

## Introduction

The Mathematics A level requires students to study elements from Pure Mathematics, Mechanics and Statistics. This enables pupils to have a much broader mathematical experience at A Level and helps provide a foundation for a wide range of higher education courses.

There are three overarching themes in the Edexcel Mathematics A Level Curriculum:

- Mathematical argument, language and proof
- Mathematical problem solving
- Mathematical modelling

These themes build on the skills developed in the IGCSE curriculum and are intended to develop a mathematician's way of thinking.

A new element of the A level is the inclusion of a 'large data set' which supports the statistics element of the course.

Students who study the Mathematics A level will have 8 forty minute lessons a week.

They will have 3 compulsory Maths external examinations to complete at the end of Year 13.

#### Content

The linear style of the course means that material covered over the full two-year period will be examined at the end of Year 13.

### Mathematics Year 1: 2/3 Pure and 1/3 applied

### Pure Mathematics Topics

Algebraic Expressions, Quadratics, Equations and Inequalities, Graphs and Transformations, Straight line graphs, Circles, Algebraic Methods, Binomial Expansion, Trigonometry, Vectors, Differentiation, Integration and Exponentials and Logarithms.

 Applied Mathematics Topics: Statistics (Data Collection, Measures of Location and Speed, Representations of Data, Correlation, Probability, Statistical Distributions, Hypothesis Testing) and Mechanics (Modelling, Constant Acceleration, Forces and Motion, Variable Acceleration).

### Mathematics Year 2: 2/3 Pure and 1/3 applied

### Pure Mathematics Topics

Algebraic Expressions, Quadratics, Equations and Inequalities, Graphs and Transformations, Straight line graphs, Circles, Algebraic Methods, Binomial Expansion, Trigonometry, Vectors, Differentiation, Integration, Exponentials and Logarithms, Functions and Graphs, Sequences and Series, Radians, Parametric Equations and Numerical Methods.

# Applied Mathematics Topics

Statistics (Data Collection, Measures of Location and Speed, Representations of Data, Correlation, Probability, Statistical Distributions, Hypothesis Testing, Normal Distribution) and Mechanics (Modelling, Constant Acceleration, Forces and Friction, Motion, Variable Acceleration, Moments, Projectiles).

# Skills

Students are examined on AO1, AO2 and AO3 skills at A Level. AO1 marks are rewarded for using and applying standard techniques and the skills required for this that we work on include learning definitions, following mathematical procedures and accurately recalling key facts. AO2 marks are rewarded for reasoning, interpreting and communicating effectively and the skills we focus on here are constructing mathematical arguments, making deductions and inferences, explaining reasoning and using mathematical language correctly. AO3 marks are rewarded for solving problems within mathematics and other contexts, and the skills we focus on here are interpreting solutions to problems, using mathematical models, and evaluating the outcomes of modelling in contexts.

A full breakdown of all the skills taught within the A Level syllabus can be found below:

https://qualifications.pearson.com/content/dam/pdf/A%20Level/Mathematics/2017/specification-and-sample-assesment/a-level-I3-mathematics-specification-issue4.pdf

## Homework

Throughout the course, students are expected to carry out ongoing independent practice and complete unfinished class work in their own time. This is referred to as bookwork and uses the Edexcel textbooks that every student is issued with.

At the end of each chapter, an independent Self Review task will be issued that students must complete within one week, then self mark once the mark scheme is released. An effort rating (out of 5 stars) will be issued by the teacher to assess the quality to which this has been completed.

# Assessment

Self Review homework tasks are to prepare students to complete assessed Checkpoints in class. If students complete Self Reviews properly, they should be well prepared to test their skills in a Checkpoint and thereby solidify their knowledge.

Students will also be assessed formally throughout the course as follows:

### Year 12

- 1. September Baseline Test
- 2. November Assessment
- **3.** January Assessment
- 4. March Assessment
- 5. June Assessment

All material is tested cumulatively to help students to build their knowledge and memory of the content in line with findings from recent educational research. Underachievement in assessments will be raised with

students and parents in order to form a supportive action plan. These assessments are all considered when forming the predicted grade, with more emphasis on the latter assessments.

# Year 13

- 1. December Assessment
- 2. Mock Exams
- 3. FINAL EXTERNAL EXAMS
  - Pure Paper 1 2 hours
  - Pure Paper 2 2 hours
  - Applied 2 hours

## **Resources and Materials**

Students will be given online access to the Pure and Applied textbooks they need (published by Pearson specifically for the Edexcel A Level Curriculum) via the Pearson ActiveLearn platform. The use of a graphical calculator is required and students will be given the opportunity to purchase this from the school in September. It is then their responsibility to look after it, bring it to every lesson, and ensure it has functioning batteries.

Revision material, extra exercises and links for all topics are made available via Google Classroom throughout the year.

In lessons, resources include use of the course textbook, Google Classroom, printed handouts and a wealth of activities and tasks created by the Mathematics team. Extension tasks, along with the departmental Monthly Challenges, are always available and can be collected by the pupils to use for enrichment or revision purposes.