A-Level Maths @ WBS Year 12 Roadmap

Subject Aim: To build upon skills and content from GCSE Maths, extending into newer concepts and highly developed ideas. To begin to understand a new strand of Mathematics in Mechanics and gain familiarity with A-Level style exam questions. To develop resilience in our approach to challenging problems.

Autumn Term

POWERS & PROOFS
- Surds & Indices
- Quadratics
- Intro to Proof

GEOMETRICAL REASONING
- Linear Graphs
- Circle Geometry
- Intro to Radians

INEQUALITIES & POLYNOMIALS
- Inequalities
- Transforming Graphs
- Algebraic Division

KINEMATICS 1
- Graphs of Motion
- 1D suvat
- Vertical Motion
- Vectors

Spring Term

LOGARITHMS & EXPONENTIALS
- Exponential Functions
- Laws of Logs
- Growth & Decay

FORCES
- Resolving Forces
- F = ma
- Connected Particles

FUNCTIONS
- Modulus Functions
- Reciprocal Functions
- Composite & Inverse Functions

SEQUENCES
- Arithmetic Sequences & Series
- Geometric Sequences & Series
- Sum to Infinity

Summer Term

CALCULUS 1
- Differentiation from First Principles
- Integration
- Area Under a Curve
- Working with Exponential & Trigonometric Functions

TRIGONOMETRY 1
- Trigonometric Graphs
- The Unit Circle
- Solving Equations
- Trig Identities
- Reciprocal & Inverse Trig Functions

Assessment – 4 Key Measures

1. In the first week of the course, you will sit our **Initial Assessment**. This enables us to assess your suitability for the course and identify any gaps in your current knowledge. There is a pass mark for this test, with a resit after 4 weeks if it is not met.

2. Each week, you will sit a **Weekly Assessment** with one of your teachers. This is a past exam question and is designed to prepare you for the challenges of the terminal exams.

3. On the completion of each Unit, you will sit a **Key Assessment**. These assessments cover the content of the Unit most recently but will also reference previously gained knowledge. These tests are generally 1 hour long and out of 50 marks.

4. In the Easter term, you sit Year 12 Exams. This is your first **Mock Exam** and will cover all content learnt up to this point.

All assessment is graded and fed back in class. We then provide detailed walkthrough solutions, either in person or via video on Brightspace.

Homework and Revision

- Students are expected to complete exercises which are attached to the end of our teaching PowerPoints. This should be done before the next lesson whenever possible.

- Within each Unit, 1 or 2 pieces of homework are also set on Dr Frost Maths to help students prepare for all assessments.

Revision resources and practice questions for assessments are published on Brightspace.

Enrichment Themes

A Level Maths Workshop runs after school in M8 on a Wednesday and is a vital source of additional support for all students.

The Senior Maths Challenge is also a great opportunity for students to stretch themselves and compete with other mathematicians on a national scale.

Where Next?

In Year 13, you will progress to applying these ideas on a bigger scale, extending to challenging Calculus & Mechanics, and learning all about the 3rd strand of the course: Statistics!