**STAGE 1 NUTRITION**

**ASSESSMENT TYPE 1: Investigations Folio**

**Practical Investigation**

Key Ideas from the Nutrition Investigation Skills section of the Subject Outline are used to clarify the purpose of the task.

**Purpose**

To demonstrate your ability to:

* conduct a safe investigation in the laboratory
* be involved in a collaborative task where results are shared to increase reliability of data
* identify random and systematic errors and suggest possible improvements to the investigation
* use appropriate methods to record data, use nutrition terms and conventions correctly.

**Description of assessment**

* Begin the investigation in class in pairs, steps 1 – 3.
* Return in the following lesson to complete the investigation collaboratively and record raw data.
* Individually use lesson and homework time to analyse the data and submit a rough draft to the teacher.
* On receiving feedback on the rough draft use one more homework time to complete the final report and then submit.

**Assessment conditions**

* This is a collaborative task for conducting the investigation and gathering raw data, it then is an individual task for the report write-up.
* This activity should be completed in one and a half weeks depending on lesson distribution.

Explicit instructions support students to understand the requirements of the task and reach the highest possible level of achievement.

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| **SACE Stage 1 Nutrition** LIFE’S ESSENTIALS: *Nutrients* How much water is in an orange? |
| **Investigative Question:**  What percentage of an orange is water? |
| **Background Information:**  A significant section of food industry is involved in the production of dry-foods. It is a great way to preserve food for later use and for convenience. A variety of foods are dried including meats, vegetables, fruits and coffee. Drying food is the process of evaporating the interior water of a food product. In most cases this will be done in a hot air tunnel. Many seasonal products are dried to reduce the cost of storage and for easy distribution of the products during the year. Some liquid foods such as orange juice are usually partially dried to lose 80% of their water and the result is called a concentrate.  **Investigation:** |
| Students to work in pairs to complete the practical aspect of the investigation. |
| **Materials:**  one orange  sharp kitchen knife  one plastic plate  electronic balance |
| **Procedure:**   1. Weigh the orange and the plate. Record the total mass in grams. 2. Cut the orange, on the plate, in very thin slices to speed up the drying process. 3. Spread the slices out on the plate. 4. Keep it in a warm place until it is fully dry. You can expect it to take 4-36 hours depending on the heat and airflow. 5. Weigh the orange slices and plate once fully dried. Record the total mass in grams.  |  | | --- | |  | |

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| **Results**:  Record your observations in the following table:   |  |  | | --- | --- | |  | mass (g) | | **Start of investigation**  mass of orange and plate | (a) | | **After drying**  mass of orange and plate | (b) | | **Difference**  in mass of orange and plate | (c) |   **Table 1: Individual group observations**  **Data Analysis:**   1. Calculate the percentage of water in the orange:  (round to a whole number)   Percentage of water in the orange for our investigation :\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   1. Share your results with the class to calculate the mean (average) percentage of water in an orange, by completing table 2.  |  |  | | --- | --- | | Student Group | % of Water in Orange | | 1 |  | | 2 |  | | 3 |  | | 4 |  | | 5 |  | | 6 |  | | 7 |  | |  | Total: | | Divide total by number of groups to calculate mean | Mean: |     **Table 2: Class results** |
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3. Use the results from table 2 to construct a graph. Label your graph as Figure 1 in your report.

4. Identify any outliers (results that stand out as being too high or too low compared with the others) and suggest possible reasons for these.

5. Explain whether the mean should be recalculated for outliers to produce a more reliable mean.

6. Identify random and systematic errors that may have occurred in the investigation and explain how they could have affected the results.

7. Suggest improvements that could be made to the investigation.

|  | Investigation, Analysis and Evaluation | Knowledge and Application |
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| A | Critically designs or conducts investigations using appropriate methodologies.  Obtain, record, and display findings of investigations, using appropriate conventions and formats accurately and highly effectively.  Systematically analyses and interprets data and /or information to formulate logical conclusions.  Critically and logically evaluates methodologies and/ or research processes and the effect on data or findings. | Deep and broad knowledge and understanding of a range of nutrition concepts.  Highly effective application of nutrition concepts in familiar and unfamiliar contexts.  Critically explores and understands the relationship between nutrition science and society.  Coherent and clear communication of nutrition concepts and nutrition literacy and numeracy. |
| B | Logically designs or conducts investigations using appropriate methodologies.  Obtain, record, and display findings of investigations, using appropriate conventions and formats mostly accurately and effectively.  Analyse and interpret data and /or information to formulate reasonable conclusions.  Logically evaluates methodologies and/ or research processes and the effect on data or findings. | Some depth and breadth of knowledge and understanding to a range of nutrition concepts.  Mostly effective application of nutrition concepts in familiar and unfamiliar contexts.  Logically explores and understands the relationship between nutrition science and society.  Mostly coherent and clear communication of nutrition concepts and nutrition literacy and numeracy. |
| C | Design or conduct investigations using appropriate clear methodologies  Obtain, record, and display findings of investigations, using appropriate conventions and formats, with some errors but generally accurately and effectively  Interpret data and /or information to formulate generally appropriate conclusions  Evaluates methodologies and/ or research processes and some of the effect on data or findings | Knowledge and understanding of a general range of nutrition concepts  Generally effective application of nutrition concepts in familiar and unfamiliar contexts  Explores and understands aspects of the relationship between nutrition science and society  Generally coherent and clear communication of nutrition concepts and nutrition literacy and numeracy |
| D | Prepares or conducts investigations using some appropriate methodologies.  Obtain, record, and display findings of investigations, using appropriate conventions and formats inconsistently, with occasional accuracy and effectiveness.  Describes data and /or information to formulate basic conclusions.  Attempts to evaluate methodologies and/ or research processes and suggest an effect on data or findings. | Some basic knowledge and partial understanding of nutrition concepts  Application of some nutrition concepts in familiar contexts.  Partially explores and recognises aspects of the relationship between nutrition science and society.  Some clear communication of nutrition concepts and nutrition literacy and numeracy. |
| E | Attempts to prepare or conduct investigations using simple methodologies.  Attempts to record and represent some data, with limited accuracy or effectiveness.  Attempts to describe data and /or information and formulates a simple conclusion.  Acknowledges that methodologies and/ or research processes effect data or findings | Limited recognition and awareness of nutrition concepts.  Attempted application of nutrition concepts in contexts.  Attempts to explore and identify an aspect of the relationship between nutrition science and society.  Attempted communication of nutrition concepts and nutrition literacy and numeracy. |