

<b>Subject:</b> Mathematics	<b>Awarding Body:</b> Edexcel
<b>Head of Dept:</b> Mr Parkinson	<b>Teachers:</b> Mr Parkinson, Mr Coles, Mrs Bate

Preferred entry requirements: Grade 6 or above in GCSE Mathematics

## Specification Content

Year 1	Year 2
<ul style="list-style-type: none"> <li>• <b>Pure Mathematics</b> Development of algebra alongside new work in trigonometry, vectors, exponentials and logarithms. Introduction of differential and integral calculus. Topics covered include: Proof, Algebra and functions, Coordinate geometry in the <math>(x,y)</math> plane, Sequences and series, Trigonometry, Exponentials and logarithms, Differentiation, Integration and Vectors.</li> <li>• <b>Statistics</b> Data analysis, representation of data, probability and hypothesis testing.</li> <li>• <b>Mechanics</b> Kinematics, forces and Newton's laws.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Pure Mathematics</b> More advanced algebra and trigonometry, calculus, series and sequences. Topics covered include: Proof, Algebra and functions, Coordinate geometry in the <math>(x,y)</math> plane, Sequences and series, Trigonometry, Exponentials and logarithms, Differentiation, Integration, Vectors and Numerical methods.</li> <li>• <b>Statistics</b> Probability, regression and the Normal distribution.</li> <li>• <b>Mechanics</b> Moments and application of kinematics.</li> </ul>

### Structure of the course:

All students will be assessed on their knowledge of Pure Mathematics, Mechanics and Statistics at A level Mathematics. In Pure Mathematics you will build on topics that you have already met at GCSE level such as algebra, coordinate geometry and trigonometry. In addition to extending your knowledge in these areas, you will meet a new branch of Mathematics, calculus (differentiation and integration). The statistics content again builds on topics met at GCSE, including the summary and representation of data, probability and correlation, but also introduces statistical distributions such as the Binomial and Normal distributions, as well as hypothesis testing. Mechanics, which is closely related to Physics, focuses on kinematics, forces and Newton's Laws. Assessments will include a greater emphasis on modelling, problem-solving and reasoning. This builds on the increase in problem-solving questions in GCSE. Students will sit three, equally weighted examinations, two in pure mathematics and one in applied mathematics. All examinations will be taken at the end of the course.

### Methodology:

Within the classroom environment a variety of teaching methods are adopted including formal tuition and worked examples, class discussion, note taking, practice of examples, group work and the use of information technology e.g. graphical software. At all times you will have opportunities to receive further explanation and support within a small group. You will be expected to practise many examples, both within lessons and in your own study time, and to keep organised files of notes and examples. You will regularly need to spend time revising methods and concepts that you have been taught throughout the course.

### Strengths/Skills developed through studying this subject:

You will be encouraged to develop your understanding of Mathematics and mathematical processes in a way that will aim to promote confidence and foster enjoyment. You will develop the ability to reason logically and recognise incorrect reasoning, to generalise and to construct mathematical proofs. You will extend your range of mathematical skills and techniques and use them in more difficult problems, learning how to communicate effectively using Mathematics. You will begin to recognise how real-world problems can be represented by mathematical models.

### What students do with this qualification:

A qualification in Mathematics is essential if you wish to study Mathematics, Physics or Engineering at university. It may also be required for courses in Computer Studies, Architecture, Science, Business or Finance. Mathematics is also highly valued for entry into many other university courses, as well as for many varied careers, even those that do not directly involve Mathematics.