



## SUBJECT: Mathematics IB Higher Analysis and Approaches

### HEAD OF DEPARTMENT:

Mrs N Foster

### EXAM BOARD AND SYLLABUS NUMBER:

IBO / QAN: 60340204

#### SYNOPSIS OF CONTENT:

Number and Algebra  
 Permutations and combination  
 Arithmetic and geometric sequences  
 Binomial theorem with fractional and negative indices  
 Partial fractions  
 Complex numbers  
 Proof by induction  
 Functions, domain, range, inverse, composite  
 Factor and remainder theorem  
 Sum and product of roots  
 Transformations of graphs  
 Geometry and Trigonometry  
 Reciprocal trigonometric functions  
 Compound and double angles  
 Vectors – equations of lines and planes  
 Scalar and vector products  
 Statistics and probability  
 Linear correlation and regression  
 Bayes Theorem  
 Discrete and continuous random variables  
 Binomial and Normal Distributions  
 Calculus  
 L'Hopital's Rule  
 Implicit differentiation  
 Integration by substitution and by parts

#### HOW IS IT ASSESSED?

20% Coursework.  
 This is a piece of written work that involves investigating an area of mathematics to be completed in Lower Sixth.  
 Three examinations at the end of the course. Two papers of 2 hours duration and one paper of 1 hour duration.

#### WHY STUDY THIS SUBJECT?

- good career opportunities
- Mathematics teaches you to think logically, to have resilience when solving problems
- enjoy solving mathematical problems for the joy of it
- gives you excellent numeracy skills and the ability to process and interpret data

People who have studied mathematics are in the fortunate position of having an excellent choice of career for example in Teaching, Insurance, Medicine, Science, Economics

#### SELF STUDY ADVICE / USEFUL WEBSITES:

[www.ibo.org](http://www.ibo.org)  
<https://studyib.net/>

#### ADDITIONAL INFORMATION / CAREER OPPORTUNITIES

You will need to have a graphical calculator. We use the Casio CG50 – these can be purchased through the school at a discounted price.

#### SPECIFIC MATRICULATION REQUIREMENTS

Grade 7 or higher at GCSE Mathematics.  
 You need to be one of the best mathematicians in your year group. It is an excellent course for a student who has a real aptitude for Mathematics. It would be expected that such a student will study Mathematics, Engineering, Physics or Economics at a good University.