

# Mathematics

*“If Mathematics is to be understood widely,  
we need to emphasise its elegance and application.” Johnny Ball*

## Summerhill students will be **valuable members of society**

Summerhill students will develop mathematical skills that are essential for everyday life and understanding our world. They will develop their natural abilities to think logically, solve puzzles and develop resilience through problem solving in real-life scenarios.

All students will be able to successfully work with money to effectively manage finances and understand the economy.

Every student will be confident using shape and measures to access a range of careers and support lifestyle decisions in design, construction and beyond.

In a world where everyday life is full of data and statistics, students will be empowered to analyse and interpret data to effectively challenge, question and make informed decisions.

## Summerhill students will be **skilled communicators**

Students will leave Summerhill able to make and discuss propositions in the universal language of Mathematics. They will clearly explain their reasoning and justify their answers using mathematical terminology with precision.

Students will be confident in drawing conclusions and presenting their findings using a variety of visual representations.

Students will be able to successfully communicate orally, again using key mathematical terms, to prove, argue and evidence their findings.

They will be highly proficient at extracting key information presented in a range of formats, to understand the underlying problem and identify suitable processes to obtain the desired answer.

## Summerhill students will be **knowledgeable**

Students will develop an exceptional fluency in working with number, which they will be able to rely on when accessing a wider range of mathematical contexts. They will make links between concepts through exploring patterns in the number system, algebra, ratio and proportion, shape, measures and statistics.

Summerhill students will develop a toolkit of mathematical skills that they employ with fluency. They will confidently apply their knowledge to reason mathematically and solve problems with increasing levels of challenge, selecting the most appropriate technique for any given situation.

Students will recognise how their mathematical knowledge can be applied in science, geography, computing and other subjects.

### **Our curriculum is underpinned by four key values:**

- Courage** – doing what is right; being truthful; trying new experiences; taking risks in the pursuit of personal development
- Ambition** – having the highest aspirations and expectations of ourselves and others; being brilliant in all we do; having a belief that challenges can be overcome with the right attitude and hard work
- Respect** – thinking about the way we interact with others; being considerate to ourselves, others and the environment; responding to expectations and working together in teams
- Effort** – investing time and energy to achieve success; always giving our best in everything we do; demonstrating resilience through challenging times.

# Mathematics Curriculum

Year	Key Features	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
7	Students have 5 lessons per week	Place value and the number line  Addition and subtraction	Multiplication and division  Powers, roots and primes	Order of operations  Directed number	Fractions	Introduction to algebraic thinking  Manipulating and simplifying expressions	Percentages, fractions and decimals  Discrete data
8	Students have 4 lessons per week	Estimation and use of the calculator  Proportional reasoning	Linear equations  Formulae	Drawing, measuring and constructing  Ratio	The cartesian grid	Polygons and angles  Area	Sequences  Bivariate data and time series
9	Students have 5 lessons per week	Standard Form  Linear Inequalities	Contextual graphs  Applying Percentages	Advanced linear graphs and equations	Congruence and similarity	Right angled triangles  Circles	Advanced drawing, measuring and constructing  Introduction to probability
10 GCSE	Students have 5 lessons per week	Advanced proportion and rates of change  Number theory	Advanced manipulating and simplifying expressions  Quadratic graphs and equations	Advanced sequences  Indices and surds	Numerical and algebraic representations of proportion and change	Advanced length and area  Surface area and volume	Continuous data

Year	Key Features	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
11 GCSE FOUNDATION	Students have 4 lessons per week	<p>Set Theory</p> <p>Sampling and advanced data analysis</p> <p>Algebraic manipulation and solving equations</p>	<p>Algebraic graphs</p> <p>Problem solving with percentages, fractions and ratio</p>	<p>Working with different forms of units and number</p> <p>Shape properties</p>	<p>Transforming shapes</p> <p>Advanced probability</p>		
11 GCSE HIGHER	Students have 4 lessons per week	<p>Set Theory</p> <p>Sampling and advanced data analysis</p> <p>Advanced quadratic graphs and equations</p>	<p>Functions and advanced graphs</p> <p>Pre-calculus</p>	<p>Algebra skills and proof</p> <p>Advanced vectors</p>	<p>Solving geometric problems</p> <p>Advanced probability</p>		