

Why choose this subject?

Do you enjoy thinking deeply and solving challenging problems? Do you want to have the tools at your fingertips to understand the modern world?

There are many reasons why you would want to study maths at A-Level; it maybe that you want to study it for a future career, university or simply because you enjoyed the subject at GCSE. Whatever your reason, this course will advance your problem solving skills, deepen your knowledge and allow you to explore a range of new mathematical techniques.

There is a shortage of highly numerate candidates in the jobs market which means employers are willing to pay more for the problem solving and number crunching skills of A Level mathematicians. An article in the Times Educational Supplement reported that young people with A Level Mathematics in general earn 10% more than people who do not have this qualification. The mathematical skills learned at A Level, such as logical thinking, problem solving and statistical analysis, are all highly desirable in the workplace.

Course details

The A level is broken down into 3 papers; Pure Mathematics (Paper 1 & 2) and two fields of applied mathematics: Statistics and Mechanics (Paper 3)

- The pure mathematics units build on the algebra, coordinate geometry, calculus and trigonometry studied in year 11.
- In statistics, which is the study of uncertainty and making predictions from data, you will learn the following techniques: statistical sampling, data presentation and interpretation, probability, statistical distributions and hypothesis testing.
- In mechanics, which is the study of forces that act on bodies to produce motion, you will study the following areas: quantities and units in mechanics, kinematics, forces and Newton's laws and moments.

Who is this course for?

Mathematics is a popular and challenging subject. It provides the skills and techniques needed to understand the world around us, and is also hugely satisfying in its own right. People who succeed in maths share a willingness to learn and practise new concepts and techniques. At Six21 a high level of conceptual understanding is required to answer complex, structured questions effectively; the emphasis is on problem solving and adapting to different situations rather than simply learning by rote.

Many will study the subject in conjunction with sciences or economics (which require you to think mathematically), but there are significant numbers who take mathematics alongside arts or humanities, and find it broadens their profile of subjects. For those who wish to pursue degree courses in engineering, physics, or chemistry, mathematics is an essential subject, and it is highly desirable in disciplines such as biology, economics, and architecture.

Our approach

Maths at Six 21 is characterised by its emphasis on meaningful and significant problem-solving and forming connections between the following areas:

- different mathematical ideas
- mathematical concepts and other subjects
- A-level content and the changing world around us
- sixth form study and professional mathematical research.

We work with our partners at top universities such as Cambridge, Oxford and King's College to ensure that our teaching prepares students for further study at the highest level. In addition, we develop mathematical oracy by giving students access to academic lectures and the opportunity to present and critique their own ideas and research in the same way that professional mathematicians do.

Higher education and career opportunities

Maths is a challenging A-level and is respected as such by employers and universities across the country. Regardless of your future career path, an A-level in maths gives you a grounding and a way of thinking that is hugely valuable in any course or career that requires analysis, problem solving, or logical thinking.

Maths can be combined with any group of subjects as it is such an important foundation for a student to possess. It will be an essential qualification for those wishing to study architecture, engineering, economics, accountancy, finance and physics and will be highly desirable for those wishing to study scientific disciplines at university.

Introductory reading

Alex's adventures in Numberland by Alex Bellos - is a fun and mind-expanding collection of stories about mathematical ideas, from the surprising geometry of the 50p piece to how probability can help you win in any casino.

Measurement, by Paul Lockhart. A fresh way of building Maths from the basics upwards, all through pictures.

How not to be wrong, by Jordan Ellenberg. How to use mathematical thinking to reevaluate the way you look at the world.

The maths of the Simpsons, by Simon Singh. How the world's most popular cartoon is underpinned by mathematics.

Guesstimation, by Lawrence Weinstein. How to use the power of estimation to answer questions about the world.

Subscribe to the following youtube channels:

- Mathologer
- Numberphile
- 3blue1brown
- vsauce
- PBS Infinite Series
- Veritasium
- London Mathematical Society