

# 6

# FORM

## Advanced Level

# MATHEMATICS & FURTHER MATHEMATICS



Subject Information Sheet



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Course Aims:

Mathematics at AS and Advanced GCE is a course worth studying not only as a supporting subject for the physical and social sciences, but in its own right. It is challenging but interesting. It builds on work students will have met at GCSE, but also involves new ideas that some of the greatest minds of the millennium have produced. It serves as a very useful support for many other qualifications as well as being a sought after qualification for the workplace and courses in higher education. A Level Mathematics can be taken without Further Mathematics.

## Course Content and Assessment:

The course consists of a broad range of topics in Pure Maths, Mechanics and Statistics. It is equivalent to two A Levels in Mathematics – A Level Mathematics and A Level Further Mathematics. **A Level Mathematics can be studied on its own.** The pace is fast and topics are covered in more depth than in the single Mathematics A Level.

Assessment is through external exams made up of three papers. Paper 1 and Paper 2 may contain questions on any topics from the Pure Mathematics content. Paper 3 will contain topics from the Statistics content in Section A and Mechanics in Section B.

## A Level Overview:

**If you study A Level Mathematics you will study:**

- Algebraic expressions, quadratic graphs, vectors in 2-D, straight-line graphs, modelling in mechanics, constant acceleration, equations and inequalities.
- Graphs and transformations, circles, algebraic methods and proof, binomial expansion, trigonometric ratios, forces and motion, differentiation.
- Trigonometric identities and equations, integration, variable acceleration, exponentials and logarithms, sequences and series.
- Radians, functions and graphs, regression and correlation, trigonometric functions, trigonometry and modelling.
- Differentiation, conditional probability, integration, parametric equations, numerical methods.
- The normal distribution, further calculus, vectors in 3-D.

**Additional topics for A Level Further Mathematics include:**

- Core Pure Mathematics: Complex numbers, methods in calculus, series, differential equations, matrix algebra, proof, polar coordinates, hyperbolic functions, volumes of revolution.
- Further Statistics 1: Statistical distributions (Binomial, Poisson, Geometric, Negative binomial, normal), further hypothesis testing and test evaluation, probability generating functions.
- Further Mechanics 1: Momentum and impulse, work, power and energy, elastic collisions in 1 and 2 dimensions.

## Learning Methods:

You will use a variety of mathematical skills and knowledge to solve problems by using mathematical arguments and logic.

You will simplify real-life situations using Mathematics to show what is happening and what might happen in different circumstances. You will also have opportunity to use the Mathematics learnt to solve problems in a real-life context.

## Career Opportunities:

A Sunday Times survey suggested that people with A-level Mathematics earn an average 10% more than those without A-level Mathematics! Advanced GCE Mathematics is a much sought-after qualification for entry to a wide variety of full-time courses in higher education. There are also many areas of employment that see a Mathematics Advanced GCE as an important qualification such as:

- Medicine, Economics, Psychology, Engineering, Accountancy, Environmental Studies, architecture

## Entry Requirements:

### A-Level Maths

- Grade 6 or above in Maths.
- Grade 5 or above in English Language.

### Further Maths

- Grade 7 or above in GCSE Maths.
- Grade 5 or above in English Language.

## Staff Contacts

Miss Charman - Assistant Headteacher Key Stage 5

Mrs Durrant - Student Development Champion Key Stage 5

Miss Savrinides - KS5 Subject Lead



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