Mathematics A Level

Course Description:

The Edexcel A Level course builds on work met at GCSE and extends to a greater depth topics such as number sequences, trigonometry, graphs of straight lines and curves, as well as introducing new ideas and powerful techniques for solving problems, for example Calculus. Mechanics introduces and develops the idea of forces, Newton's laws of motion and the study of motion (kinetics), whilst the study of statistics develops understanding of probability models (Binomial and Normal distributions), confidence intervals and hypothesis testing. The delivery of the course is similar to GCSE, but due to the smaller group sizes and shared interest there is much more discussion and interaction between the students.

Qualifications Required:

Minimum entry requirements apply. A strong Grade 6 in Maths. You should have an enjoyment of the subject and an aptitude for mathematics. In particular, you need to be confident with the problem solving aspect and the algebra content of the GCSE course.

Aims of the Course:

- To develop your understanding of mathematics and mathematical processes
- To develop your ability to reason logically, to generalise, to construct mathematical proofs and produce clear and concise solutions to questions
- To extend your range of mathematical skills and techniques and use them in more difficult, unstructured problems
- To understand a problem solving cycle includes specifying the problem, collecting information, processing and representing information and interpreting results, which may identify the need to refine the solution
- To develop an understanding of coherence and progression in mathematics and how apparently different areas of mathematics are connected at a deeper level
- To recognise how a situation may be represented mathematically and understand the relationship between 'real world' problems and standard and other mathematical models and how these can be refined and improved
- To read and comprehend written mathematics and use mathematics as an effective means of communication
- To show perseverance in answering challenging problems which may require several visitations before a solution is found
- To develop an awareness of the relevance of mathematics to other fields of study, to the world of work and to society in general

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Features of the Course:

- Plan and interpret information from different sources
- Carry out multi-stage calculations and be able to form extended lines of reasoning
- Present findings, explain results and justify choice of methods
- Spiritual, moral, ethical social and cultural issues relating to mathematics

A Level Content

Pure

Proof, Algebra and Functions, Trigonometry, Transformations, Further Differentiation and Integration, Differential Equations, Series, Partial Fractions, Numerical Methods, Vectors in 3D.

Statistics

Probability Distributions, Conditional Probability, Venn Diagrams, Normal Distribution, Confidence Intervals, Hypothesis Testing, Contingency Tables,

Mechanics

Moments, Further Kinematics with Calculus, Motion in a Plane, Forces, Friction, Projectiles.

Methods of Assessment:

A Level: There are three papers in total, two Pure Papers and a Statistics and Mechanics Paper. These main areas in mathematics are each assessed by a 2 hour written paper at the end of the course.