

Mathematics

Mathematics has been described as the study of structure, order and relation that has evolved from the practices of counting, measuring and describing objects. Mathematics provides a unique language to describe, explore and communicate the nature of the world we live in as well as being a constantly building body of knowledge and truth in itself that is distinctive in its certainty.

At IB two different mathematics courses are available that focus on different aspects of mathematics. The *Applications and Interpretations* course explores the side of mathematics that is based on describing our world and solving practical problems is often carried out in the context of another area of study. Meanwhile the *Analysis and Approaches* course is driven by abstract concepts and generalization.

Mathematics: Applications and Interpretations

This course recognizes the increasing role that mathematics and technology play in a diverse range of fields in a data-rich world. As such, it emphasizes the meaning of mathematics in context by focusing on topics that are often used as applications or in mathematical modelling. To give this understanding a firm base, this course also includes topics that are traditionally part of a pre-university mathematics course such as calculus and statistics.

The course makes extensive use of technology to allow students to explore and construct mathematical models. Mathematics: applications and interpretation will develop mathematical thinking, often in the context of a practical problem and using technology to justify conjectures.

	<i>Component</i>	<i>Weighting</i>
<i>External assessment</i>	Paper 1 Short answer questions designed to assess the breadth of student knowledge across the syllabus. Requires a Graphical Display Calculator.	SL 1h30, 80 marks, representing 40% of the final grade. HL 2h, 110 marks, representing 30% of the final grade.
	Paper 2 Extended responses designed to assess the depth of student knowledge across the syllabus. Requires a Graphical Display Calculator.	SL 1h30, 80 marks, representing 40% of the final grade. HL 2h, 110 marks, representing 30% of the final grade
	Paper 3 (HL only) This paper consists of two compulsory	HL

	extended-response problem-solving questions requiring sustained reasoning. Requires a Graphical Display Calculator.	1h, 55 marks, representing 20% of the final grade.
<i>Internal assessment</i>	All students complete a mathematical exploration into a topic of their choice. This is a short report written by the student based on a topic chosen by him or her, and it should focus on the mathematics of that particular area.	SL & HL Scored out of 20 and worth 20% of the final grade.

Mathematics: Analysis and Approaches

This course recognizes the need for analytical expertise in a world where innovation is increasingly dependent on a deep understanding of mathematics. This course includes topics that are both traditionally part of a pre-university mathematics course (for example, functions, trigonometry, calculus) as well as topics that are amenable to investigation, conjecture and proof, for instance the study of sequences and series at both SL and HL, and proof by induction at HL.

The course allows the use of technology, as fluency in relevant mathematical software and hand-held technology is important regardless of choice of course. However, Mathematics: analysis and approaches has a strong emphasis on the ability to construct, communicate and justify correct mathematical argument.

	<i>Component</i>	<i>Weighting</i>
<i>External assessment</i>	Paper 1 Non calculator questions, consisting of a mix of short and long questions.	SL 1h30, 80 marks, representing 40% of the final grade. HL 2h, 110 marks, representing 30% of the final grade.
	Paper 2 Calculator questions, consisting of a mix of short and long questions. Requires a Graphical Display Calculator.	SL 1h30, 80 marks, representing 40% of the final grade. HL 2h, 110 marks, representing 30% of the final grade

	<p>Paper 3 (HL only) This paper consists of two compulsory extended-response problem-solving questions requiring sustained reasoning.</p> <p>Requires a Graphical Display Calculator.</p>	<p>HL 1h, 55 marks, representing 20% of the final grade.</p>
<i>Internal assessment</i>	<p>All students complete a mathematical exploration into a topic of their choice. This is a short report written by the student based on a topic chosen by him or her, and it should focus on the mathematics of that particular area.</p>	<p>SL & HL Scored out of 20 and worth 20% of the final grade.</p>