ORANGE HIGH SCHOOL

ASSESSMENT TASK NOTIFICATION

Subject	Science
Assessment Task	Assessment Task 1: First-Hand Scientific Investigation
Year	10
Weighting	25%
Teachers	C. Gander/S. Norris, J. Mansur, M. Nicholson, J. Percival, E. Ruwona, M. Williams
Head Teacher	Ms Huggett
Date given	Term 1, Week 4
Due Date	Term 1, Week 6 (Specific date to be given by classroom teachers)
Submission Type	Online via Google Classroom

Assessment Outline

This assessment task is based on the Chemical World Topic. Students must conduct an investigation on the Scientific Research Question:

How can changing one factor affect the rate of a chemical reaction?

Students are to design and conduct a scientific investigation, individually. They will produce a completed scientific report based on a topic of interest.

To complete the assessment task:

- Select a scientific research question.

- Using your scientific knowledge and additional research, begin to explore some ways that you can practically investigate your research question.

- Design and then conduct your investigation using the subtitles provided in the scaffold.

Non-completion of Task:

If you know you are going to be away on the day that the task is due, you must make alternative arrangements with your classroom teacher and attempt to submit your task prior to this absence. If you are unable to submit your task on the due date you will need to complete illness/misadventure paperwork upon your return to school.

Failure to follow the above procedures may result in a zero award.

Outcomes Assessed

WS5.2 Students plan first-hand investigations by:
- a. planning and selecting appropriate investigation methods, including fieldwork and laboratory experimentation, to collect reliable data
- d. specifying the dependent and independent variables for controlled experiments

WS5.3 Students choose equipment or resources for an investigation by:
- a. identifying appropriate equipment and materials
- b. identifying the appropriate units to be used in collecting data

WS6 Students conduct investigations by:
- a. individually and collaboratively using appropriate investigation methods, including fieldwork and laboratory experimentation, to collect reliable data
- b. safely constructing, assembling and manipulating identified equipment
- f. evaluating the effectiveness of the planned procedure, considering risk factors and ethical issues, and suggesting improvements as appropriate

WS7.2 Students analyse data and information by:
- a. analysing patterns and trends, including identifying inconsistencies in data and information
- b. describing relationships between variables
- c. assessing the validity and reliability of first-hand data
- d. using knowledge of scientific concepts to draw conclusions that are consistent with evidence

Scientific Investigation Report

This task will be a report based on a scientific investigation that you conduct in class. You report must contain the following sections:

Title
A statement (only a few words) that is specific, and informs the reader of the investigation that was conducted.

Abstract
A one paragraph summary of the scientific investigation. It should give an overview of the aim, results and conclusion of the investigation (e.g. what was done, what was found out and its implications).

Background Information
This section contains scientific research that relates to the investigation. It provides the reader with background information relating to the investigation, allowing them to understand the key ideas of the investigation. This information should be sourced from current and reliable articles. All articles that are used should be included in the reference list.

Aim
A statement of the purpose of the investigation.
This should start with the word "To" and link the independent and dependent variable of the investigation.

Hypothesis
The hypothesis is formulated once the aim of the investigation is determined. It is a statement that relates the independent and dependent variable together in a way that can be tested.

Variables
These are the different factors of the scientific investigation. They include:
   - Independent variable: the one factor that is changed by the investigator.
   - Dependent variable: the factor that is measured.
   - Controlled variables: the factors that are controlled/kept the same each time the investigation is conducted.

The investigation should also have an identified experimental control. This is when the investigation is conducted without including the independent variable.

Risk Assessment
This section of the report is used to minimise the potential hazards of an investigation. Each hazard needs to be identified, the risk it poses identified, and a minimisation strategy that can be implemented listed. This can be embedded as a table with headings for each section.

Hazard	Risk	Minimisation Strategy

Equipment List
A list of all the materials that are needed to conduct the investigation. This should include any chemicals, equipment, technology, and the quantities that are needed.

Method
This is a series of steps that are undertaken to conduct the investigation. It is typically written before the investigation is conducted and then reviewed/refined as the investigation is conducted. It should be written in third person, past tense, and contain specific steps, equipment and quantities so that it could be repeated by another scientist to obtain the same results without them needing to ask the author any questions.

Results
This section describes what was observed, calculated, or the trends that were discovered. It does not explain the results. The order of the results can be in the order they were obtained, or ranked from most to least important. Results may include tables, graphs, and/or other visual representations to highlight important features. Each display should be numbered, and have a concise name, with a brief (one sentence) description of how it was obtained.

Discussion
The discussion forms the argument and provides an explanation of the results that were obtained when conducting the investigation. Any trends in the data should be explained, with reference to other scientific research. The data should also be evaluated for its accuracy, reliability and validity. When explaining the results, the limitations of the investigation should be discussed. Improvements to the method, implications of the data and future directions of scientific research should also be included.

Conclusion
This is a summary of the scientific research findings (1-2 paragraphs). No new information should be introduced. It should be stated whether the results support or disprove the hypothesis.

Reference List
All sources of information and data that have been used to inform the scientific research (investigation) should be listed using the APA referencing style.

Online reference generator: https://www.mybib.com/tools/apa-citation-generator

Marking Rubric

Component	Extensive	Thorough	Sound	Basic	Elementary	Non-Attempt	Total
Abstract WS5	**3 marks** The abstract **extensively** shows an understanding of the investigation, a summary of the method used, key results and a conclusion		**2 marks** The abstract is **sound** and has the basis of a general description of the investigation.		**1 mark** The abstract is **simplistic**, generally describes the investigation, missing various elements.	**0 marks** Minimal or non-attempt	
Background Information WS5	**5 marks** Using **5** different sources of information clearly explain the ideas behind the project and relevant information to the topic of study. Presents a **detailed and sophisticated** summary.	**4 marks** Using **5** different sources of information clearly explain the ideas behind the project and relevant information to the topic of study. Presents a **general** summary	**3 marks** Using **3-4** different sources of information clearly explain the ideas behind the project and relevant information to the topic of study. Presents a **detailed** summary.	**2 marks** Using **3-4** different sources of information clearly explain the ideas behind the project and relevant information to the topic of study. Presents a **general** summary	**1 mark** Using **1-2** different sources of information clearly explain the ideas behind the project and relevant information to the topic of study. Presents a **general** summary	**0 marks** Minimal or non-attempt	
Title and Aim WS5	**3 marks** **Sophisticated** title given (uses scientific language). **Detailed** scientific aim given, includes the independent **and** dependent variable		**2 marks** **Interesting** title given. Scientific aim given, includes **either** the independent or dependent variable		**1 mark** **Simple** title given. **Simple** aim given	**0 marks** Minimal or non-attempt	
Hypothesis WS5	**3 marks** **Prediction** of outcome. **State** how changing the independent variable will affect the dependent variable. If and Then statement used (No use of "I" or "we".).		**2 marks** **Prediction** of outcome. **Reasonable** attempt at stating how changing the independent variable will affect the dependent variable (may have some incorrect linkage).		**1 mark** **Simplistic** prediction of outcome that does not link variables.	**0 marks** Minimal or non-attempt	

	5 marks	4 marks	3 marks	2 marks	1 mark	0 marks	
Variables WS5	Correctly identifies: -Controlled variables (3 or more) **and explain why they need to be controlled.** Independent variable. Dependent variable. Experimental control.	Correctly identifies: Controlled variables (3 or more). Independent variable. Dependent variable. Experimental control.	Identifies any **THREE** variables correctly.	Identifies any **TWO** variables correctly.	Identifies any **ONE** variable correctly.	Minimal or non-attempt	**/19**
Risk Assessment WS6		Identifies **all** hazards/safety issues (3 or more) with conducting the investigation. **Detailed explanation** of how each issue can be reduced	Identifies **all** hazards/safety issues (3 or more) with conducting the investigation. **Sound explanation** of how each issue can be reduced.	Identifies **some** hazards/safety issues with conducting the investigation. **Attempts an explanation** of how at least ONE issue can be reduced.	Identifies **some** hazard/safety issue.	Minimal or non-attempt	
Equipment List WS6	**3 marks** **Sophisticated** and completed list of **all** equipment used		**2 marks** List of **most** of the equipment used		**1 mark** **Simple list** of some of the equipment used	**0 marks** Minimal or non-attempt	
Method WS6	Clear and logical method in third person. Needs to be in correct order, **detailed** and in numbered steps. Includes how the dependent variable will be measured, along with any other variables. Include how many times the experiment will be repeated and the amounts/quantities needed. Scientific terms used and at an **extensive** level. No use of "I" or "we" etc. (past tense)	Clear and logical method in third person. Needs to be in correct order, detailed and in numbered steps. Includes how the dependent variable will be measured, along with any other variables. Include how many times the experiment will be repeated. Scientific terms used. No use of "I" or "we" etc.	Method in **mostly** third person and somewhat flows. Needs to be in numbered steps. Identifies the dependent variable. Include how many times the experiment will be repeated. **Some** scientific terms used.	Method somewhat flows. **Some** scientific terms used.	Method is **attempted**.	Minimal or non-attempt	**/12**

Results WS7	9 – 10 marks	7 – 8 marks	5 – 6 marks	3 – 4 marks	1 – 2 marks	0 marks	
Results WS7	Table: Presented in an appropriate table. Has appropriate headings and correct units. No units present on the data in the table (in heading only). Averages included and correct. Neatly presented and at an **extensive** level (is enclosed and has straight lines). Graph: Presented in an appropriate graph for the data collected. A line of best fit is correctly present. Axis' are labelled correctly. Units included on the correct axis'. Data plotted correctly and at an **extensive** level (use of x to plot data points). Sentence with each to identify what data is being shown.	Table: Presented in an appropriate table. Has appropriate headings and correct units. No units present on the data in the table (in heading only). Averages included and correct. Neatly presented and at a **thorough** level. Graph: Presented in an appropriate graph for the data collected. A line of best fit is correctly present. Axis' are labelled correctly. Units included on the correct axis'. Data plotted correctly and at a **thorough** level (use of x to plot data points).	Table: Presented in an appropriate table. Has appropriate headings and correct units. Averages included. Neatly presented and at a **sound** level. Graph: Presented in an appropriate graph for the data collected. Axis' are labelled correctly. Data plotted **mostly** correct and at a **sound** level.	Table: Presented in an appropriate table. Has appropriate headings with data present. Graph: Presented in an appropriate graph for the data collected. **Some** data plotted.	Attempts a table **OR** graph. Shows a **limited** understanding of either conventions.	Minimal or non-attempt	
Discussion WS7	**Extensively** addresses the following in **detail**, using scientific language: Trends and summary of findings, Accuracy, Reliability, Validity, and Explores any future directions/applications of the investigation.	**Thoroughly** addresses the following in **somewhat detail,** using scientific language: Trends and summary of findings, Accuracy, Reliability, Validity, and Explores any future directions/applications of the investigation.	Addresses, **at least 3** of the following in somewhat detail, using **some** scientific language: Trends and summary of findings, Accuracy, Reliability, Validity, and Explores any future directions/applications of the investigation.	**Attempts** to identify some of the following at a basic level: Trends and summary of findings, Accuracy, Reliability, Validity, and Explores any future directions/applications of the investigation.	**Attempts** a very simple discussion.	Minimal or non-attempt	

	3 marks		2 marks		1 mark	0 marks	
Conclusion WS7	Summary statement of the main results from the investigation. How did the independent variable affect the dependent variable? Support given by comparison of key results. Explains if results support or disprove the hypothesis? Scientific terms used and at an **extensive** level.		Summary statement of the main results from the investigation. Example given from results. **Attempts** to explains if results support or disprove the hypothesis?		**Simple** conclusion written.	Minimal or non-attempt	**/23**
Reference List and Presentation WS9	Reference list present and in correct format (**5 or more sources used**).with a comment on how the sources are reliable. **Minimal** spelling, punctuation and grammatical errors (0-3). **Extensively** follows the report format.		Reference list present and in correct format (**3-4 sources used**).with a comment on how the sources are reliable. **Some** spelling, punctuation and grammatical errors (4-6). **Mostly** follows the report format.		Reference list present and in correct format (**1-2 sources used**). **Difficulty** with spelling, punctuation and grammatical errors.	Minimal or non-attempt	**/3**

Assessment overview:

WS5	WS6	WS7	WS9	Total
/19	/12	/23	/3	/57

Feedback:

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