	- The quadratic formula - Simultaneous equations - Proportion - Composite and inverse functions. - Circle geometry - Geometric sequences - Arc length and sector area. - Trig formulas and identities. - Vectors - Cumulative frequency - Tree diagrams and conditional probability.

Curriculum Aim	Year 12: By the end of year 12 students will be able to successfully fulfil the requirements of an externally accredited qualification. They will be able to fluently transfer skills between concepts, successfully solve problems and apply their knowledge and skills to real life contexts.					
Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Assessment	**Paper 1:** Pure Mathematics		**Paper 2:** Pure Mathematics		**Paper 3:** Statistics and Mechanics	
Powerful Knowledge/ skills	Algebra and functions Coordinate geometry in the (x, y) plane Further algebra Trigonometry Vectors (2D) Differentiation Integration Exponentials and logarithms		Proof: Algebraic and partial fractions Functions and modelling Series and sequences The binomial theorem Trigonometry Parametric equations		Statistical sampling Data presentation and interpretation Probability Statistical distributions Statistical hypothesis testing	
Useful online resources	Student access: Hegartymaths, Corbettmaths, MathsWatch Staff access: Matchbox, Justmaths, Allaboutmaths					

Curriculum Aim	Year 13: The following three overarching themes are successfully integrated throughout the Y13 course:
	  1) Mathematical argument, language and proof
	  2) Mathematical problem solving, and
	  3) Mathematical modelling.					

Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Assessment	**Paper 1:** Pure Mathematics		**Paper 2:** Pure Mathematics		**Paper 3:** Statistics and Mechanics	
Powerful Knowledge/ skills	Differentiation Differentiating sin x and cos x from first principles • Differentiating exponentials and logarithms • Differentiating products, quotients, implicit and parametric functions. • Second derivatives (rates of change of gradient, inflections) • Rates of change problems* (including growth and kinematics) • *see Integration (part 2) – Differential equations • Numerical methods* Location of roots • Solving by iterative methods (knowledge of 'staircase and cobweb' diagrams) • Newton-Raphson method • Problem solving		Integration (part 1) • Integrating xn (including when n = –1), exponentials and trigonometric functions. Integrating functions defined parametrically. • Using the reverse of differentiation, and using trigonometric identities to manipulate integrals • Integration (part 2) Integration by substitution • Integration by parts • Use of partial fractions • Areas under graphs or between two curves, including understanding the area is the limit of a sum (using sigma notation). Areas under curves expressed parametrically • The trapezium rule • Differential equations (including knowledge of the family of solution curves) • Vectors (3D): Use of vectors in three dimensions; knowledge of column vectors and i, j and k unit vectors		Quantities and units in mechanics Kinematics 1 (constant acceleration Forces & Newton's laws Kinematics 2 (variable acceleration) Revision and target intervention time.	

| Useful online resources | |