



Mathematics



I. Course overview and aims

The study of mathematics is a fundamental part of a balanced education. It promotes a powerful universal language, analytical reasoning and problem-solving skills that contribute to the development of logical, abstract and critical thinking. Mathematics can help make sense of the world and allows phenomena to be described in precise terms. It also promotes careful analysis and the search for patterns and relationships, skills necessary for success both inside and outside the classroom.

Studying mathematics should be more than simply learning formulae or rules. Students should not have the impression that all of the answers to mathematics can be found in a book but, rather, that they can be active participants in the search for concepts and relationships. At the same time, that new knowledge may then be applied to other situations, opening up even more doors for students. MYP mathematics promotes both inquiry and application, helping students to develop problem-solving techniques that transcend the discipline and that are useful in the world outside school. In that light, mathematics becomes a subject that is alive with the thrill of exploration and the rewards of discovery.

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.

II. Planning

The MYP structures sustained inquiry in mathematics by developing conceptual understanding in global contexts. Concepts represent the vehicle for students' inquiry into the issues and ideas of personal, local and global significance, providing the means by which they can explore the essence of mathematics. Concepts express understanding that students take with them into lifelong adventures of learning. They help students to develop principles, generalizations and theories. Students use conceptual understanding as they solve problems, analyse issues and evaluate decisions that can have an impact on themselves, their communities and the wider world.

III. Assessment

Assessment for mathematics courses in all years of the programme is criterion-related, based on four equally weighted assessment criteria. Each criterion has eight possible achievement levels (1–8), divided into four bands that generally represent limited (1–2); adequate (3–4); substantial (5–6); and excellent (7–8) performance. Each band has its own unique descriptor that teachers use to make “best-fit” judgments about students' progress and achievement.

Criterion A: Knowing and understanding

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

Criterion B: Investigating patterns

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

Criterion C: Communicating

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





Criterion D: Applying mathematics in real-life contexts

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

