Mathematics Subject Guide

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. For Maths these 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

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. There are 12 related concepts for each phase of Mathematics.

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

Global Context

Teaching and learning in the MYP involves understanding concepts in context. Global contexts provide a common language for powerful contextual learning, identifying specific settings, events or circumstances that provide more concrete perspectives for teaching and learning. When teachers select a global context for learning, they are answering the following questions.

• Why are we engaged in this inquiry?
• Why are these concepts important?
• Why is it important for me to understand?
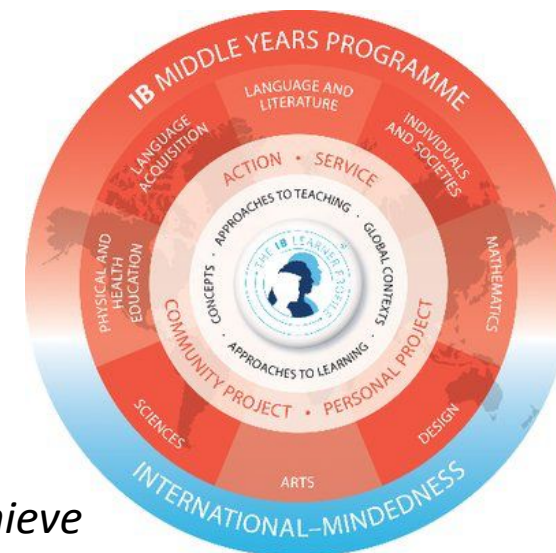• Why do people care about this topic?

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

Together we inspire, learn and achieve

Mathematics: Curriculum and Assessment overview

Criterion A	Criterion B	Criterion C	Criterion D
Knowledge & Understanding	Investigating Patterns	Communication	Real - Life Application

Year 7

Module 1	Module 2	Module 3	Module 4	Module 5	Module 6
Topics: Place Value, Arithmetics, Axions & Arrays, and Decimals.	Topics: Negative Numbers, Factors, Multiples and Primes.	Topics: Factors & multiples, Order of Operations, Negative Numbers and Algebra	Topic: Symmetry	Topics: Angles, Classifying Shapes, Coordinates and Transformation	Topic: Fractions
Criterion: A	Criterion: B, C, D	Criterion: A	Criterion: D	Criterion: A	Criterion: A, B, C

Year 8

Module 1	Module 2	Module 3	Module 4	Module 5	Module 6
Topic: Negative Numbers, Sequences, Solving Equations and Solving Inequalities	Topic: Percentages	Topics: Percentages, Linear Graphs, Ratios and Real Life Graphs	Topic: Proportions	Topics: Area and Perimeter	Topic: Fractions
Criterion: A, B, C	Criterion: D	Criterion: A	Criterion: B & C	Criterion: D	Criterion: B & C

Year 9

Module 1	Module 2	Module 3	Module 4	Module 5	Module 6
Topics: Probability, Sample Sample and Venn Diagrams	Topic: Linear Graphs	Topics: Linear Graphs, Solving Algebraically, Solving Graphically	Topic: Pythagoras	Topics: Volume and Surface Area	Topics: Angles in Polygons, Bearings, Enlargement, Surds, Trigonometry and Quadratics
Criterion: A & D	Criterion: B & C	Criterion: A	Criterion: D	Criterion B and C	Criterion: A

Mathematics Subject Guide
Year 7 & 8 Assessment Criteria

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Year 7 & 8 Grading

In the MYP, subject group objectives correspond to 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.

The scores for each of the four criteria are added together and a final Grade is awarded.

1	2	3	4	5	6	7
1-5	6-9	10-14	15-18	19-23	24-27	28-32

Level Descriptor				
level	Criterion A: Knowing and understanding	Criterion B: Investigating patterns	Criterion C: Communicating	Criterion D: Applying mathematics in real-life contexts
0	The student does not reach a standard described by any of the descriptors below.	The student does not reach a standard described by any of the descriptors below.	The student does not reach a standard described by any of the descriptors below	The student does not reach a standard described by any of the descriptors below
1–2	The student is able to: i. select appropriate mathematics when solving simple problems in familiar situations ii. apply the selected mathematics successfully when solving these problems iii. generally solve these problems correctly in a variety of contexts	The student is able to: i. apply, with teacher support, mathematical problem-solving techniques to recognize simple patterns ii. state predictions consistent with simple patterns.	The student is able to: i. use limited mathematical language ii. use limited forms of mathematical representation to present information iii. communicate through lines of reasoning that are difficult to understand	The student is able to: i. identify some of the elements of the authentic real-life situation ii. apply mathematical strategies to find a solution to the authentic real-life situation, with limited success.
3-4	The student is able to: i. select appropriate mathematics when solving more complex problems in familiar situations ii. apply the selected mathematics successfully when solving these problems iii. generally solve these problems correctly in a variety of contexts.	The student is able to: i. apply mathematical problem-solving techniques to recognize patterns ii. suggest how these patterns work.	The student is able to: i. use some appropriate mathematical language ii. use appropriate forms of mathematical representation to present information adequately iii. communicate through lines of reasoning that are able to be understood, although these are not always coherent iv. adequately organize information using a logical structure.	The student is able to: i. identify the relevant elements of the authentic real-life situation ii. apply mathematical strategies to reach a solution to the authentic real-life situation iii. state, but not always correctly, whether the solution makes sense in the context of the authentic real-life situation.
5-6	The student is able to: i. select appropriate mathematics when solving challenging problems in familiar situations ii. apply the selected mathematics successfully when solving these problems iii. generally solve these problems correctly in a variety of contexts.	The student is able to: i. apply mathematical problem-solving techniques to recognize patterns ii. suggest relationships or general rules consistent with findings iii. verify whether patterns work for another example.	The student is able to: i. usually use appropriate mathematical language ii. usually use appropriate forms of mathematical representation to present information correctly iii. communicate through lines of reasoning that are usually coherent iv. present work that is usually organized using a logical structure.	The student is able to: i. identify the relevant elements of the authentic real-life situation ii. select adequate mathematical strategies to model the authentic real-life situation iii. apply the selected mathematical strategies to reach a valid solution to the authentic real-life situation iv. describe the degree of accuracy of the solution v. state correctly whether the solution makes sense in the context of the authentic real-life situation.
7-8	The student is able to: i. select appropriate mathematics when solving challenging problems in both familiar and unfamiliar situations ii. apply the selected mathematics successfully when solving these problems iii. generally solve these problems correctly in a variety of contexts.	The student is able to: i. select and apply mathematical problem-solving techniques to recognize correct patterns ii. describe patterns as relationships or general rules consistent with correct findings iii. verify whether patterns work for other examples.	The student is able to: i. consistently use appropriate mathematical language ii. consistently use appropriate forms of mathematical representation to present information correctly iii. communicate clearly through coherent lines of reasoning iv. present work that is consistently organized using a logical structure.	The student is able to: i. identify the relevant elements of the authentic real-life situation ii. select adequate mathematical strategies to model the authentic real-life situation iii. apply the selected mathematical strategies to reach a correct solution to the authentic real-life situation iv. explain the degree of accuracy of the solution v. describe correctly whether the solution makes sense in the context of the authentic real-life situation.

Mathematics Subject Guide
Year 9 Assessment Criteria

Together we inspire, learn and achieve
Year 9 Grading

In the MYP, subject group objectives correspond to 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.

The scores for each of the four criteria are added together and a final Grade is awarded.

1	2	3	4	5	6	7
1-5	6-9	10-14	15-18	19-23	24-27	28-32

Level Descriptor				
level	**Criterion A:** **Knowing and understanding**	**Criterion B:** **Investigating patterns**	**Criterion C:** **Communicating**	**Criterion D:** **Applying mathematics in real-life contexts**
0	The student does not reach a standard described by any of the descriptors below	The student does not reach a standard described by any of the descriptors below.	The student does not reach a standard described by any of the descriptors below	The student does not reach a standard described by any of the descriptors below
1–2	The student is able to: i. select appropriate mathematics when solving simple problems in familiar situations ii. apply the selected mathematics successfully when solving these problems iii. generally solve these problems correctly in a variety of contexts.	The student is able to: i. apply, with teacher support, mathematical problem-solving techniques to discover simple patterns ii. state predictions consistent with patterns.	The student is able to: i. use limited mathematical language ii. use limited forms of mathematical representation to present information iii. communicate through lines of reasoning that are difficult to interpret.	The student is able to: i. identify some of the elements of the authentic real-life situation ii. apply mathematical strategies to find a solution to the authentic real-life situation, with limited success.
3-4	The student is able to: i. select appropriate mathematics when solving more complex problems in familiar situations ii. apply the selected mathematics successfully when solving these problems iii. generally solve these problems correctly in a variety of contexts.	The student is able to: i. apply mathematical problem-solving techniques to discover simple patterns ii. suggest relationships and/or general rules consistent with findings.	The student is able to: i. use some appropriate mathematical language ii. use appropriate forms of mathematical representation to present information adequately iii. communicate through lines of reasoning that are able to be understood, although these are not always clear iv. adequately organize information using a logical structure	The student is able to: i. identify the relevant elements of the authentic real-life situation ii. select, with some success, adequate mathematical strategies to model the authentic real-life situation iii. apply mathematical strategies to reach a solution to the authentic real-life situation iv. describe whether the solution makes sense in the context of the authentic real-life situation.
5-6	The student is able to: i. select appropriate mathematics when solving challenging problems in familiar situations ii. apply the selected mathematics successfully when solving these problems iii. generally solve these problems correctly in a variety of contexts.	The student is able to: i. select and apply mathematical problem-solving techniques to discover complex patterns ii. describe patterns as relationships and/or general rules consistent with findings iii. verify these relationships and/or general rules.	The student is able to: i. usually use appropriate mathematical language ii. usually use appropriate forms of mathematical representation to present information correctly iii. move between different forms of mathematical representation with some success iv. communicate through lines of reasoning that are clear although not always coherent or complete v. present work that is usually organized using a logical structure.	The student is able to: i. identify the relevant elements of the authentic real-life situation ii. select adequate mathematical strategies to model the authentic real-life situation iii. apply the selected mathematical strategies to reach a valid solution to the authentic real-life situation iv. describe the degree of accuracy of the solution v. discuss whether the solution makes sense in the context of the authentic real-life situation.
7-8	The student is able to: i. select appropriate mathematics when solving challenging problems in both familiar and unfamiliar situations ii. apply the selected mathematics successfully when solving these problems iii. generally solve these problems correctly in a variety of contexts.	The student is able to: i. select and apply mathematical problem-solving techniques to discover complex patterns ii. describe patterns as relationships and/or general rules consistent with correct findings iii. verify and justify these relationships and/or general rules.	The student is able to: i. consistently use appropriate mathematical language ii. use appropriate forms of mathematical representation to consistently present information correctly iii. move effectively between different forms of mathematical representation iv. communicate through lines of reasoning that are complete and coherent v. present work that is consistently organized using a logical structure.	The student is able to: i. identify the relevant elements of the authentic real-life situation ii. select appropriate mathematical strategies to model the authentic real-life situation iii. apply the selected mathematical strategies to reach a correct solution iv. explain the degree of accuracy of the solution v. explain whether the solution makes sense in the context of the authentic real-life situation.