

Introduction

Students who achieve a grade A* or higher at IGCSE are eligible to study Mathematics AND Further Mathematics A levels (two A level qualifications). All external exams for both A level qualifications are taken at the end of Year 13, giving them 7 compulsory external examinations to complete at the end of Year 13.

Content

Students will study four modules that will make up the Further Mathematics A level; two Pure and two Applied, each with an examination that will count for 25% of the A level.

PURE

Core Pure 1 Complex Numbers, Argand Diagrams, Series, Roots of Polynomials, Volumes of Revolution, Matrices, Linear Transformations, Proof by Induction, Vectors.

Core Pure 2 Complex Numbers, Series, Methods in Calculus, Volumes of Revolution, Polar Coordinates, Hyperbolic Functions, Methods in Differential Equations, Modelling with Differential Equations.

APPLIED

Two options out of:

Further Mechanics 1 Momentum and Impulse, Work, Energy and Power, Elastic Strings and Springs, Elastic Collisions in One Dimension, Elastic Collisions in Two Dimensions.

Decision Mathematics 1 Algorithms, Graphs and Networks, Algorithms on Graphs, Route Inspection, The Travelling Salesman Problem, Linear Programming, The Simplex Algorithm, Critical Path Analysis.

Further Statistics 1 Discrete Random Variables, Poisson, Geometric and Negative Binomial Distributions, Hypothesis Testing, Central Limit Theorem, Chi Squared Tests, Probability Generating Functions, Quality of Tests

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-further-mathematics-specification.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. These could cover between 1 and 3 chapters. 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

- December Assessment
- Mock Exams

FINAL EXTERNAL EXAMS:

- Core Pure Paper 1 1 hour 30 minutes
- Core Pure Paper 2 1 hour 30 minutes

then TWO out of

- Further Mechanics 1 1 hour 30 minutes
- Decision Maths 1 1 hour 30 minutes
- Further Statistics 1 1 hour 30 minutes

Resources and Materials

Students will be given online access to the CP1, CP2, D1 and FM1 textbooks (published by Pearson specifically for the Edexcel A Level Curriculum) via the Pearson ActiveLearn platform.

The use of a graphical calculator will continue to be required.

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.