ORANGE HIGH SCHOOL

ASSESSMENT TASK NOTIFICATION

Subject	Science - Task 1
Year	10
Weighting	30%
Teachers	Mrs Collins, Ms Townsend, Mr Rose, Ms Mansur, Ms Percival, Mr Ruwona, Ms Nicholson
Head Teacher	Miss Huggett
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 Living World Topic, you must base your investigation off the below Scientific Research Question:
How does changing a factor affect the amount of bacterial growth?

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 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 an appropriate referencing style (e.g. APA, Havard).

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

Title

Abstract

An abstract is a summary of the investigation that you have completed. This should be done after you have finished the investigation. It should tell the reader what your investigation is about.

Needs to be included in your abstract - one sentence about aim/purpose of investigation - one sentence about how the experiment was done - one sentence about the results that were collected (include numbers) - one sentence about the outcome of the experiment (discussion and conclusion)

Aim

What are you trying to achieve in this investigation?

Hypothesis

Written as an 'IF …….. THEN…….' statement.

Literature Review

Use 5 different sources to explain the ideas behind the project and relevant information to the topic of study

Variables

Independent variable (what is changed):

-

Dependent variable (what is measured):

-

Controlled Variables (Variables that are kept the same – at least 3)

1.
2.
3.

Why do these need to be controlled?

Risk assessment

Provide a detail risk assessment (minimum 3) with detailed explanation how the risk can be reduced

Hazard	**Risk**	**Precaution**

Equipment list

Method

- Steps
- Third person
- Past tense
- Independent, dependent and controlled variables
- How you measured the variables
- How many times you repeated the investigation
- Include amounts and quantities

Method:

Results

Create a table and a graph to show your results in a visual format.

Table: Remember to include

- Title
- Headings
- Units (in headings only)
- Neat and enclosed
- Include averages
- Independent Variable in left hand column

(Use the space provided below to do this - Please ask your teacher for assistance if needed)

Year 10 assessment FHI

Graph

See marking criteria for requirements

Title:_____

Discussion

Identify the trends in your data. Provide a detailed analysis on the following areas of your investigation; reliability, accuracy and validity. Provide detailed information on the future applications or future directions of the investigation.

Conclusion

Year 10 assessment FHI

Write a detailed explanation of if the aim and hypothesis were met in the investigation. Support with results from the investigation

References

1.

Please the attached rubric on Google Classrooms for more detail:

Name: _____

Component	Extensive	Thorough	Sound	Basic	Limited	Non-Attempt	WS outcomes
Abstract	**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.	Minimal or non-attempt	**WS5**
Background Information	**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	Minimal or non-attempt	
Title and Aim	**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.	Minimal or non-attempt	
Hypothesis	**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.	Minimal or non-attempt	
Variables	**5 marks** Correctly identifies: -Controlled variables (3 or more) **and explain why they need to be controlled.** Independent variable. Dependent variable. Experimental control.	**4 marks** Correctly identifies: Controlled variables (3 or more). Independent variable. Dependent variable. Experimental control.	**3 marks** Identifies any **THREE** variables correctly.	**2 marks** Identifies any **TWO** variables correctly.	**1 mark** Identifies any **ONE** variable correctly.	Minimal or non-attempt	**/19**

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 **some** 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	**/12**
Results	**10 marks** <u>Table:</u> 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). <u>Graph</u>: 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	**8 marks** <u>Table:</u> 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. <u>Graph:</u> 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	**6 marks** <u>Table:</u> Presented in an appropriate table. Has appropriate headings and correct units. Averages included. Neatly presented and at a **sound** level. <u>Graph</u>: Presented in an appropriate graph for the data collected. Axis' are labelled correctly. Data plotted **mostly** correct and at a **sound** level.	**4 marks** <u>Table</u>: Presented in an appropriate table. Has appropriate headings with data present. <u>Graph</u>: 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	**WS7**

	extensive level (use of x to plot data points). Sentence with each to identify what data is being shown.	data points).					
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? Support given by comparison of key 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 explains if results support or disprove the hypothesis?		**1 mark** **Simple** conclusion written.	Minimal or non-attempt	**WS7** **/23**
Reference List and overall presentation	**3 marks** 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.		**2 marks** 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.		**1 mark** Reference list present and in correct format (**1-2 sources used)**. **Difficulty** with spelling, punctuation and grammatical errors.	Minimal or non-attempt	**WS9** **/3**

Assessment overview:

WS5	WS6	WS7	WS9	Total

/19	/12	/23	/3	/57

Feedback: