

# Mathematics A Level



## INTRODUCTION TO THE COURSE

A level Mathematics at The Grey Coat Hospital covers a broad range of study, encompassing algebra, calculus, geometry, statistics and mechanics. A full overview of the content and assessment of the course is provided overleaf.

If you enjoy studying Mathematics, solving challenging problems and applying your skills to practical problems then this is the right course for you. To succeed in this course you need to be prepared to put in a significant amount of work in addition to that completed in lessons and for homework. The Mathematics department is here to support you in your learning and a dedicated Mathematics Support Club for KS5 runs two lunchtimes a week.

### HEAD OF DEPARTMENT

Claire Acraman

### EMAIL ADDRESS

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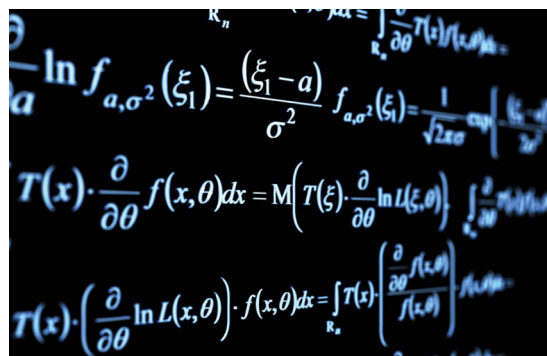
### EXAM BOARD

EDEXCEL

## WHY SHOULD I STUDY THE COURSE?

Mathematics is a difficult A-Level but a very rewarding one too. It is a versatile qualification, well respected by employers. Careers for people with good mathematics skills and qualifications are not only well paid, but they are also often interesting and rewarding.

Through solving problems, you develop resilience and are able to think creatively and strategically. The writing of structured solutions, proof and justification of results help you to formulate reasoned arguments.



The mathematical skills you learn in A-Level Mathematics are of great benefit in other A-Level subjects such as Physics, Chemistry, Biology, Geography, Psychology, and Economics.

## ENRICHMENT ACTIVITIES

There is a broad range of enrichment opportunities for our mathematicians. These include visits to lectures and events, e.g. Andrew Wiles at the inaugural Oxford Mathematical Institute London lecture, MathsFeast and The Royal Institution; participation in the UKMT Senior and Group challenges; support with Oxbridge interview preparation and our mentoring programme to support Y11 students.

The Maths Prefect works with KS5 mathematicians to coordinate some of these, e.g. assemblies for KS3 & KS4 students by KS5 students.

## PROGRAMME OF STUDY

### Pure Mathematics

2 hours

1/3 of total A Level

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2 hours

1/3 of total A Level

### Applied Mathematics

Applied Mathematics  
(Split equally between  
Statistics and Mechanics)

2 hours

1/3 of total A Level

Any of the Pure content  
could be assessed on  
either paper.

Calculators are permitted  
for all papers.

## EXAMINATION RESULTS

In 2018, 49% of students in the cohort achieved A\*-A. Overall, students achieved 64% A\*-B, and 88% A\*-C. Student destinations included studying Engineering, Biomedical Science and Computer Science.

## EXAMINATION TOPICS

The main topics are:

### **Pure Mathematics** - Topics covered in Year 12

Modelling and Problem Solving, Proof, Algebra, Quadratics & Cubics, Inequalities and Simultaneous Equations, Coordinate Geometry, Binomial Expansion, Trigonometry, Exponentials and Logarithms, Differentiation, Integration and Vectors.

### *Topics covered in Year 13*

Algebra and Functions, Trigonometry, Parametric Equations, Sequences and Series, Binomial Expansion, Differentiation, Integration, Numerical Methods and Vectors.

### **Applied Mathematics: Statistics** - Topics covered in Year 12:

Modelling and Problem Solving, Sampling, Data Presentation and Interpretation, Probability, Statistical Distributions and Hypothesis Testing.

### *Topics covered in Y13*

Correlation and Regression, Probability and The Normal Distribution.

### **Applied Mathematics: Mechanics** - Topics covered in Year 12

Modelling and Problem Solving, Kinematics and Forces and Newton's Laws.

### *Topics covered in Year 13*

Kinematics, Dynamics and Moments.

### **Calculators**

There are specific calculations you need to be able to complete for A-Level Mathematics that are not supported on a standard scientific calculator. The calculator we recommend for you for A-Level Mathematics is the Casio fx-991EX Classwiz. This calculator will enable you to carry out a huge range of essential and useful calculations quickly and effectively.

## FUTURE CAREERS

Mathematics A Level is essential for further study in Mathematics, Engineering, Sciences, Economics and a range of other disciplines. Studying Mathematics A level opens doors to a huge range of future courses and careers and is counted as a 'facilitating' subject by the Russell Group of universities. Students go on to study Mathematics, Engineering, Computer Science, Physics and a range of other courses at university.

We regularly advertise and promote a range of university taster days, lectures, open days and summer schools including on the Oxford application process. We give in depth support to students preparing to apply to university by providing reading lists and help with writing personal statements. We also run specific Oxbridge mock interviews.