GCE
AS and A Level
Mathematics
Hawthorn High School

Summary of Assessment

Why Study A level Maths and Further Maths?

Five Good Reasons

One – Career Opportunities

Mathematics and Further Mathematics are versatile qualifications, well-respected by employers and are both "facilitating" subjects* for entry to higher education. Careers for men and women with good mathematics skills and qualifications are not only well paid, but they are also often interesting and rewarding. People who have studied mathematics are in the fortunate position of having an excellent choice of career. Whilst the number of young people studying A level Mathematics and Further Mathematics is increasing there is still a huge demand from science, engineering and manufacturing employers.

Two – Employability Skills

The reason why so many employers highly value mathematics qualifications is mathematics students become better at thinking logically and analytically. Through solving problems you develop resilience and are able to think creatively and strategically. The writing of structured solutions, proof and justification of results help you to formulate reasoned arguments. And importantly you will have excellent numeracy skills and the ability to process and interpret data.

Three – Preparation for Higher Education

For progression to many courses at university it is important to have strong mathematics skills. For most science, technology, engineering and mathematics (STEM) degree course A level Mathematics is a requirement and AS or A level Further Mathematics is often a preferred subject. Anyone applying to study a degree in a STEM subject should consider taking Further Mathematics to at least AS level as the additional content helps ensure a successful progression to university. AS Further Mathematics is accessible to most A level Mathematics students. Having A level Further Mathematics on your university application is a way to make it stand out.

Four – Supporting Other Subjects

The mathematical skills you learn in A level Mathematics are of great benefit in other A level subjects such as physics, chemistry, biology, computing, geography, psychology, economics and business studies.

Studying A level Further Mathematics is likely to improve your grade in A level Mathematics. The extra time, additional practice, further consolidation and development of techniques contribute to improved results in A level Mathematics

Five – An Interesting Course

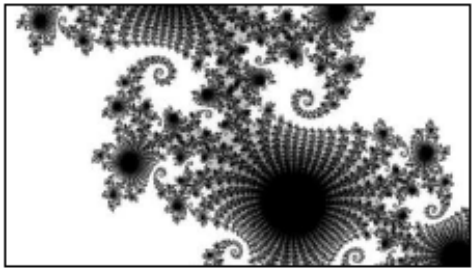
A level Mathematics is an interesting and challenging course which extends the methods you learned at GCSE and includes optional applications of mathematics, such as Statistics, Mechanics and Decision Mathematics.

Statistics – Collecting and analysing data and using this to make predictions about future events. Many subjects make use of statistical information and techniques. An understanding of probability and risk is important in careers like insurance, medicine, engineering and the sciences.

Mechanics – Modelling and analysing the physical world around us, including the study of forces and motion. Mechanics is particular useful to students studying physics and engineering.

Decision –Using algorithms and other methods to find efficient solutions to real life problems, such as finding the shortest route around a network. The techniques are important in business, logistics and computer science.

A level Further Mathematics is fun and rewarding. It broadens your mathematical skills and promotes deeper mathematical thinking. You will be introduced to interesting new areas of pure mathematics such as complex numbers and apply mathematics in a wider range of contexts.



Specification

- The new A level is now divided into 4 units
- 2AS units in year 12
- 2A2 units in year 13
- All units are compulsory
- Year 12 is worth 40% of the course
- Year 13 is worth 60% of the course

Specification

MATHEMATICS

ASSESSMENT OVERVIEW	
AS Unit 1: Pure Mathematics A Written examination: 2 hours 30 minutes	25% of qualification 120 marks
AS Unit 2: Applied Mathematics A Written examination: 1 hour 45 minutes *Section A*: Statistics (40 marks) *Section B*: Mechanics (35 marks)	15% of qualification 75 marks
A2 Unit 3: Pure Mathematics B Written examination: 2 hours 30 minutes	35% of qualification 120 marks
A2 Unit 4: Applied Mathematics B Written examination: 1 hour 45 minutes *Section A*: Statistics (40 marks) *Section B*: Differential Equations and Mechanics (40 marks)	25% of qualification 80 marks

FURTHER MATHEMATICS

- 50% of the core content of the A level is prescribed.
- At least 30% of the subject content at AS is drawn from the prescribed material in the A level.
- Learners must study both statistics and mechanics at AS.
- All units are compulsory at AS.
- At A2 there is one compulsory unit (Further Pure Mathematics) and one optional unit (Further Statistics or Further Mechanics)

FURTHER MATHEMATICS

ASSESSMENT OVERVIEW	
AS Unit 1: Further Pure Mathematics A Written examination: 1 hour 30 minutes	13 % of qualification 70 marks
AS Unit 2: Further Statistics A Written examination: 1 hour 30 minutes	13 % of qualification 70 marks
AS Unit 3: Further Mechanics A Written examination: 1 hour 30 minutes	13 % of qualification 70 marks
A2 Unit 4: Further Pure Mathematics B Written examination: 2 hours 30 minutes	35% of qualification 120 marks
A2 Unit 5: Further Statistics B Written examination: 1 hour 45 minutes **OR** **A2 Unit 6**: Further Mechanics B Written examination: 1 hour 45 minutes	25% of qualification 80 marks

MATHEMATICS and FURTHER MATHEMATICS

ASSESSMENT OBJECTIVES AO1: Use and apply standard techniques	Weighting	
	AS	A Level
Learners should be able to: • select and correctly carry out routine procedures; and • accurately recall facts, terminology and definitions	45% – 55%	45% – 55%

MATHEMATICS and FURTHER MATHEMATICS

ASSESSMENT OBJECTIVES AO2: Reason, interpret and communicate mathematically	Weighting	
	AS	A Level
Learners should be able to: • construct rigorous mathematical arguments (including proofs); • make deductions and inference; • assess the validity of mathematical arguments; • explain their reasoning; and • use mathematical language and notation correctly.	20% – 30%	20% – 30%

MATHEMATICS and FURTHER MATHEMATICS

ASSESSMENT OBJECTIVES AO3: Solve problems within mathematics and in other contexts	Weighting	
	AS	A Level
Learners should be able to: • translate problems in mathematical and non-mathematical contexts into mathematical processes; • interpret solutions to problems in their original context, and, where appropriate, evaluate their accuracy and limitations; • translate situations in context into mathematical models; • use mathematical models; and • evaluate the outcomes of modelling in context, recognise the limitations of models and, where appropriate, explain how to refine them.	20% – 30%	20% – 30%

ADDITIONAL INFORMATION

Calculators

- A calculator is required for all assessments
- Calculators used must include the following features:
  - an iterative function;
  - the ability to compute summary statistics and access probabilities from standard statistical distributions.

Formula booklet

- A formula booklet will be required in all examinations

Statistical tables

- Candidates may use a book of statistical tables for the relevant statistical units