

Year 12: Maths

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topics	<p>The Foundations of Algebra</p> <p>Focus: Expressions, equations and inequalities</p> <p>Data collection and measures of spread</p>	<p>More Complex Graphs</p> <p>Focus: Straight-line graphs and the equation of a circle.</p> <p>Distributions and hypothesis testing</p>	<p>Differentiation</p> <p>Focus: An introduction to differentiation and its applications.</p> <p>Constant acceleration and modelling.</p>	<p>Integration</p> <p>Focus: An introduction to integration and its applications.</p> <p>Variable acceleration, forces and motion.</p>	<p>AS-level exam preparation and strategies for success</p> <p>Focus: Lessons will concentrate on a variety of different exam questions and the range of strategies that need to be applied to them.</p>	<p>Learning consolidation</p> <p>Focus: Students will prepare a series of presentations to be delivered to the group in order to retrieve and consolidate prior learning.</p>
Assessments	<p>The students will be assessed towards the end of the half term. The assessment will contain 6 questions which will cover the topics that have been studied during the course of the half term.</p>	<p>The students will be assessed towards the end of the half term. The assessment will contain 6 questions which will cover the topics that have been studied during the course of the half term.</p>	<p>The students will be assessed towards the end of the half term. The assessment will contain 6 questions which will cover the topics that have been studied during the course of the half term.</p>	<p>The students will be assessed towards the end of the half term. The assessment will contain 6 questions which will cover the topics that have been studied during the course of the half term.</p>	<p>The students will sit an end-of-year assessment which will consist of one paper which will contain 8 Pure questions and 4 questions from Statistics and Mechanics.</p>	<p>The students will be assessed towards the end of the half term. The assessment will contain 6 questions which will cover the topics that have been studied during the course of the half term.</p>
Building on Prior Learning	<p>Declarative knowledge - This can be introduced with "I know that" and refers to facts and formulae, and the relationship between facts; Ofsted refer to the latter as conceptual understanding. Throughout Year 12 students will be exposed to a wide range of content which will build on and extend the solid foundations that were established at GCSE, as well as offering a significant insight into a wide range of new content, including differentiation, acceleration and measures of spread.</p> <p>Procedural knowledge - This can be introduced with "I know how" and refers to methods, and the principles underpinning them. Having been introduced to the key facts, students will then develop a range of strategies and approaches to tackle a problem and will reflect on which of these would be best used in a particular situation, solving problems both graphically and algebraically.</p>					
Cultural Capital	<p>Cultural capital will be embedded and regularly encountered throughout the delivery of the maths curriculum. Lessons will emphasise that maths and indeed learning extends well beyond the academic and students will be provided with broader development, enabling them to develop and discover their interests and talents in a wide range of areas. Students will encounter the many ways in which the knowledge and understanding of algebra can be used to, for example, maximise and minimise the effect of a given variable which, in turn, has implications in industry when looking at the costs of a project.</p>					
Mastery	<p>Students of all ability and background will acquire a deep, long-term, secure and adaptable understanding of mathematics; achieving this mastery will mean that students will acquire a solid enough understanding of the maths that's been taught to enable them to move on to more advanced material. In order to facilitate the development of mastery new content will be broken down into small coherent steps that gradually unfold the concept and will be linked to existing knowledge. Students will have their mathematical thinking challenged throughout the course and frequent retrieval practice will enable students to embed their deeper learning and understanding with increasing fluency. Developing a profound understanding of algebra will enable students to transfer and apply these skills to a wide range of challenging problems with many real world applications, including modelling differential equations which can be applied to aviation and the motor industry.</p>					
Development of Character	<p>A wide range of virtues are encouraged and developed throughout the teaching of mathematics. In every lesson, teachers will support students to develop their character – including their resilience, confidence and independence – and help them know how to keep physically and mentally healthy.</p>					
Extra-Curricular opportunities	<p>In school – Directed study offer students the opportunity to revisit recently visited content to address any misconceptions and rehearse and retrieve prior knowledge in order to ensure that it is embedded, thereby providing a solid foundation on which subsequent learning can be built.</p> <p>Outside of school - Mathematics has an integral part to play in all aspects of life. Students will be encouraged to develop an awareness of the courses and professions in which mathematics can play an integral part.</p>					
Metacognitive Learning	<p>In lessons, students will be encouraged to articulate their thought processes, reflect on what strategies work and do not work for a given problem and develop a wide range of knowledge and skills which can they be applied to subsequent new content, enabling the students to build up a cumulative web of coherent and sequenced knowledge.</p>					