



Mathematics

Key Learning Indicators of Performance: Year 6

Number – number and place value	Number – addition and subtraction	Number – multiplication and division
<ul style="list-style-type: none"> ▶ Count forwards or backwards in steps of integers, decimals, powers of 10. ▶ Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit. ▶ Identify the value of each digit to three decimal places. ▶ Identify, represent and estimate numbers using the number line. ▶ Order and compare numbers including integers, decimals and negative numbers. ▶ Find 0.001, 0.01, 0.1, 1, 10 and powers of 10 more/less than a given number. ▶ Round any whole number to a required degree of accuracy. ▶ Round decimals with three decimal places to the nearest whole number or one or two decimal places. ▶ Multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places. ▶ Use negative numbers in context, and calculate intervals across zero. ▶ 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. ▶ Solve number and practical problems that involve all of the above. 	<ul style="list-style-type: none"> ▶ Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method). ▶ Select a mental strategy appropriate for the numbers in the calculation. ▶ Recall and use addition and subtraction facts for 1 (with decimals to two decimal places). ▶ Perform mental calculations including with mixed operations and large numbers and decimals. ▶ Add and subtract whole numbers and decimals using formal written methods (columnar addition and subtraction). ▶ Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. ▶ Use knowledge of the order of operations to carry out calculations. ▶ Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. ▶ Solve problems involving all four operations, including those with missing numbers. 	<ul style="list-style-type: none"> ▶ Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method). ▶ Identify common factors, common multiples and prime numbers. ▶ Use partitioning to double or halve any number. ▶ Perform mental calculations, including with mixed operations and large numbers. ▶ Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication. ▶ Multiply one-digit numbers with up to two decimal places by whole numbers. ▶ 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. ▶ Use written division methods in cases where the answer has up to two decimal places. ▶ Use estimation and inverse to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. ▶ Use knowledge of the order of operations to carry out calculations. ▶ Solve problems involving all four operations, including those with missing numbers.
<p>Number – fractions</p> <ul style="list-style-type: none"> ▶ Compare and order fractions, including fractions > 1 (including on a number line). ▶ Use common factors to simplify fractions; use common multiples to express fractions in the same denomination. ▶ Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. ▶ Associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375 and $\frac{3}{8}$). ▶ Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions. ▶ Multiply simple pairs of proper fractions, writing the answer in its simplest form (e.g. $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$). ▶ Divide proper fractions by whole numbers (e.g. $\frac{1}{3} \div 2 = \frac{1}{6}$). ▶ Find simple percentages of amounts. ▶ Solve problems involving fractions. ▶ Solve problems which require answers to be rounded to specified degrees of accuracy. ▶ Solve problems involving the calculation of percentages (e.g. of measures and such as 15% of 260) and the use of percentages for comparison. 	<p>Geometry – properties of shapes</p> <ul style="list-style-type: none"> ▶ Compare/classify geometric shapes based on the properties and sizes. ▶ Draw 2-D shapes using given dimensions and angles. ▶ Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius. ▶ Recognise, describe and build simple 3-D shapes, including making nets. ▶ Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles. ▶ Find unknown angles in any triangles, quadrilaterals, regular polygons. <p>Geometry – position and direction</p> <ul style="list-style-type: none"> ▶ Describe positions on the full coordinate grid (all four quadrants). ▶ Draw and translate simple shapes on the coordinate plane, and reflect them in the axes. 	<p>Measurement</p> <ul style="list-style-type: none"> ▶ Use, read and write standard units of length, mass, volume and time using decimal notation to three decimal places. ▶ Convert between standard units of length, mass, volume and time using decimal notation to three decimal places. ▶ Convert between miles and kilometres. ▶ Recognise that shapes with the same areas can have different perimeters and vice versa. ▶ Calculate the area of parallelograms and triangles. ▶ Recognise when it is possible to use formulae for area and volume of shapes. ▶ Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm³) and cubic metres (m³), and extending to other units (e.g. mm³ and km³). ▶ Calculate differences in temperature, including those that involved a positive and negative temperature. ▶ Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate. <p>Statistics</p> <ul style="list-style-type: none"> ▶ Continue to complete and interpret information in a variety of sorting diagrams (including sorting properties of numbers and shapes). ▶ Interpret and construct pie charts and line graphs and use these to solve problems. ▶ Solve comparison, sum and difference problems using information presented in all types of graph. ▶ Calculate and interpret the mean as an average.
<p>Ratio and proportion</p> <ul style="list-style-type: none"> ▶ Solve problems involving the relative sizes of two quantities where missing values can be found using integer multiplication/division facts. ▶ Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples. ▶ Solve problems involving similar shapes where the scale factor is known or can be found. 	<p>Algebra</p> <ul style="list-style-type: none"> ▶ Use simple formulae. ▶ Generate and describe linear number sequences. ▶ Express missing number problems algebraically. ▶ Find pairs of numbers that satisfy an equation with two unknowns. ▶ Enumerate possibilities of combinations of two variables. 	