Overseas School of Colombo

Mathematics

Grade 9/MYP 4 Extended

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Aims of IB MYP Mathematics

The aims of MYP mathematics are to encourage and enable students to:

- enjoy mathematics, develop curiosity and begin to appreciate its elegance and power
- 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
- develop confidence, perseverance, and independence in mathematical thinking and problem-solving
- develop powers of generalization and abstraction
- apply and transfer skills to a wide range of real-life situations, other areas of knowledge and 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 areas of knowledge
- develop the knowledge, skills and attitudes necessary to pursue further studies in mathematics
- develop the ability to reflect critically upon their own work and the work of others.

Units of Study

	Numerical and abstract reasoning	**Spatial Reasoning**	**Thinking with models**	**Manipulating Algebra**
Key Concepts	Numbers can be classified into different groups. Representing numbers in different forms gives us different levels of accuracy Different mathematical diagrams allow us to represent events involving probability	The relationship between parallel and perpendicular lines allows us to predict one given the other. Graphs allow us to solve complex problems	Equations in many forms can be used to solve real-life problems	Using different number types allows us to solve problems in many ways.
Mathematical Topics*	Number Theory, Sets, Probability and Statistics	Equation of a straight line, intersects, distance, collinearity, transformations	Expansion and factorisation, Quadratic and Exponential Equations	Exponents, Fractions and Surds
Extended-only Topics*	Cumulative data, compound events and parallel data	3D distance, midpoint and gradient formula	Binomial Expansion	Compound interest, networks, pathways

*this is not a full list of the topics covered

Class Expectations

- Materials to be brought to class daily: TI-84 Plus Silver Edition graphing calculator, pencil, pen, eraser, notebook, laptop computer, headset. Also, a geometry set (protractor and compass) will be needed during the geometry unit.
- Missing school: If the student will miss school, it is helpful if the teacher is notified in advance so that missed work can be assigned. If a student misses school due to illness, *the student* is expected to contact the teacher via email or when she/he returns to school to get missed work. If a student is sick on the day of an assessment, the student is responsible for contacting the teacher to schedule a make-up time.
- Homework: Homework will be assigned. If a student shows a pattern of incomplete homework, the parent will be notified. Homework will be posted on Managebac or Google Classroom as appropriate.
- Graded assessments: Due dates and tasks will be placed on Managebac. Grades from assessments will be provided to students in class and on Managebac. Students will also receive more detailed feedback on their performance on assessments during class. Assessments will be kept in students' portfolios in class. If you would like to see these please contact the teacher to arrange to review them with your child.
- General communication: Please feel free to contact the teacher via email with any questions or concerns. If it is agreed that a meeting will be useful for communication and student support, that can be arranged via email as well. Please make sure that parent email information is kept up to date.
- Textbook: Haese and Harris, Mathematics for the International Student 9 MYP 4 and various online resources.

Assessment

The assessment of students is an integral part of learning and a continuous process throughout the school year. In **Grade 9,** a variety of **formative & summative assessment** methods are used that involve the learner, their peers and the teacher. Standardisation of grading is conducted within the Mathematics Department to ensure fairness in the application of the criteria below.

Knowing and Understanding

Students should be able to:

- select appropriate mathematics when solving problems in both familiar and unfamiliar situations
- apply the selected mathematics successfully when solving problems
- solve problems correctly in a variety of contexts.

Investigating Patterns

Students should be able to:

- select and apply mathematical problem-solving techniques to discover complex patterns
- describe patterns as general rules consistent with findings
- prove, or verify and justify, general rules.

Communicating

Students should be able to:

- use appropriate mathematical language (notation, symbols and terminology) in both oral and written explanations
- use appropriate forms of mathematical representation to present information
- move between different forms of mathematical representation
- communicate complete, coherent and concise mathematical lines of reasoning
- organize information using a logical structure.

Applying Mathematics in Real-Life Contexts

Students should be able to:

- identify relevant elements of authentic real-life situations
- select appropriate mathematical strategies when solving authentic real-life situations
- apply the selected mathematical strategies successfully to reach a solution
- justify the degree of accuracy of a solution
- justify whether a solution makes sense in the context of the authentic real-life situation.

At OSC we live our mission by creating space and time for learners to engage in mutually respectful and enriching connections; teaching intercultural understanding, development and competencies; fostering a culture of learning that sparks joy, thinking and inquiry; nurturing personal identity so every learner feels a sense of belonging and inviting all learners to persevere in their learning journey.