

## The Bourne Academy Mathematics

The Mathematics Department are committed to providing high quality learning that builds confidence to use and apply maths skills in different contexts. We aim to develop our students' independence, determination and ability to creatively solve problems and thereby achieve high grades in their exams.

The mathematics department has 8 dedicated classrooms, all with interactive whiteboards and internet access, together with a computer suite which enhances our ability to extend the use of ICT within our subject.

Our students study in ability based groups, with flexibility for change, to ensure that they are placed in an appropriate group that caters for their individual needs. Key Stage 3 is covered in years 7 and 8, consolidating previous learning and preparing them for Key Stage 4, which is covered in years 9, 10 and 11.

Students are grouped in sets according to their ability in mathematics. Set changes occur in response to student progress in class, the feedback gained from completed homework and data generated from internal assessments.

### Key Stage 3

In Years 7/8 the focus is on building confidence and promoting fluency and mastery of basic mathematical skills in order to ensure students are properly prepared for the demands of the New 1-9 GCSE syllabus. The curriculum is broken down into KPI units that build on previous knowledge. Topics covered can be grouped into the following common areas:

- Number
- Algebra
- Ratio and Proportion
- Geometry and Measures
- Statistics

There are many links between these because mathematics is not a set of isolated topics but an interconnected web of ideas. We also teach how to think mathematically, encouraging pupils to be independent learners, developing their problem solving skills. Independence involves being resourceful, observant, determined, flexible, creative and a good communicator, verbally and in a written form. Within all topics the students will be developing 'mathematical processing' skills, which includes reasoning, analysis and evaluation.

### Key stage 4

We work hard to inspire students and help them enjoy maths, developing confidence to use the maths skills they learn to solve the myriad problems that life and work might throw at them. We believe that all students can succeed in maths and we want to do all we can to make it happen.

Students follow one of two overlapping courses: Foundation and Higher, though students in set 3 will study a combination of the two courses. We (student / parent / teacher) decide the most appropriate exam for each student to enter after mock exams have been sat in Year 11.

The courses lead to 1 to 9 grades in GCSE Mathematics. It is defined by the Mathematics exam syllabus, which is common to all exam boards, in six overlapping areas:

- Number
- Algebra
- Ratio, proportion and rates of change
- Geometry and measures
- Probability
- Statistics

Depending on which exam tier students are entered, they can access the following 1 to 9 grades:

Higher grades 4 to 9 (old grade C to A\*)

Foundation grades 1 to 5 (old grades G to C)

All students will sit three 1½ hour exams at the end of the course. In the first, calculators are NOT allowed and in the second and third use of calculators will be expected.

### **Problem solving**

Solving problems is what maths is all about; it is an integral part of all maths lessons at The Bourne Academy. For more able mathematicians who really enjoy solving difficult maths problems, we enter a significant number of students each year to the UK Junior and Intermediate Maths Challenges, with students achieving awards of bronze, silver and gold, in competition with the best student mathematicians across the country.

### **6<sup>th</sup> Form**

Mathematics is a discipline, and a tool which is being increasingly used in industry to solve problems. Although not all of the subject content is always directly relevant to future employment, the fact that a student has succeeded at this subject shows they have developed skills that are highly regarded. This subject is therefore the most versatile qualification for further education and employment. This A Level will take you from being competent at Mathematics for everyday needs to an awareness of techniques that enable people to develop new ideas for the benefit of mankind in the future.

### **Content**

We offer a two year linear A Level qualification, combining the pure and applied elements of Mathematics, offering an insight into how the mechanics and statistical elements we have hinge around the purest of mathematical concepts. The course aims to deepen your mind and offers you an opportunity to ponder those curious questions and give you the rare skills to solve many complex problems that are relevant to the world today. This is an academic subject and will involve a large amount of teacher input. However, the style of teaching will be more informal than at GCSE and you are expected to take responsibility for your learning. There will always be support, but the more you put in the more you will achieve.

### **Minimum Entry Requirements**

GCSE Mathematics Grade 7 – students with grade 6 may be accepted depending on their attitude and individual circumstances.

### **Combines well with...**

Economics, Further Mathematics, Physics, Chemistry, Product Design, Engineering, Computer Science, Psychology and many others.