those where the step size is a decimal</li> <li>Solve number and practical problems that involve all of the above</li> </ul>	<ul style="list-style-type: none"> <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 in the calculation</li> <li>Recall and use addition and subtraction facts for 1 (with decimals to two decimal places)</li> <li>Perform mental calculations including with mixed operations and large numbers and decimals</li> <li>Add and subtract whole numbers and decimals using formal written methods (columnar addition and subtraction)</li> <li>Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy</li> <li>Use knowledge of the order of operations to carry out calculations</li> <li>Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why</li> <li>Solve problems involving all four operations, including those with missing numbers</li> </ul>	<ul style="list-style-type: none"> <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>Identify common factors, common multiples and prime numbers</li> <li>Use partitioning to double or halve any number</li> <li>Perform mental calculations, including with mixed operations and large numbers</li> <li>Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication</li> <li>Multiply one-digit numbers with up to two decimal places by whole numbers</li> <li>Divide numbers up to 4 digits by a two-digit whole number using the formal written methods of short or long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context</li> <li>Use written division methods in cases where the answer has up to two decimal places</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>Use knowledge of the order of operations to carry out calculations</li> <li>Solve problems involving all four operations, including those with missing numbers</li> </ul>
<h3>Number – fractions, decimals and percentages</h3> <ul style="list-style-type: none"> <li>Compare and order fractions, including fractions <math>&gt; 1</math> (including on a number line)</li> <li>Use common factors to simplify fractions; use common multiples to express fractions in the same denomination</li> <li>Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts</li> <li>Associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375 and <math>\frac{3}{8}</math>)</li> <li>Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions</li> <li>Multiply simple pairs of proper fractions, writing the answer in its simplest form (e.g. <math>\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}</math>)</li> <li>Divide proper fractions by whole numbers (e.g. <math>\frac{1}{3} \div 2 = \frac{1}{6}</math>)</li> <li>Find simple percentages of amounts</li> <li>Solve problems involving fractions</li> <li>Solve problems which require answers to be rounded to specified degrees of accuracy</li> <li>Solve problems involving the calculation of percentages (e.g. of measures and such as 15% of 260) and the use of percentages for comparison</li> </ul>	<h3>Geometry – properties of shapes</h3> <ul style="list-style-type: none"> <li>Compare/classify geometric shapes based on the properties and sizes</li> <li>Draw 2-D shapes using given dimensions and angles</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, describe and build simple 3-D shapes, including making nets</li> <li>Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles</li> <li>Find unknown angles in any triangles, quadrilaterals, regular polygons</li> </ul>	<h3>Measurement</h3> <ul style="list-style-type: none"> <li>Use, read and write standard units of length, mass, volume and time using decimal notation to three decimal places</li> <li>Convert between standard units of length, mass, volume and time using decimal notation to three decimal places</li> <li>Convert between miles and kilometres</li> <li>Recognise that shapes with the same areas can have different perimeters and vice versa</li> <li>Calculate the area of parallelograms and triangles</li> <li>Recognise when it is possible to use formulae for area and volume of shapes</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 (e.g. <math>\text{mm}^3</math> and <math>\text{km}^3</math>)</li> <li>Calculate differences in temperature, including those that involved a positive and negative temperature</li> <li>Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate</li> </ul>
<h3>Ratio and proportion</h3> <ul style="list-style-type: none"> <li>Solve problems involving the relative sizes of two quantities where missing values can be found using integer multiplication/division facts</li> <li>Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples</li> <li>Solve problems involving similar shapes where the scale factor is known or can be found</li> </ul>	<h3>Geometry – position and direction</h3> <ul style="list-style-type: none"> <li>Describe positions on the full coordinate grid (all four quadrants)</li> <li>Draw and translate simple shapes on the coordinate plane, and reflect them in the axes</li> </ul> <h3>Statistics</h3> <ul style="list-style-type: none"> <li>Continue to complete and interpret information in a variety of sorting diagrams (including sorting properties of numbers and shapes)</li> <li>Interpret and construct pie charts and line graphs and use these to solve problems</li> <li>Solve comparison, sum and difference problems using information presented in all types of graph</li> <li>Calculate and interpret the mean as an average</li> </ul> <h3>Algebra</h3> <ul style="list-style-type: none"> <li>Use simple formulae</li> <li>Generate and describe linear number sequences</li> <li>Express missing number problems algebraically</li> <li>Find pairs of numbers that satisfy an equation with two unknowns</li> <li>Enumerate possibilities of combinations of two variables</li> </ul>	