Mathematics

Year 7

In Number, pupils learn about properties of numbers such as prime and square numbers. They learn to reason with fractions (including mixed numbers), decimals as well as percentages. In Algebra, learn to create, interpret and manipulate algebraic expressions, solve equations as well as begin to gain an understanding of graphs. In Geometry & Measures, learn about transformations, connections between area and perimeter. They consolidate their understanding of angle rules, progressing to setting up equations using angle properties.

Year 8

In Number, pupils consolidate mental and written methods of calculating with integers, decimals and negative numbers. They also learn how to use proportional reasoning to solve problems relating to currency and measurement. They learn to use all 4 operations with fractions. In Algebra, pupils learn to expand brackets, manipulate more complex expressions and solve equations. They also increase their understanding of handling data and probability, using fractions to give a numerical measure of probability. In Geometry & Measures, pupils solve problems with angles on parallel lines and discover formulae for areas and volumes of common shapes.

Year 9

In Number, pupils build on their knowledge of primes to find prime factorisations as well as the HCF and LCM of two numbers. They are introduced to surds and begin to explore upper and lower bounds in real life situations. They also solve problems to do with percentage and proportional changes. In Algebra, pupils learn to manipulate more complex expressions involving powers, brackets and fractions. They learn to interpret real-life graphs and solve equations with more formal methods. In Statistics & Probability, pupils construct and interpret histograms and use a wide range of techniques to compare data.

Year 10

The GCSE course consolidates and builds on what pupils learn in Key Stage 3. In Number, pupils learn to round numbers using significant figures, solve advanced percentage problems including reverse percentages and compound interest. In Algebra, pupils learn to use gradients and intercepts with graphs. They learn to expand and factorise with double brackets and simplify algebraic fractions. In Geometry & Measures, pupils mainly consolidate their knowledge from KS3. In Statistics & Probability, pupils learn about sampling methods, venn diagrams and tree diagrams.

Year 11

In Algebra, pupils solve simultaneous linear and quadratic equations and inequalities. They also draw quadratic and cubic graphs. In Geometry & Measures, pupils learn about trigonometry, including knowing some exact values of sin, cos and tan. They also learn about circle geometry and how to perform different transformations. In Statistics & Probability, pupils consolidate and enhance their learning from Year 10 to include dependent events.

Year 12

The course consists of two Core modules and one Applied Mathematics module (Statistics or Decision Mathematics). In Core 1, the major new areas are co-ordinate geometry, sequences and series and calculus. In Core 2, students study the binomial expansion, geometric series, using radians trigonometric graphs and identities, amongst other topics. In Decision Mathematics 1, learn about modelling problems using graphs and networks. They learn to techniques to solve a variety of real-world problems including minimum spanning trees, shortest distances, critical path analysis and linear programming. In Statistics 1, students learn more advanced measures of dispersion and location. They learn about correlation, regression and the normal distribution, as well as conditional probability. After their AS exams, students begin the studying the Core 3 module. They study numerical methods, functions, transforming graphs and the exponential function.

Year 13

The Year 13 course consists of two Core modules and one Applied Mathematics module (Mechanics). In Core 3, students complete the module by studying advanced Trigonometry and Differentiation. In Core 4, students learn about partial fractions, vectors, binomial expansion, advanced calculus and co-ordinate geometry. In Mechanics, students learn the equations of motion and Newton's laws to solve problems involving projectiles, moving and static objects. They move on to solve problems involving moments, frictions and vectors.

Maths Hub

Further Mathematics

Further Mathematics is an excellent opportunity for students who want to study the subject in greater depth. This A level course is very stimulating for students who take a high level of enjoyment from Mathematics. The course must be taken in tandem with A level Mathematics.

Students need a Grade 8/9 at GCSE with an excellent grasp of algebra.

The Further Pure modules build on the Pure modules studied in A level Mathematics, covering topics such as complex numbers, numerical methods, mathematical proof, series, polar coordinates and advanced trigonometry and Calculus.

Further Mathematics has a slightly heavier focus on the applied modules than A level Mathematics, with third of the modules being based on Core Pure, Further Pure and Decision Mathematics.

The A Level course (Year 12-13) consists of 3 units from the following:

- Core Pure Mathematics 1 and 2
- Further Pure Mathematics
- Decision Mathematics

All units are equally weighted and are assessed completely by examination.