

# A-level Maths

## A-level Maths factsheet

### Overview

Universities value Maths and it is a pre-requisite subject for many degrees. Mathematical and statistical problem solving, data analysis and interpretation skills are used in a broad range of subject areas.

### Key Facts

Start Dates:

- 5 April 2021 (in Brighton only)
- 6 September 2021
- 3 January 2022

Colleges:

- Bournemouth
- Brighton
- London
- Oxford

Entry level:

- Academic: Completed 10 years of schooling (GCSE or equivalent)
- English: IELTS 5.5 or equivalent

Minimum age:

- 16

Length:

- 2 Academic Years (3 terms)
- We also offer a One-Year A-level in Maths and an entry from Year 12.

Lessons:

- Average 7 hours per week for each A-level subject (plus homework and private study)

Class size:

- 4-10

## Learning outcomes

- Gain UK national university entrance qualification
- Raise English to university level
- Develop study skills required at degree level
- Develop specialist subject expertise

## Course content and structure

The following syllabus outline is based on Edexcel exam board content. Please note that exam boards may vary from college to college.

### Year 1

Pure Maths content

- Algebra and functions (part 1)
- Further algebra
- The binomial expansion
- Differentiation
- Integration
- Vectors (2D)
- Coordinate geometry in the  $(x, y)$  plane
- Trigonometry
- Algebra and functions (part 2)
- Exponentials and logarithms

Applied Maths content: Section A — Statistics

- Statistical sampling
- Data presentation and interpretation
- Probability: mutually exclusive events;
- Independent events
- Statistical distributions
- Statistical hypothesis testing

Applied Maths content: Section B —Mechanics

- Quantities and units in mechanics
- Kinematics 1 (constant acceleration)
- Forces & Newton's laws
- Kinematics 2 (variable acceleration)

## Year 2

### Pure Maths content

- Proof
- Algebraic and partial fractions
- Functions and modelling
- Series and sequences
- The binomial theorem
- Trigonometry
- Parametric equations
- Differentiation
- Numerical methods
- Integration (part 1)
- Integration (part 2)
- Vectors (3D)

### Applied Maths content: Section A —Statistics

- Regression and correlation
- Probability
- The Normal distribution

### Applied Maths content: Section B —Mechanics

- Moments: Forces' turning effect
- Forces at any angle
- Applications of kinematics: Projectiles
- Applications of forces
- Further kinematics

## Typical A-level subject combinations with Maths

- Maths, Physics and Chemistry
- Maths, Chemistry and Biology
- Maths, Economics, Geography
- Maths, Physics and Economics

## Sample enrichment activities

- Bletchley Park visit
- The Big Bang fair, NEC Birmingham
- UK Maths Challenge
- Oxford University Science laboratory visit

- Maths Club
- Science Club
- Science in the News Club
- Astronomy Club
- Business Enterprise

## Sample academic calendar (2021-2022)

### Year 1

#### September

- 6th: term starts
- Student induction

#### October

- 18 – 22nd: half term
- Progress tests

#### November

- University fairs and talks

#### December

- 10th: term ends
- End of term exams

#### January

- 3rd: term starts

#### February

- 10th – 11th: half term
- Progress tests
- University fairs

#### March

- End of term exams
- 18th: term ends

#### April

- 4th: term starts

May

- Progress tests

June

- Exams
- 10th: term ends

## **Year 2**

September

- 5th Sept: term starts

October

- 17th – 21st: half term
- 15th October: UCAS deadline (Medicine)
- Progress tests

November

- University fairs and talks

December

- 9th: term ends
- End of term exams

January

- 2nd: term starts
- 15th January: UCAS deadline (other subjects)

February

- 9th – 10th: half term
- Progress tests

March

- 17th: term ends
- Mock exams

April

- 3rd: term starts
- Progress tests

May

- Final exams

June

- 9th June: term ends

## Recommended reading

Below is a list of books which may help you prepare for your studies prior to arrival. Please note that additional books, and online resources such as websites and journals will be shared once you begin your course.

- Proofiness: How You're Being Fooled by the Numbers by Charles Seife
- The Mathematical Experience by Philip J. Davis
- The Drunkard's Walk by Leonard Mlodin
- Oxford Student's Mathematics by Oxford Dictionaries
- Oxford Content and Language Support: Mathematics by Caroline Meyrick and Judy Roberts

## Degree progression

Maths has wide applications in industry, business, finance, science, technology and many others.

There are a number of courses where A-level Maths is favoured — including Chemistry, Medicine, Architecture and Economics.

University courses in the following fields all stipulate A-level mathematics as necessary:

- Accounting
- Business Studies
- Computing
  
- Engineering
- Maths
- Physics

## Sample alumni progression

Aysha Ahmad Sharudin

- Maths/Biology/Chemistry/Persian
- University of Exeter (Neuroscience)

Chun Yu Chan

- Maths/Biology/Chemistry/Physics
- Queen's University Belfast (Medicine)

Hon Ming Lam

- Maths/Biology/Chemistry
- University of Bristol (Pathology)

Maryam Aghaeinasababad

- Maths/Biology/Chemistry/
- Royal Veterinary College (Veterinary Medicine)

Negin Nematiniaye Masooleh

- Maths/Biology/Chemistry/Persian
- University of Leeds (Medical Science)

Pantea Hassannia

- Maths/Biology/Chemistry/Physics
- University of Surrey (Medical Engineering)

Timofei Fedotov

- Maths/Further Maths/Biology/Physics
- University of Oxford (Engineering)

Ya Gan

- Maths/Economics/Geography
- LSE (Government with Economics)

Shujie Feng

- Maths/Further Maths/Physics
- University of Edinburgh (Maths)

Yeqian Gao

- Maths/Physics/Art
- Newcastle University (Architecture)

Van Khoa Hoang

- Maths/Further Maths/Physics
- University of Manchester (Artificial Intelligence)

Thi Thu Ha Phung

- Maths/Physics/Economics
- University of Bath (Business Administration)