

## 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 <b>does not</b> 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. 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               | The student is able to: <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               | The student is able to: <ol 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> </ol>                     |
| 7–8               | The student is able to: <ol 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> </ol> |

### 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 <b>does not</b> reach a standard described by any of the descriptors below.  |
| 1–2               | The student is able to: <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               | The student is able to: <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 relationships</b> and/or general rules consistent with <b>findings</b>.</li> </ul>   |
| 5–6               | The student is able to: <ul style="list-style-type: none"> <li>i. <b>select</b> and <b>apply</b> mathematical problem-solving techniques to discover <b>complex patterns</b></li> <li>ii. <b>describe patterns</b> as relationships and/or general rules consistent with <b>findings</b></li> <li>iii. <b>verify</b> these relationships and/or general rules.</li> </ul>                            |
| 7–8               | The student is able to: <ul style="list-style-type: none"> <li>i. <b>select</b> and <b>apply</b> mathematical problem-solving techniques to discover <b>complex patterns</b></li> <li>ii. <b>describe patterns</b> as relationships and/or general rules consistent with <b>correct findings</b></li> <li>iii. <b>verify</b> and <b>justify</b> these relationships and/or 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 (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 <b>does not</b> reach a standard described by any of the descriptors below.   |
| 1–2               | The student is able to: <ul 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> </ul> |

| Achievement level | Level descriptor   |
|-------------------|--|
|                   | iii. communicate through lines of reasoning that are <b>difficult to interpret</b> .   |
| 3–4               | The student is able to: <ol style="list-style-type: none"> <li>use <b>some appropriate</b> mathematical language</li> <li>use <b>appropriate forms</b> of mathematical representation to present information <b>adequately</b></li> <li>communicate through lines of reasoning that are <b>able to be understood</b>, although these are <b>not always clear</b></li> <li><b>adequately organize</b> information using a logical structure.</li> </ol>   |
| 5–6               | The student is able to: <ol style="list-style-type: none"> <li><b>usually</b> use <b>appropriate</b> mathematical language</li> <li><b>usually</b> use <b>appropriate forms</b> of mathematical representation to present information <b>correctly</b></li> <li>move between different forms of mathematical representation <b>with some success</b></li> <li>communicate through lines of reasoning that are clear although <b>not always coherent or complete</b></li> <li>present work that is <b>usually organized</b> using a logical structure.</li> </ol> |
| 7–8               | The student is able to: <ol style="list-style-type: none"> <li><b>consistently</b> use <b>appropriate</b> mathematical language</li> <li>use <b>appropriate forms</b> of mathematical representation to <b>consistently</b> present information <b>correctly</b></li> <li>move <b>effectively</b> between different forms of mathematical representation</li> <li>communicate through lines of reasoning that are <b>complete and coherent</b></li> <li>present 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 3, students should be able to:

- identify relevant elements of authentic real-life situations
- select appropriate mathematical strategies when solving authentic real-life situations
- apply the selected mathematical strategies successfully to reach a solution
- explain the degree of accuracy of a solution
- explain 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               | The student is able to: <ol style="list-style-type: none"> <li>identify <b>some</b> of the elements of the authentic real-life situation</li> <li>apply mathematical strategies to <b>find a solution</b> to the authentic real-life situation, <b>with limited success</b>.</li> </ol> |
| 3–4               | The student is able to:   |

| Achievement level | Level descriptor  |
|-------------------|---|
|                   | <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>describe</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>describe</b> the degree of accuracy of the solution</li> <li>v. <b>discuss</b> whether the solution makes sense in the context of the authentic real-life situation.</li> </ul> |
| 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></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> </ul>                                  |