



ORANGE HIGH SCHOOL

ASSESSMENT TASK NOTIFICATION

Subject	Science - Task 1
Year	10
Weighting	30%
Teachers	Mr Warne, Mr Routh, Ms Constant, Mrs Nicholson, Ms Percival, Ms Townsend, Mr Ruwona and Ms Mansur
Head Teacher	Mr Routh
Week handed out	Week 4, Term 1
Due Date	Specific day to given by classroom teachers (Term 1 Week 8A)

Assessment Outline

Students are to design and conduct a scientific investigation, individually. They will produce a completed scientific report based on the topic they are covering in class.

For students completing the Physical World Topic, you must base your investigation off the below Scientific Research Question:

How can one of Newton's Laws of Motion be practically applied?

For students completing the Chemical World Topic, you must base your investigation off the below Scientific Research Question:

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

To complete the assessment task:

1. Select the correct Scientific Research Question
2. Using your scientific knowledge and additional research, begin to explore some ways that you can practically investigate your research question.
3. Once you have selected an area to practical test, design and then conduct your investigation as per the below:
 - a. Title
 - b. Abstract (summary to be completed after the conclusion of the investigation)
 - c. Background Information
 - d. Aim
 - e. Hypothesis
 - f. Variables
 - g. Risk Assessment
 - h. Equipment List
 - i. Method

- j. Results (table and graph)
 - k. Discussion
 - l. Conclusion
 - m. Reference list
4. Submit your completed report on the due date via Google Classroom

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. If you are away on the day of the examination, you must catch up with your classroom teacher on the first day you return to make alternate arrangements to catch up on this task.

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-two paragraph summary of the scientific investigation. It should give an overview of the aim, method, 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
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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 an appropriate referencing style (e.g. APA, Harvard).

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

Please the attached rubric on Google Classrooms for more detail:

Component	Extensive	Thorough	Sound	Basic	Limited	Non-Attempt	WS outcomes
Abstract	<p>5 marks</p> <p>The abstract extensively shows an understanding of the investigation, a summary of the method used, key results and a conclusion</p>	<p>4 marks</p> <p>The abstract is thorough and has all the required elements but depth is somewhat detail</p>	<p>3 marks</p> <p>The abstract is sound and has the basis of a general description of the investigation</p>	<p>2 marks</p> <p>The abstract is a basic statement of the investigation or is missing parts and is in general terms</p>	<p>1 mark</p> <p>The abstract is simplistic, generally describe the investigation, missing various elements</p>	Minimal or non-attempt	WS5
Background Information	<p>5 marks</p> <p>Clear explanation of the project. Detailed and sophisticated explanation of the topic area of study. 4 or more relevant pieces of scientific information given. At an extensive level.</p>	<p>4 marks</p> <p>Clear explanation of project. Detailed explanation of the topic area of study. 4 relevant pieces of information given. At a thorough level.</p>	<p>3 marks</p> <p>Explanation of project given. Explanation of topic area of study. 3 relevant pieces of information given. At a sound level.</p>	<p>2 marks</p> <p>Explanation of project. Basic explanation of the topic area. Less than 2 pieces of information given. At basic level.</p>	<p>1 mark</p> <p>Explanation of project given. No scientific information present. At elementary level.</p>	Minimal or non-attempt	
Title and Aim	<p>3 marks</p> <p>Sophisticated title given (uses scientific language), detailed scientific aim given, includes the independent and dependent variable</p>		<p>2 marks</p> <p>Interesting title given and a scientific aim given, includes either the independent or dependent variable</p>		<p>1 mark</p> <p>Simple title given and aim given</p>	Minimal or non-attempt	
Hypothesis	<p>3 marks</p> <p>Prediction of outcome. State how changing the independent variable will affect the dependent variable. If and Then statement could be used (No use of "I" or "we".)</p>		<p>2 marks</p> <p>Reasonable attempt, may have some incorrect linkage.</p>		<p>1 mark</p> <p>Simplistic</p>	Minimal or non-attempt	
Variables	<p>5 marks</p> <p>Correctly identifies the below: Controlled variables (4 or more) and explained why they need to be controlled. Independent variable. Dependent variable. Experimental control. Scientific language used.</p>	<p>4 marks</p> <p>Correctly identifies the below: Controlled variables (4 or more). Independent variable. Dependent variable. Experimental control. Scientific language used.</p>	<p>3 marks</p> <p>Controlled variables – correct (3 or less). Independent variable – correct. Dependent variable – correct.</p>	<p>2 marks</p> <p>Identifies any TWO variables correctly.</p>	<p>1 mark</p> <p>Identifies any ONE variable correctly.</p>	Minimal or non-attempt	/21

Risk Assessment		4 marks Identifies all hazards/safety issues (3 or more) with conducting the investigation. Detailed explanation of how each issue can be reduced.	3 marks Identifies all hazards/safety issues (3 or more) with conducting the investigation. Sound explanation of how each issue can be reduced.	2 marks Identifies some hazards/safety issues with conducting the investigation. Attempts an explanation of how at least ONE issue can be reduced.	1 mark Identifies a hazard/safety issue.	Minimal or non-attempt	WS6
Equipment List	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	Minimal or non-attempt	
Method	5 marks 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)	4 marks 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.	3 marks 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.	2 marks Method somewhat flows. Some scientific terms used.	1 mark Method is attempted.	Minimal or non-attempt	
Results	10 marks 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 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.	8 marks 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).	6 marks 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.	4 marks Table: Presented in an appropriate table. Has appropriate headings with data present. OR Graph: Presented in an appropriate graph for the data collected. Some data plotted.	2 marks Attempts a table OR graph. Shows a limited understanding of either conventions.	Minimal or non-attempt	122

Discussion	10 marks 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.	8 marks 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.	6 marks 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.	4 marks 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.	2 marks Attempts a very simple discussion.	Minimal or non-attempt	WS7
Conclusion	3 marks Summary statement of the main results from the investigation. How did the independent variable affect the dependent variable? Examples given from results. Explains if results support or disprove the hypothesis? Scientific terms used and at an extensive level.		2 marks Summary statement of the main results from the investigation. Example given from results. Attempts to explain if results support or disprove the hypothesis?		1 mark Simple conclusion written.	Minimal or non-attempt	
Reference List and overall presentation	5 marks Reference list present and in correct format (15 or more sources used). Minimal spelling, punctuation and grammatical errors (2-3). Follows report format extensively. Comments on how student ensures sources were reliable.	4 marks Reference list present and in correct format (10 or more sources used). Minimal spelling, punctuation and grammatical errors (4-9). Follows report format.	3 marks Reference list present and in correct format. Some spelling, punctuation and grammatical errors (10-25). Mostly follows report format correctly.	2 marks Reference list attempted, more than 4 sources	1 mark 3 or less sources identified.	Minimal or non-attempt	/18

Assessment overview:

WS5	WS6	WS7	Total
/21	/22	/18	/61