Mathematics

Units A, B & C in three semesters or Units A, B, C & D in four semesters

Year 11 at Walford
Her Way

You will build on mathematical knowledge, understanding, and skills developed in Year 10 Mathematics. You will develop an increasingly complex and sophisticated understanding of calculus, statistics, mathematical arguments and proofs, as well as developing and using mathematical models.

SACE Stage 1
three or four semesters

Engage
Skills

The topics covered provide a variety of contexts and blend algebraic and geometric thinking.
Students find solutions to mathematical problems that may:

- be routine, complex, analytical, and/or interpretative
- be posed in a variety of familiar and new contexts
- require discerning use of electronic technology.

Investigations are set in an applied, open-ended context. In the report students interpret and justify results and reflect on conclusions. The mathematical investigation may provide an opportunity to develop, test and prove conjectures.

Extend
Knowledge

Semester 1 – Unit A
Polynomials
Functions & Relations
Unit circle & radian measure
Trigonometric relationships, graphs & equations
Semester 2 – Unit C
Counting, permutations & combinations
Random variables & Statistics
Normal & Binomial Distributions
Growth & Decay
Introduction to Differential Calculus

Semester 1 – Unit B
Arithmetic & geometric sequences & series
Matrices
Geometry – Circle properties & proof
Sine & Cosine rules
Functions & Graphs
Binomial expansion & probability
Semester 2 – Unit D
Further Trigonometry
Vectors in the plane
Real & Complex numbers
Mathematical Induction

Enrich
Experiences

Students are encouraged to participate in Senior Level Mathematics competitions including:
The Hamann School Mathematics Competition (HSMC), from The Mathematical Association of South Australia (MASA)
The Computational and Algorithmic Thinking Competition (CAT), from the Australian Mathematics Trust
The Australian Mathematics Competition (AMC) from the Australian Mathematics Trust
Students are invited to take part in:
The MASA Student Quiz night
University Mathematics Experience days (when available).

Assessments/Outcomes

Each unit requires:
75%: Three Skills and Application Tasks (SATs) (including the equivalent of one conducted without the use of notes or a graphics calculator);
25%: One Investigation task (up to 8 pages);
0%: One formative examination.
In Semester 2 the examination for Unit C is on the full year of topics from both Unit A and Unit C.

Pathways

Successful completion of Units A,B,C,D prepares students for Stage 2 Specialist Mathematics and Stage 2 Mathematical Methods, or for enhanced preparation for Stage 2 Mathematical Methods studied on its own. Successful completion of Units A,B,C prepares students for Stage 2 Mathematical Methods. Stage 2 Mathematical Methods can lead to tertiary studies of economics, computer sciences, and the sciences; it prepares students for courses and careers that may involve the use of statistics, such as health or social sciences.

Stage 2 Specialist Mathematics can be a pathway to mathematical sciences, engineering, space science, and laser physics.

Tertiary options from Mathematics Units A,B,C,D, Stage 2 Specialist Mathematics and Stage 2 Mathematical Methods include: Engineering, Engineering double degrees, Mathematical Sciences, High Performance Computational Physics, plus all the tertiary options listed below.

Tertiary options from Mathematics Units A,B,C and Stage 2 Mathematical Methods include: Applied Data Analytics, Computer Science, Data Science, Dental Surgery, Engineering, Finance and Banking, Mathematical and Computer Sciences, High Performance Computational Physics, Industrial and Applied Mathematics, Mathematical Science, Medical Studies/Medicine, Mineral Geoscience, Science, Secondary School Teaching/Mathematics, Space Science and Astrophysics, Veterinary Bioscience.

Walford