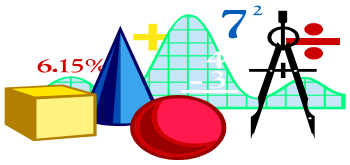

AS/A2 MATHEMATICS/FURTHER MATHEMATICS

Head of Department – Miss H. Lilley

EXAMINATION BOARD & SYLLABUSES: EDEXCEL - Mathematics & Further Mathematics

ENTRANCE REQUIREMENTS:
A Level Mathematics - GCSE Mathematics grade A
A Level Further Mathematics - GCSE Mathematics grade A*

THE COURSES:
The A Level Mathematics courses are designed to enable students to develop mathematical knowledge and understanding in a way which increases their confidence to solve problems in the real world. Emphasis is placed upon the ability to reason logically, develop mathematical proofs and use mathematics as an effective means of communication. At this level students should expect to experience mathematics as a form of enjoyment in relation to its practical, aesthetic and creative aspects.
At present the full GCE A Level *Mathematics* syllabus is divided into six units, four of which introduce students to the study of 'pure' mathematics, whilst the other two concentrate on an application of mathematics in the field of either mechanics or statistics.
The AS Level *Mathematics* qualification consists of two pure and one application unit. Students must choose what their applied option is to be. Additional units are studied for the award of A or AS Level *Further Mathematics*.

- **Pure Mathematics** involves the continued study of algebra, trigonometry and co-ordinate geometry and introduces students to the new areas of calculus, complex numbers, vectors and approximate numerical methods.

- **Mechanics** illustrates the application of mathematics to physical problems. Emphasis is placed on the ability to model a real problem mathematically, solve it, and then interpret the resulting solution back in terms of the original problem.

- **Statistics** illustrates the application of the concepts of mathematical probability to the drawing of inferences from data. Again emphasis is placed upon experimentation, modelling and the analysis of real data.

- The **Further Mathematics** course is offered with both mechanics **and** statistics as applied options. The depth of study is, of course, greater than that required for the single subject. In addition to the modelling and interpretative aspects of the subject there is an emphasis on structures and techniques, the ability to develop mathematical arguments, make logical deductions and manipulate mathematical expressions.

The course is particularly suitable for those who enjoy their mathematics and wish to accept the challenges it offers to extend them fully. Further Mathematics is a highly sought after qualification, well regarded by universities as a good preparation for a vast and varied range of subjects. It is particularly strongly recommended for those wishing to study mathematics at University.

ASSESSMENT
Assessment is by examination only. Unit examinations take place in January and June.

DIFFERENCE BETWEEN GCSE & A LEVEL
The subject is studied to a wider degree and to a greater depth than at GCSE level. The approach is more rigorous. Ultimate success depends upon the ability to understand concepts, solve problems independently and to use the language and notation of the subject correctly. There is a continued emphasis on the application of mathematics, but the approach is more analytical than at GCSE level.

ORGANISATION OF WORK
Homework is organised on a weekly basis to cover current teaching topics. The tasks are designed to give practice, consolidate the work done in class and encourage students to apply their knowledge in related but unfamiliar situations. The aim is to build a thorough understanding of the principles involved.

USEFUL SUPPORTING SUBJECTS
For those studying the mechanics option there is an obvious link with physics and technology. For those studying statistics there are links with economics or any subject where data handling is involved.

DEGREE AND CAREER OPPORTUNITIES
An A Level in Mathematics (and/or Further Mathematics) will increase your degree choices and broaden your career opportunities. The list is endless but includes actuary, aerodynamicist, air-traffic controller, architect, astronaut, audio software engineer, cartographer, computer games designer, defence analyst, dentist, doctor, insurer, IT project manager, journalist, medical researcher, pilot, politician, product designer, psychologist, risk analyst, solicitor, spy, statistician, surveyor, teacher, underwriter, veterinarian, weather forecaster, yacht builder . . .