KS5 Curriculum Overview: Y13 Maths							
Rationale: In year 13, students build on the content covered in year 12. Students look at material from the key areas including Algebra, Statistics, Geometry and Mechanics.							
Term / Length of Unit		**Outline**	**Assessment**	**Home Learning**	**Resources**	**Knowledge/Skills End Points**	**Reading**
Autumn 1	Pure	Recap Chapters 1, 2 & 3 (taught at the end of Year 12) C4 Binomial expansion C5 Radians C6 Trigonometric functions	**Test: Chapters 1, 2 & 3** **Test: Chapters 4, 5 & 6**	Set after every lesson. Assessed set every 2 weeks.	Textbooks, Dr Frost powerpoints, bank of assessed HL Qs.	4.1 Expanding $(1+x)^n$ 4.2 Expanding $(a+bx)^n$ 4.3 Using partial fractions 5.1 Radian measure 5.2 Arc length 5.3 Areas of sectors and segments 5.4 Solving trigonometric equations 5.5 Small angle approximations 6.1 Secant, cosecant and cotangent 6.2 Graphs of $\sec x$, $\operatorname{cosec} x$ and $\cot x$ 6.3 Using $\sec x$, $\operatorname{cosec} x$ and $\cot x$ 6.4 Trigonometric identities 6.5 Inverse trigonometric functions	Suggested reading: The Mathematical Experience (Philip J. Davis & Reuben Hersh) Logicomix: An Epic Search for Truth (Apostolos Doxiadis & Christos H. Papadimitriou) Euler : The Master of Us All (William Dunham) Fermat's Last Theorem: The story of a riddle that confounded the world's greatest minds for 358 years (Simon Singh) **Reading strategy:** Go through key words and annotate worded problems. **Key words:** Arc Identity

							Function
	Statistics and Mechanics	C1 Regression, correlation and hypothesis testing C2 Conditional probability		Set after every lesson. Assessed set every 3 weeks.	Textbooks, Dr Frost powerpoints, bank of assessed HL Qs.	1.1 Exponential models 1.2 Measuring correlation 1.3 Hypothesis testing for zero correlation 2.1 Set notation 2.2 Conditional probability 2.3 Conditional probabilities in Venn diagrams 2.4 Probability formulae 2.5 Tree diagrams	**Reading strategy:** Go through key words and annotate worded problems. **Key words:** Regression Correlation Conditional
Autumn 2	Pure	C7 Trigonometry and modelling C8 Parametric equations C9 Differentiation (part 1)	**Test: Chapters 7 & 8**	Set after every lesson. Assessed set every 2 weeks.	Textbooks, Dr Frost powerpoints, bank of assessed HL Qs.	7.1 Addition formulae 7.2 Using the addition formulae 7.3 Double- angle formulae 7.4 Solving trigonometric equations 7.5 Simplifying $a\cos x \pm b\sin x$ 7.6 Proving trigonometric identities 7.7 Modelling with trigonometric functions 8.1 Parametric equations 8.2 Using trigonometric identities 8.3 Curve sketching 8.4 Points of intersection 8.5 Modelling with parametric equations 9.1 Differentiating sin x and cos x	**Reading strategy:** Go through key words and annotate worded problems. **Key words:** Parametric Intersection Product

						9.2 Differentiating exponentials and logarithms 9.3 The chain rule 9.4 The product rule 9.5 The quotient rule 9.6 Differentiating trig functions	
	Statistics and Mechanics	C3 The normal distribution C4 Moments	**Test: Chapters 1, 2 & 3**	Set after every lesson. Assessed set every 3 weeks.	Textbooks, Dr Frost powerpoints, bank of assessed HL Qs.	3.1 The normal distribution 3.2 Finding probabilities for normal distributions 3.3 The inverse normal distribution function 3.4 The standard normal distribution function 3.5 Finding μ and σ 3.6 Approximating a binomial distribution 3.7 Hypothesis testing with the normal distribution 4.1 Moments 4.2 Resultant moments 4.3 Equilibrium 4.4 Centres of mass 4.5 Tilting	**Reading strategy:** Go through key words and annotate worded problems. **Key words:** Distribution Sigma Binomial
Spring 1	Pure	C9 Differentiation (part 2) C10 Numerical methods	**Test: Chapters 9 & 10**	Set after every lesson. Assessed set every 2 weeks.	Textbooks, Dr Frost powerpoints, bank of assessed HL Qs.	9.7 Parametric differentiation 9.8 Implicit differentiation 9.9 Using second derivatives 9.10 Rates of change 10.1 Locating roots 10.2 Iteration	**Reading strategy:** Go through key words and annotate worded problems. **Key words:** Iteration

						10.3 The Newton- Raphson method 10.4 Applications to modelling	Application Implicit
	Statistics and Mechanics	C5 Forces and friction C6 Projectiles	**Test: Chapters 4 & 5**	Set after every lesson. Assessed set every 3 weeks.	Textbooks, Dr Frost powerpoints, bank of assessed HL Qs.	5.1 Resolving forces 5.2 Inclined planes 5.3 Friction 6.1 Horizontal projection 6.2 Horizontal and vertical components 6.3 Projection at any angle 6.4 Projectile motion formulae	**Reading strategy:** Go through key words and annotate worded problems. **Key words:** Resolving Inclined Friction Projection
Spring 2	Pure	C11 Integration C12 Vectors	**Test: Chapters 11 & 12**	Set after every lesson. Assessed set every 2 weeks.	Textbooks, Dr Frost powerpoints, bank of assessed HL Qs.	11.1 Integrating standard functions 11.2 Integrating f(ax + b) 11.3 Using trigonometric identities 11.4 Reverse chain rule 11.5 Integration by substitution 11.6 Integration by parts 11.7 Partial fractions 11.8 Finding areas 11.9 The trapezium rule 11.10 Solving differential equations 11.11 Modelling with differential equations 12.1 3D coordinates 12.2 Vectors in 3D 12.3 Solving geometric problems 12.4 Application to mechanics	**Reading strategy:** Go through key words and annotate worded problems. **Key words:** Reverse Trapezium Coordinates

	Statistics and Mechanics	C7 Applications of forces C8 Further kinematics	**Test: Chapters 6 & 7** **Test: Chapter 8**	Set after every lesson. Assessed set every 3 weeks.	Textbooks, Dr Frost powerpoints, bank of assessed HL Qs.	7.1 Static particles 7.2 Modelling with statics 7.3 Friction and static particles 7.4 Static rigid bodies 7.5 Dynamics and inclined planes 7.6 Connected particles 8.1 Vectors in kinematics 8.2 Vector methods with projectiles 8.3 Variable acceleration in one dimension 8.4 Differentiating vectors 8.5 Integrating vectors	**Reading strategy:** Go through key words and annotate worded problems. **Key words:** Static Friction Kinematics
Summer 1	Pure	Revision	Maths dept PPEs (full papers)	Set after every lesson. Assessed set every 2 weeks, past papers	Textbooks, Dr Frost powerpoints, bank of assessed HL Qs.		
	Statistics and Mechanics	Revision	Maths dept PPEs (full papers)	Set after every lesson. Assessed set every 3 weeks, past papers	Textbooks, Dr Frost powerpoints, bank of assessed HL Qs.		