

Mathematics

Why study Mathematics?

There are many reasons why students choose to study A level Maths. Sometimes it is a requirement for a job or a course they want to follow at university; a good grade in Maths can boost an application for most courses and jobs. Studies have also shown that people with Maths A Level tend to earn more on average than people without it. Though this in itself may not be a good enough reason to study Maths, the subject allows you to develop your skills in problem solving, logic and analysing situations; developing this set of skills will make you more desirable for almost any job!

But most of all we hope you will choose Maths because you have enjoyed solving problems at GCSE (particularly in the algebra and graph work); then you are likely to continue enjoying this interesting and challenging subject. As we take topics to a higher level you will see more of the beauty of Maths and realise just how much everything around us is connected to mathematics.

What does the course cover and what is expected of you?

The A-level Mathematics course involves the study of Pure Mathematics with Statistics, Mechanics. In the first unit, Pure Core 1, much of the initial work will look reassuringly familiar (even after a long summer holiday!) as it revises a number of the Higher GCSE topics such as equations of straight lines, solving simultaneous equations, solving quadratic equations, graph sketching, surds, as well as introducing new topics such as Differentiation and Integration and their use in problem solving.

The later Pure Maths Units look at the sin, cos and tan functions in more detail; investigate more interesting graphs; use logarithms to solve problems involving exponential growth/decay such as radioactive decay, credit card bills or problems caused by the lack of birth control in a colony of hamsters!

In the Statistics unit, again some of the work will overlap with GCSE initially but you will go on to solve problems such as; what percentage of the population is taller than 1.90m? Can people really tell the difference between coke and diet coke?

The Mechanics unit looks at solving problems in the real world such as a safe height for a child's slide; what happens in collisions; what angle and speed you need to project a ball to score.

As well as explanations of new topics, much of the lesson time will be spent in group discussions of problems. Staff will use a variety of activities to make the lessons enjoyable and help students get a good grasp of new concepts. You will be loaned an advanced scientific calculator, for the duration of the 2 year course, that not only holds Statistical tables but will solve quadratics and simultaneous equations for you.

Prep will usually be questions from a text book (all students are provided with one) or a problem sheet to practice the skills learnt in different situations. Teachers are happy to share their lesson notes and are always happy to help you sort out any difficulties. There will be one evening a week when you can simply "drop-in" for support. In addition to the lessons you should expect to spend 5-8 hours a week to complete written work, to review past topics and prepare for assessments.

Where can it take you?

Success in AS and A level Mathematics opens a large number of doors in further education and employment. Mathematics is not only seen as an essential requirement for courses in Mathematics, but is often required for courses in Information Technology, Physics, Engineering, Computing, Software Engineering, and is highly regarded for other courses such as Law and Psychology.

Entry requirements

You will need a level 6 or above with good algebra skills.

Course assessment

No coursework.

AS is taken in the summer of year 12. It consists of two exams; one on the Core Pure Maths topics (2 hours) and one combined paper on Statistics and Mechanics (1¼ hours). The AS results are a stand-alone exam and do not count towards the final A level.

In order to progress to the full A level you will need to gain a grade A-E in the AS exam.

The full A level is taken in the summer of year 13. It will consist of three 2 hour exams; two on Pure Mathematics and one combined on Statistics and Mechanics.

Exam Board

Edexcel

Student View

"...the teachers at Mary Hare gave me so much help through my Maths course and having A level Maths meant I had lots of choice when I was looking at Uni courses."

Teachers Tip

The small groups really help everyone to keep involved in the lessons and to get the help they need.

Go through your notes after lessons and check you fully understand the methods and concepts covered.