Year: 13
Subject: A-level Maths

Autumn Term			
What has come before and what comes later:	*A level year 1* *Algebraic Expressions, Quadratics, Equations and inequalities, Graphs and transformations, Straight line graphs, Circles, Algebraic Methods, The Binomial Expansion, Trigonometric Ratio, Trigonometric Identities, and equations, Vectors, Differentiation, Integration, Exponentials and Logarithms and Proof/Algebraic Methods(chapter 1 Year 2 book)* *Later: Year 2 Chapters 8-12 Parametric Equations, Differentiation, Integration, Numerical Methods, Vectors(could be completed in mechanics if time)*		
	Pure	*Statistics*	*Mechanics*
The Big Questions (What questions will students be able to answer upon mastery of the topic?)	*Chapters 2-7* • *Do you understand the modulus function?* • *Can you use inverse and composite functions?* • *Are you able to combine transformations?* • *Can you solve modulus problems?* • *Do you Know the difference between a sequence and a series?* • *Can you solve problems using arithmetic and geometric series?* • *Can you calculate the sum to infinity for a geometric series? When is this possible?* • *Can you solve problems using recurrence relations?* • *Can you expand $(1+x)^n$ using the binomial expansion?* • *Can you expand $(a+bx)^n$ using the binomial expansion?* • *Can you calculate arc length using radian measure?* • *Can you calculate areas of sectors and segments using radian measure?* • *Can you solve trigonometric equations?* • *Can you solve problems using small angle approximations?* • *Do you understand the secant, cosecant and cotangent functions?* • *Can you use trigonometric identities?* • *Do you understand the inverse trigonometric functions?* • *Are you able to use the angle addition formulae?* • *Do you understand the double angle formulae?* • *Can you solve trig equations using these formulae?* • *Can you use the harmonic identities?* • *Can you prove the trigonometric identities?*	• *Are you able to understand exponential models in bivariate data?* • *Can you use a change of variable to estimate coefficients in an exponential model?* • *Can you calculate the product moment correlation coefficient?* • *Are you able to carry out a hypothesis test for a zero correlation?*	• *Can you calculate the turning effect of a force to a rigid body?* • *Can you calculate the resultant moment of a set of forces on a rigid body?* • *Can you solve problems involving uniform rods in equilibrium?* • *Can you solve problems involving non-uniform rods?* • *Can you solve problems involving rods on the point of tilting?* • *Can you resolve forces into components?* • *Can you use triangle laws to find a resultant force?* • *Can you solve problems involving rough or smooth inclined planes?* • *Do you understand friction and the coefficient of friction?* • *Can you use $F \leq \mu R$?*