



Year 10 Science Student Research Project Assessment Task 2 2024

TOPIC: Student Research Project	MARKS: /40
SUBMISSION REQUIREMENTS: CANVAS online submission Friday 14 th June by 11:59pm	WEIGHTING:
OUTCOMES TO BE ASSESSED: SC5-4WS Develops questions or hypotheses to be investigated scientifically. SC5-5WS Produces a plan to investigate identified questions, hypotheses or problems individually. SC5-6WS Undertakes a first-hand investigation to collect valid and reliable data and information individually. SC5-7WS Processes, analyses and evaluates data from first-hand investigations and secondary sources to develop evidence-based arguments and conclusions. SC5-8WS Applies scientific understanding and critical thinking skills to suggest possible solutions to identified problems. SC5-9WS Presents science ideas and evidence for a particular purpose and to a specific audience, using appropriate scientific language, conventions and representations.	
DIRECTIONAL VERBS: Analyse – identify components and the relationship between them, draw out and relate implications. Apply – use, utilise, employ in a particular situation. Evaluate – make a judgement based on criteria; determine the value of. Produce - to bring into existence by intellectual or creative ability. Present – to manifest or create. Undertake - to take upon oneself to perform a first-hand investigation.	

TASK DESCRIPTION:

You are to plan and conduct a primary investigation

Students will **develop** and conduct a hands-on practical investigation. Students will **analyse** and **evaluate** their results to draw conclusions. Students will be required to **produce** a scientific report alongside their planning that **presents** their **research**.

As part of ROSA requirements, you will conduct a research project. You will work individually to complete the practical component and independently to produce a Student Research Project on your investigation. The Student Research Project must follow the structure of a Scientific Report and demonstrate your ability to develop scientific questions, plan an investigation and communicate findings using appropriate scientific language, conventions and representations.

This is a compulsory Assessment Task that must be completed to achieve a ROSA in Science.

Requirements

- Complete **both** sections of the project (Proposal and Scientific Report).
 - *Student Research Project* that is typed up and submitted via **CANVAS on Friday 14th June by 11:59pm**
- Use the marking criteria as a guide to the requirements of the project.
- All work should be your own and must be in your own words.
- The Student Research Project must be completed on your own.
- Safety is an important part of any scientific investigation. It is essential that you carry out your project with safety in your mind.
- If you do not submit all parts of your Student Research Project, an Academic Warning Letter may be issued.

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ASSESSMENT CRITERIA:

PART A: FHI PROPOSAL

This is to be completed and submitted to demonstrate how students have **developed** their questions and hypothesis and plan to undertake the experiment to obtain valid, reliable and accurate data with any risks associated considered. This will allow for data that can then be evaluated and analysed in Part B.

Your proposal needs to include the following:

- **Title:** A descriptive name for the experiment or investigation.
- **Aim:** A sentence that states what you are trying to achieve.
- **Background Information:** any relevant background research, including bibliography.
- **Hypothesis:** A statement about what you think your results are going to prove.
- **Variables.**
- **Hazards and Risk Assessment:** A table outlining any safety considerations that you have considered before undertaking your research.
- **Equipment List:** A list of all the equipment that you will use to carry out your investigation.
- **Equipment diagram/labelled photo.**
- **Method:** A series of steps (that must be numbered) that outline what you did to achieve your results

PART B: Final Scientific Report

Students will present a scientific report no more than 5 A4 single sided pages.

Students will write a scientific report presenting their first-hand investigation. Students will complete the sections as listed in the task description. The work must be their own.

- **Results:** A table or graph that records all of your results in an easily understood manner. Remember to include labels and units for the quantities measured for both tables and graphs.
- **Discussion:** A sentence stating if your hypothesis was correct or incorrect and why. A paragraph that outlines some of the errors or problems that you may have experienced during your investigation. It could also include ideas on how you could improve your experiment to obtain better results. In this section you must identify the variables in your experiment. A sentence that explains your results and what they mean.
- **Conclusion:** A sentence that states whether the aim of the investigation was achieved. You should identify any trends in your data. Link the findings of the investigation to real world applications.

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PART A- ASSESSMENT MARKING CRITERIA

<p>Outcome SC5-4WS: Develops questions or hypotheses to be investigated scientifically. Outcome SC5 – 5WS: Produces a plan to investigate identified questions, hypothesis or problems individually</p>	<p align="center">Mark</p>	<p align="center">Grade</p>
<p>Produces a comprehensive plan to investigate with the components of the scientific proposal detailed and accurate. <i>All the following are included:</i></p> <ul style="list-style-type: none"> • The aim and hypothesis are written in a scientifically correct format, ensuring that the aim addresses the independent variable, and the prediction of the hypothesis matches the aim. • Extensive equipment list, independent variable, dependent variable, controlled variables (4 minimum), an extensively detailed method in step-by-step format, a minimum of 3 repetitions, scientific (non-personal) language, and a minimum of 3 safety hazards and the risk management used. 	<p align="center">9-10</p>	<p align="center">A</p>
<p>Produces a thorough plan to investigate with the components of the scientific proposal detailed and accurate. <i>All the following are included, although some components may be incorrect or lacking in detail:</i></p> <ul style="list-style-type: none"> • The aim and hypothesis are written in a scientifically correct format, ensuring that the aim addresses the independent variable, and the prediction of the hypothesis matches the aim. • Thorough equipment list, independent variable, dependent variable, controlled variables (4 minimum), a highly detailed method in step-by-step format, a minimum of 3 repetitions, scientific (non-personal) language, and a minimum of 3 safety hazards and the risk management used. 	<p align="center">7-8</p>	<p align="center">B</p>
<p>Produces a sound plan to investigate with the components of the scientific proposal detailed and accurate. <i>Most of the following are included, although some components may be incomplete, incorrect or lacking in detail:</i></p> <ul style="list-style-type: none"> • The aim and hypothesis are written in a scientific format, ensuring that the aim addresses the independent variable, and the prediction of the hypothesis matches the aim. • An equipment list, independent variable, dependent variable, controlled variables (4 minimum), a method in step-by-step format, a minimum of 3 repetitions, scientific (non-personal) language, and a minimum of 3 safety hazards and the risk management used. 	<p align="center">5-6</p>	<p align="center">C</p>
<p>Produces a basic plan to investigate with the components of the scientific proposal detailed and accurate. <i>Some of the following are included, with several components being incomplete, incorrect or lacking in detail:</i></p> <ul style="list-style-type: none"> • The aim and hypothesis are written • An equipment list, a method with some variables listed and repetitions identified, and some safety hazards and the risk management used. 	<p align="center">3-4</p>	<p align="center">D</p>
<p>Produces a limited plan to investigate the identified aim. <i>With some of the following present:</i></p> <ul style="list-style-type: none"> • The aim and hypothesis are written very simplistically or with teacher assistance • An equipment list, a method with some variables listed and no repetition, and some safety hazards are identified. 	<p align="center">1-2</p>	<p align="center">E</p>

PART B - ASSESSMENT MARKING CRITERIA

<p>Outcome SC5 – 6WS: Undertakes a first-hand investigation to collect valid and reliable data and information individually.</p> <p>Outcome SC5 – 7WS: Processes, analyses and evaluates data from first-hand investigations and secondary sources to develop evidence-based arguments and conclusions.</p> <p>Outcome SW5 – 8WS: Applies scientific understanding and critical thinking skills to suggest possible solutions to identified problems</p> <p>Outcome SW5 – 9WS: Presents scientific ideas and evidence for a particular purpose and to a specific audience, using appropriate scientific language, conventions and representations.</p>	<p align="center">Mark</p>	<p align="center">Grade</p>
<p>Develops a comprehensive scientific report that demonstrates a variety of working scientifically skills clearly and concisely communicated in the appropriate form.</p> <p><i>All the following are included and comprehensively accurate:</i></p> <ul style="list-style-type: none"> • Data is recorded in appropriate format (e.g., well-designed tables with clear descriptive column heading including units in headings only; meaningful graphs with appropriate labels following all rules for graphing; clearly set out. May include photographic evidence of results. • Analysis of data including trends/patterns identified; generates plausible explanations related to results; sources of errors discussed; suggestions for improvements included suggestions for further investigations. Incorporates background information/research. A relevant conclusion based on the results is written in scientific format. Identification of whether results support or reject the hypothesis. • Makes clear judgements about weaknesses within the method and outlines relevant improvements. Critical thinking skills will also apply to a discussion regarding issues encountered when conducting the experiment and how these could be overcome. • Presentation of all findings/data from the experiment in appropriate formats. All components of the graph and table are accurate and present: Quantitative data for all trials and averages presented in scientifically constructed table with heading, labelled columns containing units. Averages presented in scientifically drawn and accurately plotted graph with title, labelled axes with units and correct scaling. 	<p align="center">24-30</p>	<p align="center">A</p>
<p>Develops a thorough scientific report that demonstrates a variety of working scientifically skills clearly and concisely communicated in the appropriate form.</p> <p><i>All the following are included and thoroughly accurate, although some components may be incorrect or lacking in detail:</i></p> <ul style="list-style-type: none"> • Data is recorded in appropriate format (e.g., well-designed tables with clear descriptive column heading including units in headings only; graphs with appropriate labels following most rules for graphing. May or may not include photographic evidence of results. • Analysis of data including trends/patterns identified; generates plausible explanations related to results; sources of errors discussed; suggestions for improvements included suggestions for further investigations. May incorporate background information/research. A relevant conclusion based on the results is written in scientific format. Identification of whether results support or reject the hypothesis. • Makes clear judgements about weaknesses within the method and outlines relevant improvements. Issues encountered when conducting the experiment and how these could be overcome are discussed. • Presentation of all findings/data from the experiment in appropriate formats. Most of the components of the graph and table are accurate and present: Quantitative data for all trials and averages presented in scientifically constructed table with heading, labelled columns containing units. Averages presented in scientifically drawn and plotted graph with title, labelled axes with units and correct scaling. 	<p align="center">18-23</p>	<p align="center">B</p>
<p>Develops a sound scientific report that demonstrates a variety of working scientifically skills clearly and concisely communicated in the appropriate form.</p> <p><i>Most of the following are included and soundly accurate, although some components may be incomplete, incorrect or lacking in detail:</i></p> <ul style="list-style-type: none"> • Data is recorded in appropriate format in graphs and tables. May or may not include photographic evidence of results. • Analysis of data identified; generates plausible explanations related to results; sources of errors identified; suggestions for improvements included, suggestions for further investigations. May incorporate background information/research. A relevant conclusion based on the results is written. Identification of whether results support or reject the hypothesis. • Identifies weaknesses within the method and outlines relevant improvements. Identifies issues encountered when conducting the experiment. 	<p align="center">12-17</p>	<p align="center">C</p>

<ul style="list-style-type: none"> • Presentation of data from the experiment in appropriate formats. Most of the components of the graph and table are accurate and present: Quantitative data for all trials and averages presented in scientifically constructed table with heading, labelled columns containing units. Averages presented in scientifically drawn and plotted graph with title, labelled axes with units and correct scaling. 		
<p>Develops a basic scientific report that demonstrates a variety of working scientifically skills. <i>Some of the following are included, with several components being incomplete, incorrect or lacking in detail:</i></p> <ul style="list-style-type: none"> • Data is collected and recorded in graphs and tables. • Suggests issues with results; errors identified; suggestions for further investigations. A conclusion is written. Identification of whether results support or reject the hypothesis. • Identifies weaknesses within the method and outlines relevant improvements. Identifies issues encountered when conducting the experiment. • Presentation of data from the experiment in appropriate formats. Most of the components of the graph and table are accurate and present: Quantitative data for all trials and averages presented in scientifically constructed table with heading, labelled columns containing units. Averages presented in scientifically drawn and plotted graph with title, labelled axes with units and correct scaling. 	6-11	D
<p>Attempts to develop a question and hypothesis for scientific investigation but is limited in relation to the variables, prediction and/or scientifically correct format.</p> <ul style="list-style-type: none"> • Collects and records data. • Limited issues with results identified. • Identification of whether results support or reject the hypothesis. • Identifies issues encountered when conducting the experiment. • Limited of components of the graph and table are present: Quantitative data for all trials and averages presented in scientifically constructed table with heading, labelled columns containing units. Averages presented in scientifically drawn and plotted graph with title, labelled axes with units and correct scaling. 	1-5	E

Draft – Student Research Project

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Title: _____

Background information:

Aim:

Hypothesis:

Risk Assessment:

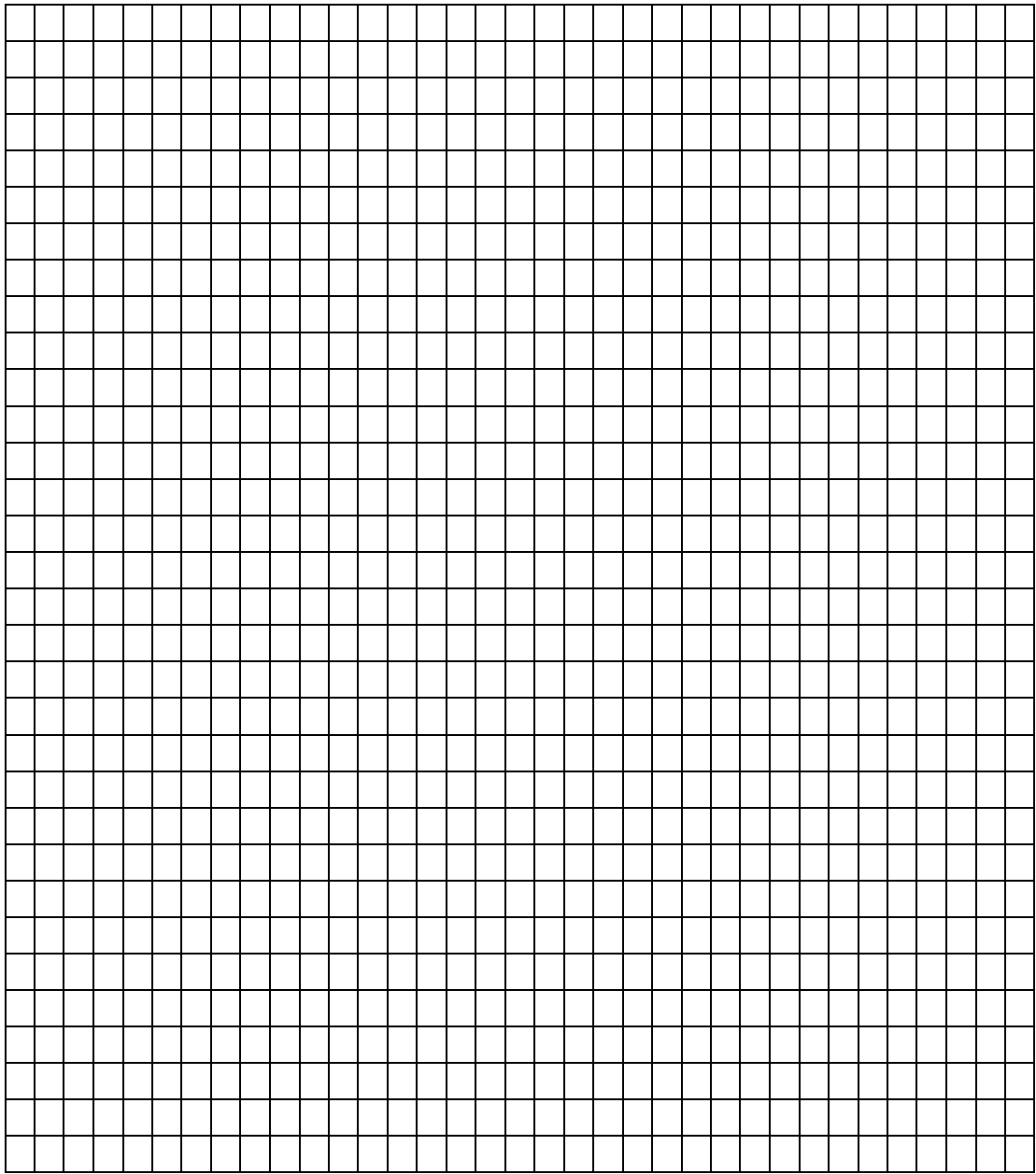
RISK/HAZARD	INJURY	PREVENTION

Equipment:

Results:

(You must record your results with a table and a graph)

Title: _____



Conclusion:

References:
