Curriculum Map : GCSE Further Mathematics

The course starts with a revision of key topics from Mathematics that have been taught by the end of Year 9 and which are essential foundations for undertaking the GCSE Further Mathematics course.

	YEAR 10	YEAR 11

ALGEBRA	**Number and Algebra I** Numbers and the number system Simplifying expressions Solving linear equations Algebra and number Expanding brackets The binomial expansion Manipulating surds The product rule for counting **Algebra II** Factorising Rearranging formulae Simplifying algebraic fractions Solving linear equations involving fractions Completing the square **Algebra III** Function notation Domain and range of a function Composite functions Graphs of functions Graphs of linear functions Finding the equation of a line Graphs of quadratic functions Inverse functions Graphs of exponential functions Graphs of functions with up to three parts to their domain **Algebra IV** Quadratic equations Simultaneous equations in two unknowns The factor theorem	

	YEAR 10	YEAR 11
	Linear inequalities Quadratic inequalities Indices Algebraic proof Sequences Limiting value of a sequence Simultaneous equations in three unknowns	

	YEAR 10	YEAR 11
GEOMETRY		**<u>Co-ordinate geometry</u>** Parallel and perpendicular lines The distance between two points The midpoint of a line joining two points Equation of a straight line The intersection of two lines Dividing a line in a given ratio Equation of a circle **<u>Geometry I</u>** Mensuration Pythagoras' theorem Angle facts Circle Theorems Geometric Proof Trigonometry in two dimensions Trigonometric functions for angles of any size The sine and cosine graphs The tangent graph Solution of trigonometric equations Trigonometric identities **<u>Geometry II</u>** The area of a triangle The sine rule The cosine rule Using the sine and cosine rules together Problems in three dimensions Lines and planes in three dimensions

	YEAR 10	YEAR 11
CALCULUS		The gradient of a curve Differentiation Differentiation using standard results Tangents and normal Increasing and decreasing functions The second derivative Stationary points
MATRICES		Multiplying matrices Transformations The identity matrix Transformations of the unit square Combining transformations