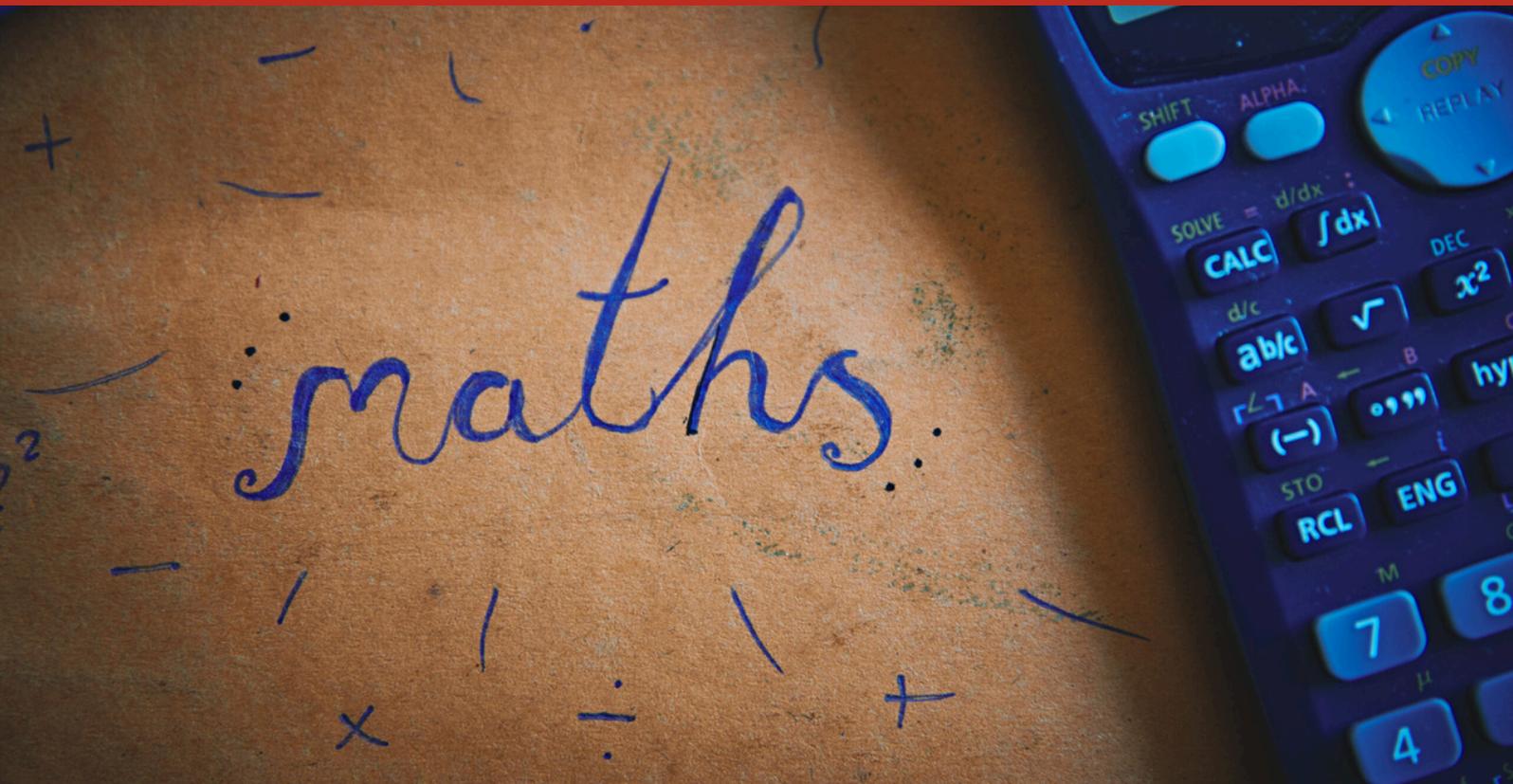




The Henrietta Barnett School

Mathematics



Authenticity - Kindness - Curiosity
Connection - Endeavour

www.hbschool.org.uk

Key Stage 3

Mathematics is the means of looking at the patterns that make up our world and the intricate and beautiful ways in which they are constructed and realised. The aim of the course at Key Stage 3 is to:

- develop fluency with number and algebra
- reason mathematically, extending the understanding of mathematical proof
- develop mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems
- develop the use of formal mathematical knowledge to interpret and solve problems, including in financial mathematics
- begin to model situations mathematically and express the results using a range of formal mathematical representations
- select appropriate concepts, methods and techniques to apply to unfamiliar and nonroutine problems

Year 7

We provide a challenging curriculum encompassing number, algebra, data handling and shape and space. Students have 2 Mathematics lessons each week of 70 minutes, plus an additional 35 minute lesson of open-ended investigative problem-solving work, and a 35-minute lesson on coding. Topics taught this year include: number work (including negative numbers, order of operations, fractions, decimals and percentages); sequences; an introduction to the use of algebra, manipulating algebraic expressions and solving simple equations; Venn diagrams; an introduction to straight line graphs; transformations.

Year 8

Building on the knowledge and skills developed in Year 7, we provide a challenging curriculum encompassing number, algebra, data handling and shape and space. Topics taught this year include: circles, number work including standard form; indices; solving more advanced equations and inequalities, straight lines and curve graphs, polygons and angles in parallel lines; Pythagoras' theorem.

Year 9

The Year 9 curriculum is both the culmination of Key Stage 3 studies and introduces many concepts and skills that form part of the GCSE syllabus. Topics taught this year include: more advanced graph work; algebra work including simultaneous equations, algebraic products and factorising quadratics; number work including trial & improvement, recurring decimals, percentages work with appreciation/depreciation, rounding (upper and lower bounds); trigonometry; congruency and similarity for triangles; transformations, particularly enlargements.

Key Stage 4

Students follow the Higher Tier GCSE Edexcel Mathematics linear course and are taught in 4 sets for the course. Students develop the ability to:

- acquire and use problem-solving strategies
- select and apply mathematical techniques and methods in mathematical, every day and real-world situations
- reason mathematically, make deductions and inferences and draw conclusions
- interpret and communicate mathematical information in a variety of forms appropriate to the information and context.

Year 10

Topics are taught in preparation for GCSE in the summer of Year 11 and include: the further development of number skills, including work on surds and highest common factors/ lowest common multiples; algebra skills, including advanced indices and graph work; trigonometry and advanced trigonometry; circle theorems; geometrical proofs; probability with conditional probability.

Year 11

In Year 11 we teach the most advanced topics in the GCSE syllabus: quadratic functions, comprising manipulating quadratic expressions, solving quadratic equations, the graphical representation of functions and their use in a range of problem-solving contexts; algebraic fractions and algebraic proofs; vectors; graph transformations. We focus on examination technique and practice past examination papers to best prepare students for the GCSE, whilst teaching them to the highest level as an excellent foundation for any future A Level study in the subject.

Key Stage 5

Students follow the OCR Mathematics specification. Both Mathematics and Further Mathematics courses are offered by the school. We aim to:

- develop their understanding of mathematics and mathematical processes in a way that promotes confidence and fosters enjoyment
- develop abilities to reason logically, to generalise and to construct mathematical proofs
- extend their range of mathematical skills and techniques and use them in more difficult, unstructured problems
- take responsibility for their own learning and the evaluation of their own mathematical development

Year 12

We teach the pure mathematics modules of C1 and C2, alongside the statistics module S1. These are all AS Level modules and students take examinations in these modules in summer of year 12.

The Further Mathematics A Level has both greater depth and greater breadth than Mathematics A Level. Further Mathematics students will also study the pure module FP1 and applied modules Decision 1 (D1) and Mechanics 1 (M1), taking examinations in these 3 modules in the summer of Year 12.

Year 13

We teach the pure mathematics modules C3 and C4, alongside the statistics module S2. Occasionally, if the timetable permits, we are able to offer the Mechanics 1 (M1) module as an alternative to S2.

The Further Mathematics students also study pure modules FP2 and FP3, together with the Mechanics 2 (M2) applied module.