

## Year 9

Timing	Unit Title	Key Question	Knowledge	Assessing Understanding
Autumn	Index laws	Can you use index laws?	<ul style="list-style-type: none"> <li>Using all index laws including negative and fractional powers.</li> </ul>	<p><b>How understanding is assessed</b></p> <ul style="list-style-type: none"> <li>by applying the theory to a range of questions and increasingly more complex situations</li> <li>discussion in lessons, sample problems</li> <li>homework and tests</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>understanding of the concepts</li> <li>numerical skills</li> <li>algebraic skills</li> <li>problem solving skills</li> </ul> <p><b>Assessment Point information</b></p> <ul style="list-style-type: none"> <li>classroom tests relevant to topics studied</li> </ul>
	Standard form	Can you convert numbers to standard form?	<ul style="list-style-type: none"> <li>Converting ordinary numbers to standard form and vice versa.</li> <li>Operations using numbers in standard form (non-calculator and calculator methods).</li> </ul>	
	Simultaneous equations	Can you solve simultaneous equations using algebra?	<ul style="list-style-type: none"> <li>Changing subject of a formula</li> <li>Solving equations by elimination method.</li> <li>Solving equations by substitution method</li> <li>Problem solving.</li> </ul>	
	Quadratic Expressions	Do you know how to expand and factorise quadratic expressions?	<ul style="list-style-type: none"> <li>Expanding single &amp; double brackets.</li> <li>Factorising of expressions.</li> <li>Factorising quadratics (<math>x^2</math> only).</li> <li>Difference of two squares.</li> </ul>	
	Linear Graphs	Can you find the equations of linear graphs?	<ul style="list-style-type: none"> <li>Drawing straight line graphs</li> <li>Finding the equation of a line from its graph or 2 coordinates.</li> <li>Solving linear simultaneous equations graphically.</li> </ul>	
	Non-linear Graphs		<ul style="list-style-type: none"> <li>Plot and interpret graphs arising from real-life situations</li> </ul>	

			<ul style="list-style-type: none"> <li>• Quadratic, Exponential and Reciprocal graphs.</li> <li>• Drawing a tangent to a curve and finding the gradient.</li> <li>• Rate of change</li> </ul>	
Spring	<b>Pythagoras' Theorem</b>	<b>Can you use Pythagoras' Theorem to solve right-angled triangle problems?</b>	<ul style="list-style-type: none"> <li>• Using Pythagoras' theorem to find missing sides.</li> <li>• Problem Solving</li> </ul>	<p><b>How understanding is assessed</b></p> <ul style="list-style-type: none"> <li>• by applying the theory to a range of questions and increasingly more complex situations</li> <li>• discussion in lessons, sample problems</li> <li>• homework and tests</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>• understanding of the concepts</li> <li>• numerical skills</li> <li>• algebraic skills</li> <li>• problem solving skills</li> </ul> <p><b>Assessment Point information</b></p> <ul style="list-style-type: none"> <li>• classroom tests relevant to topics studied</li> </ul>
	<b>Trigonometry</b>	<b>Do you know how to apply the ratios sine, cosine and tan to find unknown lengths and angles?</b>	<ul style="list-style-type: none"> <li>• Using sine, cosine and tangent to find sides and angles on in right angled triangles.</li> <li>• Problem solving involving angle facts, bearings &amp; angles of elevation / depression.</li> </ul>	
	<b>Proportion</b>	<b>Can you use algebra to solve proportionality problems?</b>	<ul style="list-style-type: none"> <li>• Direct Proportion</li> <li>• Inverse Proportion</li> </ul>	
	<b>Construction and Loci</b>	<b>Can you construct perpendicular bisectors and angle bisectors?</b>	<ul style="list-style-type: none"> <li>• Perpendicular and angle bisectors</li> <li>• Constructing triangles and quadrilaterals.</li> <li>• Loci</li> </ul>	
	<b>Congruence Similarity and Enlargement</b>	<b>Can you prove two triangles are congruent?</b>	<ul style="list-style-type: none"> <li>• Congruent Triangles</li> <li>• Similarity</li> <li>• Enlargement</li> <li>• Scale Drawing</li> </ul>	

	<b>Perimeter, Area and Volume</b>	<b>Can you find the volume and surface area of cones and pyramids?</b>	<ul style="list-style-type: none"><li>● Recap perimeter and area of circles &amp; compound shapes.</li><li>● Finding the arc length &amp; area of a sector.</li><li>● Recap volume of prisms e.g. cylinders.</li><li>● Finding the surface area of prisms.</li><li>● Converting between units.</li><li>● Volume and surface area of pyramids.</li><li>● Volume and surface area of cone.</li></ul>	
	<b>Percentages and Fractions Recap</b>	<b>Can you change recurring decimals to fractions?</b>	<ul style="list-style-type: none"><li>● Recap percentage of amounts, percentage increase/decrease.</li><li>● Percentage change.</li><li>● Reverse percentage.</li><li>● Revision of simplifying, adding, subtracting, multiplying &amp; dividing fractions</li><li>● Changing a recurring decimal to a fraction.</li></ul>	

Summer	<b>Probability</b>	<b>Can you draw &amp; use a tree diagram?</b>	<ul style="list-style-type: none"> <li>● Introducing probability</li> <li>● Probability of single events</li> <li>● Probability of combined events</li> <li>● Mutually exclusive events.</li> <li>● Drawing tree diagrams for independent events.</li> </ul>	<p><b>How understanding is assessed</b></p> <ul style="list-style-type: none"> <li>● by applying the theory to a range of questions and increasingly more complex situations</li> <li>● discussion in lessons, sample problems</li> <li>● homework and tests</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>● understanding of the concepts</li> <li>● numerical skills</li> <li>● algebraic skills</li> <li>● spatial awareness</li> <li>● problem solving skills</li> </ul> <p><b>Assessment Point information</b></p> <ul style="list-style-type: none"> <li>● exam relevant to topics studied</li> </ul>
	<b>Sets and Venn Diagrams</b>	<b>Can you understand different set notations?</b>	<ul style="list-style-type: none"> <li>● Introducing Sets</li> <li>● Venn Diagram</li> <li>● Union and Intersection</li> </ul>	
	<b>Inequalities</b>	<b>Can you show inequalities on a graph?</b>	<ul style="list-style-type: none"> <li>● Notation &amp; drawing inequalities on a number line.</li> <li>● Solving linear inequalities.</li> <li>● Graphical inequalities (linear) including identifying regions.</li> </ul>	
	<b>Data</b>	<b>Can you analyse data?</b>	<ul style="list-style-type: none"> <li>● Mean, median, mode &amp; range from lists of data &amp; frequency tables.</li> <li>● Finding the mean from grouped data.</li> <li>● Cumulative frequency &amp; finding the median.</li> <li>● Finding the interquartile range from a list of data &amp; from grouped data.</li> <li>● Frequency polygons.</li> </ul>	
	<b>Using codes / trip to Bletchley Park</b>	<b>Can you crack codes using a Caesar Wheel &amp; design your own code?</b>	<ul style="list-style-type: none"> <li>● Designing codes.</li> </ul>	
	<b>Upper &amp; lower bounds</b>	<b>Can you solve problems using upper and lower bounds.</b>	<ul style="list-style-type: none"> <li>● Identifying the upper &amp; lower bounds of a rounded number.</li> <li>● Simple calculations involving upper &amp; lower bounds.</li> </ul>	

