Notice of Assessment Task
Year 10 Science
Student Research Project

Date of initial notification:	**Date of submission of task:**
Monday 4 March, 2024 Term 1, Week 6	Thursday, 21 March, 2024 Term 1, Week 8

Task Number: 1

Time Allowed: 2.5 Weeks

Course Component/Focus area/topic/module:
Stage 5: Chemical World

Task Description

You are to plan and conduct a primary investigation to determine the effect of acids on metals.

Outline

As part of ROSA requirements, you will conduct a research project examining the effects acids have on metals. You will work collaboratively in a group to complete the practical component and independently 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.
Students will be required to submit a handwritten *draft copy* of their Scientific Report to their teacher at any stage prior to **Friday 15 March, Week 7**, to receive generalised feedback from their Science teacher.

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

Requirements

- Complete **both** sections of the project (First Draft and Student Research Project).
    - *First Draft* must be **handwritten** and submitted to your teacher for generalised feedback before **Friday 15 March, Week 7**
    - *Student Research Project* that is typed up, **saved as a PDF** and submitted via **Google Classroom,** *or* handwritten and submitted to your Science teacher on **Thursday 21 March, Week 8** by the end of the school day, 2:50pm
- 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.
- Your *Student Research Project* must demonstrate that you have taken on teacher feedback to improve your report.
- If you do not submit all parts of your Student Research Project, an Academic Warning Letter may be issued.

Outcomes/Competencies to be assessed in this task:

SC5-4WS	develops questions or hypotheses to be investigated scientifically
SC5-5WS	produces a plan to investigate identified questions, hypotheses or problems, individually and collaboratively
SC5- 9WS	presents science ideas and evidence for a particular purpose and to a specific audience, using appropriate scientific language, conventions and representations

Feedback: How will I receive feedback on this task?

☒ Written

☒ Individual

MARKING CRITERIA – Student Research Project

Outcomes	Elementary	Basic	Sound	Thorough	Extensive	MARK
SC5-4WS develops questions or hypotheses to be investigated scientifically	Makes no attempt to develop a hypothesis or writes a hypothesis that doesn't relate to the aim.	Develops a hypothesis, with assistance that relates to the aim.	Develops a hypothesis that has some relationship to the aim.	Develops a hypothesis that relates to the aim and can be investigated scientifically.	Develops a well written hypothesis based on background research that relates to the aim and can be investigated scientifically	
	1 mark	*2 marks*	*3 marks*	*4 marks*	*5 marks*	
	E	D	C	B	A	
SC5-5WS produces a plan to investigate identified questions, hypotheses or problems, individually and collaboratively	- No evidence of an aim Produces a plan that includes the following: - Method: ▪ Is attempted with any of the relevant steps ▪ Provides some detail - Identifies risks for the experiment OR identifies risks that are not wholly relevant - Selects equipment for the experiment	- Attempts to produce an aim Produces a basic plan that includes the following: - Method: ▪ Is written in steps and /or past tense ▪ Shows a reasonable attempt to relate to the aim ▪ Provides some detail - Attempts to identify the independent and dependent variables - Identifies risks for the experiment in table format OR identifies risks that are not wholly relevant - Selects equipment for the experiment	- Produces an aim that includes one type of variable Produces a sound plan that includes the following: - Method: ▪ Is written in steps and past tense, passive voice ▪ Has a relationship to the identified aim ▪ Has some sequential steps with an attempt at some detail ▪ Has some reference to controlled variables ▪ Identifies that repetition is included - Identifies the independent and dependent variables - Identifies some risks for the experiment with incorrect mitigations, presenting in a table format - Selects most of the appropriate equipment for the experiment	- Produces an aim that includes both variables Produces a thorough plan that includes the following: - Method: ▪ Is written in steps and past tense, passive voice ▪ Has some validity for the relevant identified aim ▪ Has mostly sequential steps providing some detail ▪ May include controlled variables ▪ Identifies that repetition is included to ensure reliability - Identifies the independent and dependent variables - Identifies some relevant risks and mitigations, presenting in table format - Selects appropriate equipment for the experiment	- Produces a clear aim that includes both variables and uses correct scientific terminology Produces an extensive plan that is coherent and includes the following: - Method: ▪ Is written in steps and past tense passive voice ▪ Is valid for the identified aim - Has steps that are logical providing relevant detail ▪ Clearly identifies controlled variables and how they are controlled ▪ Identifies that repetition is included to ensure reliability - Identifies the independent and dependent variables - Clearly identifies relevant risks and mitigations, presenting in a table format - Selects appropriate equipment for the experiment	
	1 – 2 marks	*3 – 4 marks*	*5 – 6 marks*	*7 – 8 marks*	*9 – 10 marks*	
	E	D	C	B	A	

Outcome	Limited	Basic	Sound	Thorough	Extensive	MARK
SC5-9WS presents science ideas and evidence for a particular purpose and to a specific audience, using appropriate scientific language, conventions and representations	- Limited or no attempt to present results - Limited or no evidence of any description of patterns and trends in the data. - Makes no attempt to describe ways to improve the quality of the data. - Makes no attempt to access secondary sources.	- Attempts to present results in desired format - attempted description of patterns and trends in the data does not relate to the collected data. - Identifies that improvements are required for the collection of data. - Identifies that there were/were not anomalies in the data. - States whether the results supported the hypotheses and no attempt of an explanation. - Makes no attempt to access secondary sources.	- Presents results in desired format without all components completed - description of patterns and trends in the data. - Attempts to describe that improvements to the project. - Describes any anomalies in the data. - States whether the results supported the hypotheses and attempted an explanation. - states how to improve the fairness, accuracy or sample size. - Uses generalised knowledge to draw conclusions that are consistent with the evidence. - Makes an attempt to access secondary sources and references part of the source	- Presents results in both a table and graph with most components completed - Analyses patterns and trends in the data - Describes generalised ways to improve the quality of the data. - Explains any anomalies in the data. - States whether the results supported the hypotheses and provides a generalised explanation. - States whether their investigation supports research or whether it is different - Explains how to improve the fairness, accuracy or sample size - Selects two to three (2-3) valid and reliable secondary sources relevant to the investigation and includes them in the reference list.	- Correctly presents results in both a table and graph with all necessary components completed (fully enclosed table, title, axis, units) - Extensively analyses patterns and trends in the data - Describes specific ways to improve the quality of the data. - Explains any anomalies in the data. - States whether the results supported the hypotheses and provides a specific explanation. - States whether their investigation supports research or whether it is different - Explains how to improve the fairness, accuracy or sample size - Selects at least four (4) valid and reliable secondary sources relevant to the investigation and includes them in the reference list.	
	1 – 3 marks	*4 – 6 marks*	*7 – 9 marks*	*10 – 12 marks*	*13 – 15 marks*	
	E	D	C	B	A	
					MARK	*/ 30*
					OVERALL GRADE:	

COMMENT:

- *If you are absent on the day that the task is due, you MUST see your teacher the next day (not your next lesson) that you are present at school to show your medical certificate or produce a misadventure form (refer to your Assessment Booklet for a copy of the form).*
- *Exemptions and extensions for any other reason will only be determined at the discretion of the Head Teacher, and only in extenuating circumstances. You must advise the Head Teacher as soon as possible if you know you are unable to submit the task on the due date.*
- *All appeals must be lodged within 48hrs of receipt of the task. Students who may consider an appeal are not permitted to take their task home. The original task cannot be altered in any way prior to the appeal process.* See Assessment booklet for details.

STUDENT RESEARCH PROJECT
Writing an Experimental Report

TITLE	A descriptive name for the experiment or investigation
AIM	A sentence that states what you are trying to achieve
HYPOTHESIS	A statement about what you think your results are going to prove
RISK ASSESSMENT	A statement outlining any safety considerations that you have considered before undertaking your research
APPARATUS	A list of all of the equipment that you will use to carry out your investigation
METHOD	A series of steps (that must be numbered) that outline what you did to achieve your results
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.

Some Important Information

Acids react with metals to produce a salt and hydrogen gas

The general equation for this is:

Metal + Acid → Salt + Hydrogen gas

e.g. Magnesium + Hydrochloric acid → Magnesium chloride + Hydrogen

gas $Mg + 2HCl \rightarrow MgCl_2 + H_2$

The chemical reaction will go faster if:

- The acid is concentrated
- The piece of metal is smaller (has a smaller surface area)
- The metal is more reactive

The chemical reaction will go slower/take longer if:

- The acid is diluted
- The piece of metal is bigger (has a large surface area)
- The metal is less reactive

For your Student Research Task this information will give you background knowledge to choose a particular independent variable for your SRP.

You have the choice of testing ONE of the following:

- Concentration of an acid
- Size of the metal (surface area)
- Different types of metals

- *If you are absent on the day that the task is due, you MUST see your teacher the next day (not your next lesson) that you are present at school to show your medical certificate or produce a misadventure form (refer to your Assessment Booklet for a copy of the form).*
- *Exemptions and extensions for any other reason will only be determined at the discretion of the Head Teacher, and only in extenuating circumstances. You must advise the Head Teacher as soon as possible if you know you are unable to submit the task on the due date.*
- *All appeals must be lodged within 48hrs of receipt of the task. Students who may consider an appeal are not permitted to take their task home. The original task cannot be altered in any way prior to the appeal process.* See Assessment booklet for details.

SRP Introduction

I have been issued a Student Research Project guideline and marking criteria. I understand that this is a mandatory part of my Science studies and failure to complete this task will result in an 'N' determination (no grade on my ROSA).

Name _____ Signature _____ Date_____

Planning your project

1. What will the topic of my Student Research Project be? *See the important information sheet attached for some ideas.*

2. What will we do in class?

3. What will I need to do at home and submit?

4. Define independent, dependent and controls of a primary investigation.

Independent	Dependent	Controls

5. Below is a word bank containing the headings of a scientific report. Place them in the correct order as you would in a scientific report.

DISCUSSION	AIM	METHOD	CONCLUSION
	HYPOTHESIS	APPARATUS	
RESULTS			

(a) _____ (b) _____ (c) _____

(d) _____ (e) _____ (f) _____

6. When conducting a primary investigation, it is important to ensure validity, reliability and accuracy. Define each term and provide an example of how you can improve each in an investigation.

Term	Definition	Example
Validity		
Reliability		
Accuracy		

7. When planning your investigation, you will be required to collect data. There are two types of data, ***qualitative data*** and ***quantitative data***.

Term	Definition	Example
Qualitative data		
Quantitative data		

- *If you are absent on the day that the task is due, you MUST see your teacher the next day (not your next lesson) that you are present at school to show your medical certificate or produce a misadventure form (refer to your Assessment Booklet for a copy of the form).*
- *Exemptions and extensions for any other reason will only be determined at the discretion of the Head Teacher, and only in extenuating circumstances. You must advise the Head Teacher as soon as possible if you know you are unable to submit the task on the due date.*
- *All appeals must be lodged within 48hrs of receipt of the task. Students who may consider an appeal are not permitted to take their task home. The original task cannot be altered in any way prior to the appeal process.* See Assessment booklet for details.

First Draft – Student Research Project

Title: _____

Background information:

Aim:

Hypothesis:

Risk Assessment:

RISK/HAZARD	INJURY	PREVENTION

Apparatus:

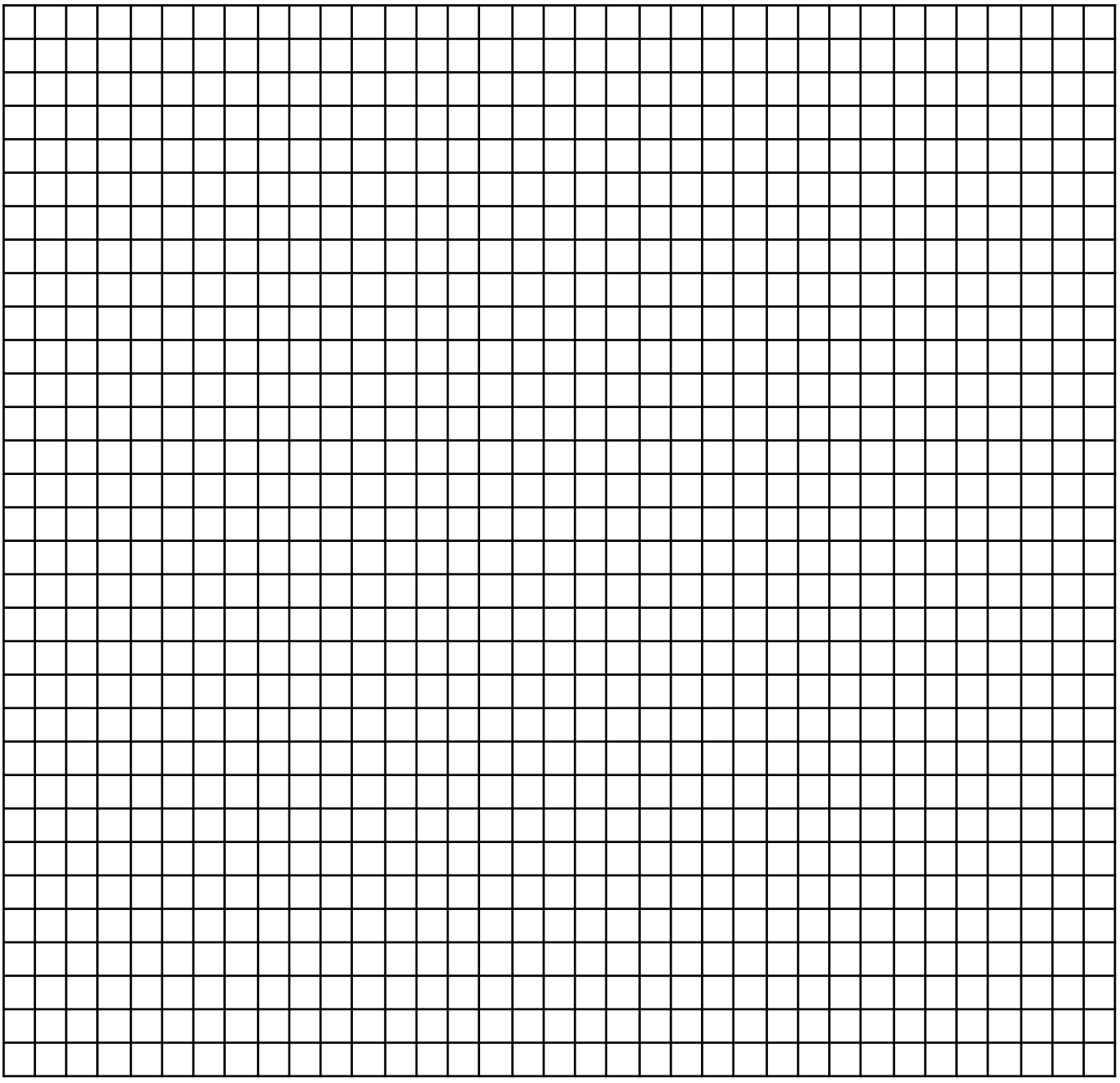
- *If you are absent on the day that the task is due, you MUST see your teacher the next day (not your next lesson) that you are present at school to show your medical certificate or produce a misadventure form (refer to your Assessment Booklet for a copy of the form).*
- *Exemptions and extensions for any other reason will only be determined at the discretion of the Head Teacher, and only in extenuating circumstances. You must advise the Head Teacher as soon as possible if you know you are unable to submit the task on the due date.*
- *All appeals must be lodged within 48hrs of receipt of the task. Students who may consider an appeal are not permitted to take their task home. The original task cannot be altered in any way prior to the appeal process.* See Assessment booklet for details.

Method:

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

- *If you are absent on the day that the task is due, you MUST see your teacher the next day (not your next lesson) that you are present at school to show your medical certificate or produce a misadventure form (refer to your Assessment Booklet for a copy of the form).*
- *Exemptions and extensions for any other reason will only be determined at the discretion of the Head Teacher, and only in extenuating circumstances. You must advise the Head Teacher as soon as possible if you know you are unable to submit the task on the due date.*
- *All appeals must be lodged within 48hrs of receipt of the task. Students who may consider an appeal are not permitted to take their task home. The original task cannot be altered in any way prior to the appeal process.* See Assessment booklet for details.

Title: _____



Discussion:

- *If you are absent on the day that the task is due, you MUST see your teacher the next day (not your next lesson) that you are present at school to show your medical certificate or produce a misadventure form (refer to your Assessment Booklet for a copy of the form).*
- *Exemptions and extensions for any other reason will only be determined at the discretion of the Head Teacher, and only in extenuating circumstances. You must advise the Head Teacher as soon as possible if you know you are unable to submit the task on the due date.*
- *All appeals must be lodged within 48hrs of receipt of the task. Students who may consider an appeal are not permitted to take their task home. The original task cannot be altered in any way prior to the appeal process.* See Assessment booklet for details.

Conclusion:

References: