



Topic	Learning Objectives	Key Vocabulary	Learning Sequence	Linked Learning	Home Learning
Calculating	Be able to calculate with roots, and with integer indices Be able to calculate with standard form $A \times 10^n$, where $1 \leq A < 10$ and n is an integer Be able to use inequality notation to specify simple error intervals due to truncation or rounding Be able to apply and interpret limits of accuracy	Power Root Index, Indices Standard form Inequality Truncate Round Minimum, Maximum Interval Decimal place Significant figure	Calculate with positive/negative indices/roots Use a calculator to evaluate numerical expressions involving powers and roots Add/Subtract /Multiply/Divide numbers written in standard form Use standard form on a scientific calculator Understand the difference between truncating and rounding Identify the minimum and maximum values of an amount that has been rounded (to nearest x, x d.p., x s.f.) Use inequalities to describe the range of values for a rounded value	Know the meaning of powers Know the meaning of roots Know the multiplication and division laws of indices Understand and use standard form to write numbers Interpret a number written in standard form Round to a given number of decimal places or significant figures Know the meaning of the symbols $<$, $>$, \leq , \geq	There will be a written piece of homework each week to reinforce key concepts



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<p>Visualising and Constructing</p>	<p>Be able to use the standard ruler and compass constructions</p> <p>Be able to use these to construct given figures and solve loci problems;</p> <p>Be able to construct plans and elevations of 3D shapes</p>	<p>Compasses</p> <p>Arc</p> <p>Line segment</p> <p>Perpendicular</p> <p>Bisect</p> <p>Perpendicular bisector</p> <p>Locus, Loci</p> <p>Plan</p> <p>Elevation</p>	<p>Use ruler and compasses to construct the perpendicular bisector of a line segment, bisect an angle, perpendicular to a line from a point and at a point</p> <p>Use a ruler and compasses to construct a Know how to construct the locus of points a fixed distance from a point and from a line</p> <p>Solve simple and complex problems involving loci</p> <p>Choose techniques to construct 2D shapes; e.g. rhombus</p> <p>Construct a shape from its plans and elevations</p> <p>Construct the plan and elevations of a given shape</p>	<p>Measure distances to the nearest millimetre</p> <p>Create and interpret scale diagrams</p> <p>Use compasses to draw circles</p> <p>Interpret plan and elevations</p>	<p>There will be a written piece of homework each week to reinforce key concepts</p>



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Algebraic proficiency: tinkering	<p>Be able to understand and use the concepts and vocabulary of identities</p> <p>Be able to know the difference between an equation and an identity</p> <p>Be able to simplify and manipulate algebraic expressions by expanding products of two binomials and factorising quadratic expressions of the form $x^2 + bx + c$</p> <p>Be able to argue mathematically to show algebraic expressions are equivalent, and use algebra to support and construct arguments</p> <p>Be able to translate simple situations or procedures into algebraic expressions or formulae</p>	<p>Inequality</p> <p>Identity</p> <p>Equivalent</p> <p>Equation</p> <p>Formula, Formulae</p> <p>Expression</p> <p>Expand</p> <p>Linear</p> <p>Quadratic</p> <p>Notation</p> <p>The equals symbol ‘=’ and the equivalency symbol ‘\equiv’</p>	<p>Understand the meaning of an identity</p> <p>Multiply two linear expressions of the form $(x + a)(x + b)$</p> <p>Multiply two linear expressions of the form $(ax \pm b)(cx \pm d)$</p> <p>Expand the expression $(x \pm a)^2$</p> <p>Factorise a quadratic expression of the form $x^2 + bx$</p> <p>Factorise a quadratic expression of the form $x^2 + bx + c$</p> <p>Work out why two algebraic expressions are equivalent</p> <p>Create a mathematical argument to show that two algebraic expressions are equivalent</p> <p>Distinguish between situations that can be modelled by an expression or a formula</p> <p>Create an expression or a formula to describe a situation</p>	<p>Manipulate expressions by collecting like terms</p> <p>Know that $x \times x = x^2$</p> <p>Calculate with negative numbers</p> <p>Know the grid method for multiplying two two-digit numbers</p> <p>Know the difference between an expression, an equation and a formula</p>	<p>There will be a written piece of homework each week to reinforce key concepts.</p>



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Proportional reasoning	<p>Be able to solve problems involving direct and inverse proportion including graphical and algebraic representations</p> <p>Be able to apply the concepts of congruence and similarity, including the relationships between lengths in similar figures</p> <p>Be able to change freely between compound units (e.g. density, pressure) in numerical and algebraic contexts</p> <p>Be able to use compound units such as density and pressure</p>	<p>Direct proportion</p> <p>Inverse proportion</p> <p>Multiplier</p> <p>Linear</p> <p>Congruent, Congruence</p> <p>Similar, Similarity</p> <p>Compound unit</p> <p>Density, Population density</p> <p>Pressure</p> <p>Notation</p> <p>Kilograms per metre cubed is written as kg/m³</p>	<p>Know the difference between direct and inverse proportion</p> <p>Recognise direct proportion in a situation</p> <p>Know the features of a graph that represents a direct proportion situation</p> <p>Recognise inverse proportion in a situation</p> <p>Know the features of a graph that represents an inverse proportion situation</p> <p>Know the features of an expression, or formula, that represents a direct or inverse proportion situation</p> <p>Understand the connection between the multiplier, the expression and the graph</p> <p>Solve problems involving direct and inverse proportions</p> <p>Identify congruence & similarity of shapes in a range of situations</p> <p>Finding missing lengths in similar shapes</p> <p>Solve problems with compound units, such as density, pressure, population density and speed</p> <p>Convert between units of density and speed</p>	<p>Find a relevant multiplier in a situation involving proportion</p> <p>Plot the graph of a linear function</p> <p>Understand the meaning of a compound unit</p> <p>Convert between units of length, capacity, mass and time</p>	<p>There will be a written piece of homework each week to reinforce key concepts.</p>