

Careers in...

Maths

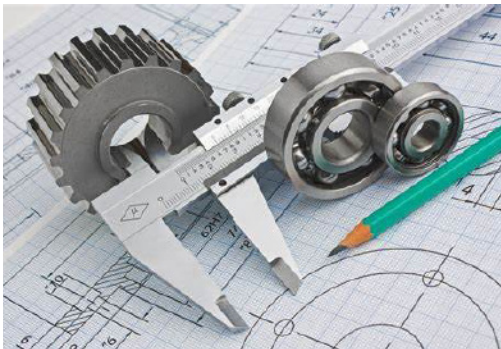
Advice for Year 10 & Year 11 Pupils



1. Explore Career Paths in Maths

Mathematics opens doors to a wide range of careers, including;

- **Engineering**
- **Data Science**
- **Finance and Accounting**
- **Actuarial Science**
- **Teaching**
- **Research and Development**



Engineering

Mathematics is fundamental in engineering for designing, analysing, and optimizing systems and structures. Key areas include:

Civil Engineering: Uses geometry and trigonometry for surveying and designing structures, and calculus for analysing forces and materials¹

Mechanical Engineering:

Applies algebra and calculus to design and analyse mechanical systems, such as engines and HVAC systems¹

Electrical Engineering: Relies on linear algebra and differential equations to design circuits and analyse electrical systems²

Computer Engineering: Uses discrete mathematics for algorithms and data structures, and Boolean algebra for logic gates¹

Data Science

Mathematics is crucial in data science for analysing and interpreting data. Key areas include:

Statistics: Used for data analysis, hypothesis testing, and making inferences from data

Linear Algebra: Essential for handling large datasets and performing operations on matrices

Calculus: Used in optimization problems and understanding changes in data

Probability Theory: Helps in modelling uncertainty and making predictions

Finance and Accounting

Mathematics is used extensively in finance and accounting for managing and analysing financial data. Key areas include:

Financial Mathematics: Involves concepts like the time value of money, probability theory, and stochastic processes for pricing financial instruments and managing risk

Accounting: Uses basic arithmetic for calculating totals, percentages, and interest rates, and more advanced techniques like linear regression for forecasting

Actuarial Science

Actuarial science applies mathematics to assess risk in insurance and finance. Key areas include:

Probability and Statistics: Used to predict future events and assess risk

Calculus: Helps in modelling changes over time and understanding the time value of money

Financial Mathematics: Used for pricing insurance policies and pension plans

Teaching

Mathematics teaching involves not only understanding mathematical concepts but also effective communication and instructional strategies. Key areas include:

Pedagogical Techniques: Using manipulatives, visual aids, and real-world examples to make math engaging and understandable

Curriculum Development: Designing lessons that build on students' prior knowledge and promote problem-solving skills

Research and Development

Mathematics is essential in R&D for developing new technologies and scientific discoveries. Key areas include:

Mathematical Modelling: Used to simulate real-world systems and predict outcomes

Data Analysis: Involves statistical methods to interpret experimental data and draw conclusions

Optimisation: Applied to improve processes and systems for better efficiency and performance

2. Focus on Relevant Subjects

Ensure you are taking the right subjects at GCSE and A-levels. Key subjects include:

Mathematics

Further Mathematics

Physics

Computer Science

These subjects will provide a strong foundation for further studies in mathematics-related fields. LUSoM is a college based in Preston which specialises in mathematics and fields related to really push you.



LANCASTER UNIVERSITY
SCHOOL OF MATHEMATICS



3. Attend Career Events

Participate in career fairs, open days at universities, and talks by professionals in the field. These events can provide insights into different careers and help you make informed decisions

4. Develop Key Skills

In addition to academic knowledge, develop skills such as:

- **Problem-solving**
- **Analytical thinking**
- **Communication**
- **Teamwork**

These skills are highly valued in any career and will complement your mathematical abilities.

5. Plan for Further Education

Consider your options for further education. This could include:

A-levels: Focus on subjects that will support your career goals.

University: Look into degrees in mathematics, engineering, computer science, or related fields.

Apprenticeships: Some industries offer apprenticeships that combine work and study, providing a practical route into a career – British Aerospace, Springfields Fuels, National Grid – all big employers in our local area.



7. Seek Guidance

Talk to your teachers, career advisors, and professionals in the field. They can provide personalised advice and help you navigate your career path

8. Stay Curious and Motivated

Mathematics is a field that constantly evolves. Stay curious, keep learning, and stay motivated. Join math clubs, participate in competitions, and engage with online resources to keep your skills sharp and your interest alive.

If you have any specific questions or need further guidance, feel free to ask any of your maths teachers!



United Kingdom
Mathematics Trust



Mr Sneddon, Assistant Head of Maths
January 2025

