

## Mathematics – Standard Level

Mathematics SL is designed to provide a background of mathematical thought and a reasonable level of technical ability for those not wishing to take mathematics at the higher level. It is intended to provide a sound mathematical basis for those students planning to pursue further studies in fields such as chemistry, economics, geography and business administration. Although offered at SL, the course is nevertheless demanding, containing a variety of mathematical topics. The aim of the course is to enable students to appreciate the multiplicity of cultural and historical perspectives of mathematics and to develop an enjoyment and appreciation of the richness the subject offers.

Students will be given the opportunity to develop logical, critical and creative thinking skills as well as strategies for problem solving whilst at the same time appreciate technological developments and their uses in society, transferring these skills to alternative situations in the future. All students are expected to own a Texas Instruments TI-83, TI-84 or TI-84+ graphing calculator, which will be used extensively throughout the course.

### Subject Areas

1. **Algebra** – sequences, series, logarithms, binomial theorem
2. **Functions and equations**
3. **Circular functions and trigonometry** – the circle, radians, trigonometry, triangle solutions
4. **Matrices** – properties, four operations, determinants, inverses
5. **Vectors** – four operations, 3D, magnitude, intersections
6. **Statistics and probability** – analysis and interpretation of numerical data in terms of sample and population, measures of spread, probability, binomial distribution, normal distribution
7. **Calculus** – derivatives, differentiation, integration, optimization

### Assessment Outline

<b>1. Internal Portfolio</b>	Each Portfolio must contain two pieces of work, one from each type - Mathematical investigation - Mathematical modeling	20%
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The purpose of the Portfolio is to provide students with opportunities to increase their understanding of mathematical concepts and processes. The Portfolio is internally assessed by the teacher and externally moderated by the IBO.

<b>2. External Paper 1</b>	1 hr 30min – 15 compulsory short response questions based on the whole syllabus	40%
<b>Paper 2</b>	1 hr 30min – 5 compulsory extended response questions based on the whole syllabus	40%