



A-Level Mathematics

Mathematics and Further Mathematics are versatile qualifications, well-respected by employers. Both are ‘facilitating’ subjects for entry to Higher Education. Careers for those with good mathematics skills and qualifications are not only well paid, but they are also often interesting and rewarding. People who have studied Mathematics are in the fortunate position of having an excellent choice of career.

The reason why so many employers value mathematics qualifications so highly is that mathematics students are better at thinking logically and analytically. Students will develop resilience through problem solving as well as creative and strategic thinking skills. The writing of structured solutions, proof and the justification of results help students to formulate reasoned arguments. Crucially, an A-Level Mathematics student will develop excellent numeracy skills and the ability to process and interpret data.

Many courses at University require strong mathematics skills. For most Science, Technology, Engineering and Mathematics (STEM) degree courses, A-Level Mathematics is a requirement and AS or A-Level Further Mathematics is often a preferred subject.

The A-Level Mathematics syllabus and course changed in September 2017 and the Mathematics department has invested in the latest resources to support our students. As such, students in the SRPA Sixth Form have access to brand new text books as well as an online content system called ‘Kerboodle’ which allows our students access to their own digital version of the text book in school and at home. Our internal VLE website has up to date resources that students can access to support them with the new course requirements and the new Casio Classwiz calculators, which are required for A-Level study. In addition to this, the teaching staff at the Academy are very experienced at A-Level with staff members specialised in each of the three strands of A-Level study (Pure Mathematics, Mechanics and Statistics).

Qualities and qualifications needed

Students studying mathematics will need:

- A Grade 7 or above at GCSE Mathematics.
- Strong algebra skills from GCSE study.
- Resilience and problem-solving skills.
- A willingness to put in the required study time beyond attending the classroom lessons.

How will the course be assessed?



Each chapter of work is formally assessed using professionally produced assessment materials.

Assessments last 60 minutes and improvement work is undertaken after each round of assessment.

Students can expect to have one assessment per strand (Pure, Mechanic and Statistics) each term.



Course content

The A-Level course is split into three main strands each with several associated topics. The strands and main topics are:

Pure Mathematics

The study of problem-solving using calculus, geometrical analysis, numerical methods, mathematical proof and real life modelling.

Mechanics

The study of systems of forces, Newton's Laws, projectiles and modelling physical interactions between objects and particles.

Statistics

The modelling of populations from sampling techniques, measures of central tendency and spread. The use of probability models in real world scenarios.



Examinations

At SRPA we follow the Edexcel syllabus and scheme of work for A-Level Mathematics. Examination is by three 2 hour examinations at the end of year 13. Course content in the examination is split as follows:



Paper 1
Pure Mathematics – 2 hours



Paper 2
Pure Mathematics – 2 hours



Paper 3
Statistics & Mechanics – 2 hours

Students sit formal mocks at the end of year 12. These are 'real' papers provided by Edexcel specifically for use in Year 12. These are split as follows:



Paper 1
Pure – 2 hours



Paper 2
Mechanics and Statistics – 1 hour 15 minutes

Methods of teaching and learning

Students are taught all three strands by specialist teachers from day one. In addition to this contact time, students are provided with a home study booklet for each strand from which they will be set weekly tasks. Home study is marked, assessed and then improved upon each time it is completed. Students are then tracked by teachers on their competence in each sub-topic, with intervention in place if a student falls behind. Students are provided with self-assessment sheets to track their own progress and can access help from their teachers at any time they feel they need some extra assistance. Twilight study sessions are also provided for students approaching their formal examination, and these have proved very popular with students in recent years.
