Year 13 A-level Mathematics Curriculum Sequence					
Subject Intent: For every learner to be confident and fluent mathematicians who enjoy and succeed in mathematics, leaving school with a solid foundation of mathematical skills, knowledge and understanding, primed for their chosen fields in the 21st century.					
	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Big idea/Theme	• Probability • Conditional probability • Correlation • Regression, correlation and hypothesis testing • Trigonometry and modelling • Parametric equations • Differentiation	• Statistical distributions • Hypothesis testing • The normal distribution • Vectors • Modelling in mechanics • Constant acceleration • Projectiles • Variable acceleration	• Differentiation • Numerical methods • Variable acceleration • Further kinematics • Forces and motion	• Integration • Moments • Forces and friction • Application of forces	Revision of all topics: Pure 1&2, Statistics 1&2 and Mechanics 1&2	External exam
Knowledge that needs to stick	• Calculate probabilities for single events • Draw and interpret Venn diagrams • Understand mutually exclusive and independent events • Use tree diagrams • Use set notation in probability	• Use simple discrete probability distributions • Use the binomial distribution • Calculate probabilities for the binomial distribution • Understand the language and concept of hypothesis testing	• Differentiate trigonometric functions • Differentiate exponentials and logarithms • Differentiate functions using the chain, product and quotient rules • Differentiate parametric equations • Differentiate implicit functions	• Integrate standard mathematical functions including trigonometric and exponential functions of the form $f(ax + b)$ • Use trigonometric identities in integration • Use the reverse of the chain rule to integrate more complex functions		

	• Solve conditional probability problems • Draw and interpret scatter diagrams • Interpret correlation and causation • Interpret the coefficients of a regression line equation • Understand exponential models • Use the product moment correlation coefficient • Carry out a hypothesis test for zero correlation • Use the addition formulae • Solve trigonometric equations • Write equivalent expressions	• Understand that a sample is used to make an inference about population • Find critical values of a binomial distribution using tables • Carry out a one-tailed and two-tailed tests for the proportion of the binomial distribution • Understand the normal distribution • Use a standard normal curve • Find unknown means and/or standard deviations for a normal distribution • Approximate a binomial distribution using a normal distribution • Carry out a hypothesis test for the mean of a normal distribution	• Use the second derivative • Solve problems involving connected rates of change and construct simple differential equations • Locate roots of $f(x) = 0$ • Use iteration to find an approximation to the root of the equation $f(x) = 0$ • Use Newton-Raphson procedure to find the approximations to the solutions of the equations of the form $f(x) = 0$ • Work with vectors for displacement, velocity and acceleration • Use calculus with harder functions of time	• Integrate functions by making a substitution, using integration by parts and using partial fractions • Use the trapezium rule to approximate the area under a curve • Solve simple differential equations • Draw force diagrams and calculate resultant forces • Understand and use Newton's laws • Solve problems involving connected particles • Calculate turning effects • Calculate the resultant moments • Solve problems involving bodies in equilibrium		

	• Prove trigonometric identities • Convert parametric equations into Cartesian form • Sketch parametric curves • Solve coordinate geometry problems involving parametric equations • Differentiate trigonometric functions • Differentiate exponentials and logarithms • Differentiate functions using the chain, product and quotient rules • Differentiate parametric equations • Differentiate implicit functions • Use the second derivative	• Understand 3D coordinates • Use vectors in 3D • Use vectors to solve geometric problems • Work with vectors for displacement, velocity and acceleration • Use calculus with harder functions of time • Differentiate and integrate vectors • Use displacement-time graphs • Use velocity-time graphs • Use the constant acceleration formulae • Solve problems involving particles projected at an angle	• Differentiate and integrate vectors • Draw force diagrams and calculate resultant forces • Understand and use Newton's laws • Solve problems involving connected particles	• Resolve forces into components • Solve problems involving smooth or rough inclined planes • Use $F \leq \mu R$ • Solve static problems involving weight, tension and pulleys • Understand and solve problems involving limiting equilibrium • Solve problems involving motion on rough or smooth inclined planes • Solve problems involving connected particles		

	• Solve problems involving connected rates of change and construct simple differential equations	• Derive the formulae for time of flight, range and greatest height, and the equation of the path of a particle • Use differentiation and integration to solve kinematics problems • Use calculus to solve problems involving maxima and minima				