

## Year 10

Timing	Unit Title	Key Question	Knowledge	Assessing Understanding
Autumn	Angles and Trigonometry	How is trigonometry applied to non-right-angled triangles and to 3D shapes?	<ul style="list-style-type: none"> <li>• Angle properties including angles in polygons.</li> <li>• Pythagoras theorem and SOHCAHTOA.</li> <li>• Sine rule, cosine rule and area of a triangle (<math>\frac{1}{2}ab\sin C</math>).</li> <li>• 2D and 3D problem solving.</li> </ul>	<p><b>How understanding is assessed</b></p> <ul style="list-style-type: none"> <li>• Through 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 involving past paper questions.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>• In addition to the understanding of the concepts significant algebraic and problem solving skills are required.</li> </ul> <p><b>Assessment Point information</b></p> <ul style="list-style-type: none"> <li>• Timed questions using past GCSE papers relevant to topics studied.</li> </ul>
	Number 1	Can you work with indices and surds?	<ul style="list-style-type: none"> <li>• HCF and LCM.</li> <li>• Numerical indices.</li> <li>• Standard form problem solving.</li> <li>• Surds (simplifying, manipulating and rationalising the denominator).</li> </ul>	
	Algebra 1	Can you factorise a quadratic?	<ul style="list-style-type: none"> <li>• Algebraic indices.</li> <li>• Expanding (multiplying up to three brackets).</li> <li>• Factorising.</li> </ul>	
	Mensuration	<p>Can you find the upper and lower bounds of a measurement and use in calculations?</p> <p>Can you solve volume problems?</p>	<ul style="list-style-type: none"> <li>• Perimeter and area.</li> <li>• Units and accuracy.</li> <li>• Volume and surface area <ul style="list-style-type: none"> <li>- prisms</li> <li>- cylinders and spheres</li> <li>- pyramids and cones.</li> </ul> </li> <li>• Solving linear equations.</li> </ul>	
	Algebra 2	Can you solve different types of equations?	<ul style="list-style-type: none"> <li>• Solving quadratic equations.</li> <li>• Rearranging formula.</li> </ul>	

Spring	<b>Fractions, ratio and percentages</b>	<p><b>Can you calculate with percentages?</b></p> <p><b>Can you work with ratio and proportion?</b></p>	<ul style="list-style-type: none"> <li>• Fractions (add, subtract, multiply, divide, finding reciprocal).</li> <li>• Ratio and proportion (simplifying, problem solving, simple direct proportion).</li> <li>• Percentages (percentages of amounts, reverse percentages, simple interest, percentage change.</li> <li>• Converting between fractions, decimals and percentages.</li> </ul>	<p><b>How understanding is assessed</b></p> <ul style="list-style-type: none"> <li>• Through 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 involving past paper questions.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>• In addition to the understanding of the concepts significant algebraic &amp; problem solving skills are required.</li> </ul> <p><b>Assessment Point information</b></p> <ul style="list-style-type: none"> <li>• Timed questions using past GCSE papers relevant to topics studied.</li> </ul>
	<b>Interpreting and representing data</b>	<b>Can you interpret and construct a variety of statistical diagrams including time series and scatter graphs?</b>	<ul style="list-style-type: none"> <li>• Time series.</li> <li>• Scatter graphs and line of best fit.</li> <li>• Averages and range.</li> <li>• Reading and interpreting diagrams.</li> </ul>	

	<b>Graphs 1</b>	<b>Can you work with the straight line graph equation <math>y = mx + c</math>? Can you sketch and use quadratic, cubic and reciprocal graphs?</b>	<ul style="list-style-type: none"> <li>• Linear graphs (<math>y=mx+c</math>, parallel and perpendicular lines, mid points, line segments, sketch).</li> <li>• Quadratic graphs.</li> <li>• Cubic and reciprocal graphs.</li> <li>• Equation of a circle.</li> <li>•</li> </ul>	
	<b>Reasoning</b>	<b>Can you calculate with compound measures?</b>	<ul style="list-style-type: none"> <li>• Compound measures (Speed, distance and time, Mass, density and volume, Force, pressure and area.</li> <li>• Units.</li> <li>•</li> </ul>	
	<b>Proportion</b>	<b>Can you solve problems involving direct and inverse proportion?</b>	<ul style="list-style-type: none"> <li>• Direct and inverse proportion algebraic problem solving.</li> <li>•</li> </ul>	
	<b>Exponential functions</b>	<b>Can you solve problems with exponentials?</b>	<ul style="list-style-type: none"> <li>• Know what is meant by an exponential function.</li> <li>• Recognise the graphs of <math>y=a^x</math> and <math>y=a^{-x}</math></li> <li>• Problem solving (growth and decay).</li> </ul>	

Summer	<b>Graphs 2</b>	<b>Can you construct and interpret real-life graphs?</b>	<ul style="list-style-type: none"> <li>● Real life graphs <ul style="list-style-type: none"> <li>- distance time graphs</li> <li>- velocity time graphs</li> <li>- real life graphs and rates of change</li> <li>- tangents and areas under curves.</li> </ul> </li> </ul>	<p><b>How understanding is assessed</b></p> <ul style="list-style-type: none"> <li>● Through 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 involving past paper questions.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>● In addition to the understanding of the concepts significant algebraic and problem solving skills are required.</li> </ul> <p><b>Assessment Point information</b></p> <ul style="list-style-type: none"> <li>● Timed questions using past GCSE papers relevant to topics studied.</li> </ul>
	<b>Probability and combinations</b>	<b>Can you construct and use a probability tree?</b> <b>Can you construct and use a Venn diagram?</b>	<ul style="list-style-type: none"> <li>● Listing outcomes, combined events, sample space diagrams, mutually exclusive events and experimental probability.</li> <li>● Independent events and tree diagrams.</li> <li>● Conditional probability.</li> <li>● Venn diagrams and set notation.</li> </ul>	
	<b>Similarity and congruence</b>	<b>Can you apply the concepts of congruency and similarity?</b>	<ul style="list-style-type: none"> <li>● Congruence (Proof).</li> <li>● Similarity (Length, area and volume problem solving).</li> </ul>	

	<b>Circle theorems</b>	<b>Can you work with standard circle theorems?</b>	<ul style="list-style-type: none"><li>● Circle theorems.</li><li>● Proofs.</li><li>● Finding the equation of a tangent at a point on a circle.</li></ul>	
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