

Beyond Year 6 – challenge for more able Year 6 children

Number: calculation and accuracy	Number Theory	Algebra: expressing relations	Algebra: using equations and functions
<p>I can use place values, including for decimals, measures, the language of larger and smaller numbers, and ordering numbers, including the correct use of =, ≠, <, >, ≤, ≥</p> <p>I can use the four operations, including efficient written methods, applied to a range of numbers, both positive and negative</p> <p>I understand and use conventional notation for the priority of operations, including brackets, powers, roots and reciprocals. Use mass, length, time, money and other measures</p> <p>I can compare, order and convert between fractions and decimals</p> <p>I can interpret percentages and percentage changes as a fraction or a decimal, and calculate these using multiplication</p> <p>I can interpret and compare numbers in standard form (such as $A \times 10^n$, where n is positive or negative)</p> <p>I can estimate number, measures and approximate answers, including using these to check other calculation methods</p> <p>I can round numbers and measures to an appropriate degree of accuracy, including simple error intervals, using standard interval and inequality notation</p> <p>I can use a calculator to calculate results accurately and then interpret them appropriately</p>	<p>I know and can use:</p> <ul style="list-style-type: none"> • prime numbers • common factors and common multiples for whole numbers with 2 and 3 digits • highest common factor and lowest common multiple, understanding these as the intersection and union of the prime factors. • other classifications of number, including product notation • integer powers and associated roots (square, cube and higher), including the use of surd notation (e.g. $\sqrt{8}$). <p>I can distinguish between exact answers and decimal approximations</p>	<p>I can read and interpret algebraic notation</p> <p>I can express known relations algebraically, using accurate notation, including prioritisation of operations</p> <p>I can expand products of binomials</p> <p>I can simplify expressions involving sums of products and powers</p> <p>I can find the nth term in an arithmetic sequence</p> <p>I can find the nth term in geometric, quadratic and other sequences</p> <p>I can produce graphs of linear and quadratic functions of one variable with appropriate scaling (using equations in x and y and the Cartesian plane)</p> <p>I can interpret mathematical relationships both algebraically and geometrically</p>	<p>I can use formulae by substitution to calculate the value of a variable</p> <p>I am beginning to model problems algebraically</p> <p>Solve linear equations in one variable</p> <p>Use linear and quadratic graphs to estimate values of y for given values of x and vice versa and approximate solutions of simultaneous equations</p> <p>Use given graphs of a variety of functions, including piece-wise linear, exponential and reciprocal graphs, to approximate solutions to problems</p>

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Ratio, proportion and rate of change	Geometry and measures	Probability	Statistics
<p>Use ratio and scale factor notation (in contexts such as conversion, mixing, measuring, scaling, comparing quantities and concentrations)</p> <p>Calculate missing quantities and totals using given ratios</p> <p>Solve problems involving percentage change</p> <p>Use reasoning where two quantities have a fixed product or fixed ratio represented graphically and algebraically</p> <p>Solve problems with constant rates of change involving distance and speed</p>	<p>Solve problems involving perimeter and area of triangles, circles and composite shapes, and cross-sectional areas, surface area and volume of cubes, cuboids, prisms, cylinders and composite solids</p> <p>Use compound units such as speed, unit pricing and density to solve problems</p> <p>Use analogue and digital instruments to measure line segments and angles in geometric figures, including interpreting scales drawings.</p> <p>Illustrate by sketching, constructing and drawing on coordinate axes: point, line, vertex, parallel, perpendicular, right angle, regular, symmetric and irregular polygons, using conventional terms and notations</p> <p>Identify properties, e.g. equal lengths, circles, triangles, quadrilaterals, and other plane figures, using appropriate language</p> <p>Know and use angle relations in parallel lines to deduce unknown angles</p> <p>Apply angle facts, triangle congruence, similarity and properties of named quadrilaterals to derive results about angles and sides using transformational, axiomatic and property-based logical reasoning</p> <p>Use Pythagoras Theorem and side ratios in similar triangles to solve problems in right-angled triangles</p> <p>Identify face, edge and vertex properties of cubes, cuboids, prisms, cylinders, pyramids, cones and spheres</p> <p>Interpret mathematical relationships both algebraically and geometrically</p>	<p>Record and describe the outcomes of probability experiments involving randomness, fairness, equally and unequally likely outcomes using appropriate language and the 0-1 scale</p> <p>Enumerate sets and combinations of sets systematically, using tabular, grid and Venn diagrams</p> <p>Generate possibilities for single and combined events with equally likely, mutually exclusive outcomes; use these to calculate theoretical probabilities (knowing that the probabilities of an exhaustive set of mutually exclusive outcomes have the sum of one)</p>	<p>Describe and compare distributions through: appropriate graphical representation involving discrete, continuous and grouped data and appropriate measures of central tendency and spread</p> <p>Describe simple mathematical relationships between two variables</p> <p>Identify appropriate questions, data collection, presentation, analysis and interpretation to conduct exploratory data analysis</p>