# Why study A-level Mathemathics?

A Level Mathematics- crucial for studying any mathematical, science, economics related degrees; also an enabling subject for many more degrees and also careers as it demonstrates an ability to think logically and rigorously and to reason and problem solve at a high level; also has an intrinsic value and beauty of its own which is part of the cultural entitlement and heritage of all human beings.

We would like to offer at the earliest opportunity Further Mathematics A Level- this is essential (either as an entry requirement, increasingly, or as strongly recommended) for doing a mathematics degree at many Russell group universities (and also for courses such as economics at universities such as LSE).

We have supported small numbers of students in the last few years to do Further Maths outside the timetable and are happy to continue doing this – but would prefer to have it on the full curriculum offer and timetable as soon as possible.

# Exam Board: AQA

#### Course overview...

#### Year 12:

Algebra and Functions; Logarithms and Exponentials; Everything Binomial; Sequences and Series; Kinematics with constant acceleration; Differentiation; Integration.

#### Year 13:

Proof; Further Differentiation; Further Integration; Probability; Statistics and Large Data Set; Further Trigonometry; Dynamics and Forces; Kinematics with Calculus; Numerical Methods; Statistical Distributions; Hypothesis Testing; Differential Equations; Moments.

#### **Further Mathematics:**

Complex Numbers; Matrices; Further Algebra and functions; Further Calculus; Vectors; Polar Coordinates; Hyperbolic Functions; Differential Equations; Further Numerical Methods; plus two options.

A) Mechanics: Dimensional Analysis; Momentum and Impulse; Work Energy and Power; Springs and Elastic Energy; Elastic Collisions; Circular Motion; Centres of Mass.

B) Discrete: Graph Theory; Networks and Algorithms; Network Flows; Linear Programming; Critical Path analysis; Game Theory; Modular Arithmetic; Binary Operations; Group Theory.

### Possible careers linked to this qualification...

Just about anything! Any career in any area of science, finance, business, medicine, health and many more will be helped by having A Level mathematics.

### Some of our students have gone on to study:

Mathematics including at Oxford and King's; Engineering (of all kinds!); Computing; Medicine (including at Cambridge); Economics Accounting and Finance; Actuarial Science; Anthropology; Archaeology.



