

Our whole school curriculum aims to give our students the knowledge and skills to succeed in the world as it is, and the wisdom, empathy and courage to fashion the world as it should be.



Mathematics is a core subject of the National Curriculum and we aim to provide students with the skills and opportunities to equip them to meet the challenges of the 21st century. Mathematics is both a tool for solving problems in a wide range of contexts, a development of logical intent and a discipline with its own inherent structure and aesthetic appeal.

The use of interactive whiteboards, graphical calculators (when appropriate) and specific mathematical software enhance the teaching and learning in lessons. Students at all levels have access to on-line support material both in and out of the classroom. Students complete Key Stage 3 by the Christmas of year 9 and then progress on to the GCSE Statistics course, where they achieve their first GCSE in the summer of year 10. All students will also complete their GCSE Mathematics course during years 10 and 11 before they sit the exam as part of their main GCSE's, whilst about 30% will also sit a level 2 qualification in Further Maths.

At Key Stage 5, students may choose to take an IB level course that suits their ability. Mathematics is a required subject in the IB and can be taken at Higher or Standard level in either Analysis and Approaches (Pure Mathematics) or Applications and Interpretation (Applied Mathematics).

The IB Mathematics Diploma Courses are designed to develop mathematical and independent thinking skills, aiding in developing an appreciation of how different topics are linked. The courses are rigorous and promote a deeper understanding of concepts that prepare students for the future.

There are opportunities for extra-curricular fulfilment through the UK Mathematics Challenges, and attending conferences.

Outline of the subject:

Year 7

Students are taught in loose ability sets dependent on their CAT scores and internal testing. They have 6 one hour lessons a fortnight of set maths and the work in this year is still based around securing arithmetic skills and geometric principles, but adding new concepts like: factorising and solving algebraic expressions, working with multiplicative problems as well as sequences and graphs. All students should have a scientific calculator, a geometry set and be prepared to have an open mind to new and difficult challenges.

Year 8

Students are again taught in loose sets, but these have been refined from their year 7 results. They still have 6 one hour lessons a fortnight. Work builds on the skills learnt in year 7 and adds new topics including: Powers, construction, loci and transformations and Pythagoras Theorem.

Year 9

By now, the sets are becoming rigidly based on the data acquired from their performance in years 7 and 8. They still have 6 one hour lessons a fortnight. Students finish their Key Stage 3 program by Christmas and then begin their GCSE Statistics course which is completed later in year 10. They will all endeavour to take the Edexcel Higher qualification, which is examined in June of year 10 by 2 papers each of 1 hour 30 minutes, both of which allow calculators. A few students are better suited to doing the Foundation Level but with an aim of still securing a strong pass. Topics covered in year 9 on this course include: Quadratics; Accuracy and Measures; Inequalities, Equations and Graphical Solutions; and Trigonometry.

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Year 10

Students are now operating in 'two halves' of the curriculum structure with 4 and 3 sets created, both which have a spread of ability.

They now have 8 one hour lessons per fortnight so that there is a greater investment in continuity.

Topics covered to finish the Statistics GCSE include: Probability, index numbers and probability distributions.

In January all students start their Edexcel Higher Mathematics GCSE and if appropriate the Further Maths AQA Level 2 qualification is embedded into lessons(only with the two top sets).

Topics Covered include:

Number

Algebra Core

Fractions, Ratio and Percentages

Angles and Trigonometry

Graphs

Area and Volume

Year 11

Students continue in their sets with the same teaching periods as they had in year 10.

Fine-tuning of the sets occurs if necessary and a few students are moved across to the Foundation GCSE to ensure they achieve a more successful level pass grade.

Topics Covered Include:

Transformations and Constructions

Multiplicative Reasoning

Equations and Inequalities

Similarity and Congruence

Circle Theorems

Vectors

Proportions and Graphs

At the end of the year students will complete their GCSE as well as Further Maths if appropriate.

Year 12 and 13

The IB Mathematics Diploma Courses are designed to develop mathematical and independent thinking skills, aiding in developing an appreciation of how different topics are linked. The courses are rigorous and promote a deeper understanding of concepts that prepare students for the future.

Students choosing the IB pathway have the opportunity to study Mathematics at Higher or Standard level in either Analysis and Approaches (Pure Mathematics) or Applications and Interpretation (Applied Mathematics).

Analysis and Approaches HL:

This course is ideal for students who enjoy algebra and abstract Mathematics and have mastered the GCSE algebra and problem-solving skills and are keen to develop these. It is a challenging course with a large emphasis on proof and analysis of a range of more complex mathematical concepts. Students will develop the ability to use appropriate and relevant mathematics to problem solving and to discuss and report mathematical findings.

This course is ideal for students who will need a strong Mathematics background for their future plans (Mathematics, Physics or Maths related courses at university)

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Analysis and Approaches SL:

This course focuses on a wide variety of topics already covered at GCSE level, with a strong emphasis on algebraic techniques, and extends on the techniques learnt and applied at GCSE with relevant topics in basic algebra, calculus, geometry and modelling. Mathematical problem solving is a common theme throughout this course.

This course is ideal for students studying Sciences, economics or Computer Science at HL who need some Mathematics in their future plans (some chemistry courses, some computer science courses, some engineering courses)

Applications and Interpretation HL:

This course is ideal for students who enjoy learning Mathematics when it is applied to real life contexts and other subject areas and have mastered the GCSE algebra and problem-solving skills and are keen to develop these in a practical context. It is a challenging course with a large emphasis on proof and analysis of a range of more complex mathematical concepts. Students will develop the ability to use appropriate and relevant mathematics to problem solving and to discuss and report mathematical findings.

This course is ideal for students who need applied Mathematics in their future plans (Economics, Engineering, Computer Science courses at university)

Applications and Interpretation SL:

This course focuses on a wide variety of topics already covered at GCSE level, with a strong emphasis on Statistics and Probability, and extends on the techniques learnt and applied at GCSE with relevant topics in basic algebra, calculus, geometry and modelling. This course is ideal for gaining skills and knowledge relevant to other branches of sciences and social sciences including Sociology, Psychology, Biological and Environmental Sciences. Mathematical problem solving is a common theme throughout this course.

This course is ideal for students who do not need Mathematics in their future plans and want to get the highest point score possible (all other courses at university)

All course options in the IB Mathematics Diploma Course include a piece of internal assessment (coursework) which contributes to the overall grade. This gives students the chance to explore and research a particular topic which is of interest to them.

All options study the following core skills:

- Number and Algebra
- Functions
- Geometry and trigonometry
- Statistics and probability
- Calculus