

# 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               | The student is able to: <ol style="list-style-type: none"> <li>i. <b>select</b> appropriate mathematics when solving simple problems in familiar situations</li> <li>ii. <b>apply</b> the selected mathematics successfully when solving these problems</li> <li>iii. generally <b>solve</b> these problems correctly.</li> </ol>                          |
| 3–4               | The student is able to: <ol style="list-style-type: none"> <li>i. <b>select</b> appropriate mathematics when solving more complex problems in familiar situations</li> <li>ii. <b>apply</b> the selected mathematics successfully when solving these problems</li> <li>iii. generally <b>solve</b> these problems correctly.</li> </ol>                    |
| 5–6               | The student is able to: <ol style="list-style-type: none"> <li>i. <b>select</b> appropriate mathematics when solving challenging problems in familiar situations</li> <li>ii. <b>apply</b> the selected mathematics successfully when solving these problems</li> <li>iii. generally <b>solve</b> these problems correctly.</li> </ol>                     |
| 7–8               | The student is able to: <ol style="list-style-type: none"> <li>i. <b>select</b> appropriate mathematics when solving challenging problems in both familiar and unfamiliar situations</li> <li>ii. <b>apply</b> the selected mathematics successfully when solving these problems</li> <li>iii. generally <b>solve</b> these problems correctly.</li> </ol> |

## 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"> <li>i. <b>apply</b>, with teacher support, mathematical problem-solving techniques to discover simple patterns</li> <li>ii. <b>state</b> predictions consistent with patterns.</li> </ol>   |
| 3–4               | The student is able to: <ol style="list-style-type: none"> <li>i. <b>apply</b> mathematical problem-solving techniques to discover simple patterns</li> <li>ii. <b>suggest</b> general rules consistent with findings.</li> </ol>  |
| 5–6               | The student is able to: <ol style="list-style-type: none"> <li>i. <b>select</b> and <b>apply</b> mathematical problem-solving techniques to discover complex patterns</li> <li>ii. <b>describe</b> patterns as general rules consistent with findings</li> <li>iii. <b>verify</b> the validity of these general rules.</li> </ol>                              |
| 7–8               | The student is able to: <ol style="list-style-type: none"> <li>i. <b>select</b> and <b>apply</b> mathematical problem-solving techniques to discover complex patterns</li> <li>ii. <b>describe</b> patterns as general rules consistent with correct findings</li> <li>iii. <b>prove</b>, or <b>verify</b> and <b>justify</b>, these general rules.</li> </ol> |

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               | The student is able to: <ol style="list-style-type: none"> <li>i. <b>use</b> limited mathematical language</li> <li>ii. <b>use</b> limited forms of mathematical representation to present information</li> <li>iii. <b>communicate</b> through lines of reasoning that are difficult to interpret.</li> </ol>   |
| 3–4               | The student is able to: <ol style="list-style-type: none"> <li>i. <b>use</b> some appropriate mathematical language</li> <li>ii. <b>use</b> appropriate forms of mathematical representation to present information adequately</li> <li>iii. <b>communicate</b> through lines of reasoning that are complete</li> <li>iv. adequately <b>organize</b> information using a logical structure.</li> </ol>   |
| 5–6               | The student is able to: <ol style="list-style-type: none"> <li>i. usually <b>use</b> appropriate mathematical language</li> <li>ii. usually <b>use</b> appropriate forms of mathematical representation to present information correctly</li> <li>iii. usually move between different forms of mathematical representation</li> <li>iv. <b>communicate</b> through lines of reasoning that are complete and coherent</li> <li>v. <b>present</b> work that is usually organized using a logical structure.</li> </ol>                             |
| 7–8               | The student is able to: <ol style="list-style-type: none"> <li>i. consistently <b>use</b> appropriate mathematical language</li> <li>ii. <b>use</b> appropriate forms of mathematical representation to consistently present information correctly</li> <li>iii. move effectively between different forms of mathematical representation</li> <li>iv. <b>communicate</b> through lines of reasoning that are complete, coherent and concise</li> <li>v. <b>present</b> work that is consistently organized using a logical structure.</li> </ol> |

## 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               | The student is able to: <ol style="list-style-type: none"> <li>i. <b>identify</b> some of the elements of the authentic real-life situation</li> <li>ii. <b>apply</b> mathematical strategies to find a solution to the authentic real-life situation, with limited success.</li> </ol>   |
| 3–4               | The student is able to: <ol style="list-style-type: none"> <li>i. <b>identify</b> the relevant elements of the authentic real-life situation</li> <li>ii. <b>select</b>, with some success, adequate mathematical strategies to model the authentic real-life situation</li> <li>iii. <b>apply</b> mathematical strategies to reach a solution to the authentic real-life situation</li> <li>iv. <b>discuss</b> whether the solution makes sense in the context of the authentic real-life situation.</li> </ol>  |
| 5–6               | The student is able to: <ol style="list-style-type: none"> <li>i. <b>identify</b> the relevant elements of the authentic real-life situation</li> <li>ii. <b>select</b> adequate mathematical strategies to model the authentic real-life situation</li> <li>iii. <b>apply</b> the selected mathematical strategies to reach a valid solution to the authentic real-life situation</li> <li>iv. <b>explain</b> the degree of accuracy of the solution</li> <li>v. <b>explain</b> whether the solution makes sense in the context of the authentic real-life situation.</li> </ol> |

| Achievement level | Level descriptor  |
|-------------------|---|
| 7–8               | <p>The student is able to:</p> <ol style="list-style-type: none"> <li>i. <b>identify</b> the relevant elements of the authentic real-life situation</li> <li>ii. <b>select</b> appropriate mathematical strategies to model the authentic real-life situation</li> <li>iii. <b>apply</b> the selected mathematical strategies to reach a correct solution to the authentic real-life situation</li> <li>iv. <b>justify</b> the degree of accuracy of the solution</li> <li>v. <b>justify</b> whether the solution makes sense in the context of the authentic real-life situation.</li> </ol> |

## eAssessment

Students seeking **IB MYP results** for MYP mathematics courses complete an on-screen examination in which they can demonstrate their achievement of subject group objectives. Successful results can contribute to students' attainment of the **IB MYP certificate**. This verification of learning assures accurate and consistently-applied standards, as set forth in the *Guide to MYP eAssessment*.