

## Year 12 Maths

<p>Module Title:</p> <p>Algebra, Co-ordinate Geometry, Calculus, Proof and Statistics</p>	<p>Module Title:</p> <p>Calculus, Mechanics, Hypothesis Testing, Logarithms and Exponentials</p>	<p>Module Title:</p> <p>Functions, Radians, Exponentials and Further Statistics</p>
<p>Learning Intent for this module:</p> <p>Students will recap the methods and laws associated with surds and indices as well as algebraic manipulation. This knowledge will be extended to include all polynomials.</p> <p>Students will use a range of co-ordinate geometry formulae and will be expected to solve geometrical problems.</p> <p>Students will be introduced to the binomial expansion.</p> <p>Students will learn how to differentiate and apply their knowledge for a range of purposes.</p> <p>Students will study the topic of proof. This will underpin the work they will complete in all other aspects of the course.</p> <p>Students will work with data, this will be numerically and in diagrams.</p> <p>Students will calculate probabilities, including with the binomial distribution.</p>	<p>Learning Intent for this module:</p> <p>Students will extend their techniques in calculus to include integration. They will look at the method and purpose.</p> <p>Students will revise and extend their knowledge of vectors. They will learn how to find the magnitude and direction as well as solve geometrical problems.</p> <p>Students will begin the Mechanics section of the course. They will study kinematics, including the application of calculus. They will then learn when and how to use the SUVAT formulae. They will also study Newton's laws of force and motion.</p> <p>Students will complete the Statistics component of the course with sampling and hypothesis testing with the Binomial Distribution.</p> <p>Students will revisit trigonometry and will extend their knowledge of the trigonometric functions to include the graphs and some common trig identities.</p> <p>Students will be introduced to logarithms and will begin to understand and use them.</p>	<p>Learning Intent for this Module:</p> <p>Students will complete the Mechanics section of the AS Maths course. They will understand how forces are applied when two objects are involved.</p> <p>Students will also complete the Pure Mathematics section of the AS Maths course and will study exponential models. This will extend their knowledge of the use of logarithms.</p> <p>Students will spend some time revising AS topics in preparation for the end of year examinations.</p> <p>Students will begin to study content from the A-Level course. They will study functions including definition of functions, types of functions and domain and range.</p> <p>Students will study the radian angle unit and applications of this.</p> <p>Students will also extend their knowledge of vectors to include 3-D vectors in a mechanics context.</p> <p>Students will complete the A-Level statistics section of the course. They will learn and use the conditional probability formulae. They will also be introduced to the Normal Distribution and associated calculator functions and will discover</p>

		further types of hypothesis testing for sample means and product moment correlation coefficients.
<p>Key Content to be learned:</p> <p><i>Teacher 1</i></p> <ul style="list-style-type: none"> <li>• Indices and Surds</li> <li>• Quadratic Functions</li> <li>• Polynomials</li> <li>• Using Graphs</li> <li>• Co-ordinate Geometry</li> <li>• Binomial Expansion</li> <li>• Differentiation</li> <li>• Applications of Differentiation</li> </ul> <p><i>Teacher 2</i></p> <ul style="list-style-type: none"> <li>• Proof</li> <li>• Working with Data</li> <li>• Probability</li> </ul>	<p>Key content to be learned:</p> <p><i>Teacher 1</i></p> <ul style="list-style-type: none"> <li>• Integration</li> <li>• Vectors</li> <li>• Kinematics</li> <li>• Motion with Constant Acceleration</li> <li>• Force and Motion</li> </ul> <p><i>Teacher 2</i></p> <ul style="list-style-type: none"> <li>• Statistical Hypothesis Testing</li> <li>• Trigonometric Functions and Equations</li> <li>• Triangle Geometry</li> <li>• Logarithms</li> </ul>	<p>Key Content to be learned:</p> <p><i>Teacher 1</i></p> <ul style="list-style-type: none"> <li>• Objects in Contact</li> <li>• Functions</li> <li>• Radians</li> <li>• Applications of Vectors</li> </ul> <p><i>Teacher 2</i></p> <ul style="list-style-type: none"> <li>• Exponential Models</li> <li>• Conditional Probability</li> <li>• The Normal Distribution</li> <li>• Further Hypothesis Testing</li> </ul>
<p>Key tasks for this module:</p> <ul style="list-style-type: none"> <li>• Key Task 1 – Quadratics and Polynomials</li> <li>• Key Task 2 – Co-ordinate Geometry</li> <li>• Key Task 3 – Differentiation</li> <li>• Key Task 4 – Probability</li> <li>• Key Task 5 – Summative Assessment</li> </ul>	<p>Key tasks for this module:</p> <ul style="list-style-type: none"> <li>• Key Task 1 – Integration</li> <li>• Key Task 2 – Statistical Hypothesis Testing</li> <li>• Key Task 3 – Force and Motion</li> <li>• Key Task 4 – Trigonometry</li> <li>• Key Task 5 – Summative Assessment</li> </ul>	<p>Key tasks for this module:</p> <ul style="list-style-type: none"> <li>• Key Task 1 – Objects in Contact</li> <li>• Key Task 2 – Logarithms and Exponentials</li> <li>• Key Task 3 – The Normal Distribution</li> <li>• Key Task 4 - Functions</li> <li>• Key Task 5 – End of Year Exam</li> </ul>

## Year 13 Maths

Module Title:	Module Title:	Module Title:
Trigonometry, Differentiation, Functions, Sequences and Series, Rational Functions and Proof	Integration, Differential Equations, Mechanics, Rational Functions and Numerical Methods	Mechanics, Statistics and Revision
<p>Learning Intent for this module:</p> <p>Students will further their knowledge of trigonometry by studying further identities as well as their uses and applications. Students will then discover further differentiation techniques and their applications. Students will revisit functions and extend this to further transformations of graphs. Students will study arithmetic and geometric sequences as well as the associated formulae and how to use it to solve problems. Students will extend their proof knowledge to include proof by contradiction. Students will learn how to express a fraction using partial fractions as well as their uses.</p>	<p>Learning Intent for this module:</p> <p>Students will extend their knowledge of the integration techniques to include more complex functions. They will apply this knowledge to forming and solving differential equations. Students will begin the Mechanics element of Year 2 when they study projectiles. Students will complete their work on Rational Functions and will use and apply the General Binomial Expansion. Students will discover parametric equations and applications of calculus methods relating to this. Students will complete the Pure Mathematics content of Year 2 when they study Numerical Methods. This include iterative methods, Newton-Raphson as well as the Trapezium Rule.</p>	<p>Learning Intent for this Module:</p> <p>Students will complete the A-Level course content for Mechanics after they have studied forces in context and moments. Students will revisit the Year 2 Statistics topics with particular focus on The Normal Distribution and Further Hypothesis Testing. Students will now consolidate their learning cross the course. Particular revision will focus on areas for improvement identified in mock 2.</p>
<p>Key Content to be learned:</p> <p><i>Teacher 1</i></p> <ul style="list-style-type: none"> <li>• Further Trigonometry</li> <li>• Calculus of Exponential and Trigonometric Functions</li> </ul>	<p>Key content to be learned:</p> <p><i>Teacher 1</i></p> <ul style="list-style-type: none"> <li>• Further Integration Techniques</li> <li>• Further Applications of Calculus - More Complicated Areas</li> </ul>	<p>Key Content to be learned:</p> <p><i>Teacher 1</i></p> <ul style="list-style-type: none"> <li>• Forces in Context</li> <li>• Moments</li> <li>• Revision</li> </ul>

<ul style="list-style-type: none"> <li>• Further Differentiation</li> <li>• Further Applications of Calculus - Properties of Curves</li> <li>• Further Applications of Calculus - Related Rates of Change</li> </ul> <p><i>Teacher 2</i></p> <ul style="list-style-type: none"> <li>• Functions</li> <li>• Further Transformations of Graphs</li> <li>• Sequences and Series</li> <li>• Proof</li> <li>• Rational Functions and Partial Fractions</li> </ul>	<ul style="list-style-type: none"> <li>• Differential Equations</li> <li>• Projectiles</li> </ul> <p><i>Teacher 2</i></p> <ul style="list-style-type: none"> <li>• General Binomial Expansion</li> <li>• Parametric Equations</li> <li>• Numerical Solutions of Equations</li> <li>• Numerical Integration</li> </ul>	<p><i>Teacher 2</i></p> <ul style="list-style-type: none"> <li>• Conditional Probability</li> <li>• The Normal Distribution</li> <li>• Further Hypothesis Testing</li> <li>• Revision</li> </ul>
<p>Key tasks for this module:</p> <ul style="list-style-type: none"> <li>• Key Task 1 – Further Trigonometry</li> <li>• Key Task 2 – Sequences and Series</li> <li>• Key Task 3 – Further Differentiation</li> <li>• Key Task 4 – Mock 1 Paper 1</li> <li>• Key Task 5 – Mock 1 Paper 2</li> </ul>	<p>Key tasks for this module:</p> <ul style="list-style-type: none"> <li>• Key Task 1 – Further Integration</li> <li>• Key Task 2 – Rational Functions and General Binomial Expansion</li> <li>• Key Task 3 – Numerical Methods</li> <li>• Key Task 4 – Mock 2 Paper 1</li> <li>• Key Task 5 – Mock 2 Paper 2</li> </ul>	<p>Key tasks for this module:</p> <ul style="list-style-type: none"> <li>• Key Task 1 – Mechanics Assessment</li> </ul>