

# Year 11 Curriculum Plan

## Maths



	Term 1	Term 2	Term 3
<b>PRIOR LEARNING...</b>	<p>From KS3 and year 10 pupils should have learnt:</p> <ul style="list-style-type: none"> <li>• Histograms.</li> <li>• Frequency Polygons.</li> <li>• Surds.</li> </ul>	<p>From KS3, Year 10 and Year 11 term 1 pupils should have learnt:</p> <ul style="list-style-type: none"> <li>• Completing the square (<math>a \geq 1</math>).</li> <li>• Solving quadratic inequalities.</li> <li>• Solving simultaneous equations.</li> <li>• Direct / inverse proportion numerically, graphically, and algebraically.</li> <li>• Compound interest.</li> <li>• Complex ratio.</li> <li>• Vectors arithmetic.</li> <li>• Geometric proof.</li> <li>• Experimental probability.</li> <li>• Tree diagrams.</li> <li>• Complex probability.</li> </ul>	<p>From KS3, Year 10, Year 11 term 1 and 2 pupils should have learnt:</p> <ul style="list-style-type: none"> <li>• Functions.</li> <li>• Translating graphs.</li> <li>• Rates of change.</li> <li>• Algebraic fractions.</li> <li>• Algebraic proofs.</li> <li>• Constructions.</li> <li>• Proving congruence.</li> <li>• Proving circle theorems.</li> </ul>

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<b>KNOWING WHAT...</b>	<p><u>Algebra unit 14 -</u> Forming and solving quadratics from contexts. Completing the square. (<math>a \geq 1</math>). Finding the TP by symmetry; producing complete sketches of quadratics. Solving quadratic inequalities and representing the solution set on a number line and a graph, using set notation. Solving simultaneous equations where one is linear and one non-linear.</p> <p><u>Number unit 16 -</u> Direct and inverse proportion, first numerically, then graphically, then algebraically. Compound interest. Exponential growth and decay. Advanced ratio work - complex problems (including combining ratios), algebraic problems.</p> <p><u>Geometry/ Measure unit 10 -</u> Representing a path/translation as a vector. Addition and subtraction of vectors. Multiplication of a vector by a scalar. Magnitude of a vector. Geometric arguments and proofs using vectors.</p> <p><u>Statistics/Probability unit 7 -</u> Predict expected outcomes of experiments. Experimental probability. Draw and interpret tree diagrams. Multiple strategies for solving probability problems - tree diagrams, Venn diagrams, two-way tables, applying the 'AND' and 'OR' rules. Complex probability problems involving forming and solving algebraic equations, 'given that' problems.</p>	<p><u>Algebra unit 15 -</u> Reading and writing functions. Inverse and composite functions. Plot and interpret graphs of cubic, reciprocal (<math>y=1/x</math>) and exponential (<math>y=k^x</math>, <math>k&gt;0</math>) functions. Plot, sketch and interpret the graphs of <math>y=\sin x</math>, <math>y=\cos x</math> and <math>y=\tan x</math>. Recognise and use the equation of a circle. Estimate solutions to equations by drawing graphs. Iteration. Sketch translations and reflections of the graph of a given function. Revisit completing the square to find turning points in the context of translating a quadratic. Trigonometric function graphs. Equation of a circle and tangent to a circle.</p> <p><u>Algebra unit 16/17 -</u> Find and estimate instantaneous and average rates of change. Find and estimate areas under curves and interpret these in real contexts. Arithmetic with algebraic fractions. Rearranging formulae with algebraic fractions. Solving equations involving algebraic fractions. Disproof by counterexample. Algebraic proof by deduction. Algebraic sequences round-up: Linear, Fibonacci, geometric sequences, finding common ratio or difference of an algebraic sequence; recurrence relations. Proof of formulae: quadratic formula, sine and cosine rules, area of a triangle, Pythagoras' Theorem.</p>	<p><u>Geometry/Measure unit 11 -</u> Drawing and reading scale drawings, constructing loci, solving loci problems, solving bearings problems. Solving simple kinematics problems with the SUVAT formulae. Proving the congruence of triangles. Prove two shapes are similar. Proving the circle theorems and solving more complex circle theorem. Solving a variety of complex geometric problems using vectors, trigonometry, ratio and other suitable strategies. Solving geometric problems involving algebra and equation.</p>
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<p><b>KNOWING HOW...</b></p>	<ul style="list-style-type: none"><li>• Plot quadratics equations.</li><li>• Solve quadratic inequalities.</li><li>• Solve complex simultaneous equations.</li><li>• Use ratio tables and axis for direct and inverse proportion.</li><li>• Substitute into compound interest formula.</li><li>• Rearrange compound interest formula.</li><li>• Use numbers lines for vectors.</li><li>• Form geometric proofs.</li><li>• Reason with geometric facts.</li><li>• Construct Venn's diagrams, tree diagrams, two-way tables.</li><li>• Apply rules to solve complex probability questions.</li></ul>	<ul style="list-style-type: none"><li>• Understand function notation.</li><li>• Plot and interpret graphs.</li><li>• Sketch graphs.</li><li>• Substitution.</li><li>• Rearranging formula.</li><li>• Solving equations.</li><li>• Arithmetic with fractions.</li><li>• Form algebraic proof.</li><li>• Recall angle facts.</li><li>• Recall Pythagoras rule.</li><li>• Recall sequence facts.</li></ul>	<ul style="list-style-type: none"><li>• Use of mathematical equipment; pencil, ruler, compass, and protractor.</li><li>• Construct and read scale drawings.</li><li>• Construct loci.</li><li>• Substitution.</li><li>• Rearrange complex formula.</li><li>• Solving equations.</li><li>• Spot patterns in sequences.</li><li>• Form a geometric proof.</li><li>• Recall angle facts.</li></ul>
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<b>ASSESSMENT...</b>	<p>After each unit pupils complete a short assessment based on each bullet point from above. The test is split into 3 parts.</p> <p>Part 1 - skill questions and key definitions/literacy.</p> <p>Part 2 - more difficult reasoning questions.</p> <p>Part 3 - problem solving questions which also link to prior knowledge from other units.</p> <p>Pupils also sit two larger assessments; one is at the halfway point for the year and the other is during whole school exam week in June.</p>	
	<p><b><u>Assessment 1 (PPE1).</u></b></p> <p>The revision list for this exam will change every year and will be provided via the PPE programme.</p>	<p><b><u>Assessment 2 (PPE2).</u></b></p> <p>The revision list for this exam will change every year and will be provided via the PPE programme.</p>