

# Mathematics & Further Mathematics

## Examination Board: OCR

### Why study Mathematics?

The study of Mathematics at this level is generally undertaken by students who enjoy the unique aspects of this subject: the disciplined approach to problem solving, mathematical modelling of real life problems and the development of new, more precise mathematical methods.

It is clearly beneficial to all students embarking on science or related subjects at A-level. It can be successfully combined with a wide variety of other subjects but some students find it more difficult if they are not using their maths skills in other disciplines. The study of Mathematics is beneficial and in some cases essential if you wish to go on to study any of the following courses at university: Mathematics; Science; Engineering; Business Studies; Economics; Geography; Medicine; Veterinary Science; Accountancy; Social Science and many more.

### Entry Requirements

To embark on an A-level or AS-level course it is essential for students to have followed the higher level GCSE or the Extended IGCSE syllabus as these contain core knowledge for the A-level.

### Subject Specification

During the course there are three areas of study:

**Core Mathematics:** The Core Maths syllabus is two-thirds of the content and covers more advanced treatment of Trigonometry, Functions, Vectors, Algebra and Coordinate Geometry, with an introduction to Calculus, Series and Numerical Methods.

**Applications/Statistics:** The Statistics syllabus covers one-sixth of the content and introduces the ideas of Probability Distributions, Hypothesis Testing, Correlation and Regression Analysis.

**Mechanics:** The Mechanics syllabus one-sixth of the content and includes an introduction to Kinematics, Forces and Equilibrium, Newton's Laws, Variable Acceleration and Momentum.

All students follow a common course throughout the two-years.

AS-level Mathematics is examined through two examinations at the end of the Lower Sixth. This is 40% of the entire course. The two examinations are:

Pure with Mechanics

And

Pure with Statistics.

These are both 90 minute papers.

A-level Mathematics is examined through three examinations at the end of the Upper Sixth. The three examinations are:

Pure Mathematics,

Pure with Mechanics

and

Pure with Statistics.

These are all two hour papers.

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### Further Mathematics

Students who are interested in Further Mathematics A-level should talk to the Head of Mathematics for details of the course. Further Mathematics is only available to pupils who have gained a very high grade in either GCSE Mathematics or IGCSE Mathematics.

Further Mathematics is a fully taught A-level and has the same lesson allocation as that for any other A-level.

The course consists of a compulsory Pure Mathematics element which comprises 50% of the entire course. This addresses topics such as Complex Numbers, Matrices, Polar Coordinates and Further Calculus..

It is designed to broaden the spectrum of Mathematical knowledge and to provide a sound footing in preparation for a mathematical based degree.

There are two optional elements.

The first of these will be Additional Further Pure Mathematics. This delves into areas such as Partial Differentiation which forms the foundation for areas such as Thermodynamics.

The second option can be either Mechanics or Statistics and both of these extend the work covered in the core aspect of the syllabus. The choice here will largely be governed by future interests with the Mechanics course more suited to an engineering or Physics based degree whilst the Statistics would benefit a focus on Biology or Economics.

Examination at A-Level will consist of four papers:

Pure Mathematics Paper 1,  
Pure Mathematics Paper 2,  
Option Paper 1  
Option Paper 2

These are all 90 minute papers.

Strong candidates will have the opportunity to sit further examinations such as STEP (Sixth Term Entry Papers) when this is felt to be appropriate or required.

### Further information

Students or parents requiring any further details are most welcome to contact Mr I Hibbert, Head of Mathematics and Computing ([iph@oswestryschool.org](mailto:iph@oswestryschool.org). uk)

