Mathematics

Studying Maths helps us find patterns and structure in our lives. Practically, Maths helps us put a price on things, create graphics, build websites, build skyscrapers and generally understand how things work or predict how they might change over time and under different conditions.

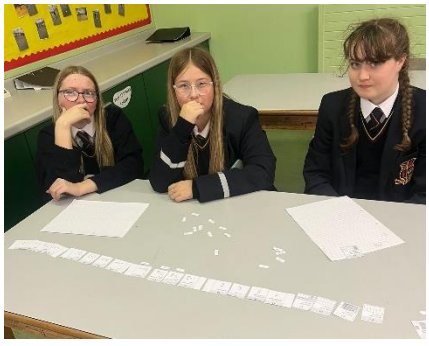
Maths is one of the best subjects to develop your **analytical, research** and **problem solving** skills. Not only will studying maths help give you the knowledge to tackle scientific, mechanical, coding and abstract problems, it will also help you develop **logic** to tackle everyday issues like **planning** projects, **managing** budgets and even **debating** effectively.

Maths is a compulsory subject at GCSE and most colleges and universities require at least grade C.

Key Stage 3

The members of the Maths department work together to promote Maths as an enjoyable and important subject. Practical activities and games are integrated into the classroom work.

In Key Stage 3 Mathematics students will learn how to solve numerical problems and carry out calculations with and without the aid of a calculator. They will progress to forming and solving algebraic equations, dealing with formulae and plotting graphs. Students will explore the geometrical properties of 2D and 3D shapes and learn how to calculate their areas or volumes. They will collect and interpret statistical data and gain the skills required to calculate the probability of a situation in a real-life context occurring.



Students will learn that Mathematics is about more than all of the above; it is about thinking logically and being able to apply the principles they learn to everyday situations.

At the end of Year 10 pupils submit a portfolio of evidence to CCEA to be awarded a level at Key Stage 3. These results and their end of year test are used to place pupils in the most appropriate set for Key Stage 4.

Key Stage 4

Introduction

Mathematics is a compulsory subject at Key Stage 4

Our aim is to make the subject as interesting as possible through stimulating texts and varied teaching strategies. This course will enable students to apply mathematics in everyday situations and develop an understanding of the part which mathematics plays in the world around them.

Mathematics at Key Stage 4 is taught by:

Mrs McKane, Mrs Liggett, Mrs Ferguson/Miss Elliott, Mr Owen and Mr Buchanan.

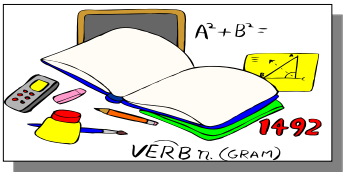
Course Breakdown

Pupils are initially set according to their results at Key Stage 3 although there is some movement between classes until Halloween in Year 11.

We currently follow the CCEA Modular Maths.

Pupils are entered at the tier which is most appropriate to their ability.

Tier of Entry	Available grades
Higher	A* - D
Foundation	C* - G



Grade C* is now available to all students regardless of tier of entry.

There are **two** exam modules, one in May in Year 11 worth 45%, one in January or May of Year 12 worth 55%.

There is no coursework in Maths.

Course Content

Year 11 exam	Decimal Numbers, Fractions, Percentages, Statistics, Area and Volume, Algebraic methods, Graphs, Circles, Perimeter and Area, Equations, Indices, Pythagoras's' Theorem and Trigonometry
Year 12 exam	Polygons, Similarity, Sequences, Transformations, Ratio, Vectors, Probability, Approximation, Personal finance, Inequalities, Standard form, Ratio, Quadratic graphs and Surds

Further Maths GCSE

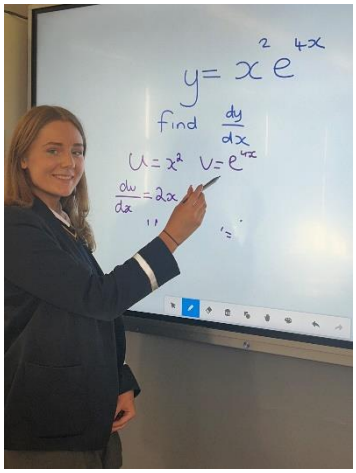
We now offer Further Maths GCSE which allows pupils to extend their base in Mathematics from which they can progress to higher studies in Mathematics. Further Maths enables pupils to design and develop mathematical models that allow them to use problem-solving strategies and apply a broader range of mathematics to a variety of situations.

Course Content

Year 11 Exam 50%	Pupils investigate algebra, trigonometry, differentiation, integration, logarithms, matrices and quadratic inequalities.
Year 12 Exam 25%	Pupils explore kinematics, vectors, forces, Newton's laws of motion and moments.
Year 12 Exam 25%	Pupils investigate central tendency and dispersion, probability, the binomial and normal distributions and bivariate analysis.

Key Stage 5

AS or A Level Maths



AS or A Level Maths consolidates and extends the knowledge, skills and understanding developed in Key Stage 4. It helps build a suitable foundation for further study and a wide range of interesting careers.

A Level Maths counts as a science in most universities. It is the most desirable A level for Engineers or for Accounting /Finance.

A Level Maths helps develop the ability to solve problems, reason logically and to recognise incorrect reasoning.

Year 13 AS

AS1 24% of A level

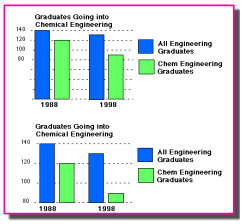
Builds upon GCSE Higher Maths. Includes quadratic functions and inequalities previously studied and introduces Differentiation and Integration. Vectors in 2 dimensions are also included.

1 hour 45 mins exam in May.

AS2 16% of A level

Mechanics: Topics such as Mathematical modelling of real-life problems, Newton's Laws of Motion and Friction.

Statistics: Probability, Scatter Graphs, Mean and Standard Deviation are considered. Could be beneficial with Biology.



1 hour 15 mins exam in May.

Year 14 A2

A21 36% of A Level

Builds upon AS1. Includes composite functions, Partial Fractions, Differentiating and Integrating sin x, cos x and tan x and introduces arithmetic and geometric series and further binomial expansions.

2 ½ hour exam in June.

A22 24% of A Level

Mechanics : Variable acceleration, Projectiles, moments and momentum.

Statistics: Conditional probability, Normal distributions and Hypothesis testing

1 ½ hour exam in June.