

Subject- Mathematics

Subject Leader: Mr Miller

Subject teachers: Mr Brenno, Mr Moors, Miss O'Neill, Mr Lindsay and Miss O'Neill

HLTA: Mrs Fletcher

Department aims:

Mathematics is a creative and highly interconnected discipline that is essential to everyday life, it is critical to Science, Technology and Engineering, as well as necessary for financial literacy and most forms of employment.

We aim to deliver a high-quality mathematics education that provides a foundation for: understanding the world; the ability to reason mathematically; an appreciation of the beauty and power of mathematics and a sense of enjoyment and curiosity about the subject.

Students will:

- become fluent in the fundamentals of Mathematics, through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately
- reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, developing an argument, justifying or proving using mathematical language
- solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions

KS3

Throughout KS3, lessons are planned and delivered to classes by our dedicated team of specialist mathematics teachers. In order to allow students to meet the demands of the new GCSE curriculum, we have planned and coordinated a scheme of work that will challenge students, identify and address any misconceptions and gaps in subject knowledge.

Year 7

Students cover work from all strands of Mathematics each term. They consolidate and improve both their mental and written methods for addition, subtraction, multiplication and division of whole numbers, decimals, integers and fractions. They begin to develop both algebraic and geometric reasoning skills and statistical inquiry; study probability, sequences, functions, graphs, transformations, ratio, percentages, measurement and aspects of discrete Mathematics. Problem solving tasks and activities are used to extend and develop understanding of topics covered.

Year 8

Students further develop their skills gained in Year 7 with an increased focus on algebraic manipulation and application to real-life context, fractions, percentages and applications; decimals and approximation; formulae manipulation and measurement; sequences and graphs; geometry and equations and finally angles with trigonometry and application to real-life context. Again, students are extended and challenged through problem solving tasks.

KS4

KS4 mathematics begins in year 9 with the new GCSE curriculum. The focus here is to build upon the skills that students have already learned in KS3 and allow them to apply these skills creatively in multi-layered problem-solving situations.

Year 9

All students start their journey towards the new Linear GCSE (OCR- J560). Students review and develop their non-calculator numerical skills, measurement, algebraic manipulation, graphical representation and angle properties, statistics and probability. Elements of functional skills are developed, together with the quality of students' written and oral communication.

Year 10

Students continue with the course they began in Year 9. Students are challenged to develop their subject skills even further through extensive and detailed feedback from regular GCSE mock assessments.

Year 11

There is greater emphasis for students on the topics at the higher end of the grades applicable for their tier of entry (either foundation or higher). Topics include trigonometry, circle theorems, vectors, congruence proofs and transformations of functions at Higher level and quadratics, Pythagoras' theorem, transformations, construction and loci, inequalities, measurement and data analysis at Foundation level.

How can I help support my child's learning in Mathematics?

- Encourage your child to show you their homework and help them using the tailored prompt sheets which can be found here on the school gateway.
(<https://gateway2.bircheshead.org.uk/Subjects/Homework/Maths/SitePages/Home.aspx>)
- Add number games/board games to your child's collection – counters, dominoes, pack of cards, snakes and ladders, cribbage, darts, tape measures, and different shapes. They depend on numbers, counting, calculation and scoring.
- Make the most of your child's hobbies. If they have favourite band, get them to compile statistics such as charting weeks or songs sold. If your child is car mad, talk about relative engine sizes, fuel economy, speed and performance. Watch and play sports that involve scoring, timing, counting, measuring.
- Think about time. Look at clocks, both digital and analogue. Estimate how long an activity will take and see if you are right! Play games: how long is a minute, starting from now? Work out how long it is to a next mealtime or to a favourite programme.
- Think about calendars and dates too. Make a timeline of birthdays of each member of the family and work out how far apart they are. Use different units: months, weeks, days, hours, minutes and seconds. Add on other important events, such as Christmas or a family holiday and count down to the big day.
- Ask your child to find shapes and patterns on floors, wallpapers, buildings and even animals. Draw objects made entirely of circles, squares, rectangles and triangles. Make symmetrical or "butterfly" pictures by painting on one half of the paper and folding it over so that the image is mirrored.

Useful websites

Gateway - (gateway/sites/bircheshead/Subjects/Maths/default.aspx)

Maths bitesize – (www.bbc.co.uk/education/subjects)

Corbett maths – (corbettmaths.com)

Mathed Up - (www.mathedup.co.uk)