

## A Level in Mathematics

Entry criteria – achieve a grade 7 or above the GCSE in Mathematics.

A Level in Mathematics consists of three externally examined papers. Students must complete all assessment in May/June in any single year.

### **Paper 1 – Pure Mathematics 1 – 33.33%, 1 hour and a half.**

#### **Content overview**

- Topic 1 – Proof
- Topic 2 – Algebra and functions
- Topic 3 – Coordinate geometry in the (x,y) plane
- Topic 4 – Sequences and series
- Topic 5 – Trigonometry
- Topic 6 – Exponentials and logarithms
- Topic 7 – Differentiation
- Topic 8 – Integration
- Topic 9 – Vectors



**Nobel**  
Sixth Form

## **Paper 2 – Pure Mathematics 2 – 33.33%, 1 hour and a half.**

### **Content overview**

- Topic 1 – Proof
- Topic 2 – Algebra and functions
- Topic 3 – Coordinate geometry in the (x,y) plane
- Topic 4 – Sequences and series
- Topic 5 – Trigonometry
- Topic 6 – Differentiation
- Topic 7 – Integration
- Topic 8 – Numerical methods

## **Paper 3 – Statistics and Mechanics – 33.33%, 1 hour and a half.**

### **Content overview**

Section A: Statistics • Topic 1 – Statistical sampling

- Topic 2 – Data presentation and interpretation
  - Topic 3 – Probability
  - Topic 4 – Statistical distributions
  - Topic 5 – Statistical hypothesis testing
- Section B: Mechanics
- Topic 6 – Quantities and units in mechanics
  - Topic 7 – Kinematics
  - Topic 8 – Forces and Newton's Laws
  - Topic 9 – Moments

## Qualification aims and objectives



The aims and objectives of this qualification are to enable students to:

- understand mathematics and mathematical processes in a way that promotes confidence, fosters enjoyment and provides a strong foundation for progress to further study
- extend their range of mathematical skills and techniques
- understand coherence and progression in mathematics and how different areas of mathematics are connected
- apply mathematics in other fields of study and be aware of the relevance of mathematics to the world of work and to situations in society in general
- use their mathematical knowledge to make logical and reasoned decisions in solving problems both within pure mathematics and in a variety of contexts, and communicate the mathematical rationale for these decisions clearly
- reason logically and recognise incorrect reasoning
- generalise mathematically
- construct mathematical proofs
- use their mathematical skills and techniques to solve challenging problems which require them to decide on the solution strategy
- recognise when mathematics can be used to analyse and solve a problem in context
- represent situations mathematically and understand the relationship between problems in context and mathematical models that may be applied to solve them
- draw diagrams and sketch graphs to help explore mathematical situations and interpret solutions
- make deductions and inferences and draw conclusions by using mathematical reasoning
- interpret solutions and communicate their interpretation effectively in the context of the problem
- read and comprehend mathematical arguments, including justifications of methods and formulae, and communicate their understanding
- read and comprehend articles concerning applications of mathematics and communicate their understanding
- use technology such as calculators and computers effectively and recognise when such use may be inappropriate
- take increasing responsibility for their own learning and the evaluation of their own mathematical development.