

Key concepts

Key concepts promote the development of a broad curriculum. They represent big ideas that are both relevant within and across disciplines and subjects. Inquiry into key concepts can facilitate connections between and among:

- courses within the mathematics subject group (intra-disciplinary learning)
- other subject groups (interdisciplinary learning).

Table 1 lists the key concepts to be explored across the MYP. The key concepts contributed by the study of mathematics are **form, logic** and **relationships**.

Aesthetics	Change	Communication	Communities
Connections	Creativity	Culture	Development
Form	Global interactions	Identity	Logic
Perspective	Relationships	Systems	Time, place and space

Table 1

MYP key concepts

These key concepts provide a framework for mathematics, informing units of work and helping to organize teaching and learning.

Form

Form is the shape and underlying structure of an entity or piece of work, including its organization, essential nature and external appearance.

Form in MYP mathematics refers to the understanding that the underlying structure and shape of an entity is distinguished by its properties. Form provides opportunities for students to appreciate the aesthetic nature of the constructs used in a discipline.

Logic

Logic is a method of reasoning and a system of principles used to build arguments and reach conclusions.

Logic in MYP mathematics is used as a process in making decisions about numbers, shapes, and variables. This system of reasoning provides students with a method for explaining the validity of their conclusions. Within the MYP, this should not be confused with the subfield of mathematics called “symbolic logic”.

Relationships

Relationships are the connections and associations between properties, objects, people and ideas—including the human community’s connections with the world in which we live. Any change in

relationship brings consequences—some of which may occur on a small scale, while others may be far reaching, affecting large networks and systems such as human societies and the planetary ecosystem.

Relationships in MYP mathematics refers to the connections between quantities, properties or concepts and these connections may be expressed as models, rules or statements. Relationships provide opportunities for students to explore patterns in the world around them. Connections between the student and mathematics in the real world are important in developing deeper understanding.

Other key concepts can also be important in mathematics and these are outlined in the **Mathematics skills framework** section of this guide.

Related concepts

Related concepts promote deep learning. They are grounded in specific disciplines and are useful for exploring key concepts in greater detail. Inquiry into related concepts helps students develop more complex and sophisticated conceptual understanding. Related concepts may arise from the subject matter of a unit or from the craft of a subject—that is, its features and processes.

Table 2 lists related concepts for the study of mathematics. Teachers are not limited to the related concepts listed in this chart and may choose others when planning units, including from other subject groups.

Related concepts in mathematics		
Change	Equivalence	Generalization
Justification	Measurement	Models
Patterns	Quantity	Representation
Simplification	Space	Systems

Table 2

Related concepts in mathematics

The appendices contain a glossary of these related concepts for mathematics.

Global contexts for teaching and learning

Global contexts direct learning towards independent and shared inquiry into our common humanity and shared guardianship of the planet. Using the world as the broadest context for learning, MYP mathematics can develop meaningful explorations of:

- identities and relationships
- orientation in space and time
- personal and cultural expression

- scientific and technical innovation
- globalization and sustainability
- fairness and development.

Teachers must identify a global context for teaching and learning, or develop additional contexts that help students explore the relevance of their inquiry (why it matters).

Many inquiries into mathematics concepts naturally focus on scientific and technical innovation. However, courses in this subject group should, over time, offer students multiple opportunities to explore all MYP global contexts in relation to the aims and objectives of the subject group.