

# IB MATHEMATICS ANALYSIS & APPROACHES HL12

## Course Outline

### ***Course Aim***

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As stated in the IB Subject Guide, the aim of this course is to enable students to

- enjoy mathematics, and develop an appreciation of the elegance and power of mathematics
- develop an understanding of the principles and nature of mathematics
- communicate clearly and confidently in a variety of contexts
- develop logical, critical and creative thinking, and patience and persistence in problem-solving
- employ and refine their powers of abstraction and generalization
- apply and transfer skills to alternative situations, to other areas of knowledge and to future developments
- appreciate how developments in technology and mathematics have influenced each other
- appreciate the moral, social and ethical implications arising from the work of mathematicians and the applications of mathematics
- appreciate the international dimension in mathematics through an awareness of the universality of mathematics and its multicultural and historical perspectives
- appreciate the contribution of mathematics to other disciplines, and as a particular “area of knowledge” in the TOK course.

### ***Approaches to Learning***

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The IB Diploma Programme encourages students to become lifelong learners. As such, this course will focus on more than content by seeking to develop the skills that are set out in the IB Approaches to Learning (ATL) document. ATL refer to deliberate strategies, skills and attitudes which are intrinsically linked with the learner profile attributes, enhance student learning and assist student preparation for the Diploma Programme assessment and beyond. The five approaches to learning categories in the DP are:

- thinking skills
- social skills
- communication skills
- self-management skills
- research skills

Development of these skills is key to experiencing success in the Diploma Programme and will be formally and informally taught and assessed.

### ***Course Topics***

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| • Chapter 1: Counting Principles            | • Chapter 6: Function Analysis              |
| • Chapter 2: Further Algebra                | • Chapter 7: Vectors                        |
| • Chapter 3: Geometry & Trigonometry        | • Chapter 8: Statistics & Probability       |
| • Chapter 4: Complex Numbers & Applications | • Chapter 9: Differentiation & Applications |
| • Chapter 5: Mathematical Proof             | • Chapter 10: Integration & Applications    |

### ***Personal Planning***

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This course will require some independent study every day. One of the ways you can reduce your stress level is by not getting behind. If you are struggling with a concept, you will need to determine if the struggle is productive or if it is time to ask for help.

### ***Academic Honesty***

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As diploma candidates, you are expected to adhere to the school’s Policy for Academic Integrity, and also to the principles and practices set out in the IB document, Diploma Programme: Academic Honesty, 2011. Ignorance of the standards related to academic honesty and student integrity is not an excuse for dishonesty, plagiarism and malpractice. You are expected to familiarize yourself with the policy.

### ***Technology***

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Students need to have access to a scientific calculator or a graphing calculator. A class set of calculators will be available to students when they are at school. If students require a graphing calculator at home, one option is to borrow one from the school (\$125 deposit – cheque made out to Semiahmoo Secondary School, post-dated for the date you plan to return the calculator). When working at home, another option is to use the Desmos app on your phone or home computer.

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### Assessment

#### ***Mathematical Exploration***

Students will complete a mathematical exploration on a topic of their choice. From the Guide: "The emphasis is on mathematical communication (including formulae, diagrams, graphs and so on), with accompanying commentary, good mathematical writing and thoughtful reflection. A student should develop his or her own focus, with the teacher providing feedback via, for example, discussion and interview. This will allow the students to develop area(s) of interest to them without a time constraint as in an examination and will allow all students to experience a feeling of success." The exploration will be 12 – 20 pages in length and include a bibliography and references for any direct quotes.

#### ***Assignments***

It is vital that students get regular, sustained practice with the concepts they learn. Most of this practice will take place after class using the questions found in the textbook.

#### ***Quizzes***

Quizzes are intended to help you determine areas of weakness before the chapter test. Therefore, it is important to keep track of returned quizzes and use them to help you prepare for the chapter test. Quizzes will take place at the beginning of each class and will evaluate your understanding of the previous day's material.

#### ***Tests***

Unit tests are worth 50% of your course work. Your preparation for tests is critical. There will be no **retests**. Being absent on the day of a test is considered to be a breach of the Academic Honesty policy until such time as proof is provided that the absence was unavoidable.

#### ***Course Fee***

There will be a nominal course fee of \$7.50 to cover the cost of the notes packages that you will receive. The fee will be collected through School Cash Online and parents will receive an email with payment instructions.

#### ***Contact***

I can be contacted at the following email address: [clunas\\_b@surreyschools.ca](mailto:clunas_b@surreyschools.ca)

Please provide the following information:

_____	_____
<b>Student Name (please print)</b>	<b>Student Signature</b>
_____	_____
<b>Student Email (please print)</b>	<b>Date</b>
_____	_____
<b>Parent Name (please print)</b>	<b>Parent Signature</b>
_____	_____
<b>Parent Email (please print)</b>	<b>Date</b>