

Maths Curriculum Intent

Our ambitious aims

By the end of their time with us at Gloucester Academy, our students will be able to:

- solve problems relating to each of the Big Ideas in maths; think mathematically in order to make secure, logical connections based on their knowledge and understanding of mathematics.
- have the confidence and resilience to explain and reason their method, written or spoken, using the correct mathematical language.
- climb their personal mathematical mountain to empower them to study maths and further maths at A-level and Degree level.
- understand the importance of mathematics in real life, whether this be through academic achievement or its applications in the real world.

Big ideas

To achieve our aims, students will be exposed to and develop a deep understanding of several powerful mathematical concepts

Concept	Definition	Rationale
Number	<i>Relationships between units and their value. Expressed using words, symbols or figures.</i>	Number forms the building blocks for further study in mathematics. The ability to use core number skills fluently and with accuracy enable students to solve problems in everyday life. Crucially students must understand place value and how to order numbers, including integers, decimals, fractions, percentages and negatives. Students learn and apply the four basic operations in a range of contexts and understand the correct hierarchy of order of operations.
Algebra	<i>The representation of unknown quantities using letters</i>	Students understand that algebra can be used to generalise the structure of arithmetic and to formulate mathematical relationships between two or more unknowns.
Ratio/ Proportion/ Rates of change	<i>The quantitative relationship between two or more amounts</i>	Students learn how ratio and proportion permeates all other areas of maths. They need to be confident in using ratio and/or algebra to solve problems: e.g. use proportion to solve equations and apply to similar shapes. Students are able to apply their knowledge to other areas of the curriculum, such as algebra, geometry and probability.
Geometry/ Shape	<i>The use of points, lines, surfaces, shapes and solids</i>	Students understand how geometry can be used across different parts of mathematics to develop deductive reasoning and proof. Moreover, geometry allows for students to develop visualisation and spatial reasoning. Through geometry, students are introduced to proof - a key part of Maths study at a higher level - which allows them to construct general mathematical arguments that always hold true.
Statistics/ Probability	<i>Collecting and analysing numerical data in large quantities</i>	Students understand the importance of statistics in the real world, and how they can help us to tell a story. Statistics simplifies large amounts of data into simplified representations that allow us to understand that data better. Probability permeates much of the scientific method and is fundamental to how financial systems work. Students need to grasp the basics in secondary, whilst being introduced to its scope.