Criterion A: Knowing and understanding

**Maximum: 8**

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

i. explain scientific knowledge

ii. apply scientific knowledge and understanding to solve problems set in familiar and unfamiliar situations

iii. analyse and evaluate information to make scientifically supported judgments.

|  |  |
| --- | --- |
| **Achievement level** | **Level descriptor** |
| 0 | The student does not reach a standard identified by any of the descriptors below. |
| 1–2 | The student is able to:  i. **state** scientific knowledge  ii. apply scientific knowledge and understanding to **suggest solutions** to problems set in **familiar situations**  iii. **interpret** information to make **judgments**. |
| 3–4 | The student is able to:  i. **outline** scientific knowledge  ii. apply scientific knowledge and understanding to **solve problems** set in **familiar situations**  iii. **interpret** information to make **scientifically supported judgments**. |
| 5–6 | The student is able to:  i. **describe** scientific knowledge  ii. apply scientific knowledge and understanding to **solve problems** set in **familiar situations** and **suggest solutions** to problems set in **unfamiliar situations**  iii. **analyse** information to make **scientifically supported judgments**. |
| 7–8 | The student is able to:  i. **explain** scientific knowledge  ii. apply scientific knowledge and understanding to **solve problems** set in **familiar and unfamiliar situations**  iii. **analyse** and **evaluate** information to make **scientifically supported judgments**. |

Criterion B: Inquiring and designing

**Maximum: 8**

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

i. explain a problem or question to be tested by a scientific investigation

ii. formulate a testable hypothesis and explain it using scientific reasoning

iii. explain how to manipulate the variables, and explain how data will be collected

iv. design scientific investigations.

|  |  |
| --- | --- |
| **Achievement level** | **Level descriptor** |
| 0 | The student does not reach a standard identified by any of the descriptors below. |
| 1–2 | The student is able to:  i. **state** a problem or question to be tested by a scientific investigation  ii. **outline** a testable hypothesis  iii. **outline** the variables  iv. **design** a method, **with limited success.** |
| 3–4 | The student is able to:  i. **outline** a problem or question to be tested by a scientific investigation  ii. **formulate** a testable hypothesis **using scientific reasoning**  iii. **outline** how to manipulate the variables, and **outline** how **relevant data** will be collected  iv. design a **safe method** in which he or she **selects materials and equipment**. |
| 5–6 | The student is able to:  i. **describe** a problem or question to be tested by a scientific investigation  ii. **formulate and explain** a testable hypothesis **using scientific reasoning**  iii. **describe** how to manipulate the variables, and **describe** how **sufficient, relevant data** will be collected  iv. design a **complete and safe method** in which he or she selects **appropriate materials and equipment**. |
| 7–8 | The student is able to:  i. **explain** a problem or question to be tested by a scientific investigation  ii. **formulate and explain** a testable hypothesis **using correct scientific reasoning**  iii. **explain** how to manipulate the variables, and **explain** how **sufficient, relevant data** will be collected  iv. **design** a **logical, complete and safe method** in which he or she **selects appropriate materials and equipment**. |

Criterion C: Processing and evaluating

**Maximum: 8**

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

i. present collected and transformed data

ii. interpret data and explain results using scientific reasoning

iii. evaluate the validity of a hypothesis based on the outcome of the scientific investigation

iv. evaluate the validity of the method

v. explain improvements or extensions to the method.

|  |  |
| --- | --- |
| **Achievement level** | **Level descriptor** |
| 0 | The student does not reach a standard identified by any of the descriptors below. |
| 1–2 | The student is able to:  i. **collect and present** data in numerical and/or visual forms  ii. **interpret** data  iii. **state** the validity of a hypothesis based on the outcome of a scientific investigation  iv. **state** the validity of the method based on the outcome of a scientific investigation  v. **state** improvements or extensions to the method. |
| 3–4 | The student is able to:  i. **correctly collect and present** data in numerical and/or visual forms  ii. **accurately interpret** data and **explain** results  iii. **outline** the validity of a hypothesis based on the outcome of a scientific investigation  iv. **outline** the validity of the method based on the outcome of a scientific investigation  v. **outline** improvements or extensions to the method that would benefit the scientific investigation. |
| 5–6 | The student is able to:  i. **correctly collect, organize and present** data in numerical and/or visual forms  ii. **accurately interpret** data and **explain** results **using scientific reasoning**  iii. **discuss** the validity of a hypothesis based on the outcome of a scientific investigation  iv. **discuss** the validity of the method based on the outcome of a scientific investigation  v. **describe** improvements or extensions to the method that would benefit the scientific investigation. |
| 7–8 | The student is able to:  i. correctly collect, organize, transform and present data in numerical and/ or visual forms  ii. accurately interpret data and explain results using correct scientific reasoning  iii. evaluate the validity of a hypothesis based on the outcome of a scientific investigation  iv. evaluate the validity of the method based on the outcome of a scientific investigation  v. explain improvements or extensions to the method that would benefit the scientific investigation. |

Criterion D: Reflecting on the impacts of science

**Maximum: 8**

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

i. explain the ways in which science is applied and used to address a specific problem or issue

ii. discuss and evaluate the various implications of using science and its application to solve a specific problem or issue

iii. apply scientific language effectively

iv. document the work of others and sources of information used.

|  |  |
| --- | --- |
| **Achievement level** | **Level descriptor** |
| 0 | The student does not reach a standard identified by any of the descriptors below. |
| 1–2 | The student is able to:  i. **outline** the ways in which science is used to address a specific problem or issue  ii. **outline** the implications of using science to solve a specific problem or issue, interacting with a factor  iii. **apply** scientific language to communicate understanding but does so **with limited success**  iv. document sources, with **limited success**. |
| 3–4 | The student is able to:  i. **summarize** the ways in which science is applied and used to address a specific problem or issue  ii. **describe** the implications of using science and its application to solve a specific problem or issue, interacting with a factor  iii. **sometimes apply** scientific language to communicate understanding  iv. **sometimes** document sources correctly. |
| 5–6 | The student is able to:  i. **describe** the ways in which science is applied and used to address a specific problem or issue  ii. **discuss** the implications of using science and its application to solve a specific problem or issue, interacting with a factor  iii. **usually apply** scientific language to communicate understanding clearly and precisely  iv. **usually** document sources correctly. |
| 7–8 | The student is able to:  i. explain the ways in which science is applied and used to address a specific problem or issue  ii. discuss and evaluate the implications of using science and its application to solve a specific problem or issue, interacting with a factor  iii. consistently apply scientific language to communicate understanding clearly and precisely  iv. document sources completely. |