WHY?

CHOOSE

MATHS

Where could it lead?

# Why study Mathematics?

Studying Mathematics and Further Mathematics will:

- provide a stimulating and challenging course;

- develop key employability skills such as problem-solving, logical reasoning, communication and resilience;

- increase knowledge and understanding of mathematical techniques and their applications;

- support the study of other A level subjects;

- provide excellent preparation for a wide range of university courses;

- lead to a versatile qualification that is well-respected by employers and higher education.

# Common career misconceptions

- Unless you plan to do a STEM (Science, Technology, Engineering, Mathematics) degree, you don't need A level Mathematics.

- Most careers that require A level Mathematics are male-dominated.

- You only do a mathematics degree to become a mathematics teacher.

- Further Mathematics is an A level just for students who want to become engineers or physicists.
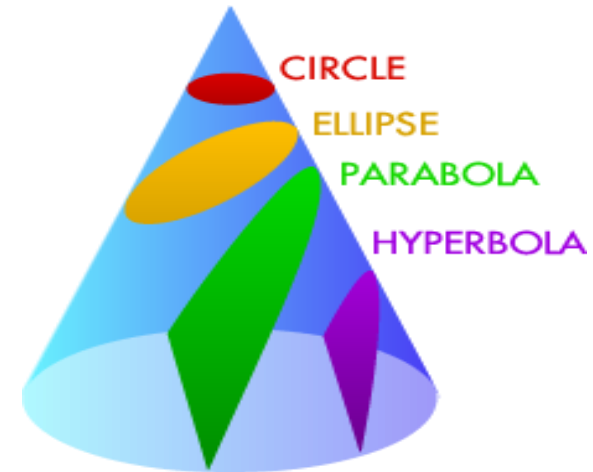
**These are no longer true.**

**Mathematics is relevant to many different careers and degrees, all of which now require better quantitative skills.**

CIRCLE

ELLIPSE

PARABOLA

HYPERBOLA

# What are the career opportunities?

"Maths is the only A level proven to increase earnings in later life - by an average of 10%."



(Source www.gov.uk/government/speeches/elizabeth-truss-on-support-for-maths-and-science-teaching)

# A Level Maths

# What is covered in AS/A level Mathematics?

All of the content in the AS/A level Mathematics qualification is compulsory and is the same for all examination boards.

| Pure Mathematics (paper 1 and 2) (66%) |
| --- |
| methods and techniques which underpin the study of all other areas of mathematics, such as, proof, algebra, trigonometry, calculus, and vectors. |

| Statistics (paper 3) (17%) |
| --- |
| statistical sampling, data presentation and probability leading to the study of statistical distributions |

| Mechanics (paper 3) (17%) |
| --- |
| the study of the physical world, modelling the motion of objects and the forces acting on them. |

# Course Overview

## FINAL EXAMS:

- Three 2 hour Exams
- Equal Weighting
- All Modules taken at the end of the course
- Graded A*-E

# Course Overview

## A-level Maths assessment objectives

| Assessment objective | Weighting |
|---|---|
| **AO1:** Use and apply standard techniques | 50% |
| **AO2:** Reason, interpret and communicate mathematically | 25% |
| **AO3:** Solve problems within mathematics and in other contexts | 25% |

| **Paper 1: Pure Mathematics 1 (\*Paper code: 9MA0/01)** |
|---|
| **Paper 2: Pure Mathematics 2 (\*Paper code: 9MA0/02)** |
| *Each paper is:* <br><br> *2-hour written examination* <br><br> *33.33% of the qualification* <br><br> *100 marks* |
| **Content overview** <br><br> • Topic 1 – Proof <br> • Topic 2 – Algebra and functions <br> • Topic 3 – Coordinate geometry in the $(x, y)$ plane <br> • Topic 4 – Sequences and series <br> • Topic 5 – Trigonometry <br> • Topic 6 – Exponentials and logarithms <br> • Topic 7 – Differentiation <br> • Topic 8 – Integration <br> • Topic 9 – Numerical methods <br> • Topic 10 – Vectors |
| **Assessment overview** <br><br> • Paper 1 and Paper 2 may contain questions on any topics from the Pure Mathematics content. <br> • Students must answer all questions. <br> • Calculators can be used in the assessment. |

## Paper 3: Statistics and Mechanics (*Paper code: 9MA0/03)

*2-hour written examination*

*33.33% of the qualification*

*100 marks*

**Content overview**

**Section A: Statistics**

- Topic 1 – Statistical sampling
- Topic 2 – Data presentation and interpretation
- Topic 3 – Probability
- Topic 4 – Statistical distributions
- Topic 5 – Statistical hypothesis testing

**Section B: Mechanics**

- Topic 6 – Quantities and units in mechanics
- Topic 7 – Kinematics
- Topic 8 – Forces and Newton's laws
- Topic 9 – Moments

**Assessment overview**

- 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.

# A Level Further Maths

You must take A Level Maths if you want to take A Level Further Maths –

You cannot study A Level Further Maths without also studying A Level Maths.

# What is covered in AS/A level Mathematics?

All of the content in the AS/A level Mathematics qualification is compulsory and is the same for all examination boards.

**Pure Mathematics  (paper 1 & 2)**                                    **(50%)**
methods and techniques which underpin the study of all other areas of mathematics, such as, proof, algebra, trigonometry, calculus, and vectors.

**Option1 (paper 3)**                                    **(25%)**
You complete one of the following four options:
Further Pure Mathematics, Further Statistics, Further Mechanics, Decision Mathematics

**Option 2 (paper 4)**                                    **(25%)**
You complete one of the following four options:
Further Pure Mathematics, Further Statistics, Further Mechanics, Decision Mathematics. This must be different to what you study in option 1.

# Course Overview

**FINAL EXAMS:**
- Four 1.5 hour Exams
- Equal Weighting
- All Modules taken at the end of the course
- Graded A*-E
- Don't forget you will also be taking the 3 A-Level maths exams too, so 7 maths exams in total!

HARD WORK BEATS TALENT WHEN TALENT DOESN'T WORK HARD

You're a STAR!

## Paper 1 and Paper 2 Topics Covered:

1) Proof

2) Complex Numbers

3) Matrices

4) Further algebra and functions

5) Further calculus

6) Further vectors

7) Polar coordinates

8) Hyperbolic functions

9) Differential equations

| Paper 3 Topics Covered: |
| --- |
| 1) Further Trigonometry |
| 2) Further Calculus |
| 3) Further Differential Equations |
| 4) Coordinate Systems |
| 5) Further Vectors |
| 6) Further Numerical Methods |
| 7) Inequalities |
| 8) Groups |
| 9) Further Matrix Algebra |
| 10) Further Complex Numbers |
| 11) Number Theory |
| 12) Further Sequences and Series |

**Paper 4 Topics Covered:**

1) Momentum and impulse

2) work, energy, power

3) Elastic strings and springs

4) Elastic collisions in one dimension

5) Elastic collisions in two dimensions

# Expectations of You

- Take notes in class – organised into files by module then chapter
- Correctly equipped for all lessons – including own calculator (Classwiz)
- Excellent attendance and punctuality
- Demonstrate willingness to develop independent learning skills
- Thorough revision throughout the year
- All homework assignments completed on time
- Reflect on previous work to make better progress
- Initial Assessment at end of September – suitability for course; additional options?

EXPECTATIONS

REALITY
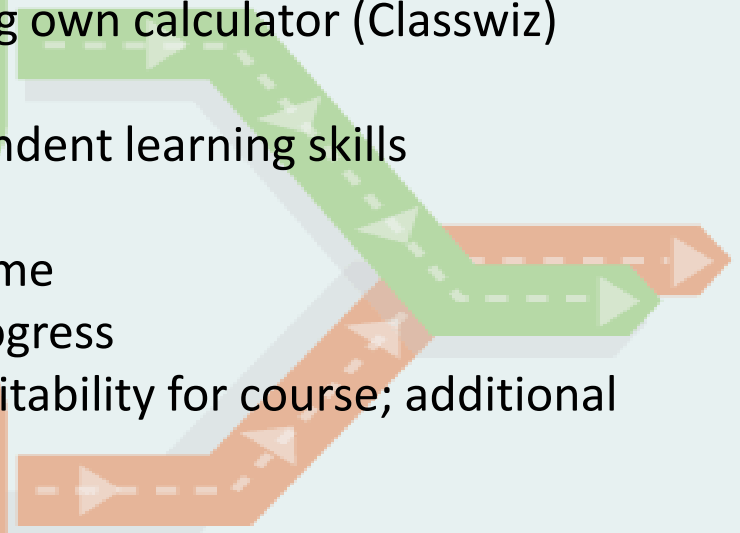
# Expectations of Us

- All lessons will be taught – we don't cancel lessons
- Lessons planned at a suitable level to challenge all students
- Excellent exam preparation (support and materials)
- Extra revision sessions nearer to final exams
- Provision of textbooks and online resources for every topic
- Availability of wider opportunities
- Support for University/UCAS/Job/Apprenticeship applications

EXPECTATIONS

REALITY