

Assessment criteria overview

Assessment for mathematics courses in all years of the programme is criterion-related, based on four equally weighted assessment criteria:

Criterion A	Knowing and understanding	Maximum 8
Criterion B	Investigating patterns	Maximum 8
Criterion C	Communicating	Maximum 8
Criterion D	Applying mathematics in real-life contexts	Maximum 8

Subject groups **must** assess **all** strands of **all** four assessment criteria **at least twice in each year** of the MYP.

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. Each band has its own unique descriptor that teachers use to make “best-fit” judgments about students’ progress and achievement.

This guide provides the **required assessment criteria** for years 1, 3 and 5 of MYP mathematics. In response to national or local requirements, schools may add criteria and use additional models of assessment. Schools must use the appropriate assessment criteria, as published in this guide, to report students’ final achievement in the programme.

Teachers clarify the expectations for each summative assessment task with direct reference to these assessment criteria. Task-specific clarifications should clearly explain what students are expected to know and do. They might be in the form of:

- a task-specific version of the required assessment criteria
- a face-to-face or virtual classroom discussion
- a detailed task sheet or assignment.

Mathematics assessment criteria: Year 1

Criterion A: Knowing and understanding

Maximum: 8

At the end of year 1, students should be able to:

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

Achievement level	Level descriptor
0	The student does not reach a standard described by any of the descriptors below.
1–2	<p>The student is able to:</p> <ul style="list-style-type: none"> 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.
3–4	<p>The student is able to:</p> <ul style="list-style-type: none"> 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.
5–6	<p>The student is able to:</p> <ul style="list-style-type: none"> 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.
7–8	<p>The student is able to:</p> <ul style="list-style-type: none"> 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.

Criterion B: Investigating patterns

Maximum: 8

At the end of year 1, students should be able to:

- i. apply mathematical problem-solving techniques to recognize patterns
- ii. describe patterns as relationships or general rules consistent with correct findings
- iii. verify whether the pattern works for other examples.

Achievement level	Level descriptor
0	The student does not reach a standard described by any of the descriptors below.
1–2	The student is able to: <ol style="list-style-type: none"> i. apply, with teacher support, mathematical problem-solving techniques to recognize simple patterns ii. state predictions consistent with simple patterns.
3–4	The student is able to: <ol style="list-style-type: none"> i. apply mathematical problem-solving techniques to recognize patterns ii. suggest how these patterns work.
5–6	The student is able to: <ol style="list-style-type: none"> 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.
7–8	The student is able to: <ol style="list-style-type: none"> 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.

Note: A task that does not allow students to select a problem-solving technique is too guided and should result in students earning a maximum achievement level of 6 (for years 1 and 2).

Criterion C: Communicating

Maximum: 8

At the end of year 1, students should be able to:

- i. use appropriate mathematical language (notation, symbols and terminology) in both oral and written statements
- ii. use appropriate forms of mathematical representation to present information
- iii. communicate coherent mathematical lines of reasoning
- iv. organize information using a logical structure.

Achievement level	Level descriptor
0	The student does not reach a standard described by any of the descriptors below.
1–2	<p>The student is able to:</p> <ol style="list-style-type: none"> 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.
3–4	<p>The student is able to:</p> <ol style="list-style-type: none"> 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.
5–6	<p>The student is able to:</p> <ol style="list-style-type: none"> 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.
7–8	<p>The student is able to:</p> <ol style="list-style-type: none"> 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.

Criterion D: Applying mathematics in real-life contexts

Maximum: 8

At the end of year 1, students should be able to:

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

Achievement level	Level descriptor
0	The student does not reach a standard described by any of the descriptors below.
1–2	<p>The student is able to:</p> <ol style="list-style-type: none"> 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	<p>The student is able to:</p> <ol style="list-style-type: none"> 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	<p>The student is able to:</p> <ol style="list-style-type: none"> 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	<p>The student is able to:</p> <ol style="list-style-type: none"> 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 assessment criteria: Year 3

Criterion A: Knowing and understanding

Maximum: 8

At the end of year 3, students should be able to:

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

Achievement level	Level descriptor
0	The student does not reach a standard described by any of the descriptors below.
1–2	<p>The student is able to:</p> <ul style="list-style-type: none"> 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.
3–4	<p>The student is able to:</p> <ul style="list-style-type: none"> 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.
5–6	<p>The student is able to:</p> <ul style="list-style-type: none"> 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.
7–8	<p>The student is able to:</p> <ul style="list-style-type: none"> 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.

Criterion B: Investigating patterns

Maximum: 8

At the end of year 3, students should be 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 and justify relationships and/or general rules.

Achievement level	Level descriptor
0	The student does not reach a standard described by any of the descriptors below.
1–2	The student is able to: <ol style="list-style-type: none"> i. apply, with teacher support, mathematical problem-solving techniques to discover simple patterns ii. state predictions consistent with patterns.
3–4	The student is able to: <ol style="list-style-type: none"> i. apply mathematical problem-solving techniques to discover simple patterns ii. suggest relationships and/or general rules consistent with findings.
5–6	The student is able to: <ol style="list-style-type: none"> 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.
7–8	The student is able to: <ol style="list-style-type: none"> 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.

Note: A task that does not allow students to select a problem-solving technique is too guided and should result in students earning a maximum achievement level of 4 (year 3 and higher). However, teachers should give enough direction to ensure that all students can begin the investigation.

For year 3 and higher, a student who describes a general rule consistent with incorrect findings will be able to achieve a maximum achievement level of 6, provided that the rule is of an equivalent level of complexity.

Criterion C: Communicating

Maximum: 8

At the end of year 3, students should be able to:

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

Achievement level	Level descriptor
0	The student does not reach a standard described by any of the descriptors below.
1–2	<p>The student is able to:</p> <ol style="list-style-type: none"> 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.
3–4	<p>The student is able to:</p> <ol style="list-style-type: none"> 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.
5–6	<p>The student is able to:</p> <ol style="list-style-type: none"> 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.
7–8	<p>The student is able to:</p> <ol style="list-style-type: none"> 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.

Criterion D: Applying mathematics in real-life contexts

Maximum: 8

At the end of year 3, students should be able to:

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

Achievement level	Level descriptor
0	The student does not reach a standard described by any of the descriptors below.
1–2	<p>The student is able to:</p> <ol style="list-style-type: none"> 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	<p>The student is able to:</p> <ol style="list-style-type: none"> 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	<p>The student is able to:</p> <ol style="list-style-type: none"> 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	<p>The student is able to:</p> <ol style="list-style-type: none"> 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.

Mathematics assessment criteria: Year 5

Criterion A: Knowing and understanding

Maximum: 8

At the end of year 5, students should be able to:

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

Achievement level	Level descriptor
0	The student does not reach a standard described by any of the descriptors below.
1–2	<p>The student is able to:</p> <ul style="list-style-type: none"> 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.
3–4	<p>The student is able to:</p> <ul style="list-style-type: none"> 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.
5–6	<p>The student is able to:</p> <ul style="list-style-type: none"> 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.
7–8	<p>The student is able to:</p> <ul style="list-style-type: none"> 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.

Criterion B: Investigating patterns

Maximum: 8

At the end of year 5, students should be able to:

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

Achievement level	Level descriptor
0	The student does not reach a standard described by any of the descriptors below.
1–2	The student is able to: <ol style="list-style-type: none"> i. apply, with teacher support, mathematical problem-solving techniques to discover simple patterns ii. state predictions consistent with patterns.
3–4	The student is able to: <ol style="list-style-type: none"> i. apply mathematical problem-solving techniques to discover simple patterns ii. suggest general rules consistent with findings.
5–6	The student is able to: <ol style="list-style-type: none"> i. select and apply mathematical problem-solving techniques to discover complex patterns ii. describe patterns as general rules consistent with findings iii. verify the validity of these general rules.
7–8	The student is able to: <ol style="list-style-type: none"> i. select and apply mathematical problem-solving techniques to discover complex patterns ii. describe patterns as general rules consistent with correct findings iii. prove, or verify and justify, these general rules.

Note: A task that does not allow students to select a problem-solving technique is too guided and should result in students earning a maximum achievement level of 4 in year 5. However, teachers should give enough direction to ensure that all students can begin the investigation.

For year 5, a student who describes a general rule consistent with incorrect findings will be able to achieve a maximum achievement level of 6, provided that the rule is of an equivalent level of complexity.

Criterion C: Communicating

Maximum: 8

At the end of year 5, students should be able to:

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

Achievement level	Level descriptor
0	The student does not reach a standard described by any of the descriptors below.
1–2	<p>The student is able to:</p> <ol style="list-style-type: none"> 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.
3–4	<p>The student is able to:</p> <ol style="list-style-type: none"> 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 complete iv. adequately organize information using a logical structure.
5–6	<p>The student is able to:</p> <ol style="list-style-type: none"> i. usually use appropriate mathematical language ii. usually use appropriate forms of mathematical representation to present information correctly iii. usually move between different forms of mathematical representation iv. communicate through lines of reasoning that are complete and coherent v. present work that is usually organized using a logical structure.
7–8	<p>The student is able to:</p> <ol style="list-style-type: none"> 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, coherent and concise v. present work that is consistently organized using a logical structure.

Criterion D: Applying mathematics in real-life contexts

Maximum: 8

At the end of year 5, students should be able to:

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

Achievement level	Level descriptor
0	The student does not reach a standard described by any of the descriptors below.
1–2	<p>The student is able to:</p> <ol style="list-style-type: none"> 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	<p>The student is able to:</p> <ol style="list-style-type: none"> 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. discuss whether the solution makes sense in the context of the authentic real-life situation.
5–6	<p>The student is able to:</p> <ol style="list-style-type: none"> 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. explain the degree of accuracy of the solution v. explain whether the solution makes sense in the context of the authentic real-life situation.
7–8	<p>The student is able to:</p> <ol style="list-style-type: none"> 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 to the authentic real-life situation iv. justify the degree of accuracy of the solution v. justify whether the solution makes sense in the context of the authentic real-life situation.