

KS5 Maths Curriculum (Y12 & Y13)

At James Calvert Spence College, KS5 A Level mathematics follows on from the KS4 curriculum, incorporating and extending all of the fluency, reasoning and problem solving elements of the GCSE. From September 2018, we are excited to now be able to offer A-Level (or AS-Level) Further Maths. Pupils can expect to receive at least 4hrs teacher contact time per week and class sizes do not exceed 10 pupils. It is expected that pupils will complete independent monthly assignments and pupils should expect their workload to increase significantly from KS4.

The aims and objectives of studying either A-Level Mathematics and/or A-Level Further Mathematics are to enable students to:

- understand mathematics and mathematical processes in a way that promotes confidence, fosters enjoyment and provides a strong foundation for progress to further study
- extend their range of mathematical skills and techniques
- apply mathematics in other fields of study and be aware of the relevance of mathematics to the world of work and to situations in society in general
- use their mathematical knowledge to make logical and reasoned decisions in solving problems both within pure mathematics and in a variety of contexts, and communicate the mathematical rationale for these decisions clearly
- reason logically and recognise incorrect reasoning
- generalise mathematically
- construct mathematical proofs
- make deductions and inferences and draw conclusions by using mathematical reasoning
- use technology such as calculators and computers effectively and recognise when their use may be inappropriate
- take increasing responsibility for their own learning and the evaluation of their own mathematical development.

A-Level Mathematics (Edexcel)

Course requirements: Grade 7 at GCSE

Students must complete all assessment in May/June in any single year.

<p>Paper 1: Pure Mathematics 1 (*Paper code: 9MA0/01)</p> <p>Paper 2: Pure Mathematics 2 (*Paper code: 9MA0/02)</p>
<p><i>Each paper is:</i></p> <p>2-hour written examination</p> <p>33.33% of the qualification</p> <p>100 marks</p>
<p>Content overview</p> <ul style="list-style-type: none"> • Topic 1 – Proof • Topic 2 – Algebra and functions • Topic 3 – Coordinate geometry in the (x, y) plane • Topic 4 – Sequences and series • Topic 5 – Trigonometry • Topic 6 – Exponentials and logarithms • Topic 7 – Differentiation • Topic 8 – Integration • Topic 9 – Numerical methods • Topic 10 – Vectors
<p>Assessment overview</p> <ul style="list-style-type: none"> • Paper 1 and Paper 2 may contain questions on any topics from the Pure Mathematics content. • Students must answer all questions. • Calculators can be used in the assessment.

Paper 3: Statistics and Mechanics (*Paper code: 9MA0/03)
<p><i>2-hour written examination</i></p> <p><i>33.33% of the qualification</i></p> <p><i>100 marks</i></p>
<p>Content overview</p> <p>Section A: Statistics</p> <ul style="list-style-type: none"> • Topic 1 – Statistical sampling • Topic 2 – Data presentation and interpretation • Topic 3 – Probability • Topic 4 – Statistical distributions • Topic 5 – Statistical hypothesis testing <p>Section B: Mechanics</p> <ul style="list-style-type: none"> • Topic 6 – Quantities and units in mechanics • Topic 7 – Kinematics • Topic 8 – Forces and Newton’s laws • Topic 9 – Moments
<p>Assessment overview</p> <ul style="list-style-type: none"> • Paper 3 will contain questions on topics from the Statistics content in Section A and Mechanics content in Section B. • Students must answer all questions. • Calculators can be used in the assessment.

N.B. – All exams are sat during May/June at the end of Y13. If pupils chose to only take AS mathematics, they will sit their exams (8MA0) during May/June of Year 12.

A-Level (AS-Level) Further Maths (Edexcel)

Course requirements: Grade 7 at GCSE & students must be enrolled on the A-Level Mathematics course.

The Pearson Edexcel Level 3 Advanced GCE in Further Mathematics consists of four externally-examined papers.

Students must complete all assessments in May/June in any single year.

Paper 1: Core Pure Mathematics 1 (*Paper code: 9FM0/01)
Paper 2: Core Pure Mathematics 2 (*Paper code: 9FM0/02)
<p><i>Each paper is:</i></p> <p><i>1 hour and 30 minutes written examination</i></p> <p><i>25% of the qualification</i></p> <p><i>75 marks</i></p>
<p>Content overview</p> <p>Proof, Complex numbers, Matrices, Further algebra and functions, Further calculus, Further vectors, Polar coordinates, Hyperbolic functions, Differential equations</p>
<p>Assessment overview</p> <ul style="list-style-type: none"> • Paper 1 and Paper 2 may contain questions on any topics from the Pure Mathematics content. • Students must answer all questions. • Calculators can be used in the assessment.

Paper 3: Further Mathematics Option 1 (*Paper codes: 9FM0/3A-3D)
Written examination: 1 hour and 30 minutes 25% of the qualification 75 marks
Content overview **Students take one of the following four options: A: Further Pure Mathematics 1 B: Further Statistics 1 C: Further Mechanics 1 D: Decision Mathematics 1
Assessment overview <ul style="list-style-type: none"> • Students must answer all questions. • Calculators can be used in the assessment.

Paper 4: Further Mathematics Option 2 (*Paper codes: 9FM0/4A-4G)
Written examination: 1 hour and 30 minutes 25% of the qualification 75 marks
Content overview **Students take one of the following seven options: A: Further Pure Mathematics 2 B: Further Statistics 1 C: Further Mechanics 1 D: Decision Mathematics 1 E: Further Statistics 2 F: Further Mechanics 2 G: Decision Mathematics 2
Assessment overview <ul style="list-style-type: none"> • Students must answer all questions. • Calculators can be used in the assessment.

GCSE Re-sit

Pupils that enrol into the 6th Form and have not yet achieved a Grade 4 at GCSE will be required 3hrs of lessons per week of GCSE maths. We have increased the amount of contact time, per week, for our GCSE re-sit students this academic year (previously 2hrs of lessons per week). Class sizes can vary depending on the number of students that enrol into 6th Form. Either in the November or June exam cycle, pupils will re-take their GCSE mathematics exams.

Exam Board: AQA GCSE Mathematics (8300)

Paper 1: Non-Calculator (1hr 30mins)

Paper 2: Calculator paper (1hr 30mins)

Paper 3: Calculator paper (1hr 30mins)