

Maths

	Year 12	Year 13
A u t u m n 1	<p>Pure Maths:</p> <ul style="list-style-type: none"> ● Algebraic manipulation (expanding and factorising) ● Surds and Laws of Indices ● Trigonometry in right-angled triangles and solving simple trigonometric equations ● Coordinate Geometry and the equation of a straight line <p>Applied Maths:</p> <ul style="list-style-type: none"> ● Sampling techniques and measures of central tendency/dispersion 	<p>Pure Maths:</p> <ul style="list-style-type: none"> ● Algebraic manipulation involving fractions ● Division of polynomials and using the Factor Theorem ● Working with the reciprocal trigonometric functions, including further identities and solving equations ● Coordinate Geometry and the equation of a circle <p>Applied Maths:</p> <ul style="list-style-type: none"> ● Use and interpret visual representations, including histograms, box plots and scatter diagrams ● Vectors in 3 dimensions
A u t u m n 2	<p>Pure Maths:</p> <ul style="list-style-type: none"> ● Introduction to differentiation, including from first principles ● Introduction to integration as the reverse of differentiation ● Introduction to Numerical Methods (using Trial and Improvement) ● Working with exponentials and solving simple exponential equations ● Binomial expansions involving positive integer powers <p>Applied Maths:</p> <ul style="list-style-type: none"> ● Vectors in 2 dimensions ● Basic probability and probability notation 	<p>Pure Maths:</p> <ul style="list-style-type: none"> ● Differentiation involving the Product and Quotient Rules ● Integration by Parts ● Solving equations using the Newton-Raphson method ● Modelling real-life situations involving exponential growth or decay ● Developing the concept of a recurrence relation to describe/generate sequences <p>Applied Maths:</p> <ul style="list-style-type: none"> ● Extending probability to cover the concept of conditional probability ● Introduction to the Normal probability distribution
S p r i n g 1	<p>Pure Maths:</p> <ul style="list-style-type: none"> ● Solving linear simultaneous equations ● Quadratic functions and solving quadratic equations ● Trigonometry in non-right-angled triangles, an introduction to the radian measure and applications to arcs and sectors of circles ● Curve sketching techniques <p>Applied Maths:</p> <ul style="list-style-type: none"> ● Probability distributions, discrete random variables and the Binomial Distribution 	<p>Pure Maths:</p> <ul style="list-style-type: none"> ● Developing work on functions to include inverse functions ● Decomposition of rational functions into Partial Fractions ● Using the Compound and Double Angle Formulae to solve trigonometric equations and to prove more advanced trigonometric identities ● Using small angle approximations to simplify trigonometric expressions ● Using Parametric Equations to represent a curve, and being able to convert between Parametric and Cartesian Equations ● Parametric Differentiation <p>Applied Maths:</p> <ul style="list-style-type: none"> ● Performing hypothesis tests involving the Normal Distribution and the Product Moment Correlation Coefficient ● Introducing friction and/or moments into problems involving objects in equilibrium (including on sloped surfaces)

S p r i n g 2	<p>Pure Maths:</p> <ul style="list-style-type: none"> ● Applications of differentiation to finding stationary points, tangents and normals ● Definite integration and integration as the area under a curve ● Locating roots of an equation using the 'change of sign' method ● Introducing logarithms, including the natural logarithm ● Using 'sigma notation' to represent a sum <p>Applied Maths:</p> <ul style="list-style-type: none"> ● Newton's Laws and objects in equilibrium ● Hypothesis testing involving the Binomial Distribution 	<p>Pure Maths:</p> <ul style="list-style-type: none"> ● Differentiating a function represented implicitly ● Further differentiation techniques, including finding whether a curve is concave or convex ● Integration of further functions involving substitution or by writing in terms of Partial Fractions ● Use of the Trapezium Rule to estimate the area under a curve ● Solving more advanced exponential and logarithmic equations ● Solving problems involving geometric sequences and series ● Introduction to methods of proof <p>Applied Maths:</p> <ul style="list-style-type: none"> ● Kinematics involving motion under constant and non-constant acceleration in two dimensions ● Projectiles
S u m m e r 1	<p>Pure Maths:</p> <ul style="list-style-type: none"> ● A formal introduction to functions, including domain, range and composite functions ● Solving linear and quadratic inequalities ● Using basic trigonometric identities to solve more advanced trigonometric equations ● Transformations of graphs, including translations, reflections and stretches <p>Applied Maths:</p> <ul style="list-style-type: none"> ● Kinematics involving motion under constant and non-constant acceleration in one dimension 	<p>Pure Maths:</p> <ul style="list-style-type: none"> ● Solving trigonometric equations of the form $a\cos x + b\sin x = c$ ● Drawing graphs and solving equations involving the modulus function ● Using differentiation to solve problems involving rates of change and connected rates of change ● Forming and solving differential equations ● Plotting and using logarithmic graphs ● Binomial Expansions involving rational and negative powers <p>Applied Maths:</p> <ul style="list-style-type: none"> ● Further development of Newton's Laws to incorporate the effects of friction on objects (including connected objects) moving on horizontal or sloped surfaces ● Forming and solving differential equations to represent scenarios involving variable forces/acceleration
S u m m e r 2	<p>Pure Maths:</p> <ul style="list-style-type: none"> ● Differentiation using the Chain Rule, and differentiating trigonometric, exponential and logarithmic functions ● Integration by substitution ● Solving equations using iterative methods ● Introducing and using the laws of logarithms ● Solving problems involving arithmetic sequences and series <p>Applied Maths:</p> <ul style="list-style-type: none"> ● Development of Newton's Laws to solve problems involving accelerating objects and connected objects 	EXAMS