



Year 12 Further Maths Curriculum

<b>Overview</b>	<p><b>Maths Further Maths A' Level (MEI)</b> Developed in collaboration with Mathematics in Education and Industry (MEI), the new A Level Further Mathematics B (MEI) qualification offers a coherent course of study to develop students' mathematical understanding and skills, encouraging them to think, act and communicate mathematically. It provides a solid foundation for further study in mathematics and also for those studying Computer Science, Finance, Engineering and the Physical Sciences other disciplines that make extensive use of mathematical skills.</p> <p>We start with ensuring the content required from A2 Pure Maths is fully covered before accessing the Further Maths content.</p>
-----------------	--

<b>Autumn Term</b>	<b>Half Term 1</b>	<b>Half Term 2</b>	<b>Assessment</b>
	<p><b>Calculus:</b></p> <ul style="list-style-type: none"> <li>A brief run through of most of the differentiation and integration from A level maths and some of the trigonometry.</li> </ul>	<p><b>Kinematics:</b></p> <ul style="list-style-type: none"> <li>motion with constant and variable acceleration.</li> </ul> <p><b>Matrices:</b></p> <ul style="list-style-type: none"> <li>Arrays of numbers that can be used to represent transformations in 2D and 3D</li> </ul> <p><b>Discrete Random Variables:</b></p> <ul style="list-style-type: none"> <li>The algebra of probability, expectation (population mean) and variance</li> </ul> <p><b>Complex Numbers:</b></p> <ul style="list-style-type: none"> <li>Combining imaginary numbers (multiples of the square root of minus one) with real numbers (normal numbers).</li> </ul> <p><b>Forces:</b></p> <ul style="list-style-type: none"> <li>Using Newton's second law (<math>F=ma</math>)</li> </ul> <p><b>Roots:</b></p> <ul style="list-style-type: none"> <li>Using the coefficients of a cubic and quartic equations to give information about the possible solutions.</li> </ul>	<p>We do a second assessment in the first week after half term.</p> <p>A formal assessment takes place just before the end of HT2.</p>

<b>Spring Term</b>	<b>Half Term 3</b>	<b>Half Term 4</b>	<b>Assessment</b>
	<p><b>Bivariate Data:</b></p> <ul style="list-style-type: none"> <li>Interpreting and hypothesis testing correlation and ranked correlation and regression.</li> </ul> <p><b>Sequences and Induction:</b></p> <ul style="list-style-type: none"> <li>Sigma notation and proof by induction.</li> </ul> <p><b>Friction:</b></p> <ul style="list-style-type: none"> <li>Friction and the normal reaction, particles on slopes.</li> </ul>	<p><b>Centre of Mass:</b></p> <ul style="list-style-type: none"> <li>Finding the centre of mass of two and three dimensional shapes.</li> </ul> <p><b>Inverse Matrices:</b></p> <ul style="list-style-type: none"> <li>Using inverse matrices to solve simultaneous equations.</li> </ul> <p><b>Vectors and 3D Space:</b></p> <ul style="list-style-type: none"> <li>Multiplying vectors and intersection of planes.</li> </ul>	<p>We do two assessments in Pure Maths.</p> <p>One towards the end of each half term</p>

<b>Spring Term</b>	<p><b>Complex Number:</b></p> <ul style="list-style-type: none"> <li>■ Geometry: Representing sets of complex numbers that fit a rule or condition geometrically.</li> </ul> <p><b>Moments:</b></p> <ul style="list-style-type: none"> <li>■ The turning effect of a force.</li> </ul>	<p><b>Work Energy and Power:</b></p> <ul style="list-style-type: none"> <li>■ Kinetic energy and gravitational potential energy.</li> </ul> <p><b>Discrete Distributions:</b></p> <ul style="list-style-type: none"> <li>■ using discrete probability distributions (Binomial, Poisson Uniform and geometric)</li> </ul>	
--------------------	--	--	--

<b>Summer Term</b>	<p><b>Half Term 5</b></p> <p><b>Chi Squared:</b></p> <ul style="list-style-type: none"> <li>■ A hypothesis test that looks how well data fits a distribution.</li> </ul> <p><b>Impulse:</b></p> <ul style="list-style-type: none"> <li>■ Change in momentum and collisions.</li> </ul> <p><b>Dimensional Analysis:</b></p> <ul style="list-style-type: none"> <li>■ Using the dimensions (length, time, mass) to analyse models and formulae.</li> </ul>	<p><b>Half Term 6</b></p> <p><b>Y13 Work Summations and Series:</b></p> <ul style="list-style-type: none"> <li>■ Further proof by induction and differencing to simplify summations</li> </ul> <p><b>Matrices:</b></p> <ul style="list-style-type: none"> <li>■ Matrices and the intersection of planes</li> </ul>	<b>Assessment</b>
			<p>The main assessment in HT5 &amp; 6 take place shortly after half term and are a full set of summer exams.</p>

<b>Useful Resources for Supporting Your Child at Home:</b>	<b>Homework:</b>
<ul style="list-style-type: none"> <li>■ <a href="http://integralmaths.org">integralmaths.org</a></li> <li>■ <a href="http://www.drfrstmaths.com">www.drfrstmaths.com</a></li> <li>■ <a href="http://www.savemyexams.co.uk/a-level">www.savemyexams.co.uk/a-level</a></li> <li>■ <a href="http://www.examsolutions.net">www.examsolutions.net</a></li> <li>■ <a href="http://www.physicsandmathstutor.com/maths-revision">www.physicsandmathstutor.com/maths-revision</a></li> <li>■ <a href="http://www.madasmaths.com">www.madasmaths.com</a></li> </ul>	<p>Homework is much more extensive, and we expect students to take control of their own work and spend longer on it (a minimum of 300 mins per week).</p> <p>Minimum Expectations are:</p> <ul style="list-style-type: none"> <li>■ All questions especially “P” &amp; “E” questions from exercises in the textbooks are to be completed self-marked and corrected.</li> <li>■ All MEI Section test to be completed online this is marked by the online program</li> <li>■ When requested Topic Assessment tests and exam practice questions might be set by teachers.</li> </ul> <p>Other Topic specific questions are available in Class Material in Teams.</p>