Redcliffe Sixth Form Centre

Post 16 Mathematics

Why study maths?

A guide for students, parents and carers

Post-16 maths options

GCSE Mathematics re-sit	Maths Studies
AS or A level Mathematics	AS or A level Further Mathematics

Important questions

- What is Maths Studies?
- What does A level Mathematics involve?
- What is Further Mathematics?
- Why should I study A level Mathematics?
- What are the career opportunities with A level Mathematics?
- Which degree courses require these qualifications?

What is Maths Studies?

- A course for those who want to keep up their valuable maths skills but are not planning to take AS or A level Mathematics.
- A level 3 qualification, equal in size to an AS level.
- Suitable for students with the equivalent of a GCSE Mathematics grade 5 or above.
- Focuses on using and applying maths to address authentic problems drawn from study, work and life.
- Includes new content such as statistics, financial maths and using algebra.

Why study Maths Studies?

- Develops valuable real-life skills, to understand mathematical information and make better informed decisions.
- Supports other A level subjects such as geography, social sciences and business.
- Develops knowledge, confidence and understanding in maths in preparation for university study.
- Provides useful skills for employment.

Maths Studies style problems

How much domestic water does the UK require every year? 	A newly qualified teacher earns £23,000 per year, has no student loans, and pays 7.4% of their salary into a pension scheme. What is the teacher's net monthly salary after tax and national insurance contributions?
A genetic disease occurs in one in every 10,000 people. A test for the disease is accurate 98% of the time. If you are tested and the result is positive, what are the chances of you actually having the disease?	The speed of cars driving down a road with a speed limit of 50mph is recorded. The mean speed was 47mph and the standard deviation of the speeds was 5mph. What percentage of the cars were breaking the speed limit?

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 maths **(66%)**

methods and techniques which underpin the study of all other areas of maths, such as, proof, algebra, trigonometry, calculus, and vectors.

Statistics **(17%)**

statistical sampling, data presentation, interpreting real life data and probability leading to the study of statistical distributions

Mechanics **(17%)**

the study of the physical world, modelling the motion of objects and the forces acting on them.

What is Statistics?

Reaching conclusions from data and calculating the chance of an event occurring.

Actuaries study statistical information to calculate the risk of a driver of a certain age having a car accident or the risk of flood. This information would be used by insurers in establishing the cost of the annual premiums.

What is Mechanics?

The modelling of the world around us, the motion of objects and the forces acting on them. For example:

What angle should a cricketer aim to hit the ball in order to maximise the distance it will travel?

Students planning careers in physics or engineering would find mechanics particularly useful.

What is Further Mathematics?

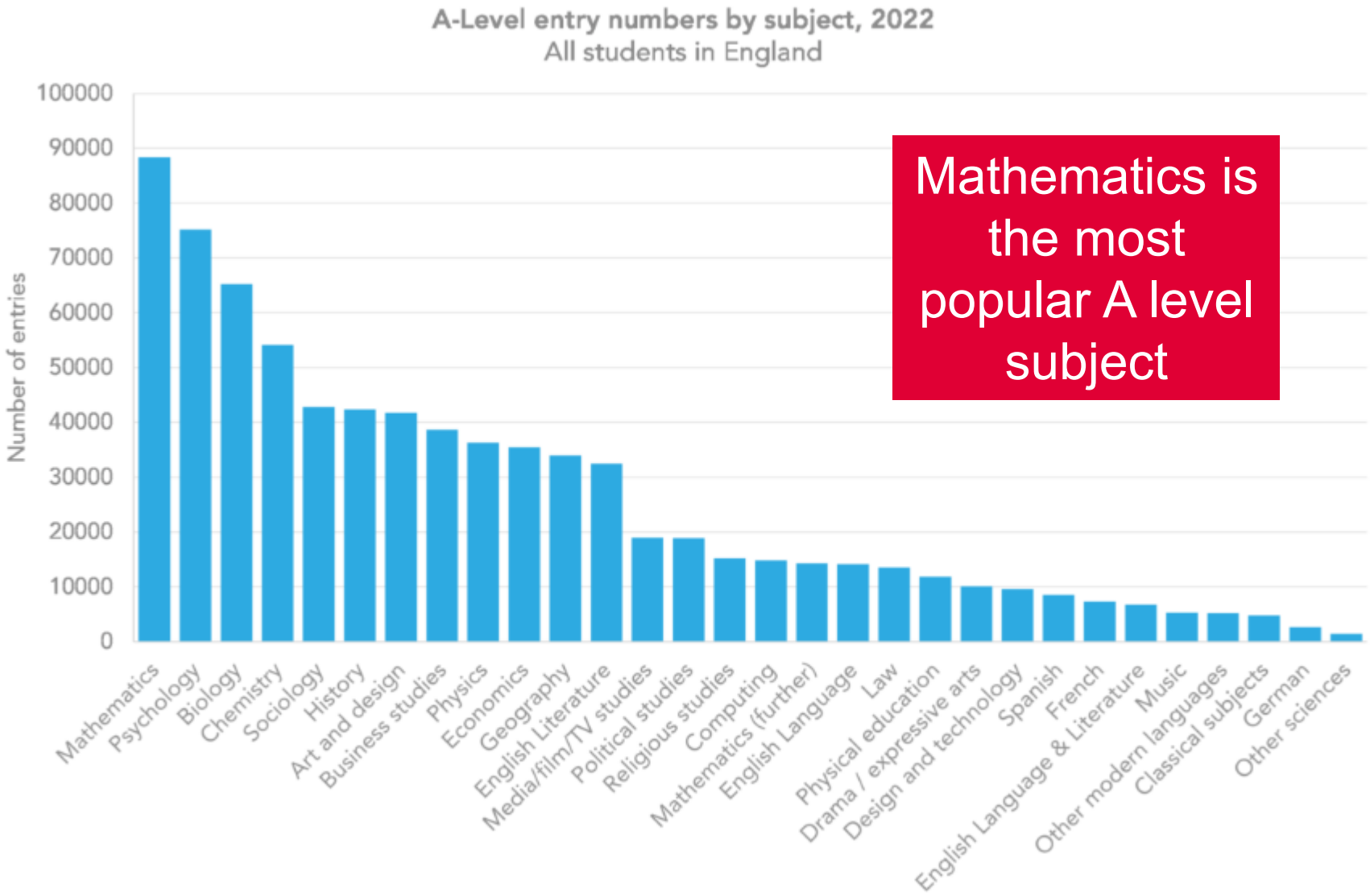
- Mathematics and Further Mathematics can both be taken at either AS level or at A level.
- Further Mathematics is an additional AS/A level qualification taken **in addition to** an AS/A level Mathematics course.
- It is designed to stretch and challenge able mathematicians and prepare them for university courses in maths and related quantitative and scientific subjects.

What is covered in Further Mathematics?

- Pure maths content, making up at least 30% of the AS level and at least 50% of the A level.
- The remainder of the content is made up of options which include:
  - Additional pure maths
  - Additional mechanics

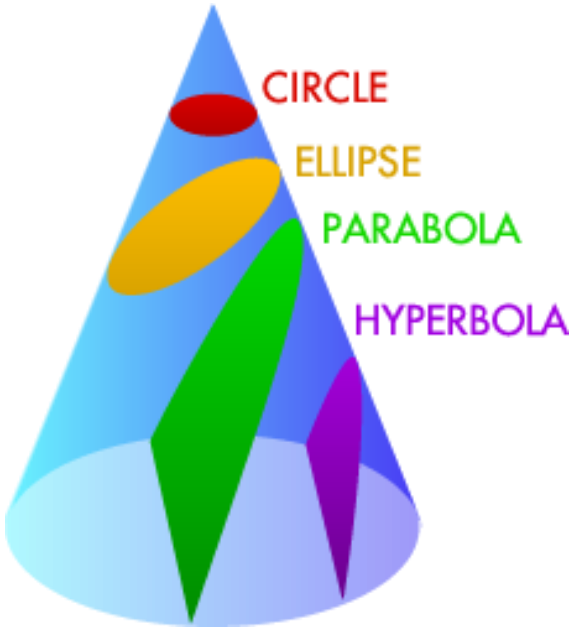
Why study maths A levels?

- stimulating and challenging courses;
- 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 levels;
- excellent preparation for a wide range of university courses;
- leads to versatile qualifications that are well-respected by employers and higher education.


A-Level entry numbers by subject, 2022
All students in England
Number of entries
100000
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
Mathematics
Psychology
Biology
Chemistry
Sociology
History
Art and design
Business studies
Physics
Economics
Geography
English Literature
Media/film/TV studies
Political studies
Religious studies
Computing
Mathematics (further)
English Language
Law
Physical education
Drama / expressive arts
Design and technology
Spanish
French
English Language & Literature
Music
Other modern languages
Classical subjects
German
Other sciences
Mathematics is the most popular A level subject

Common Career misconceptions

- Unless you plan to do a STEM (Science, Technology, Engineering, Maths) degree, you don't need to study maths post-GCSE
- Most careers that require A level Mathematics are male-dominated.
- You only do a maths degree to become a maths teacher.
- Further Mathematics is an A level just for students who want to become engineers or physicists.



These are not true!

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

What are the Career opportunities?

Is A level Mathematics needed for entry to university degree courses?

- It is important to have strong maths skills for progression to many degree courses at university.
- A level Mathematics is also essential or desirable for a wide range of degree courses including economics, computing, social sciences and business.
- According to research by UCL, students with an A level in Mathematics are more likely to attend a Russell Group university.
- Any student applying to study a degree in a STEM subject should also consider taking Further Mathematics to at least AS level alongside A level Mathematics.

Extra Curricular

- STEP sessions - every Friday after school for year 12 and 13.
- Lots of Maths competitions!

  October & February – School competitions

  Girls Olympiad (October)

  Senior Team Challenge (November)

  UKMT Senior Maths Challenge (November)
- UKMT Mentoring Scheme

Skills and personal qualities required to study A Level Maths

- You need to be very good at maths (Grade 7,8 or 9) especially algebra and trigonometry.
- You need to have a really good work ethic. This includes being very organised.
- You need to really like maths!