



Sir Joseph Williamson's Mathematical School

Department of Mathematics

$$3 - 2 = 1 \rightarrow$$

$$\sin^2 \theta + \cos^2 \theta = 1 \rightarrow$$

$$\frac{1}{\sqrt{2\pi}} \int_{-\infty}^{+\infty} e^{-\frac{1}{2}t^2} dt = 1$$

Why A Level Mathematics?

- You enjoy the subject and you are good at it.
- You are willing to work hard and challenge yourself.
- It helps you be logical! Studying mathematics is a great way to build analytical, research and problem-solving skills and can help you to develop logic for everyday tasks like planning projects, managing your money and more.
- It supports other subjects. As a facilitating subject mathematics A Level is a 'must have' to study a number of subjects such as physics, engineering and economics, but it also supports a range of further subjects like IT, chemistry, biology, technology and artificial intelligence.
- Excellent facilities and excellent success record.
- A Level Mathematics leads to excellent career prospects
- SJWMS is a Mathematics hub school for Kent & Medway
- Improves Oxbridge success
- Experienced team of well qualified teachers:

Dr I L Karam, BSc, MSc, PGCE, PhD	Assistant Head Teacher / Director of Mathematics
Mr N Daniels, BSc, NPQML, QTS	Head of Mathematics
Mrs A Winterbottom, BSc, PGCE	Key Stage 3 Coordinator
Mr J Townsend, BSc, PGCE	Key Stage 4 Coordinator
Mr J Afolayan, BSc, MSc, PGCE	Key Stage 5 Coordinator
Mr D Owen, BSc, PGCE, MA	Teacher of Mathematics
Miss N Keyes, BSc, PGCE	Teacher of Mathematics
Mr R Davidson, MEng, ACGI, QTS	Teacher of Mathematics
Mrs K Singh, BSc, PGCE	Teacher of Mathematics
Mrs R Fashion, BSc, PGCE	Teacher of Mathematics
Mr A Stewart, BSc, PGCE	Teacher of Mathematics
Mr P Williams, BA, PGCE	Teacher of Mathematics

Why A Level Further Mathematics?

In addition to the benefits of studying A Level Mathematics, studying Further Mathematics will:

- Develop areas of the brain untouched by other subjects.
- Make many standard topics seem easier.
- Provide a stimulating experience taking you beyond the standard A Level.
- Be an entry requirement by some Universities for Mathematics based degree courses.
- SJWMS is the only school in the South East with a dedicated Subject Leader for Further Mathematics
- SJWMS has close links with the South East Further Mathematics Network
- Enable you to earn more money than the rest of us!

Examinations, qualifications and title requirements for the New A Level Mathematics and Further Mathematics

A Level Mathematics:

A Level Mathematics is the most popular subject in the school and it is currently followed by the majority of students in the Sixth Form. The Department of Mathematics offers A Level Mathematics and A Level Further Mathematics over a period of two years. A Level Mathematics has fixed content with two Pure Mathematics papers and one combined Mechanics and Statistics paper. Students may access this course if they have achieved a grade 7 or above in GCSE Mathematics.

The table below clarifies the units required.

Qualification	Component	Overview
A Level Mathematics	Pure Mathematics – Year 1 / AS Pure Mathematics – Year 2 Statistics and Mechanics – Year 1 / AS Statistics and Mechanics – Year 2	All units are compulsory
	Component / Assessment	
	Paper 1: (2 hours – 100 marks) Pure Mathematics	Any pure mathematics content can be assessed on either paper.
	Paper 2: (2 hours – 100 marks) Pure Mathematics	
Paper 3: (2 hours – 100 marks) Statistics and Mechanics	Section A: Statistics (50 marks) Section B: Mechanics (50 marks)	
AS Level Mathematics	Paper 1: (2 hours – 100 marks) Pure Mathematics	AS pure mathematics content
	Paper 2: (1 hour 15 minutes – 60 marks) Statistics and Mechanics	Section A: Statistics (30 marks) Section B: Mechanics (30 marks) This qualification will only be offered in certain circumstances.

A Level Further Mathematics:

The Further Mathematics course must comprise four units, including two compulsory Core Pure Mathematics units and two Option units. Papers 3 and 4 for Further Mathematics have a range of possible options. Students may access this course if they have achieved a grade 8 in GCSE Mathematics. The table below clarifies the units required.

Qualification	Compulsory Core units	Overview
A Level Further Mathematics	<p>Compulsory Units: Core Pure Mathematics – Year 1 / AS Core Pure Mathematics – Year 2</p> <p>Option Units: Further Pure Mathematics 1 Further Pure Mathematics 2 Further Mechanics 1 Further Mechanics 2 Further Statistics 1 Further Statistics 2 Decision Mathematics 1 Decision Mathematics 2</p>	Two compulsory units and two option units.
	Component / Assessment	
	<p>Paper 1: (1.5 hours – 75 marks) Core Pure Mathematics 1</p>	Any core pure mathematics content can be assessed on either paper
	<p>Paper 2: (1.5 hours – 75 marks) Core Pure Mathematics 1</p>	
	<p>Paper 3: (1.5 hours – 75 marks) Further Mathematics Option 1</p>	<p>Students take one of the following four options:</p> <ul style="list-style-type: none"> ▪ Further Pure Mathematics ▪ Further Statistics ▪ Further Mechanics ▪ Decision Mathematics ▪
<p>Paper 4: (1.5 hours – 75 marks) Further Mathematics Option 2</p>	<p>Students take one of the following four options:</p> <ul style="list-style-type: none"> ▪ Further Pure Mathematics ▪ Further Statistics ▪ Further Mechanics ▪ Decision Mathematics 	
AS Level Further Mathematics	<p>Paper 1: (1 hour 40 minutes – 80 marks) Core Pure Mathematics</p>	AS core pure mathematics content
	<p>Paper 2: (1 hour 40 minutes – 80 marks) Further Mathematics Option</p>	<p>Same options in A Level Further Mathematics</p> <p>This qualification will only be offered in certain circumstances.</p>

In this Department, for Further Mathematics we are planning to follow a route which takes advantage of the expertise in the department and the success of our Further Mathematics students in recent years. The option units highlighted in bold are the ones which will be offered to the Further Mathematics students. However, this might change depending on the needs of our students. If you have any questions about anything on this sheet please do not hesitate to contact either Dr I Karam, Mr N Daniels or Mr J Afolayan.

The results for A Level Mathematics and A Level Further Mathematics for last year are shown in the tables below.

A Level Mathematics

	A*	A	B	C	D	E
Totals	28	24	13	16	11	7
Percentage	28	24	13	16	11	7

A Level Further Mathematics

	A*	A	B	C	D	E
Totals	8	7	3	4	2	0
Percentage	33	29	13	17	8	0

We achieved 65% A*-B grades.

The percentage of A*grades are one of the highest in the school.

Both A Level Mathematics and Further Mathematics courses will encourage students to:

- develop their understanding of mathematics and mathematical processes in a way that promotes confidence and fosters enjoyment
- develop abilities to reason logically and recognise incorrect reasoning, to generalise and to construct mathematical proofs
- extend their range of mathematical skills and techniques and use them in more difficult, unstructured problems
- develop an understanding of coherence and progress in mathematics and of how different areas of mathematics can be connected
- recognise how a situation may be represented mathematically and understand the relationship between 'real-world' problems and standard and other mathematical models and how these can be refined
- use mathematics as an effective means of communication
- read and comprehend mathematical arguments and articles concerning applications of mathematics
- acquire the skills needed to use technology such as calculators and computers effectively, recognise when such use may be inappropriate and be aware of limitations
- develop an awareness of the relevance of mathematics to other fields of study, to the world of work and to society in general
- take increasing responsibility for their own learning and the evaluation of their own mathematical development.