Criterion B required components	**1-2**	**3-4**	**5-6**	**7-8**
Problem/ Question	The question/ problem is **stated** but is incomplete, without specific information or does not agree with the hypothesis	The question/problem is **stated** and complete The description is not included or included but is does not describe the science background and vocabulary related to the investigation	The questions is stated and complete The question/ problem is supported with a **description** of the science and relevant science vocabulary connected to the question/problem	The questions is stated and complete The science and relevant science vocabulary connected to the question/problem is **described** The **language used is scientific** and a citation may be included.
Hypothesis	A **statement** of what is being tested	An **outline** of what is being tested A general prediction is described	The specific test and prediction are **described** with a reasonable and possible **explanation** of the prediction Some use of scientific language is included	Using **scientific language**, the specific test and prediction are **described** with a reasonable and possible **explanation**.
Variables: Independent (IV) Dependent (DV) Controlled (CV)	Identified each variable but without supporting details or with incorrect information	Correctly identify most variables and **outlined** how each will be manipulated (IV), measured (DV), and controlled (CV)	Correctly identify all variables and **outlined** how each will be manipulated (IV), measured (DV), and controlled (CV)	Correctly identified all variables and **described** specifically how each will be manipulated (IV), measured (DV), and controlled (CV)
Materials & equipment	The list is incomplete and without specifications	Identified most relevant materials and equipment with some specifications	Identified all relevant materials and equipment with some specifications	Identified all relevant materials and equipment with complete specifications
Method	Method cannot be repeated based on the steps provided	Something close to the method can be repeated but the specific steps needed to repeat the exact investigation are not included	Method illustration supports the investigation and but may not include all specifications. The exact method may be repeated based on the steps described.	Method illustration supports the investigation and includes all specifications. The exact method may be repeated based on the steps described and the steps are in a logical sequence.
Data collection & processing	None of the required components	**Statement** of all/most of the following: -the data recorded -the number of trials -the mathematic calculations performed after the investigation using the trial data The data collected is relevant	**Outline** of all/most of the following: -the data recorded -the number of trials -the mathematic calculations used with the data after the investigation The data collected is relevant	**Description** of all of the following: -the specific data recorded -the number of trials -the specific mathematic calculations used with the data after the investigation, including an example. The data collected is relevant

Important definitions

Relevant – connected specifically to the information being presented or to the lab investigation or to the hypothesis

Discuss – can include one the following information: 1) limitations and benefits, 2) making arguments for and against, 3) the positive and negative effects of, 4) advantages, or disadvantages.

Interpret - to provide a meaning of or to explain

Precision - "The number of significant digits to which a value has been measured" - *example*: *you measured to the nearest whole number (such as 1cm) or to a more precise tenths of a centimeter (such as 1.5cm) (Haby)*

Accuracy – "the measurement is the actual value of the quantity being measurement" *(Haby)*

State – a single sentence that is not supported with any specific details or description

> Example: The data collected were not reliable because the data were not consistent.

Outline – a summary of ideas but without specific supporting details

> Example: The data collected were not reliable. The data from the trials using the round car and square car were not close together.

Describe - to write about the characteristics and features of something, to show what something is by drawing a picture using words (this is the '*what*' part)

> Example: The data collected were not reliable because the data were not consistent. The data from the trials using the round car ranged from 0.71s to 0.87s. The data from the trials using the square car ranged from 0.88s to 1.96s.

Explain – includes specific information on what, how, and why

> Example: The data collected were not reliable because the data for the square car were not consistent. The data from the trials using the round car were consistent because the difference in the times was only 0.12s: the times ranged from 0.71s to 0.87s. The data from the trials using the square car were not consistent because the difference in the times was 1.08s: the times ranged from 0.88s to 1.96s. Whereas the data from trials 1 and 2 using the square car were consistent with only a difference of 0.01s, the time of 1.96s measured in trial 3 was anomalous.

Haby, Jeff. "WHAT IS THE DIFFERENCE BETWEEN ACCURACY AND PRECISION?" *WHAT IS THE DIFFERENCE BETWEEN ACCURACY AND PRECISION?* The Weather Prediction, n.d. Web. 21 July 2012. <http://www.theweatherprediction.com/habyhints/246/>.

Criterion C required components	**1-2**	**3-4**	**5-6**	**7-8**
Data table: collecting, organizing, transforming, and presenting data in numerical forms	Data do not make sense or is confusing Table does not contain any of the following: -a relevant title -column headings or row labels -units	Data make sense Table includes most of the following: - a specific and **relevant** title - column headings and row labels - units Data in the table may include: - some inaccurate data - units in the data cells - inappropriate decimals	Data is accurate and make sense Table includes most of the following: - a specific and **relevant** title - specific column headings - specific row labels - units	Data is accurate and make sense Table includes all of the following: - a specific and **relevant** title - specific column headings - specific row labels - units
Graphs: organizing, transforming, and presenting data in visual forms	At least one graph is included but is confusing or the data do not make sense	At least one graph is included Graph includes most of the following: - a specific and relevant title - relevant data labels - units on the y-axis - labels on the x-axis Data on the graph may include: - some inaccurate data - inappropriate labels	Both a line and a bar graph are included. Graph includes most of the following: - a specific and relevant title - relevant data labels - units on the y-axis - relevant labels on the x-axis	Both a line and a bar graph are included. Graph includes all of the following: - a specific and relevant title - relevant data labels - units on the y-axis - relevant labels on the x-axis
Describe results		Most of the following are included with accurate information and correct units: - the averages - the highest trial data - the lowest trial data	All of the following are included with accurate information and correct units: - the specific averages - the highest trial data - the lowest trial data	Using **scientific language**, all of the following are included with accurate information and correct units: - the specific averages - the highest trial data - the lowest trial data
Interpret data (2 paragraphs) ***Interpret***: *to provide a meaning of or to explain*	General **statement** on the reliability of the data but without specific details General interpretation of the results is outlined but is based on an incorrect assessment of the results	**Outline** of the reliability of the data that includes the correct range and difference of the trial data General interpretation of results is **outlined** and is based on a correct assessment of the results	**Description** of the reliability of the data that includes the correct range and difference of the trial data Specific interpretation of results is **described** that is reasonable and is based on a correct assessment of the results	**Explanation** of the reliability of the data that includes the correct range and difference of the trial data and an explanation of anomalous data. Using **scientific language**, specific interpretation of results is **explained** that is based on a correct assessment of the results and is supported by research that is linked directly to the results.

Criterion C required components	**1-2**	**3-4**	**5-6**	**7-8**
Hypothesis Evaluation	Statement does not include any specific details about the prediction or whether the hypothesis was supported by the results	**Statement** includes all of the following: -the original prediction -a statement of whether the hypothesis was supported	**Outline** includes most of the following: -the original prediction -a statement of whether the hypothesis was supported -the results	**Discussion** includes all of the following: -the original prediction -a statement of whether the hypothesis was supported -a comparison of the results as evidence
Method validity	No specific details about the method are used in the evaluation	**Statement** included most of the following: - the precision of the equipment selected - the CV's that were not controlled - flaws in the method	**Outline** included most of the following: - the precision of equipment selected - the CV's that were not controlled - flaws in the method	Using scientific language, the **discussion** included most of the following: - the precision and appropriateness of equipment selected - the CV's that were not controlled and their effects on the results - reasonable flaws in the method and their effects on the results
Improvements & extensions	Statement on the improvements or extensions to the investigation does not contain any specific details	**Statement** on how the investigation could be improved or extended Statement is based on the results	**Outline** of how the investigation could be improved or extended Outline is based on the results	**Description** of how the investigation could be improved or extended Description is based on the results