MATHEMATICS AND FURTHER MATHEMATICS

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If you enjoy mathematics then studying it at A Level is an obvious choice. You will have the opportunity to enjoy the challenge of problem-solving and delight in the logic and beauty of the subject. Mathematics also supports many other subjects where calculations and data analysis are important. Numbers and statistics are all around us and the more confident you are about using mathematics the more able you are to reach informed opinions.

In the sixth form there will be a number of mathematical options available. All the courses will follow the newly revised OCR modular syllabus. The four course options available to you are:

AS Level Mathematics	(3 units)
A Level Mathematics	(6 units)
A Level Mathematics and AS Level Further Mathematics	(9 units)
A Level Mathematics and A Level Further Mathematics	(12 units)

Further Mathematics is a sensible choice for many students but it is particularly recommended for those who intend to study Mathematics, Physics, Engineering, Economics or Computing at university or for those who simply really like Maths!

Decisions about whether to study Mathematics to AS Level or to do the full A Level do not have to be made until after the first year. The majority of students, however, do continue to do the full A Level.

Core Mathematics (Pure Mathematics)
This section most resembles the work you have met so far. It builds on the work you will have covered for GCSE. Algebra and trigonometry will be extended further and you will be introduced to the very important topic of calculus.

Pure Mathematics provides the tools essential to the solving of scientific and engineering problems.

Statistics
You will build on the knowledge you already have to provide a deeper and wider study of data analysis. This will involve probability, fitting mathematical models to collected data and interpretation of results. You will realise how important statistics really is. By looking at past events you can make predictions, with some degree of certainty, about future events. Some questions that statistics enables us to answer include, for example,

Is a new treatment more effective than an old one?
Is it significant that 8 out of 10 cats prefer a particular cat food?
What are your chances of winning the lottery?
Is there a connection between the age of driver and the number of car accidents?

Mechanics
This is of prime interest to physicists and engineers but also provides breadth of study to those who will specialise in Statistics. You will study how particles and bodies move using, amongst other things, Newton's Laws of Motion.

Decision Mathematics
Decision Mathematics (also known as Discrete Mathematics) has developed during the 20th century alongside the advancement of technology. It uses algorithms to find the most efficient way of solving practical problems often related to businesses. For example it might address the question of how would you organise the vehicles boarding a ferry to maximise the use of the available space. Anyone studying Further Mathematics A Level will cover a unit in this area.

Which Units will I study?
In Mathematics all of the units carry equal weighting. Core Mathematics is the name given to the Pure Mathematics modules. Students also studying Physics will usually do the Mechanics modules. Other students will usually be expected to do the Statistics modules. The choice of which topic will be covered as your third unit may be restricted by the timetable.

Mathematics

AS Units
1 Core Mathematics 1

2 Core Mathematics 2

3 Mechanics 1 or Statistics 1

A2 Units
4 Core Mathematics 3

5 Core Mathematics 4

6 Mechanics 2 or Statistics 2

Further Mathematics

In addition to covering the Mathematics units (with the Mechanics modules) the following are usually covered:

AS Units
1 Further Pure Mathematics 1

2 Decision Mathematics 1

3 Statistics 1

A2 Units
4 Further Pure Mathematics 2

5 Further Pure Mathematics 3

6 Statistics 2