Mathematics	**Intent:** Mathematics is a creative and highly inter-connected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.		
Year 12	**Pure**	**Statistics**	**Mechanics**
Knowledge (facts, information, concepts and key terminology)	Algebraic Expressions, Quadratics, Graphs, Straight line graphs, Equations and Inequalities, Circles, Transformations, Algebraic Methods, Binomial Expansion, Trigonometric Ratios, Equations and Identities, Vectors, Exponentials and Logarithms, Differentiation and Integration.	Data Collection, Measures of Location and Spread, Representation of Data and Scatter Diagrams, Probability, Statistical Distributions, Hypothesis Testing	Modelling in Mechanics, Constant Acceleration, Forces and Motion, Variable Acceleration
Understanding (ability to connect and synthesise knowledge within a context)	The fundamental skills required to solve the most complex mathematical problems. That different topic areas can support one another when building an in-depth solution.	The differences between key statistics and how they represent data. Understand the advantages and disadvantages of different approaches and use them to compare two or more sets of data. The theoretical aspect of probability and how different distributions and diagrams can support contextual questions.	The simplification of a real-world scenario into a mathematical problem, including which aspects are more important and which are negligible. The differences between contexts in which acceleration is constant and variable and how that affects the procedure.
Skills (successful application of knowledge and understanding to a specific task)	To read information, identify the relevant mathematical topic and fluently apply the correct procedure to solve contextual problems.	Create statistical models and apply the correct procedure to generate key information. Critique and improve models efficiently by using coding. Apply correct probability distributions for contextual problems.	Translate contextual scenarios into mathematical problems by drawing accurate diagrams and labelling key information. Apply procedures fluently and state limitations of both solutions and models.
Formal Assessments (those done by all/vast majority of the cohort)	Termly formal assessments Assessed homework		

By the end of the year students on course for at least a grade C will be able

- Recall or recognise many of the mathematical facts, concepts, techniques and standard models required and sometimes select appropriate ones to use in a variety of contexts.
- Manipulate mathematical expressions with few errors and sometimes use graphs, sketches and diagrams appropriately.
- Sometimes use mathematical language and notation with confidence.
- Sometimes construct extended arguments and proofs.
- Sometimes make correct deductions and inferences, and sometimes draw correct conclusions and recognise incorrect reasoning.
- Sometimes devise and implement a solution strategy in previously unseen unstructured problems.
- Occasionally notice and correct errors made in calculations or logic.
- Recall or recognise many of the standard models and sometimes select appropriate ones to apply to a variety of familiar situations in the real world.
- Sometimes refer the results of problem solving back to the given context and, as required, sometimes make interpretations, comments, evaluations or predictions and note limitations.
- Sometimes make reasoned, sometimes correct comments on modelling assumptions, outcomes and limitations, evaluate and suggest possible refinements to the model.

Term 1	Term 2	Term 3
• Algebraic Expressions • Quadratics • Equations and Inequalities • Straight Line Graphs • Transformations • Non-Linear Graphs • Equations of Circles • Algebraic Methods • Binomial Expansion • Trigonometric Ratios • Trigonometric Identities and Equations	• Vectors • Exponentials and Logarithms • Differentiation • Integration • Modelling in Mechanics	• Data Collection • Measures of Location and Spread • Representations of Data/Scatter Diagrams • Probability • Statistical Distributions • Hypothesis Testing • Constant Acceleration • Forces and Motion • Variable Acceleration