

Mathematics

Cambridge International
Examinations Syllabus
Code 9709

IGCSEs needed

We strongly recommend that learners starting this course should have studied and obtained at least a B in Cambridge IGCSE Mathematics 0580 (Extended). Learners who studied IGCSE Additional Mathematics will find it very helpful when learning A Level Mathematics.

Course Overview

Cambridge International AS & A Level Mathematics develops a set of transferable skills. These include the skill of working with mathematical information, as well as the ability to think logically and independently, consider accuracy, model situations mathematically, analyse results and reflect on findings. Learners can apply these skills across a wide range of subjects and the skills equip them well for progression to higher education or directly into employment.

Syllabus Units/Topics

AS LEVEL

Paper 1 (Pure Mathematics 1)

- 1.1 Quadratics
- 1.2 Functions
- 1.3 Coordinate geometry
- 1.4 Circular measure
- 1.5 Trigonometry
- 1.6 Series
- 1.7 Differentiation
- 1.8 Integration

Paper 5 (Probability & Statistics 1)

- 5.1 Representation of data
- 5.2 Permutation and Combinations
- 5.3 Probability
- 5.4 Discrete Random Variables
- 5.5 The Normal Distribution

A LEVEL

Paper 3 (Pure Mathematics 3)

- 3.1 Algebra
- 3.2 Logarithmic and exponential functions
- 3.3 Trigonometry
- 3.4 Differentiation
- 3.5 Integration
- 3.6 Numerical solution of equations
- 3.7 Vectors
- 3.8 Differential equations
- 3.9 Complex numbers

Paper 4 (Mechanics)

- 4.1 Forces and Equilibrium
- 4.2 Kinematics of Motion in a Straight Line
- 4.3 Momentum
- 4.4 Newton's Laws of Motion
- 4.5 Energy, Work and Power

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Assessment Details

AS LEVEL

Paper 1

Pure Mathematics 1 1 hour 50 minutes
75 marks
10 to 12 structured questions based on the
Pure Mathematics 1 subject content
Written examination
Externally assessed
60% of the AS Level
30% of the A Level
Compulsory for AS Level and A Level

Paper 5

Probability & Statistics 1 1 hour 15 minutes
50 marks
6 to 8 structured questions based on the
Probability & Statistics 1 subject content
Written examination
Externally assessed
40% of the AS Level
20% of the A Level
Compulsory for A Level

A LEVEL

Paper 3

Pure Mathematics 3 1 hour 50 minutes
75 marks
9 to 11 structured questions based on the
Pure Mathematics 3 subject content
Written examination
Externally assessed
30% of the A Level only
Compulsory for A Level

Paper 4

Mechanics 1 hour 15 minutes
50 marks
6 to 8 structured questions based on the
Mechanics subject content
Written examination
Externally assessed
40% of the AS Level
20% of the A Level
Offered as part of AS Level or A Level

Skills Developed

A) Problem solving

Mathematics is fundamentally problem solving and representing systems and models in different ways.

B) Communication

Mathematical proof and reasoning is expressed using algebra and notation so that others can follow each line of reasoning and confirm its completeness and accuracy. Mathematical notation is universal. Each solution is structured, but proof and problem solving also invite creative and original thinking.

C) Mathematical modelling

Mathematical modelling can be applied to many different situations and problems, leading to predictions and solutions. A variety of mathematical content areas and techniques may be required to create the model. Once the model has been created and applied, the results can be interpreted to give predictions and information about the real world.

Degree course this will lead to:

Cambridge International A Level Mathematics provides a foundation for the study of mathematics or related courses in higher education. Equally it is suitable as part of a course of general education and related field as below.

Accountancy
Architecture
Biochemistry
Biology
Biomedical Sciences (including Medical Science)
Business Studies
Chemistry
Computer Science
Dentistry
Dietetics
Geography – Some Geography BSc (science) degrees prefer one from Biology, Chemistry, Mathematics or Physics
Law – facilitating subjects at A-level are useful when applying for Law
Management Studies
Nursing and Midwifery
Orthoptics
Pharmacy
Philosophy
Physiotherapy
Planning
Psychology
Surveying
Teacher Training