

## Stage 8

<i>Units</i>	<i>Mastery indicators</i>	<i>Essential knowledge</i>
<ul style="list-style-type: none"> <li>Numbers and the number system</li> <li>Calculating</li> <li>Visualising and constructing</li> <li>Understanding risk I</li> <li>Algebraic proficiency: tinkering</li> <li>Exploring fractions, decimals and percentages</li> <li>Proportional reasoning</li> <li>Pattern sniffing</li> <li>Investigating angles</li> <li>Calculating fractions, decimals and percentages</li> <li>Solving equations and inequalities</li> <li>Calculating space</li> <li>Algebraic proficiency: visualising</li> <li>Understanding risk II</li> <li>Presentation of data</li> <li>Measuring data</li> </ul>	<ul style="list-style-type: none"> <li>Apply the four operations with negative numbers</li> <li>Convert numbers into standard form and vice versa</li> <li>Apply the multiplication, division and power laws of indices</li> <li>Convert between terminating decimals and fractions</li> <li>Find a relevant multiplier when solving problems involving proportion</li> <li>Solve problems involving percentage change, including original value problems</li> <li>Factorise an expression by taking out common factors</li> <li>Change the subject of a formula when two steps are required</li> <li>Find and use the nth term for a linear sequence</li> <li>Solve linear equations with unknowns on both sides</li> <li>Plot and interpret graphs of linear functions</li> <li>Apply the formulae for circumference and area of a circle</li> <li>Calculate theoretical probabilities for single events</li> </ul>	<ul style="list-style-type: none"> <li>Know how to write a number as a product of its prime factors</li> <li>Know how to round to significant figures</li> <li>Know the order of operations including powers</li> <li>Know how to enter negative numbers into a calculator</li> <li>Know that <math>a^0 = 1</math></li> <li>Know percentage and decimal equivalents for fractions with a denominator of 3, 5, 8 and 10</li> <li>Know the characteristic shape of a graph of a quadratic function</li> <li>Know how to measure and write bearings</li> <li>Know how to identify alternate angles</li> <li>Know how to identify corresponding angles</li> <li>Know how to find the angle sum of any polygon</li> <li>Know that circumference = <math>2\pi r = \pi d</math></li> <li>Know that area of a circle = <math>\pi r^2</math></li> <li>Know that volume of prism = area of cross-section <math>\times</math> length</li> <li>Know to use the midpoints of groups to estimate the mean of a set of grouped data</li> <li>Know that probability is measured on a 0-1 scale</li> <li>Know that the sum of all probabilities for a single event is 1</li> </ul>

## Stage 9

<i>Units</i>	<i>Mastery indicators</i>	<i>Essential knowledge</i>
<ul style="list-style-type: none"> <li>Calculating</li> <li>Visualising and constructing</li> <li>Algebraic proficiency: tinkering</li> <li>Proportional reasoning</li> <li>Pattern sniffing</li> <li>Solving equations and inequalities I</li> <li>Calculating space</li> <li>Conjecturing</li> <li>Algebraic proficiency: visualising</li> <li>Solving equations and inequalities II</li> <li>Understanding risk</li> <li>Presentation of data</li> </ul>	<ul style="list-style-type: none"> <li>Calculate with roots and integer indices</li> <li>Manipulate algebraic expressions by expanding the product of two binomials</li> <li>Manipulate algebraic expressions by factorising a quadratic expression of the form <math>x^2 + bx + c</math></li> <li>Understand and use the gradient of a straight line to solve problems</li> <li>Solve two linear simultaneous equations algebraically and graphically</li> <li>Plot and interpret graphs of quadratic functions</li> <li>Change freely between compound units</li> <li>Use ruler and compass methods to construct the perpendicular bisector of a line segment and to bisect an angle</li> <li>Solve problems involving similar shapes</li> <li>Calculate exactly with multiples of <math>\pi</math></li> <li>Apply Pythagoras' Theorem in two dimensions</li> <li>Use geometrical reasoning to construct simple proofs</li> <li>Use tree diagrams to list outcomes</li> </ul>	<ul style="list-style-type: none"> <li>Know how to interpret the display on a scientific calculator when working with standard form</li> <li>Know the difference between direct and inverse proportion</li> <li>Know how to represent an inequality on a number line</li> <li>Know that the point of intersection of two lines represents the solution to the corresponding simultaneous equations</li> <li>Know how to find the nth term of a quadratic sequence</li> <li>Know the characteristic shape of the graph of a cubic function</li> <li>Know the characteristic shape of the graph of a reciprocal function</li> <li>Know the definition of speed</li> <li>Know the definition of density</li> <li>Know the definition of pressure</li> <li>Know Pythagoras' Theorem</li> <li>Know the definitions of arc, sector, tangent and segment</li> <li>Know the conditions for congruent triangles</li> </ul>