



DOUBLE MATHS

A-Level Course Information



Qualification: Advanced Level Mathematics & Advanced Level Further Maths

Exam Board: AQA

Subject Leader: Mrs H. Harris

Entry Requirements:

Minimum Entry Requirements:

5 x 5s

4 in English and Maths

Subject Specific Entry Requirements :

Grade 8 at GCSE Mathematics.

If your school currently offers either FSMQ Additional Mathematics or Level 2 Further Mathematics we would expect you to be taking this. If your school does not offer either of these qualifications, we would encourage you to do some self-study of the content before the start of the course in September.

Why study Double Maths?

Do you enjoy maths and wish to study it in more depth? If so, Double Maths is the course for you. It further develops the ideas studied in A-Level Maths and introduces new mathematical topics to bridge the gap to degree level mathematics and other subjects with a high mathematical content (such as Engineering/ Physics/ Computer Science/Medicine). Students who gain Advanced Level qualifications in both Mathematics and Further Mathematics are highly employable and, since it demonstrates a student's ability to tackle more advanced topics, it is desirable for many subjects at university level.

What can I do with Double Maths after A-Level?

Further Mathematics is taken in combination with Mathematics and sets strong foundations for a variety of related degrees. The subject has clear links with courses such as Computer Science, Engineering, Physics, Material Science or even Chemistry. Advanced Level Further Mathematics students find the skills and knowledge gained from the course useful when pursuing careers in areas such as medicine, engineering, veterinary science, finance, computing and any scientific discipline.

Double Maths Extras

In addition to the events offered to students of the Advanced Level Mathematics course, there will be further opportunities for students to extend their mathematical horizons. In particular, students can elect to tackle extension work in preparation for university interviews and additional examinations, such as MAT—the Mathematics entrance exam for Oxford, AEA – Advanced Extension Award or STEP – used for admissions to Mathematics at Cambridge. At Comberton Sixth Form we will support you in preparation for those as well as support you if you choose to go on to study Mathematics or similar at degree level.

What will I study?

In Double Maths you will study A-Level Mathematics in Year 12 and A-Level Further Mathematics in Year 13. You will sit examinations for both A-Level Mathematics and A-Level Further Mathematics at the end of Year 13.

A-Level Mathematics

A-Level Mathematics is divided up into 3 components. Every student will study each of these 3 components in Year 12.

1. Pure Mathematics
2. Statistics
3. Mechanics

It is examined by 3 papers which are sat at the end of Year 13. Each paper is 2 hours long, and is out of 100 marks.

Paper 1 – Pure Mathematics only

Paper 2 – This paper is divided into 2 sections, each section is worth 50 marks:

- Section A – Pure Mathematics
- Section B – Mechanics

Paper 3 – This paper is divided into 2 sections, each section is worth 50 marks:

- Section A – Pure Mathematics
- Section B – Statistics

Component 1: Pure Mathematics (66.6% of A-Level Mathematics)

Pure mathematics forms the foundation of the course, underpinning both the Statistics and Mechanics components of the course. It is concerned with how to abstract a problem and reason about it in a logical manner. You will learn new techniques that reveal a deeper understanding of the world we live in.

It includes the topics: Proof; Algebra and functions; Coordinate geometry; Sequences and series; Trigonometry; Exponentials and logarithms; Differentiation; Integration; Numerical methods and Vectors.

Component 2: Statistics (16.7% of A-Level Mathematics)

Statistics is about how to analyse and interpret data gathered from the real world. Throughout this component of the course you will become familiar with manipulating a large data set using both your calculator and computer software. Manipulating and interpreting data are valuable skills which complement studying many subjects such as Economics, Geography, Psychology and Sociology.

It includes topics: Statistical sampling; Data presentation and interpretation; Probability; Statistical distributions and Statistical hypothesis testing.

Component 3: Mechanics (16.7% of A-Level Mathematics)

Mechanics is primarily concerned with how the physical world can be modelled using mathematics. By modelling the real world you can make predictions about what may happen in a given set of circumstances and more deeply understand why particular events occur. This component of the course complements studying all science subjects but in particular Physics.

It includes the topics: Quantities and Units in Mechanics; Kinematics; Forces and Newton's Laws and Moments.

A-Level Further Mathematics

A-Level Further Mathematics is designed to build upon the content studied in A-Level Mathematics. In Year 13 all students will study Further Pure Maths along with one option from:

1. Further mechanics
2. Further statistics
3. Discrete

A-Level Further Mathematics is examined by 3 papers which are sat at the end of Year 13. Each paper is 2 hours long, and is out of 100 marks.

- Paper 1 – Further Pure Mathematics only
- Paper 2 – Further Pure Mathematics only
- Paper 3 – This paper is divided into 2 sections (equal weighting) reflecting the option choices made

Further Pure Mathematics (66.6% of A-Level Further Mathematics)

Pure mathematics forms the foundation of the course. It is concerned with how to abstract a problem and reason about it in a logical manner. You will learn new techniques that reveal a deeper understanding of the world we live in.

It includes topics designed to build upon the Pure Mathematics component studied in the A-Level Mathematics course.

Further mechanics (16.7% of A-Level Further Mathematics)

This option component of the course is designed to build upon the Mechanics component studied in the A-Level Mathematics course. You will learn more ways of modelling physical situations. The component of the course complements students studying Physics and would be best suited for individuals wishing to study either Physics or Engineering at university.

Further statistics (16.7% of A-Level Further Mathematics)

This is designed to build upon the Statistics component of A-Level Mathematics. You will learn more statistical distributions, which can be used to model a wider variety of real world situations. The techniques learned in this component of the course will be helpful in many courses at degree level (such as Engineering/Physics/Computer Science/Medicine).

Discrete (16.7% of A-Level Further Mathematics)

How do you know you have the correct solution to a problem? And how quickly can you find it? In discrete mathematics you study the foundations of some algorithms which underpin the modern world. This optional component of the course is entirely new to many students. This component of the course complements Computer Science and Economics.