## Year 8 Science 20017-2018 Criterion B: Inquiring and designing

|  |  |  |
| --- | --- | --- |
| Level of Achievement |  | Level Descriptor |
| 0 | The student does not reach the standard described in any of the levels below. |
| 1-2 | The student is able to:i. **state** a problem or question to be tested by a scientific investigationii. **outline** a testable hypothesisiii. **outline** the variablesiv. **design** a method, with limited success | [ ]  The question or investigation problem is adequate, but poorly expressed. [ ]  The hypothesis is formulated [ ]  Variables have been identified.[ ]  The **method** does not allow for the effective development of the investigation. **[ ]**  A reference list is not included. |
| 3-4 | The student is able to:i. **outline** a problem or question to be tested by a scientific investigationii. **formulate** a testable hypothesis using scientific reasoningiii. **outline** how to manipulate the variables, and outline how relevant data will be collectediv. **design** a safe method in which he or she selects materials and equipment | [ ]  The question or investigation problem is adequate. [ ]  The hypothesis is formulated and justified with some scientific reasoning. [ ]  Variables are correctly identified as independent, dependent, controls may be missing.[ ]  The manipulation and measuring of all variables is present. [ ]  The method allows for the collection of relevant data. [ ]  The **method** is safe.[ ]  A complete list of materials, is included.[ ]  A reference list is included. |
| 5-6 | The student is able to:i. describe a problem or question to be tested by a scientific investigationii. formulate and explain a testable hypothesis using scientific reasoningiii. describe how to manipulate the variables, and describe how sufficient, relevant data will be collectediv. design a complete and safe method in which he or she selects appropriate materials and equipment | [ ]  The question or investigation problem is explained in broad terms, using scientific vocabulary, based on some research. [ ]  The hypothesis is well formulated, explained and theoretically justified with scientific reasoning. [ ]  Variables are correctly identified as independent, dependent and controlled.[ ]  The manipulation and measuring of all variables is present.[ ]  The method allows for the collection of sufficient relevant data. [ ]  The **method** is completely clear and safe.[ ]  A complete list of materials is included.[ ]  A reference list is included in the APA format. |
| 7-8 | The student is able to:i. **explain** a problem or question to be tested by a scientific investigationii. **formulate** and **explain** a testable hypothesis using correct scientific reasoningiii. **explain** how to manipulate the variables, and explain how sufficient, relevant data will be collectediv. **design** a logical, complete and safe method in which he or she selects appropriate materials and equipment. | [ ]  The question or investigation problem is well detailed, using scientific vocabulary, based on research. [ ]  The hypothesis is well formulated, explained and theoretically justified with correct scientific reasoning. [ ]  Variables are correctly identified as independent, dependent and controlled.[ ]  The manipulation and measuring of all variables is explained.[ ]  The method allows for the collection of sufficient relevant data. [ ]  The **method** is completely clear, safe and logically structured.[ ]  A complete list of materials, with their proper names, is included.[ ]  A reference list is included in the APA format. |

**Task**: Design an investigation into a factor that affects the speed of a chemical reaction.

You can choose from one of the following reactions:

* Potassium permanganate and glucose
* Acid and metal reaction (Mg + HCl)
* Effervescent tablet in water

**Note**: For this formative assessment you will need to complete the following sections of a lab report:

1. The research question
2. Background information
3. The hypothesis (supported by some background information)
4. The independent, dependent and control variables
5. Materials and method, , clearly indicating how you will manipulate or measure the different variables.

**NOTE: Sufficient data means: 3 repetitions of 5 varieties of the independent variable**

[Click here to download the template](http://www.sciencesfp.com/uploads/2/1/5/9/21597828/format_lab_report_myp_2015.docx)

**The deadline for the formative assessment is, Fridday January 19th 2018.**

**You will carry out this investigation in the lab and your summative lab report for Criterion B and Criterion C will be due a week after you have finished collecting data. More information will be given during the investigation weeks.**