# Mathematics

IGCSE Mathematics

# Subject: Mathematics

**Course Title:** IGCSE Mathematics

**Careers:** Mathematics is a required subject for all careers. Employers always look for grade C or above in Mathematics at IGCSE level.

**Why study this subject:** Because you have to! Mathematics is deemed by the British Educational Authority to be so important in a child's future that any pupil studying at a British Curriculum School must study Mathematics up to IGCSE level.

Cambridge IGCSE Mathematics is accepted by universities and employers as proof of mathematical knowledge and understanding. Successful Cambridge IGCSE Mathematics candidates gain lifelong benefits, including:

- the development of their mathematical knowledge

- confidence, by developing a feel for numbers, patterns and relationships

- an ability to consider and solve problems and present and interpret results

- skills in communication and reasoning using mathematical concepts

- a solid foundation for further study.

# Syllabus aims:

The aims are to enable candidates to:

- develop their Mathematical knowledge and oral, written and practical skills in a way which encourages confidence and provides satisfaction and enjoyment

- read mathematics, and write and talk about the subject in a variety of ways

- develop a feel for number, carry out calculations and understand the significance of the results obtained

- apply Mathematics in everyday situations and develop an understanding of the part which Mathematics plays in the world around them

- solve problems, present the solutions clearly, check and interpret the results

- develop an understanding of mathematical principles

- recognise when and how a situation may be represented mathematically, identify and interpret relevant factors and, where necessary, select an appropriate mathematical method to solve the problem

- use Mathematics as a means of communication with emphasis on the use of clear expression

- develop an ability to apply Mathematics in other subjects, particularly science and technology

- develop the abilities to reason logically, to classify, to generalise and to prove

- appreciate patterns and relationships in Mathematics

- produce and appreciate imaginative and creative work arising from Mathematical ideas

- develop their Mathematical abilities by considering problems and conducting individual and co-operative enquiry and experiment, including extended pieces of work of a practical and investigative kind

- appreciate the interdependence of different branches of Mathematics

- acquire a foundation appropriate to their further study of Mathematics and of other disciplines.

## Assessment at a glance:

Cambridge IGCSE Mathematics is assessed via two components. All candidates take two written papers.

Candidates who follow the Core curriculum take Papers 1 and 3 and are eligible for grades C to G.

Candidates who follow the Extended curriculum take Papers 2 and 4 and are eligible for grades A* to E.

At the beginning of year 10 you will be placed in a class based on your ability.  This is to help you work with others at your level and choose whether you want to partake in the Core curriculum (grades C-G) or Extended curriculum (grades A* - E) exams in Year 11.

| Component | Time | Weighting |
|---|---|---|
| **Paper 1: Non-calculator (Core)** <br><br> Structured and unstructured questions. Use of a calculator is **not** allowed. Externally marked. <br><br> **80 marks**. | **1 hour 30 minutes** | **50%** |
| **Paper 2: Non-calculator (Extended)** <br><br> Structured and unstructured questions. Use of a calculator is **not** allowed. Externally marked. <br><br> **100 marks.** | **2 hours** | **50%** |
| **Paper 3: Calculator (Core)** <br><br> Structured and unstructured questions. A scientific calculator is required. Externally marked. <br><br> **80 marks**. | **1 hour 30 minutes** | **50%** |
| **Paper 4: Calculator (Extended)** <br><br> Structured and unstructured questions. A scientific calculator is required. Externally assessed. <br><br> **100 marks.** | **2 hours** | **50%** |

- Candidates should have an electronic calculator for all papers. Algebraic or graphical calculators are not permitted. Three significant figures will be required in answers except where otherwise stated.
-  Candidates should use the value of π from their calculators if their calculator provides this. Otherwise, they should use the value of 3.142 given on the front page of the question paper only.
- Tracing paper may be used as an additional material for all of the written papers.

# Curriculum content:

Core - Carry out calculations involving the perimeter and area of a rectangle and triangle, the circumference and area of a circle, the area of a parallelogram and a trapezium, the volume of a cuboid, prism and cylinder and the surface area of a cuboid and a cylinder.

Extended - Solve problems involving the arc length and sector area as fractions of the circumference and area of a circle, the surface area and volume of a sphere, pyramid and cone (given formulae for the sphere, pyramid and cone).

- Number, set notation and language

- Squares and cubes+

- Vulgar and decimal fractions and percentages+

- Ordering+

- Standard form+

- The four rules estimation+

- Limits of accuracy

- Ratio, proportion, rate

- Percentages

- Use of an electronic calculator+

- Measures+

- Time+

- Money+

- Personal and household finance+

- Graphs in practical situations

- Graphs of functions

- Algebraic representation and formulae

- Algebraic manipulation

- Functions*

- Indices

- Solutions of equations and inequalities

- Linear programming*

- Geometrical terms and relationships

- Symmetry

- Angle properties

- Locus

- Mensuration

- Trigonometry

- Further Trigonometry*

- Statistics

- Probability

- Conditional Probability*

- Vectors in 2D

- Vector Geometry*

- Matrices*

  - Differentiation*

- Transformations

+ Core only          * Extended only