

Timing	Unit Title	Key Question	Knowledge	Assessing Understanding
Autumn	Equations and inequalities	Can you solve a quadratic equation by completing the square? Can you solve simultaneous equations?	<ul style="list-style-type: none"> <li>Solve quadratics by completing the square</li> <li>Solving linear simultaneous equations</li> <li>Solving linear and quadratic simultaneous equations</li> <li>Solving linear inequalities</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>
	Equations and graphs	Can you use graphs to solve equations?  Can you sketch quadratic and cubic graphs?  Do you know how to approximate a solution using iteration?  Can you represent inequalities graphically?	<ul style="list-style-type: none"> <li>Solving simultaneous equations graphically</li> <li>Make approximations to quadratic equations using graphs</li> <li>Sketch graphs by considering shapes, roots and y intercepts</li> <li>Identify maximum/minimum points by completing the square</li> <li>Expand triple brackets</li> <li>Understand iteration notation</li> <li>Use iteration to make approximations</li> <li>Solve quadratic and cubic equations using an iterative process</li> <li>Know the 'change of sign' means that there is a root</li> <li>Representing inequalities graphically and solve</li> <li>Represent and interpret linear inequalities</li> <li>Solve quadratic inequalities</li> </ul>	<p><b>Skills</b></p> <ul style="list-style-type: none"> <li>In addition to the understanding of the concepts significant algebraic 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>

	<p><b>Algebra 3</b></p> <p><b>Can you work confidently with algebraic fractions?</b></p> <p><b>Can you manipulate surds and rationalise denominators?</b></p> <p><b>Vectors</b></p> <p><b>How are vectors used?</b></p> <p><b>Can you use vectors to solve geometric problems?</b></p> <p><b>Algebra 4</b></p> <p><b>What do we mean by a function?</b></p> <p><b>How can algebra be used to prove a result?</b></p> <p><b>Sequences</b></p> <p><b>Can you generate sequences? Can you find the nth term?</b></p>	<ul style="list-style-type: none"> <li>• Add, subtract, multiple and divide algebraic fractions</li> <li>• Simplify algebraic fractions</li> <li>• Solve equations involving algebraic fractions</li> <li>• Rationalise denominators with 2 terms</li> <li>• Vector notation, +, - , x and ÷</li> <li>• Graphical representation</li> <li>• Modulus</li> <li>• Vector arithmetic</li> <li>• Application to simple geometric proofs</li> <li>• Geometric problem solving</li> <li>• Function notation</li> <li>• Composite functions</li> <li>• Inverse functions</li> <li>• Prove a result using algebra</li> <li>• The difference between an equation and an identity.</li> <li>• Linear sequences (arithmetic)</li> <li>• Non-linear sequences</li> <li>• Find the nth term of a quadratic sequence</li> </ul>	
Spring	<p><b>Further statistics</b></p> <p><b>Do you know how and why sampling is used?</b></p> <p><b>Can you draw, interpret and compare cumulative frequency graphs, box plots and histograms</b></p>	<ul style="list-style-type: none"> <li>• Simple random sample</li> <li>• Pearson capture-recapture method</li> <li>• Make predictions based on sampling</li> <li>• Calculate the median and quartiles from a list of data</li> <li>• Draw and interpret cumulative frequency tables and diagrams</li> </ul>	

	<p><b>Trigonometry graphs, ratios &amp; equations</b></p> <p><b>Transformations and construction revision</b></p> <p><b>Graphs transformations</b></p> <p><b>Revision</b></p>	<p>Can you sketch and recognise the graphs of sine, cosine and tangent functions?</p> <p>Can you solve simple trig equations? Do you know exact trig ratios?</p> <p>Can you remember 2D transformations? Can you remember constructions of lines and simple shapes?</p> <p>Can you sketch the transformations of graphs?</p>	<ul style="list-style-type: none"> <li>• Calculate the median, quartiles and interquartile range from a cumulative frequency diagram</li> <li>• Draw, interpret and compare box plots</li> <li>• Find quartiles and interquartile range from stem and leaf diagrams</li> <li>• Draw and interpret histograms</li> <li>• Calculate frequency density</li> <li>• Use histograms to estimate the median</li> <li>• Graphs of <math>y = \sin x</math>, <math>y = \cos x</math> and <math>y = \tan x</math> Must be able to draw and know the key points</li> <li>• Know the exact values of <math>\sin \theta</math> and <math>\cos \theta</math> for <math>\theta = 0^\circ, 30^\circ, 45^\circ, 60^\circ, 90^\circ</math> and the exact values of <math>\tan \theta</math> for <math>\theta = 0^\circ, 30^\circ, 45^\circ, 60^\circ</math>.</li> <li>• 3D drawings, plans and elevations</li> <li>• 2D transformations</li> <li>• Bearings and Scale drawings</li> <li>• Constructions</li> <li>• Loci</li> <li>• Graphs translations <math>f(x)+a</math> <math>f(x+a)</math></li> <li>• Graph reflections <math>f(-x)</math> <math>-f(x)</math></li> <li>• All transformations of trig curves</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 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>
Summer	Revision and practising past papers			