



**Mathematics**

**Key Learning Indicators of Performance: Year 6**

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