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| **Instrument Number 2** | | | **Term 1 2022** | |
| **Student Name** |  | **Handout Date** (Week Beginning) | | 14/03/2022 |
| **Teacher Name** |  | **Interim Check Date** | | 21/03/2022 |
| **Unit Number/Name** | Unit 1 – Chemical Reactions | **STILE Due Date** | | 25/03/2022 |
| **Research Poster Due Date** | | **30/03/2022** |

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| **Assessment Technique** | Assignment | | | |
| **Time/Length** | 2 Weeks | | | |
| **Assessment Conditions** | Summative | | | |
| **Seen/Unseen** | Seen | | | |
| Materials handed out prior to assessment? | No | Yes | **Conditions** |
| Click here to enter text. |

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| **Criterion** | **Grades** |
| Science Inquiry Skills |  |

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| **Differentiation: If assessment conditions have been adjusted details are provided below** |
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| **Acknowledgement of assessment responsibility** |  |
| I understand the consequences of plagiarism/cheating and confirm this is my own work. | |
| **Student Signature:** | **Date:** ……………………………… |

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| B:\Common\_NEW MSHS LOGO\NEW LOGO - B&W\BW-Shield Only white outline.png | **Maroochydore State High School**  **Standards Matrix for Year** 9 **Science Term 1 Chemical Reactions** |

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| --- | --- | --- | --- | --- | --- |
| Assessable Elements | A | B | C | D | E |
| SCIENCE INQUIRY SKILLS | | | | |
| QUESTIONING AND PREDICTING | Students design a research question that can be investigated scientifically. Once developed, students evaluate and enhance this question in order to make the research question specific and relevant. | Students design a research question that can be investigated scientifically. Once developed, students evaluate and enhance this question in order to make the research question relevant. | Students design a relevant research question that can be investigated scientifically. | Students can identify questions that can be researched. | Students state a research question. |
| Planning and Conducting | Students appropriately design and conduct an experiment to investigate their research question, with considered management of safety and ethical issues  Students appropriately measure and control variables, select equipment appropriate to the task and collect data with accuracy. | Students adequately design and conduct an experiment to investigate their research question, with management of safety and ethical issues  Students adequately measure and control variables, select equipment appropriate to the task and collect data with accuracy | Students collaboratively design and conduct an experiment to investigate their research question, some management of safety and ethical issues  Students measure variables, select equipment appropriate to the task and collect data | Students conduct an experiment  or  some management of safety and ethical issues  or  Students measure variables. | Students measure conduct an experiment |
| Processing and analysing data and information | Students select and construct appropriate representations to analyse data collected.  Students summarise and explain findings from the experiment and use scientific understanding to identify relationships and draw conclusions based on evidence | Students select and construct adequate representations to analyse data collected.  Students summarise and describe data from the experiment and use scientific understanding to identify relationships and draw conclusions based on evidence | Students select and construct representations to analyse data collected.  Students identify data from the experiment and use scientific understanding to identify relationships and draw conclusions. | Students make a statement about the findings of data. | Students collect data from the experiment |
| Evaluating AND COMMUNICATION | Students appropriately use scientific language terms, and concepts fluently and concisely, and reference their findings in a research poster | Students use adequately use scientific language, terms, and concepts and reference their findings in a research poster | Students use scientific language, terms, and concepts and reference their findings in a research poster | Students use language and terms to communicate their findings and ideas. | Students use language to communicate. |

**Teacher feedback:**

ASSESSMENT DESCRIPTION

**Task**

You have been exploring many different chemical reactions in class. Your task is to investigate and modify an experiment on a chemical reaction. You will design and conduct an experiment that uses a chemical reaction to solve a problem. You will present your research through the creation of a research poster. Your poster will draw on the key ideas we have been investigating in class and summarise the findings of your research using appropriate representations of your results.

STEPS TO ASSESSMENT SUCCESS

Complete these in the **Chemical Reactions Investigation Planner** in Stileapp – every group member needs to keep their own copy updated.

⃝ STEP ONE

Identify the members in your group (Q1 Stileapp)

Select a chemical reaction from the list provided in Table 1 or negotiate an alternative reaction with your teacher.

Identify a chemical reaction that you will refine

⃝ STEP TWO   
Identify the common problem that you will use your chemical reaction to solve

STEP THREE  
Develop and design a research question. In your research poster, you will answer this question. Below is some information about forming a research question

* A research question is something that starts with an interrogative such as: How, Why, To what extent etc.
* A research question is never closed and this means it cannot be answered by either ‘yes’ or ‘no’.
* It needs to be specific so that you can create an investigation to answer it.
* You should be constantly evaluating and refining your research question

Develop your research question in the box below

Use your research question to create an aim for your experiment (Q2 Stileapp)

⃝ STEP FOUR

Design your experiment. This will be a cyclic process and will include:

* Identifying the variables (Q3 and 4 Silteapp)
* Developing a hypothesis (Q5 Silteapp)
* Design a method (Q6 Stileapp)
* List the materials (Q7 Stileapp)
* Draw a diagram (Q8 Stileapp)
* Consider safety risks (Q9 Stileapp)

⃝ STEP FIVE

Discuss your experimental design with your teacher, make improvements and get approval to proceed with your experiment.

⃝ STEP SIX  
Design a table to collect the results from your experiment (Q10 Stileapp).

⃝ STEP SEVEN  
Undertake your experiment and collect data

⃝ STEP EIGHT

Analyse the data that you have collected. You may need to:

* Present your data graphically – this will depend on the kind of data that you have collected
* Identify a pattern or trend.
* Interpret your results – what did you find? How did you answer your original question?
* Reflect on your results (Q 11 and 12 Stileapp)

⃝ STEP NINE

Plan your research poster. It will need a:

* Title
* Introduction that explains the problem you are solving, the chemical reaction you are using and a description of your experiment
* Method (this can be a description in a paragraph not just steps)
* Risk assessment of the safety issues
* Result section and findings
* Conclusion
* You can include Diagrams, images, graphs and tables as well as writing.

You may want to draw your plan below:

⃝ STEP TEN

Make your poster. You have **2** options for completion of your poster;

1. Hard copy on A3 paper
2. Digital version using one of the below online templates:

<https://www.makesigns.com/SciPosters_Templates.aspx>

<https://www.canva.com/design/play?category=tACZCh01txM>

**Table 1. List of possible chemical reactions that can be conducted in this assignment.**

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| Chemical reaction name | Description |
| Red cabbage pH indicator | Use red cabbage as a pH indicator to determine the pH of various substances |
| Exothermic reaction | Mix the reactants together and measure the energy given off by the reaction by measuring the change in temperature of the solution |
| Glowing tonic water | Mix the reactants together to reduce the glow of the liquid. |
| Magnesium and acid | Mix magnesium and hydrochloric acid and measure the change in temperature. |

**Table 2. Possible problems and subsequent research questions that could be used in your assignment**

|  |  |  |
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| Chemical reaction | Common problem | Question |
| Red cabbage as a pH indicator | The acid in juice wears away teeth enamel and damages teeth | Which juice is least acidic so that it won’t damage my teeth? |
| Red cabbage as a pH indicator | If soap is too basic it can cause skin irritation | Which soap is least basic so that it won’t irritate my skin? |
| Exothermic reaction between | My hands are cold, I need a hand warmer | What is the best mix of chemicals to make the most heat to warm my hands? |
| Glowing tonic water | My tonic water is glowing, a predator may see my campsite, how do I stop the glow? | What are the best chemicals (bleach, lemon juice, vinegar) to make my tonic water stop glowing? |
| B STANDARD ONLY  Magnesium and acid | Using the method provided add Mg metal to different acids and measure the temperature change | Which acid produces the most heat when mixed with Mg metal |