KS4 Mathematics

Introduction

All pupils follow a course leading to the higher/foundation-tier EDEXCEL GCSE in Mathematics. They will be expected to demonstrate ability in several areas of Mathematics including: basic numeracy (including fractions, percentages and ratios) and computational skills, estimation, effective use of calculator, measurement, geometry (both two and three-dimensional), proofs, statistics, probability, algebra and graphical representation.

What skills will they develop?

During the course of Year 10 and 11, the emphasis gradually shifts away from the learning of new mathematical techniques and towards the application of techniques to the solution of unfamiliar problems. As well as obtaining answers, pupils will be expected to be able to describe accurately and concisely their methods of solution, orally as well as on paper. Pupils are also expected to be efficient in their usage of non-calculator methods to problem-solving.

GCSE Specification

At Key Stage 4 students begin their study of GCSE Mathematics. GCSE Mathematics follows the Edexcel 1MA0 Linear Syllabus. The HIGHER course covers work from Grades A* to D. The FOUNDATION course covers Mathematics from grade C to G. The Department follows the programme of study with the Edexcel exam board for both courses. GCSE Mathematics is a linear course which is 100% assessed with 2 examination papers at the end of Year 1

AQA Level 2 Further Mathematics	GCSE Higher and Foundation: Year 10	GCSE Higher and Foundation: Year 11
This specification will help students to develop their: • higher order knowledge and understanding of mathematical principles • experience of advanced Mathematics, such as Calculus • skills in Trigonometry, functions and graphs further • ability to select, apply and link mathematical techniques and methods to solve challenging and non-routine problems • independent mathematical reasoning and argument. **SMSC: Theory of calculus and its applications in real life**	Through the GCSE Mathematics content pupils will be able to: • Develop Fluency – by ensuring understanding of the number system to include powers roots and indices. • Reason Mathematically – for example interpret when the structure of a numerical problem requires additive, multiplicative or proportional reasoning. • Develop skills on number, algebra, shape, space, measure and data handling. **SMSC: knowledge of compound interest and depreciation (percentages), analysing and interpreting data (statistics).**	Through the GCSE Mathematics content in Year 11 pupils will be able to: • Use analytical skills, interpret data, process numerical calculations to make sophisticated comparisons of data. • Further develop skills on number, algebra, shape, space, measure and data handling – break down functional skills problems and relate to real life situations. **SMSC: knowledge of applications of Pythagoras and Trigonometry in real life situations.**

Intervention and support:

To support learning, preparation and revision, students are provided with:

- Extension classes which run every week.
- Holiday booster sessions
- Visits to revision lessons at Birkbeck University.
- Attached academic tutors who provide one-one mentoring.
- MyMaths logins to browse Mathematical topics according to grades and levels.

Literacy

Throughout the year 12 and 13 course, students are developing their ability to decode questions in order to identify suitable methods for their calculations. This is emphasised through teaching students to notice topic specific terminology and key words in questions for use in analysing functional questions which demonstrate real life situations. Students regularly have literacy objectives in their lessons which highlight mathematical terminology and their definitions.

Assessment

Formative assessments take the form of regular homework set weekly, questioning in class and the correction of misconceptions. In addition to this students are expected to do independent study to develop their understanding of certain topics taught in class.

In year 10 mock exams take place in December and in June along with practice papers that are given to students for extra revision.
In Year 11 students sit the Edexcel Linear GCSE papers.
Non-calculator 1 hour 45 min
Calculator 1 hour 45 min
Mocks exams take place in December and Easter along with practice papers leading up to the final exam in the summer.
There is a rolling programme of in class half-termly tests and regular teacher assessment throughout the year.

Independent Study and VLE.

The school also thrives on providing computing services for all of its students. The virtual learning environment boasts an outstanding student computer ratio allowing pupils to freely browse the internet, research and print out necessary documents. This service is available at times of break, afterschool and before morning registration.

Websites:

www.mymaths.co.uk

www.nrich.maths.org.uk

www.bbc.co.uk/bitesize/ks4