**STAGE 2 CHEMISTRY**

**ASSESSMENT TYPE 1: Investigations Folio**

**Practical (Design): Triglycerides**

**Purpose**

Vegetable oils are mixtures of different triglycerides that have different properties. The purpose of this investigation is to identify three different vegetable oils.

This assessment provides you with the opportunity to:

* deconstruct a problem in order to design and conduct an investigation
* collect, record and display data
* analyse and interpret data to form a justified conclusion
* evaluate procedures and their effect on the data
* communicate your understanding of concepts relating to organic chemistry

**Description of the problem**

What properties of triglycerides can be used to confirm the identity of three unlabelled samples of vegetable oil as olive oil, flaxseed oil, and canola oil?

**Part A Deconstruct the problem and design an investigation procedure**

You will need to provide evidence of your deconstruction of the problem, your choice of question and justification for the various parts of your method.

Individually:

* research properties of triglycerides that could be used to identify individual triglycerides in the laboratory
* select one factor to investigate and give reasons for your choice of independent variable and dependent variable
* find an appropriate technique that you can use safely in the laboratory for this investigation. You may carry out a preliminary trial to take notes and plan your method.
* write an investigable question or hypothesis that can be tested in the laboratory
* identify factors that can be controlled and those that cannot be controlled
* design and write a method to test your question. Include a list materials required and a detailed list of steps in dot points. Justify your choice of equipment and the various steps in the method.

Present your deconstruction ideas, your proposed method and a justification of your method on a maximum of 4 sides of an A4 page. Consider using a concept map, flow chart, tables etc. to present your ideas succinctly.

Submit your deconstruction evidence for teacher feedback and your list of requirements one week before undertaking the practical investigation.

**Part B Practical investigation**

Carry out your approved investigation with your partner.

**Part C Investigation Report**

Individually write a practical report that includes:

* introduction with relevant chemistry concepts, and either a hypothesis and variables, or an investigable question
* materials/apparatus
* method that was implemented
* identification and management of safety and/or ethical risks\*
* results, including table(s) and/or graph(s)
* analysis of results, identifying trends, and linking results to concepts
* evaluation of procedures and their effects on data, and identifying sources of uncertainty
* conclusion, with justification.

The report should be a maximum of 1500 words if written, or a maximum of 10 minutes for an oral presentation, or the equivalent in multimodal form.

Only the following sections of the report are included in the word count:

* introduction
* analysis of results
* evaluation of procedures
* conclusion and justification.

The deconstruction evidence must be attached to the report.

**Assessment conditions**

**Part A**

Plan the investigation in the laboratory under teacher supervision.

**Part B**

The practical is completed in the laboratory during a ninety-minute lesson.

**Part C**

An individual practical report is completed and submitted for assessment no later than seven days after completion of Part B.

In the report the specific features IAE1, IAE2, IAE3, IAE4 and KA1 are assessed:

**Performance Standards for Stage 2 Chemistry**

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| --- | --- | --- | --- | --- | --- | --- |
|  | | **A** | **B** | **C** | **D** | **E** |
| **Investigation, Analysis and Evaluation** | **1**  **2**  **3**  **4** | **Critically** deconstructs a problem and **designs** a **logical, coherent**, and **detailed** chemistry investigation.  Obtains records, and represents data, using **appropriate** conventions and formats accurately and **highly** effectively.  **Systematically** analyses and interprets data and evidence to formulate **logical** conclusions with **detailed** justification.  **Critically** and **logically** evaluates procedures and their effects on data. | **Logically** deconstructs a problem and **designs** a **well-considered** and **clear** chemistry investigation.  Obtains, records, and represents data, using **appropriate** conventions and formats **mostly** accurately and effectively.  **Logically** analyses and interprets data and evidence to formulate **suitable** conclusions with **reasonable** justification.  **Logically** evaluates procedures and their effects on data. | Deconstructs a problem and **designs** a **considered** and **generally clear** chemistry investigation.  Obtains, records, and represents data, using **generally** **appropriate** conventions and formats with **some errors** but **generally** accurately and effectively.  Undertakes **some** analysis and interpretation of data and evidence to formulate **generally** appropriate conclusions with **some** justification.  Evaluates procedures and **some** of their effects on data. | Prepares a **basic** deconstruction of a problem and an **outline** of a chemistry investigation.  Obtains, records, and represents data, using conventions and formats **inconsistently**, with **occasional** accuracy and effectiveness.  **Describes** data and undertakes **some basic** interpretation a **basic** conclusion.  **Attempts** to evaluate procedures **or** suggest **an** **effect** on data. | Attempts a **simple** deconstruction of a problem and a procedure for a chemistry investigation.  **Attempts** to record and represent **some** data, with **limited** accuracy or effectiveness.  **Attempts** to describe results and/or interpret data to formulate a **basic** conclusion.  **Acknowledges** that procedures affect data. |
| **Knowledge and Application** | **1**  **2**  **3**  **4** | Demonstrates **deep and broad** knowledge and understanding of a range of chemical concepts.  Applies chemical concepts **highly effectively** in **new and** familiar contexts.  **Critically** explores and understands **in depth** the interaction between science and society.  Communicates knowledge and understanding of chemistry **coherently** with **highly effective** use of appropriate terms, conventions and representations. | Demonstrates **some depth** and breadth of knowledge and understanding of a range of chemical concepts.  Applies chemical concepts **mostly effectively** in **new and** familiar contexts.  **Logically** explores and understands in **some depth** the interaction between science and society.  Communicates knowledge and understanding of chemistry **mostly coherently** with **effective** use of appropriate terms, conventions, and representations. | Demonstrates knowledge and understanding of a **general** range of chemical concepts.  Applies chemical concepts **generally effectively** in **new o**r familiar contexts.  Explores and understands **aspects** of the interaction between science and society.  Communicates knowledge and understanding of chemistry **generally effectively** using **some** appropriate terms, conventions, and representations. | Demonstrates **some basic** knowledge and **partial** understanding of chemical concepts.  Applies **some** chemical concepts in familiar contexts.  **Partially** explores and recognises **aspects** of the interaction between science and society.  Communicates **basic** chemical information, using **some** appropriate terms, conventions, and/or representations. | Demonstrates some **limited** recognition and awareness of chemical concepts.  **Attempts** to apply chemical concepts in familiar contexts.  **Attempts** to explore and identify **an aspect** of the interaction between science and society.  **Attempts** to communicate information about chemistry. |