



MATHS

A level courses in:
Mathematics
Computer Science



Ashby
Sixth
Form



A level Mathematics

WHY STUDY A-LEVEL MATHEMATICS?

An A-level qualification in mathematics is highly regarded by prospective employers and universities as being a good indicator of a logical and analytical mind. The content of the course is good preparation for further study in many subjects at degree level.

Further mathematics enables students to take the subject a lot further and is an excellent preparation for degree level studies in engineering, mathematics itself and a wide variety of science courses. Indeed, it is becoming a pre-requisite qualification for many degree courses at top universities.

ENTRY REQUIREMENTS

All students must sign up to the two year A level course. Entry requirements for A level mathematics are a GCSE grade 6 in mathematics and for A level further mathematics a GCSE grade 8. Pupils are able to study Core Maths with a GCSE grade 4.

COURSE CONTENT

A level mathematics is a linear course, made up of approximately one third pure mathematics, one sixth mechanics and one sixth statistics.

A level content includes proof, algebra and functions, co-ordinate geometry, sequences and series, trigonometry, exponentials and logarithms, differentiation, integration, numerical methods, vectors, statistical sampling, probability, statistical distributions, statistical hypothesis testing, kinematics in mechanics, forces and Newton's laws, moments.

A level further mathematics has two thirds of the content being compulsory and one third being optional. Further pure content is compulsory and builds upon A level and two optional elements are studied from discrete, mechanics and statistics.

ASSESSMENT INFORMATION

There are regular internal assessments throughout the two year course before the main examinations at the end of Year 13. A level mathematics is assessed by three 2 hour examinations—paper 1 on pure mathematics, paper 2 on pure mathematics and mechanics and paper 3 on pure mathematics and statistics (based on AQA model).

Pupils who study A level further mathematics must also study A level mathematics. A level further mathematics is assessed at the end of Year 13 by three 2 hour examinations—two on pure mathematics and one on applied options (decision & statistics or statistics & mechanics).

AS Further Mathematics is assessed by two 1.5 hour papers—one on pure mathematics and one on the two applied options.

FURTHER INFORMATION

Students can take part in maths prefecting, which involves supporting KS4 classes and in the past has involved helping in the running of events, from open days to primary school maths activity days. If you are determined to make something happen, you can!

We regularly run a trip to Cambridge University. This involves a tour of the university along with maths lectures on a variety of subjects. These lectures have been on topics such as juggling, bouncing bombs and maths in 'The Simpsons'.

Students are encouraged to take part in the Senior Maths Challenge and are offered support if they get through to subsequent rounds. Support is also offered to students sitting maths papers for higher level university applicants, such as STEP papers.

We subscribe to the Further Maths network and our students have taken part in some of their events across the region.

Core Maths: The department is also involved in delivering the Core Maths qualification. This is taken as an enrichment subject. If you would like more information, please speak to a member of staff at this event or contact the faculty by email.





A level Computer Science

WHY STUDY COMPUTER SCIENCE?

This is an intensely creative subject that combines invention and excitement, and looks at the world through a digital prism. It values computational thinking, helping learners to develop the skills to solve problems, design systems and understand the power and limits of human and machine intelligence. Learners will develop an ability analyse, critically evaluate and make decisions.

COURSE CONTENT

The characteristics of contemporary processors, input, output and storage devices
Software and software development
Exchange data
Data type, data structures and algorithms
Legal, moral, cultural and ethical issues
Elements of computational thinking
Problem solving and programming
Algorithms to solve problems and standard algorithms

The learner will choose a computing problem to work through according to the guidance in the specification.
Analysis of the problem
Design of the solution
Developing the solution
Evaluation

COURSE PROGRESSION

A level computer science students may consider careers in the following areas:

Software engineering
Website development
Project management
Database administrator
Computer hardware engineer
Computer network architect
Information security analyst

FURTHER INFORMATION

As an A level student, you will be treated as a mature young adult and will have access to all the computer science facilities, enabling you to develop a broad range of skills and knowledge within the context of computer science.

ASSESSMENT

Unit number	Title
1	Computer Systems
	Externally set and marked examination 40% of qualification 2.5 hours duration
2	Algorithms and Programming
	Externally set and marked examination 40% of qualification 2.5 hours duration
3	Programming Project
	Internally set and assessed software project 20% of qualification

CONTACT INFORMATION

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