

Welcome to the Mathematics Department

Subject Leader: Mr K Foley

Teachers: Mrs J Pennells, Mrs S Bagga, Ms A Kennedy, Mr P Dahal,
Mrs J Karkin, Mr T Burnett, Mrs C McMahon

Subject Overview

Key Stage 3: Years 7 and 8

Students follow an objective led curriculum. The areas of mathematics to be studied are grouped into units. There are 10 units in Year 7 and another 10 units in Year 8. Our course covers the 6 main strands of Mathematics: number, algebra, ratio, proportion and rates of change, geometry and measures, probability and statistics. Throughout the course students will have the opportunity to apply their knowledge, skills and understanding to relevant real-life situations.

Key Stage 4: Years 9, 10 and 11

We also teach Key Stage 4 in units and generally there are about 2 units per term. As in Key Stage 3, the units cover: number, algebra, ratio, proportion and rates of change, geometry and measures, probability and statistics.

Post 16

A level Mathematics is covered over 2 years and we also offer a re-sit GCSE to be taken in June of year 12 (or November for those students who were very close to a grade 4) and also papers in Functional Mathematics skills levels 1 and 2.

Teaching Aims and Objectives

The department aims to encourage students to take pleasure in Mathematics and to appreciate the importance of Mathematics, its relevance to other aspects of the curriculum and to life beyond school. We believe that it is essential that students have the highest Mathematics results that their potential allows, in order to be fully equipped for the workplace. We aim to equip students with the mathematical skills to be able to solve real-life problems using the most efficient Mathematical method available.

Course Information

Key Stage 3

Year 7 and Year 8: The units covered are:

Number: Number knowledge, Calculators & estimation, Negative numbers, Powers, Factors & multiples, Prime factorization, Ratio, and proportion.

Algebra: Expressions and order of operations, Sequences, Functions and graphs, Equations and formulae, Expanding and factorizing.

Ratio, proportion and rates of change: Ratio, Fractions, Percentages, Proportion and scale drawings.

Geometry & measures: Angles, Constructions & properties of shape, Perimeter, Area and volume, Transformations, 3D shapes.

Probability: Listing outcomes, Probability of single events.

Statistics: Collecting and representing data, Averages & interpreting data, Scatter graphs and correlation.

Key Stage 4

Year 9: Students will be taught from the six strands:
Number: Calculating with decimals, Negative numbers, Rounding & calculators, Using approximations, Types of numbers, Fractions and Percentages.
Algebra: Solving equations, Inequalities, Formulae, Finding the nth term of a sequence, Graphs, Expanding and factorizing quadratic equations.
Ratio, Proportion and rates of change: Converting units, ratio, compound measures.
Geometry and measures: Angles in shapes, Transformations, Areas & volumes, Pythagoras and trigonometry.
Probability: Relative frequency and listing outcomes.
Statistics: Stem and leaf, scatter graphs, Types of charts, Collecting data & representing data.

All GCSE students will also learn to apply the functional elements of Mathematics in everyday and real-life situations.

Year 10: As in Year 9, students will be taught topics from the six strands:
Number: Surds, changing recurring decimals to fractions compound measures and upper and lower bounds.
Algebra: Quadratics, Simultaneous equations, Graphs, Rearranging formulae.
Ratio, Proportion and rates of change: Direct and inverse proportion, Compound interest and financial mathematics.
Geometry and measures: Constructions, Transformations, Angles in polygons, Circle theorems, Volume, and vectors.
Probability: Probability trees and Venn diagrams to solve probability problems.
Statistics: Collecting and representing data, histograms, cumulative frequency and box plots. Stratified sampling.

Year 11: Students consolidate the learning from Years 9 and 10 in preparation for Pre-public examinations in December. From January students follow a rigorous revision programme, particularly focusing on areas of development highlighted in the PPE examinations in preparation for another PPE examination in March. The March PPE finalises the level of entry for the GCSE exam.

All students in Year 11 will take the Linear Edexcel GCSE (1MA1) examination in June at the higher or foundation level.

Post 16

Year 12: Students who have not achieved a grade 4 or above in their GCSE exams, will be required to attend maths lessons in order to re-take the GCSE exams at the end of Year 12 (or in November of year 12 for those students who were very close to a grade 4). Exams can be taken at both Higher and Foundation level and the appropriate level will be decided, following Pre-public exams taken during the school year. These students will also take functional skills level 1 or 2

A level courses offered are Edexcel Advanced GCE Core Maths and Further Maths (Level 3 GCE; National classification codes 9MA0 and 9FM0, respectively).

Homework Expectations (Including ICT resources and websites)

Students in Years 7, 8 and 9 are set homework twice a week and those in Years 10 and 11 three times a week. In the Sixth Form, students should expect to be set homework every lesson. Homework can take the form of:

- Consolidation – which is to be completed for the next lesson
- Exam question practice
- Revision
- Investigations
- A mathswatch task

We subscribe to 'mathswatch' which is available through the school web page.

Students will have the opportunity to purchase the Collins Edexcel Mathematics revision guides and workbooks from the Maths Shop throughout the year at cost price.

Web Sites

www.nrich.maths.org.uk

www.mrbartonmaths.com

www.mathsgenie.co.uk

www.emaths.co.uk

Marking and Assessment

Key Stage 3

Students will complete a one hour assessment at the end of each term, and a 20 minute assessment midway through the term and be given detailed feedback on any areas of weakness they need further practice in. Students in Years 7 and 8 will also complete an actual GCSE paper at end of term 3 and a further one as the end of the year assessment.

Key Stage 4

As with Key Stage 3, students will also complete a one hour assessment at the end of each term consisting of previous GCSE exam questions, and a 20 minute assessment midway through the term and be given detailed feedback on any areas of weakness they need further practice in. Students in Years 9 and 10 will also complete an actual GCSE paper at end of term 3 and a further one at the end of the year. Year 11 students will have their Pre-public examinations at the ends of terms 2 and 4 in addition to other assessments throughout the year.

Sixth Form

Students will complete at least termly assessments based on actual exam papers or actual previous exam papers of varying lengths, but typically either 1 hour or 1 hour 30 minutes. Detailed feedback on any areas of weakness will be given and opportunities to address these. There will be pre-public exams at the start of term three and midway through term six.

Examinations

GCSE

Edexcel Mathematics (1MA1)

<http://qualifications.pearson.com/en/qualifications/edexcel-gcses/mathematics-2015.html>

A level

Edexcel Mathematics (8MA0,9MA0)

Edexcel Further Mathematics (8FM0, 9FM0)

<http://qualifications.pearson.com/en/qualifications/edexcel-a-levels/mathematics-2017.html>