Key Stage 5

Subject: A Level Mathematics

Aims of the subject:

- To develop mathematical knowledge and skills which encourages confidence and provides satisfaction and enthusiasm
- To develop an understanding of mathematical principles and an appreciation of the subject of mathematics as logical and coherent
- To acquire a range of mathematical skills which could be applied in the context of everyday situations and across other subjects
- To develop the ability to analyse problems logically, recognise when and how a situation may be represented mathematically and select an appropriate method to solve the problem
- To secure the mathematical background necessary for further study in this or related subjects

A-Level Examination Board: AQA

Assessment Overview:

Course	What will I study?	Assessment
A Level Linear	**Year 12 Term 1:** • Algebraic Manipulation, Quadratic Equations & Simultaneous Equations • Graphs, Linear & Quadratic Inequalities • Straight Lines & Circles • Binomial Expansions • Differentiation • Integration • Triangle Geometry • Trigonometric Functions and Equations	Transition Assessment: Summer Algebra HWK Algebra Entry Assessment Transition HWK 3 – Indices and surds **Assessment 1:** Indices, Surds, Quadratics, Polynomials **Assessment 2:** Coordinate, Geometry, Graphs

	Year 12 Term 2: • Vectors • Proof • Exponentials & Logarithms • Statistical Sampling • Data Presentation & Interpretation • Probability and Statistical Distributions • Statistical Hypothesis Testing	**Exam Week** *(w/c 7th Jan 2019):* All content up to and incl. differentiation **Assessment 4:** Integration and Trigonometric Equations **Assessment 5:** Triangle Geometry, Vectors, Exponents
	Year 12 Term 3: • Kinematics in One Dimension • Forces & Newton's Laws	**Mock Examinations** **Assessment 7:** Mechanics Content **Assessment 8:** Statistics Content
	Year 13 Term 1: • Binomial Theorem, Sequences and Series • Trigonometry & Circular Measure • Functions & Transformations • Further Differentiation • Further Integration • Numerical Methods • Parametric Equations	1. Binomial Sequences, Series 2. Trigonometry, Functions, Transformations 3. Integration, Differentiation

	Year 13 Term 2: • Trigonometry • Partial Fractions & Integration • Differential Equations • Kinematics in Two Dimensions • Equilibrium & Resolving • Statics & Dynamics • Moments	**Mock Week** *(w/c 7th January 2019)* 4. Parametric Equations & Differential Equations 5. Mechanics Content
	Year 13 Term 3: • Further probability • Statistical Distributions • Statistical Hypothesis Testing	**Mock Week** **Summer Examinations and Revision** Paper 1 Exam: 6th June 2019 Paper 2 Exam: 13th June 2019 Paper 3 Exam: 15th June 2019

Enrichment Opportunities

UKMT Senior Maths Challenge (6th November 2018)

Set Text

A Level Mathematics for AQA Student Book 1, Cambridge University Press
A Level Mathematics for AQA Student Book 2, Cambridge University Press

e-learning

Cambridge Elevate – digital learning experience

Suggestions for wider reading

AQA Core 1&2: Advanced Mathematics for AQA Core 1 & 2, Oxford
AQA Core 3&4: Advanced Mathematics for AQA Core 3 & 4, Oxford
SMP AS/A2 Core 1,2,3 and 4 for AQA
SMP Statistics 1 for AQA
Advanced Maths for AQA, Statistics S1, Upton and Cook
Advancing Maths for AQA 2nd Edition: Mechanics 2 – ISBN 0-435-51337-0

A First Course in Mechanics Mary Lunn (OUP, 1991)
A bridge between the sort of mechanics you meet at A-level and the sort you are going to meet at university; not just a bridge but also a good bit of road on the far side.

Advanced Problems in Mathematics S.T.C. Siklos (1996 and 2003)
These are selections of STEP-like problems complete with discussion and full solutions. They cover Core, Statistics and Mechanics problems. The problems are different from most A-level questions, being much longer ('multi-step' is the current terminology) and sometimes covering material from apparently unconnected areas of mathematics. They are more like the sort of problems that you encounter in a university mathematics course, although they are based on the syllabuses of school mathematics. Working through one or both of these booklets would be an excellent way of getting your mathematics up to speed again after the summer break.
The 2003 booklet (Advanced Problems in Core Mathematics) is in a sense a prequel, since it is based on a less advanced syllabus (basically the A-level core plus some mechanics and probability). Both these booklets can be downloaded from the STEP website
www.stepmathematics.org.uk