

Name\_\_\_\_\_

Section	Achievement Level
Scientific Inquiry - Exploration	
Scientific Inquiry - Evaluation	
Scientific Inquiry - Communication	
Data Management	

## **Overall levels**

Scientific Inquiry:	Data Management:
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Exploration						
1	2	3	4	5	6	7
No elements of <b>Exploration</b> are included.	<b>Research Question</b> An <i>unclear or vague</i> RQ is <u>stated</u> .	<b>Research Question</b> An <i>unfocused</i> (broad) RQ is <u>stated</u> .	<b>Research Question</b> A <i>clear</i> RQ is <u>stated</u> .	<b>Research Question</b> An <i>appropriate</i> RQ is <u>stated</u> .	<b>Research Question</b> A <i>focused</i> RQ is <u>stated</u> .	
	<b>Scientific Background</b> Information that is <i>basic</i> but with <i>no relevance</i> to the RQ is <u>stated</u> .	<b>Scientific Background</b> Information that is <i>basic</i> with <i>little relevance</i> to the RQ is <u>stated</u> .	<b>Scientific Background</b> Information that <i>links</i> to the RQ is <u>stated</u> .	<b>Scientific Background</b> Outlines RQ and describes <i>scientific context</i> to <i>demonstrate understanding</i> of Investigation.	<b>Scientific Background</b> Discusses RQ and explains <i>scientific context</i> to <i>enhance understanding</i> of Investigation.	<b>Scientific Background</b> Fully discusses RQ and explains <i>scientific context</i> to <i>enhance understanding</i> of Investigation.
	<b>Variables</b> IV or DV are <u>identified</u> but with <i>major errors</i> .	<b>Variables</b> IV and DV are <u>identified</u> but with <i>some errors</i> .	<b>Variables</b> IV and DV are correctly <u>identified</u> .	<b>Variables</b> <i>Correctly identifies</i> the IV and DV, and has <i>links</i> to the Method.	<b>Variables</b> <u>Describes</u> how to <i>manipulate</i> the IV and DV, and <i>connects</i> to how Data will be <i>collected</i> .	<b>Variables</b> <u>Describes</u> how to <i>manipulate</i> the IV and DV, and <u>describes</u> how <i>sufficient, relevant</i> Data will be <i>collected</i> .
	<b>Control Variables</b> Some CV are <u>listed</u> but are <i>not appropriate</i> .	<b>Control Variables</b> Some <i>appropriate</i> CV are <u>listed</u> .	<b>Control Variables</b> <i>Most relevant</i> CV are <u>listed</u> .	<b>Control Variables</b> All <i>relevant</i> CV are <u>listed</u> and <i>some</i> are <i>linked</i> to the Method.	<b>Control Variables</b> All <i>relevant</i> CV <u>listed</u> and <i>some</i> are <u>explained</u> with <i>clear link</i> to Method or Diagram.	<b>Control Variables</b> All <i>relevant</i> CV <u>listed</u> and <u>explained</u> and <i>clearly linked</i> to Method and Diagram.
	<b>Procedure</b> Method <u>stated</u> is <i>unclear</i> and <i>cannot be followed</i> .  Diagrams are <i>missing</i> .	<b>Procedure</b> Method <u>stated</u> can be <i>followed</i> with <i>difficulty</i> .  Diagrams are <i>missing</i> .	<b>Procedure</b> <u>Designs</u> a <i>logical</i> Method but does <i>not</i> allow <i>sufficient</i> or <i>relevant</i> Data to be <i>collected</i> .  Diagrams are included but <i>inappropriate</i> .	<b>Procedure</b> <u>Designs</u> a <i>logical</i> Method but <i>some</i> details are <i>missing</i> .  Diagrams are <i>appropriate</i> but <u>unlabelled</u> .	<b>Procedure</b> <u>Designs</u> a <i>logical</i> and <i>complete</i> Method that allows for <i>sufficient</i> and <i>relevant</i> Data to be <i>collected</i> .  Diagrams are <i>appropriate</i> and <u>labelled</u> .	<b>Procedure</b> <u>Designs</u> a <i>logical</i> and <i>complete</i> Method allowing for <i>sufficient, relevant</i> , and <i>precise</i> Data to be <i>collected</i> .  Diagrams are <i>appropriate</i> , <u>labelled</u> , and <i>enhance understanding</i> .
	<b>Considerations</b> <i>No awareness</i>	<b>Safety/Ethical/ Environmental Considerations</b> <i>Limited awareness</i>		<b>Safety/Ethical/ Environmental Considerations</b> <i>Some awareness</i>		<b>Considerations</b> <i>Full awareness</i>

Data Management						
1	2	3	4	5	6	7
No elements of Data Management are included.	<b>Data Table(s)</b> Results displayed in a Table with <i>major errors</i> or <i>omissions</i> causing <i>incorrect representation</i> of the Data or making the Data <i>unintelligible</i> to the reader.  Average Results were <i>not calculated</i> or were calculated with <i>major errors</i> or <i>omissions</i> .	<b>Data Table(s)</b> Results displayed in a Table with <i>major errors</i> or <i>omissions</i> causing <i>portions</i> of the Table to be <i>unclear</i> .  Average Results were <i>not calculated</i> or were calculated with <i>major errors</i> .	<b>Data Table(s)</b> Constructs an <i>appropriate</i> Table for Raw Data, but <i>errors</i> and/or <i>omissions</i> detract from (lessen) overall Presentation of Data.  Average Results are <u>calculated</u> but <i>errors</i> present.	<b>Data Table(s)</b> Constructs an <i>appropriate</i> Table for Raw Data with <i>some errors</i> or <i>omissions</i> present.  Average Results are <i>correctly</i> <u>calculated</u> but shown with <i>some errors</i> in Significant Figures.	<b>Data Table(s)</b> Constructs an <i>appropriate</i> Table for Raw Data  Average Results are <i>correctly</i> <u>calculated</u> and shown with <i>correct</i> Significant Figures.	<b>Data Table(s)</b> Constructs a <i>concise</i> and <i>appropriate</i> Table for Raw Data  Average Results are <i>correctly</i> <u>calculated</u> and shown with <i>correct</i> Significant Figures.
	<b>Uncertainties</b> Uncertainties are <i>not stated</i> .	<b>Uncertainties</b> <i>Few</i> Uncertainties are <u>stated</u> , or with <i>major errors</i> in Instrumental and Procedural Uncertainty.	<b>Uncertainties</b> <i>Only</i> Instrumental or Procedural Uncertainties are <u>stated</u> , or <i>errors</i> are present.	<b>Uncertainties</b> Instrumental and Procedural Uncertainties <u>stated</u> but with <i>some small errors</i> .	<b>Uncertainties</b> Instrumental and Procedural Uncertainties are <i>correctly stated</i> .	
	<b>Qualitative Data</b> <i>No relevant</i> Qualitative Data <u>stated</u> (where necessary).	<b>Qualitative Data</b> <i>Some relevant</i> Qualitative Data <u>stated</u> but with <i>major errors</i> or <i>omissions</i> (where necessary).	<b>Qualitative Data</b> <i>Some</i> Qualitative Data <i>mostly relevant</i> to the Investigation is <u>stated</u> (where necessary).	<b>Qualitative Data</b> Qualitative Data <i>mostly relevant</i> to the Investigation is <u>stated</u> (where necessary).	<b>Qualitative Data</b> <i>Appropriate</i> Qualitative Data <i>relevant</i> to the Investigation is <u>stated</u> (where necessary).	<b>Qualitative Data</b> <i>Appropriate</i> and <i>sufficient</i> Qualitative Data <i>relevant</i> to the Investigation is <u>stated</u> (where necessary).
	<b>Sample Calculations</b> <i>No</i> Sample Calculations <u>stated</u> .	<b>Sample Calculations</b> <i>Some</i> Sample Calculations <u>stated</u> , with <i>major errors</i> or <i>omissions</i> .	<b>Sample Calculations</b> <i>Labeled</i> and <i>mostly accurate</i> Sample Calculations are <u>stated</u> for <i>each step</i> of Data Processing, with <i>some omissions</i> .	<b>Sample Calculations</b> <i>Labeled</i> and <i>accurate</i> Sample Calculations are <u>stated</u> for <i>each step</i> of Data Processing, with <i>some omissions</i> .	<b>Sample Calculations</b> <i>Labeled</i> and <i>accurate</i> Sample Calculations are <u>stated</u> for <i>each step</i> of Data Processing.	

Data Management						
1	2	3	4	5	6	7
No elements of <b>Data Management</b> are included.	<p><b>Graphs</b></p> <p>Graph(s) <i>not</i> included, or included but do <i>not reflect</i> the Processed Data <i>correctly</i> or <i>appropriately</i>.</p>	<p><b>Graphs</b></p> <p>Graph(s) included that <i>partly reflect</i> the Processed Data but include <i>major errors</i> or <i>omissions</i>.</p>	<p><b>Graphs</b></p> <p>Graph(s) <u>constructed</u> that <i>reasonably reflect</i> the Processed Data with <i>trendlines</i> and <i>correct error bars</i>, with <i>some errors</i>.</p>	<p><b>Graphs</b></p> <p>Graph(s) <u>constructed</u> that <i>mostly reflect</i> the Processed Data with <i>appropriate trendlines</i> and <i>correct error bars</i>, with <i>some small errors</i>.</p>	<p><b>Graphs</b></p> <p>Graph(s) <u>constructed</u> that <i>reflect</i> the Processed Data with <i>appropriate trendlines</i> and <i>correct error bars</i>, with <i>some small errors</i> that do <i>not</i> detract from the overall Presentation of Processed Data</p>	<p><b>Graphs</b></p> <p>Graph(s) <u>constructed</u> that <i>accurately reflect</i> the Processed Data with <i>appropriate trendlines</i> and <i>correct error bars</i> included.</p>
	<p>Graph(s) included are <i>not relevant</i> to the Investigation.</p>	<p>Graph(s) included do <i>not reflect</i> the Processed Data <i>correctly</i> or <i>appropriately</i>.</p>	<p>Graph(s) include <i>appropriate titles, axes labels, units, and the equation</i> for the trendline - but <i>may have omissions</i>.</p>	<p>Graph(s) include <i>appropriate titles, axes labels, units, and the equation</i> for the trendline.</p>	<p>Graph(s) include <i>appropriate titles, correct axes labels, units, and the equation</i> for the trendline.</p>	<p>Graph(s) include <i>appropriate titles, correct axes labels, units, and the equation</i> for the trendline.</p>

Evaluation						
1	2	3	4	5	6	7
No elements of <b>Evaluation</b> are included.	<b>Conclusion</b> Data is <i>incorrectly interpreted</i> with a <i>simple statement</i> .  No attempt to <u>discuss</u> the Results in a <i>scientific context</i> .	<b>Conclusion</b> Data is <i>correctly interpreted</i> with a <i>simple statement</i> .  There is an attempt to <u>discuss</u> the Results in a <i>scientific context</i> but with <i>omissions or errors</i> .	<b>Conclusion</b> Data is <i>correctly interpreted</i> with <i>one or more detailed</i> statements. Data is used to <u>justify</u> the Conclusion.  There is an attempt to <u>explain</u> the Results in a <i>scientific context</i> but with <i>omissions or errors</i> .	<b>Conclusion</b> Data is <i>correctly interpreted</i> and <i>linked</i> to the Research Question. Data is used to <u>justify</u> the Conclusion.  The Conclusion is <u>discussed</u> using <i>scientific knowledge</i> .	<b>Conclusion</b> <u>Interpret</u> and <u>analyse</u> Processed Data to <u>deduce</u> a Conclusion <i>linked</i> to the Research Question. Processed Data and Graphical Results are used to <u>justify</u> the Conclusion.  The Conclusion is <u>explained</u> using <i>scientific knowledge</i>	<b>Conclusion</b> <u>Interpret</u> and <u>analyse</u> Processed Data to <u>deduce</u> a Conclusion <i>linked</i> to the Research Question. Processed Data and Graphical Results are used to <u>justify</u> the Conclusion.  The Conclusion is <u>explained</u> using <i>scientific knowledge</i> AND makes reference to <i>academic sources</i> .
	<b>Validity of Conclusion</b> No <i>validity</i> of the Data <u>stated</u> .	<b>Validity of Conclusion</b> <i>Validity</i> of the Data <u>stated</u> .	<b>Validity of Conclusion</b> <i>Validity</i> of the Data outlined but with <i>little reference</i> to the Data.	<b>Validity of Conclusion</b> <i>Validity</i> of the Data <u>discussed</u> but with <i>some omissions or errors</i> .	<b>Validity of Conclusion</b> <i>Validity</i> of the Data <u>discussed</u> with <i>reference</i> to the Data and Graph ( <i>qualitative and quantitative, as appropriate</i> ).	<b>Validity of Conclusion</b> <i>Validity</i> of the Data <u>evaluated</u> with <i>reference</i> to the Data and Graph ( <i>qualitative and quantitative, as appropriate</i> ).
	<b>Evaluation</b> No relevant <i>strengths</i> or <i>weaknesses</i> of Investigation are <u>identified</u> .  Improvements are <i>not suggested</i> .	<b>Evaluation</b> Some <i>strengths</i> or <i>weaknesses</i> of Investigation are <u>identified</u> .  Improvements <u>suggested</u> are <i>irrelevant</i> .	<b>Evaluation</b> Some <i>strengths</i> and <i>weaknesses</i> of Investigation are <u>identified</u> .  Improvements <u>suggested</u> but <i>most</i> are <i>minor</i> .	<b>Evaluation</b> Relevant <i>strengths</i> and <i>weaknesses</i> of Investigation are <u>identified</u> and <u>described</u> using the Results.  Improvements <u>suggested</u> that are <i>realistic</i> and <i>appropriate</i> .	<b>Evaluation</b> Relevant <i>strengths</i> and <i>weaknesses</i> of Investigation are <u>identified</u> and <u>explained</u> using the Results.  Realistic Improvements <u>explained</u> .	<b>Evaluation</b> Key <i>strengths</i> and <i>weaknesses</i> of Investigation are <u>identified</u> , <u>explained</u> and <u>evaluated</u> using the the Results.  Realistic Improvements and Extensions to the Investigation <u>explained</u> .

Communication						
1	2	3	4	5	6	7
No passing level for Communication can be awarded.	<b>Presentation</b> Report is <i>hard to follow</i> and is <i>not</i> in a <i>logical order</i> .	<b>Presentation</b> An <i>attempt</i> to <u>order</u> the Report has been made, with some <i>logic</i> , but overall is <i>not well presented</i> and somewhat <i>hard to follow</i> .	<b>Presentation</b> Report is <i>mostly</i> in <u>order</u> but can be <i>hard to follow</i> and is <i>not concise</i> or <i>well-presented</i>	<b>Presentation</b> Report is in <u>order</u> with <i>some Sections missing headings</i> and/or somewhat <i>concise</i> and <i>well-presented</i> .	<b>Presentation</b> Report is in <u>order</u> with <i>appropriate</i> headings, and mostly <i>concise</i> and <i>well-presented</i> .	<b>Presentation</b> Report is <i>well-presented</i> , <i>concise</i> (12 page maximum), and <i>logically</i> structured ( <u>ordered</u> ).
	<b>Use of Conventions</b> Conventions & Topic-Specific Terminology are <i>incorrectly used</i> and <i>hinder understanding</i> .	<b>Use of Conventions</b> Conventions & Topic-Specific Terminology are <u>used</u> in <i>some</i> Sections of the Report, but contain <i>major errors</i> that <i>hinder understanding</i> .	<b>Use of Conventions</b> Conventions & Topic-Specific Terminology are <u>used</u> in <i>some</i> Sections of the Report, but contain <i>errors</i> that <i>hinder understanding</i> .	<b>Use of Conventions</b> Conventions & Topic-Specific Terminology are <u>used</u> in <i>most</i> Sections of the Report, but there are <i>some errors</i> that <i>might hinder understanding</i> .	<b>Use of Conventions</b> Conventions & Topic-Specific Terminology are <u>used correctly</u> , with <i>small errors</i> that <i>do not hinder the overall understanding</i> .	<b>Use of Conventions</b> Conventions & Topic-Specific Terminology are <u>used correctly</u> and <i>enhance the overall understanding</i> .
	<b>Personal Engagement</b> Shows <i>no creativity, interest</i> or <i>initiative</i> in their Investigation, despite <i>teacher prompting</i> .	<b>Personal Engagement</b> Shows <i>little creativity, interest</i> or <i>initiative</i> in their Investigation with <i>teacher prompting</i> .	<b>Personal Engagement</b> Shows <i>some creativity, interest</i> or <i>initiative</i> in their Investigation with <i>some teacher prompting</i> .	<b>Personal Engagement</b> Shows <i>some creativity, interest</i> or <i>initiative</i> in their Investigation.		
	<b>MLA Referencing</b> No Citations are <u>used</u> .	<b>MLA Referencing</b> Citations are <i>attempted</i> , ( <i>used</i> ) but <i>not appropriately</i> , and are <i>not</i> in MLA format.	<b>MLA Referencing</b> Citations are <u>used</u> but are <i>not</i> in MLA format.	<b>MLA Referencing</b> MLA Citations are <i>used to acknowledge sources</i> but there are <i>errors</i> or <i>omissions</i> .	<b>MLA Referencing</b> MLA Citations are <i>used to acknowledge sources</i> but there are <i>some small errors</i> .	<b>MLA Referencing</b> MLA Citations are <u>used to appropriately acknowledge sources</u> .