

Mathematics

In the Mathematics faculty at Magdalen we aim for our pupils to be engaged by the challenges of problem solving and investigative tasks and to develop their independent and creative mathematical thinking skills. We aim for all pupils to become self-confident and resilient mathematical learners.

Mathematics is an exciting subject and we encourage our students to enjoy the challenges it offers and to appreciate the importance of mathematics in understanding and shaping the world around us. As well as preparing our students with the mathematical skills they will need in the workplace and in their everyday adult lives, we also aim to provide students with opportunities to experience the pleasure afforded from the pursuit of mathematical ideas and patterns for their own sake.

We follow a 5 year continuous curriculum throughout with an emphasis on problem solving involving a mixture of investigative, practical and textbook activities.

The graphics below show an indicative summary of the content and order of our curriculum. The specific length of time spent on each unit and the level of difficulty will be adjusted to suit the needs of the class.

Where possible, we will link the current topic with previous topics as well as real life uses to give the content purpose. The students are given mini assessments near the end of each topic to assess understanding.

7	Numbers and the Number system I	Calculating: mental arithmetic	Calculating: division		Visualising & Constructing 2D & 3d	Properties of shape	Algebraic proficiency		Fractions, decimals & percentages	Proportional reasoning	Sequences	Measuring space	Investigating angles	Fractions, decimals & percentages	Solving equations & inequalities	Calculating space	Checking, estimating	Mathematical movement	Measuring data	Presentation of data
	Numbers and the Number system II	Counting & comparing	Calculating	Visualising & Constructing	Properties of shape	Algebraic proficiency	Fractions, decimals & percentages	Proportional reasoning	Sequences	Measuring space	Investigating angles	Fractions, decimals & percentages		Solving equations & inequalities	Checking & approximating, estimating	Calculating space	Mathematical movement		Presentation of data	Measuring data

In Years 9, 10 and 11 there is a greater emphasis on preparation of students for the AQA GCSE in Mathematics. Common topics and key ideas remain as in years 7 and 8 but the complexity and challenge increases.

9	Numbers and the Number system III	Calculating		Visualising & Constructing	Understanding risk	Algebraic proficiency	Fractions, decimals & percentages	Proportional reasoning	Sequences	Investigating angles	Fractions, decimals & percentages	Calculating space	Algebraic proficiency: graphs	Understanding risk	Presentation of data	Measuring data
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10	Calculating	Mock Exams	Visualising & Constructing	Algebraic proficiency		Proportional reasoning	Sequences	Solving equations & inequalities	Calculating space			Conjecturing	Algebraic proficiency: graphs	Solving equations & inequalities	Analysing statistics	Algebraic proficiency: graphs II	Vectors	Mock Exams	Review
11	Investigating properties of shapes	Calculating	Solving equations and inequalities	Calculating space	Math. movement	Analysing statistics	Mock Exams	Synoptic Review	Vectors	Algebraic proficiency: graphs	Proportional reasoning	Risk	Synoptic Review	Mock Exams	Synoptic Review	PUBLIC EXAMS			

Mathematics is a very popular subject at A level. Students study the highly respected OCR (MEI) A level. We run a very well attended after-school sixth form support session once every week of term. We also offer Further Mathematics A level for our high-performing mathematicians.

A Level Mathematics

12	Surds & Indices	Quadratic Functions	Equations & Inequalities	Coordinate Geometry	Trigonometry	Collecting and Processing data	Polynomials	Graphs & Transformations	Binomial expansion	Differentiation I	Integration	Logs & Exponentials	Probability	Binomial distribution	Hypothesis Testing	Problem solving	Mock Exams	Normal Distribution	Proof
12	Kinematics				Forces				Forces & Motion			Forces & Motion		Friction	Problem solving	Differentiation (Yr2)			
13	Partial fractions	Integration		Differentiation	Trigonometry	Mock Exams	Functions	Sequences	Numerical methods	Normal Distribution	Mock Exams	Synoptic Review		PUBLIC EXAMS					
13	Projectiles		Moments		Variable Acceleration		Parametric Equations		Differential Equations	Hypothesis Testing II									

A Level Further Mathematics

12	Matrices I & II	Complex numbers I & II	Roots of Polynomials	Proof	Forces	Friction & Moments	Dimensional Analysis	Energy & Power	Impulse & Momentum	Centres of Mass	Mock Exams	Matrices (Yr2)
12	Algorithms	Networks	Linear programming	Discrete Random Variables	Bivariate data	Chi-squared tests	Vectors I	Vectors II (Yr2)	Review	Review		
13	Integration	Further calculus	Polar Co-ordinates	Hyperbolic Functions	Mock Exams	Maclaurin series	Complex Numbers	Differential equations	Mock Exams	Differential equations	Review	PUBLIC EXAMS
13	Revisit Statistics			Revisit Linear Programming			Synoptic Review					

Yr 12 'Core Maths' curriculum – launching from September 2020 we have devised an additional course to support students studying A Levels where maths fluency is needed, but who aren't taking A Level Mathematics. This course includes a range of knowledge and skills, supporting current learning and broadening Maths experience.

12	Statistics	Review	Statistics	Graphs, Exponentials & Logarithms	Ratio & Geometry in Mathematics	Mock Exams	Ratio & Geometry cont.
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