



Kimberley  
School

# Mathematics

## Sixth Form

**AS/A-Level**

**2017-2019**

**Mathematics**

## What is Mathematics?

Over 5,000 years ago Mathematics evolved from basic numeracy into a new language to precisely describe the universe around us and as a tool for man-kind to make its mark on the planet. From the Great Pyramids of Giza to the Apollo Space Program, Mathematics has been at the heart of humanities most impressive achievements. In our modern society it plays an essential role in Economics, Engineering, Science & Technology. In the past 500 years, Mathematics has extended past the confines of physical reality and now represents an exciting frontier for the realms of human thought.

Mathematics at AS and A-Level is both challenging and interesting as it builds on the topics you have met at GCSE and develops the ideas further. It is a highly sought after qualification in the workplace and in Higher Education.

Higher Education courses or careers that list A-Level Mathematics as essential or highly desirable include:

- Computing
- Economics
- Architecture
- Accountancy
- Psychology
- Biology
- Finance
- Medicine
- Engineering
- Actuary
- Chemistry
- Physics

and of course Pure Mathematics itself.

## Who is it for?

AS and A-level Mathematics is for anyone who has a proven track record in the subject at GCSE. Minimum entry is GCSE grade 6, though ideally you would have gained a grade 7, 8 or 9. It is particularly suited to people who enjoy problem solving, computation and logical reasoning including proof. Importantly, anyone taking the course must have a comprehensive understanding of GCSE Algebra topics and be willing to spend considerable time independently improving their mathematical fluency and reasoning.

## What will I study?

As of 2017 the specification of content and methods of assessment have changed for all exam boards across England. Consequently, the current information available is only a working draft until it has been accredited by Ofqual. At the present time no assurances can be made that the qualification will not change before the start of teaching in September 2017. It is the intention of the Kimberley Mathematics Department to study the AQA AS Mathematics (7356) and A-Level Mathematics (7357) courses, please see [AQA.org.uk](http://AQA.org.uk) for more information and updates.

The course is made up of:

## AS

AS specifications in Mathematics must require students to demonstrate the overarching knowledge and skills contained in sections **OT1**, **OT2** and **OT3**. These must be applied, along with associated mathematical thinking and understanding, across the whole of the detailed content in sections **A** to **R**.

- OT1: Mathematical argument, language and proof
- OT2: Mathematical problem solving
- OT3: Mathematical Modelling
- A: Proof
- B: Algebra and functions
- C: Coordinate geometry in the (x,y) plane
- D: Sequences and series
- E: Trigonometry
- F: Exponentials and logarithms
- G: Differentiation
- H: Integration
- J: Vectors
- K: Statistical sampling
- L: Data presentation and interpretation
- M: Probability
- N: Statistical distributions
- O: Statistical hypothesis testing
- P: Quantities and units in mechanics
- Q: Kinematics
- R: Forces and Newton's laws

For more details about AS Mathematics content please speak to a member of our KS5 team or visit [AQA.org.uk](http://AQA.org.uk).

## A2

A-level specifications in Mathematics require that students meet the AS specifications and content detailed above and to a more advanced level. Additional content for the A-level is the following sections;

- I: Numerical methods
- S: Moments

For more details about A- Level Mathematics content please speak to a member of our KS5 team or visit [AQA.org.uk](http://AQA.org.uk).

## How will I be assessed?

Changes in AS/A-level assessment have meant that all courses are now linear meaning that students will sit all examinations at the end of the course. Importantly this means that the AS qualification is examined separately from the A-Level qualification. To provide the best opportunities for all students, the Kimberley 6<sup>th</sup> Form has decided to enter all students for AS qualification at the end of Year 12. The AQA A-level Mathematics course has been specifically designed to allow students qualify at AS-level and progress to A-level by extending their knowledge of the required content.

For the AS Mathematics qualification in June 2018 students will sit Paper 1 & Paper 2 detailed as follows;

Paper 1	Paper 2
Content: Sections A, B, C, D, E, F, G, H, J, P, Q, R.	Content: Sections A, B, C, D, E, F, G, H, K, L, M, N, O.
Duration: 1 hour 30 minutes	Duration: 1 hour 30 minutes
Weighting: 50% of AS	Weighting: 50% of AS
Questions: A mix of questions from short, single-mark questions to multi-step problems.	Questions: A mix of questions from short, single-mark questions to multi-step problems.

For the A-level Mathematics qualification in June 2019 students will sit Paper 1, Paper 2 & Paper 3 detailed as follows;

Paper 1	Paper 2	Paper 3
Content: Sections A, B, C, D, E, F, G, H, I.	Content: Any content from Paper 1 and from sections J, P, Q, R, S.	Content: Any content from Paper 1 and from sections K, L, M, N, O.
Duration: 2 hours	Duration: 2 hours	Duration: 2 hours
Weighting: 33⅓ % of A-Level	Weighting: 33⅓ % of A-Level	Weighting: 33⅓ % of A-Level
Questions: A mix of questions from short, single-mark questions to multi-step problems.	Questions: A mix of questions from short, single-mark questions to multi-step problems.	Questions: A mix of questions from short, single-mark questions to multi-step problems.

In accordance with the DfE 's *Mathematics: AS and A-level content* document, students on both courses will have to become familiar with one or more large data set(s) in advance of the final assessments. This requirement is common to all exam boards.

**For more information please see Mr Jolly**