Subject: Mathematics (A Level)

Year 12	Year 13
Algebra and Proof: Students explore indices and surds, quadratic functions and their graphs, algebraic division and factor theorem. They also learn about simultaneous equations.	**Algebra and Proof**: Further algebraic division and factorising; Modulus of Linear Functions; Composite and Inverse Functions; Combinations of transformations; Rational Functions into Partial Fractions.
Geometry: Students have an opportunity to further apply their knowledge and skills with linear graphs and equations, circle theorems and vectors in two dimensions.	**Geometry**: Parametric equations and conversion between Cartesian and parametric forms; Differentiate simple functions and relations defined implicitly or parametrically, for first derivative only.
Calculus: Students explore differentiation; from first principles, as a rate of change, differentiation of polynomials and in application to graphs and optimisation. Students also study integration of polynomials, the evaluation of definite integrals and how to find areas in different contexts.	**Calculus:** Differentiation and integration of trigonometric, exponential, logarithmic, and complex functions; Convex and Concave sections of curves and points of inflection; Integration as a limit of a sum.
Trigonometry: Students explore Sine and Cosine rules, the area of a Triangle, trigonometric functions and graphs, trigonometric Identities and work on solving trigonometric equations.	**Trigonometry:** Small angle approximations; Definitions and Graphs of Sec, Cosec, and Cot; Compound Angle Formulae; Radians; Understand and use compound angle formulae; Trigonometric Proof.
Exponentials and Logarithms: Students learn about the function axax and its graph, where a is positive including exex. They learn the definition and graph of logax$logax$ as well as the laws of logarithms and exponentials in modelling.	
Sequences and Series: Students practise binomial expansion for positive powers and make links to binomial probabilities.	**Sequences and Series**: Students understand binomial theorem with any rational power. They learn about sequences sigma notation, arithmetic sequences and series, geometric sequences and series as well as sequences and series in modelling.
	Mechanics: Students learn and apply the language of mechanical systems, kinematics, Newton's laws of motion and rotating forces through use of moments.
	Statistics: Students explore statistical models, common representations, probabilities (conditional, mutually exclusive, and diagrammatic representations), normal and binomial distributions and hypothesis testing.