

Mathematics A Level Curriculum



Year 12						
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Content: What will students know	<ul style="list-style-type: none"> • Topic 1 – Proof • Topic 2 – Algebra and functions • Topic 3 – Coordinate geometry in the (x, y) plane 	<ul style="list-style-type: none"> • Topic 4 – Sequences and series • Topic 5 – Trigonometry • Topic 1 – Statistical sampling 	<ul style="list-style-type: none"> • Topic 5 – More Trigonometry • Topic 6 – Exponentials and logarithms Topic 2 – Data presentation and interpretation 	<ul style="list-style-type: none"> • Topic 7 – Differentiation • Topic 3 – Probability • Topic 6 – Quantities and units in mechanics 	<ul style="list-style-type: none"> • Topic 8 – Integration • Topic 4 – Statistical distributions • Topic 7 – Kinematics 	<ul style="list-style-type: none"> Topic 9 – Vectors • Topic 5 – Statistical hypothesis testing • Topic 8 – Forces and Newton's laws
Skills: What will students be able to do	<p>Construct and present mathematical arguments through appropriate use of diagrams; sketching graphs; logical deduction; precise statements involving correct use of symbols and connecting language, including: constant, coefficient, expression, equation, function, identity, index, term, variable. Understand and use mathematical language and syntax as set out in the content.</p> <p>Understand and use language and symbols associated with set theory, as set out in the content. Apply to solutions of inequalities and probability.</p> <p>Understand and use the definition of a function; domain and range of functions. Comprehend and critique mathematical arguments, proofs and justifications of methods and formulae, including those relating to applications of mathematics.</p> <p>Recognise the underlying mathematical structure in a situation and simplify and abstract appropriately to enable problems to be solved.</p> <p>Construct extended arguments to solve problems presented in an unstructured form, including problems in context.</p> <p>Interpret and communicate solutions in the context of the original problem. Understand that many mathematical problems cannot be solved analytically, but numerical methods permit solution to a required level of accuracy.</p>					
Other: Literacy/Numeracy/ Ethos	<p>Mathematical vocabulary is introduced and assessed through the year.</p> <p>Mathematical technology is introduced and used more and more frequently as the course develops.</p>					
Assessment:	Half-termly test	Half-termly test	Half-termly test	Half-termly test	Half-termly test	EOY Exam (mock)



Year 13						
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Content: What will students know	<ul style="list-style-type: none"> • Topic 1 – Proof • Topic 2 – Algebra and functions • Topic 1 – Statistical sampling 	<ul style="list-style-type: none"> • Topic 3 – Coordinate geometry in the (x, y) plane • Topic 4 – Sequences and series • Topic 2 – Data presentation and interpretation • Topic 6 – Quantities and units in mechanics 	<ul style="list-style-type: none"> • Topic 5 – Trigonometry • Topic 6 – Exponentials and logarithms • Topic 3 – Probability • Topic 7 – Kinematics 	<ul style="list-style-type: none"> • Topic 7 – Differentiation • Topic 8 – Integration • Topic 4 – Statistical distributions • Topic 8 – Forces and Newton's laws 	<ul style="list-style-type: none"> Topic 9 – Numerical methods • Topic 10 – Vectors • Topic 5 – Statistical hypothesis testing • Topic 9 – Moments 	Exam technique and past-papers
Skills: What will students be able to do	<p>Evaluate, including by making reasoned estimates, the accuracy or limitations of solutions, including those obtained using numerical methods.</p> <p>Understand the concept of a mathematical problem-solving cycle, including specifying the problem, collecting information, processing and representing information and interpreting results, which may identify the need to repeat the cycle.</p> <p>Understand, interpret and extract information from diagrams and construct mathematical diagrams to solve problems, including in mechanics.</p> <p>Translate a situation in context into a mathematical model, making simplifying assumptions.</p> <p>Use a mathematical model with suitable inputs to engage with and explore situations (for a given model or a model constructed or selected by the student).</p> <p>Interpret the outputs of a mathematical model in the context of the original situation (for a given model or a model constructed or selected by the student).</p> <p>Understand that a mathematical model can be refined by considering its outputs and simplifying assumptions; evaluate whether the model is appropriate.</p> <p>Understand and use modelling assumptions.</p>					
Other: Literacy/Numeracy/ Ethos	Use of technology is increased in both variety and depth.					
Assessment:	End of Topic Tests and Half-Term assessments	End of Topic Tests and Half-Term assessments	End of Topic Tests and Half-Term assessments	Mock Exam	External Exam	