

# Mathematics assessment criteria: Year (4 and) 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 <b>does not</b> 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"><li>i. select appropriate mathematics when solving <b>simple problems</b> in <b>familiar situations</b></li><li>ii. apply the selected mathematics successfully when solving these problems</li><li>iii. generally solve these problems correctly in a variety of contexts.</li></ol>
3–4	<p>The student is able to:</p> <ol style="list-style-type: none"><li>i. select appropriate mathematics when solving <b>more complex problems</b> in <b>familiar situations</b></li><li>ii. apply the selected mathematics successfully when solving these problems</li><li>iii. generally solve these problems correctly in a variety of contexts.</li></ol>

5–6	<p>The student is able to:</p> <ul style="list-style-type: none"> <li>i. select appropriate mathematics when solving <b>challenging problems</b> in <b>familiar situations</b></li> <li>ii. apply the selected mathematics successfully when solving these problems</li> <li>iii. generally solve these problems correctly in a variety of contexts.</li> </ul>
7–8	<p>The student is able to:</p> <ul style="list-style-type: none"> <li>i. select appropriate mathematics when solving <b>challenging problems</b> in both <b>familiar and unfamiliar situations</b></li> <li>ii. apply the selected mathematics successfully when solving these problems</li> <li>iii. generally solve these problems correctly in a variety of contexts.</li> </ul>

## 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 <b>does not</b> 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"> <li>i. <b>apply, with teacher support</b>, mathematical problem-solving techniques to discover <b>simple patterns</b></li> <li>ii. <b>state predictions</b> consistent with patterns.</li> </ul>
3–4	<p>The student is able to:</p> <ul style="list-style-type: none"> <li>i. <b>apply</b> mathematical problem-solving techniques to discover <b>simple patterns</b></li> <li>ii. <b>suggest general rules</b> consistent with <b>findings</b>.</li> </ul>
5–6	<p>The student is able to:</p> <ul style="list-style-type: none"> <li>i. <b>select and apply</b> mathematical problem-solving techniques to discover <b>complex patterns</b></li> <li>ii. <b>describe patterns</b> as general rules consistent with <b>findings</b></li> <li>iii. <b>verify</b> the validity of these general rules.</li> </ul>
7–8	<p>The student is able to:</p> <ul style="list-style-type: none"> <li>i. <b>select and apply</b> mathematical problem-solving techniques to discover <b>complex patterns</b></li> <li>ii. <b>describe patterns</b> as general rules consistent with <b>correct findings</b></li> <li>iii. <b>prove, or verify and justify</b>, these general rules.</li> </ul>

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

## 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 <b>does not</b> 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"><li>i. use <b>limited</b> mathematical language</li><li>ii. use <b>limited forms</b> of mathematical representation to present information</li><li>iii. communicate through lines of reasoning that are <b>difficult to interpret</b>.</li></ol>
3–4	<p>The student is able to:</p> <ol style="list-style-type: none"><li>i. use <b>some appropriate</b> mathematical language</li><li>ii. use <b>appropriate forms</b> of mathematical representation to present information <b>adequately</b></li><li>iii. communicate through lines of reasoning that are <b>complete</b></li></ol>

	iv. <b>adequately organize</b> information using a logical structure.
5–6	<p>The student is able to:</p> <ol style="list-style-type: none"> <li>1. <b>usually</b> use <b>appropriate</b> mathematical language</li> <li>2. <b>usually</b> use <b>appropriate forms</b> of mathematical representation to present information <b>correctly</b></li> <li>3. <b>usually</b> move between different forms of mathematical representation</li> <li>4. communicate through lines of reasoning that are <b>complete and coherent</b></li> <li>5. <b>present</b> work that is <b>usually organized</b> using a logical structure.</li> </ol>
7–8	<p>The student is able to:</p> <ol style="list-style-type: none"> <li>i. <b>consistently</b> use <b>appropriate</b> mathematical language</li> <li>ii. use <b>appropriate forms</b> of mathematical representation to <b>consistently</b> present information <b>correctly</b></li> <li>iii. move <b>effectively</b> between different forms of mathematical representation</li> <li>iv. communicate through lines of reasoning that are <b>complete, coherent and concise</b></li> <li>v. <b>present</b> work that is <b>consistently organized</b> 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 <b>does not</b> 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"> <li>i. identify <b>some</b> of the elements of the authentic real-life situation</li> <li>ii. apply mathematical strategies to <b>find a solution</b> to the authentic real-life situation, <b>with limited success</b>.</li> </ul>
3–4	<p>The student is able to:</p> <ul style="list-style-type: none"> <li>i. identify the <b>relevant</b> elements of the authentic real-life situation</li> <li>ii. select, <b>with some success, adequate</b> mathematical strategies to model the authentic real-life situation</li> <li>iii. apply mathematical strategies to <b>reach a solution</b> 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> </ul>
5–6	<p>The student is able to:</p> <ul style="list-style-type: none"> <li>i. identify the <b>relevant</b> elements of the authentic real-life situation</li> <li>ii. select <b>adequate</b> mathematical strategies to model the authentic real-life situation</li> <li>iii. apply the selected mathematical strategies to <b>reach a valid solution</b> to the authentic real-life situation</li> <li>iv. <b>explain</b> the degree of accuracy of the solution</li> </ul>

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