Curriculum Summary   **Mathematics**

Year	
7	Number topics include: Fractions / decimals /percentages. There is an introduction to basic algebra that also includes plotting simple linear functions. Shape and Space topics include: Angle work including the angles formed between Parallel lines. Perimeter, Area and Volume of simple shapes. Metric and imperial measures and conversion. More able students will be introduced to Pythagoras' Theorem. Data Handling topics include: Simple probability. Drawing and interpreting various charts and graphs.
8	Number topics include: Fractions / decimals /percentages. Algebra knowledge is built upon and students are now expected to construct expressions and solve equations. Shape and Space topics include: Angle work including the angles formed between Parallel lines and interior and exterior angle properties of polygons. Perimeter, Area and Volume of compound shapes and prisms. Metric and imperial measures and conversion. Data Handling topics include: Simple probability calculations. Drawing and interpreting various charts and graphs.
9	Year 9 is an introduction to GCSE. In the Autumn term students cover some of the main topics in preparation for starting the GCSE course in January. They are expected to be able to add, subtract, multiply and divide with fractions. Solve more complex algebraic equations. Plot linear functions and become familiar with y=mx + c. Find the total surface area and volume of common prisms. Find averages from a table of large data sets. The GCSE course starts revisiting all number topics and students are now expected to solve percentage problems using multipliers.
10	Students continue with the GCSE course and should now be familiar with more abstract techniques. At the higher tier, students will have been introduced to Trigonometry, the Circle Theorems and be able to find total surface area and volume of pyramids as well as prisms. Number work will include the rules of Indices and pupils will be able to deal with very large and small numbers by turning them into Standard Form. Problem solving across all attainment targets is promoted and in particular students are expected to form equations from worded problems and solve them.
11	Year 11 is finishing off GCSE courses and practising and preparing for exams. The highest level concepts for Higher and Foundation tiers are covered. At Foundation level this will be forming and solving equations, including the technique of 'trial and improvement'. Pythagoras' Theorem. Calculating the estimated mean from tables and even simple trigonometry and standard form. At Higher tier students will cover the Sine and Cosine rules, and 3-D Pythagoras and Trigonometry. Vectors. Simultaneous equations. Transformation of functions following the six rules. The problem solving questions at higher tier will stretch the most able and even start to bridge the gap between GCSE and A level.

12	Content for Core 1 of the A-level is: Quadratic Functions, equations and Inequalities, Sketching Functions, Coordinate Geometry, Sequences and Series, Differentiation and Integration. Content for Core 2 is: The Sine and Cosine rules, Exponentials and Logarithms, Coordinate Geometry (of circles), The Binomial expansion, Radian measure, Geometric Sequences and Series. Trigonometric identities and simple equations, further Differentiation and Integration. Content for the Mechanics 1 module is: Mathematical Models in Mechanics, Vectors and their application in mechanics, Kinematics of a particle, Dynamics of a particle moving in a straight line, Moments.
13	Content for core 3 is: Algebraic Fractions, Functions, The Exponential and Log functions, Numerical methods, Transforming graphs of functions, Trigonometry, further Trigonometric Identities and their applications, Differentiation. Content for core 4 is: Partial Fractions, Coordinate Geometry (parametric equations), The Binomial Expansion, Differentiation, Vectors, Integration. Content for Statistics 1 is: Mathematical models in probability and statistics, Representation and summary of data (location and measures of dispersion), Probability, Correlation, Regression, Discrete random variables, the Normal Distribution.