

Science Project Report Rubric

- The report must be **typed**. No exceptions. *Each section must begin with a heading (minus 5 points per section if the heading is omitted).*
Your report must include four reference citations. I will subtract five points for each missing citation.

Title Page

3 points _____

- The title page must contain all of these items else your score is 0:
 - ❖ The title of the experiment,
 - ❖ Your name,
 - ❖ John Ehret High School
 - ❖ Period number
 - ❖ Your name,
 - ❖ The date,

Introduction and Background

25 Pts. _____

- State the purpose of the experiment (what you hope to prove)
- Develop the background by summarizing relevant prior research and theories.
- Dedicate a paragraph to each of the relevant articles you have read. You need five references with citations. Use MLA or APA citations.
- Include pertinent information about the previous studies (this may include hypotheses, methodology, findings and conclusions).
- Explain your rational (your reason) for doing your experiment. Explain why your experiment is relevant and how your experiment relates to the real world.
- State any formulas and define the variables. Example $D = m/v$ where D = density, m = mass and v = volume.
- Give a brief overview of your study
- Present hypotheses about the expected results of the study.
- Explain the rationale for your hypotheses, relating them back to the previous research.

Methods

10 Pts. _____

- Explain how you studied the problem or performed the experiment. You should include enough detail so most high school student could repeat your experiment
- List important materials (or Apparatus) you used
- Give a detailed description of any custom materials and apparatus used in your study in enough detail to allow the reader to replicate the study.
- Explain how you collected your data.
- Explain any safety precautions.
- You may describe your procedure in paragraph form or as a numerical listing of the steps involved in the experiment.

Results (27 points)

- **Data tables**

8 Pts. _____

 - Formatted with a title and includes all levels of the IV and the DV. The table must include labels, units and the data from multiple trials (minimum of 3) and averages. Any calculated values (i.e., rate) should be included. Numbers must be neatly 'lined up.' Units only appear in the column headings
 - Qualitative observations such as a verbal description of events observed during lab should follow the data table.

3 Pts. _____

- Analysis of data:

6 Pts. _____

- Include a summary of the data and the appropriate statistical tests (5% test of y intercept, deviation, standard deviation, etc.).
- Explain how you know the data is reliable or is not reliable.
- Discuss any errors that occurred.
- Explain that for the purposes of this investigation, why certain data should be considered potential outliers.
- Explain that you suspected that these values were outliers. Explain what evidence there is that these “bad” values are outliers. The best explanations are mathematical explanations such as the outlier is outside of a certain % range (i.e., 10% range).

- **Graphs** (you must use a printed graph from Excel, Logger Pro, or some other software) and include the following

10 Pts. _____

1. x axis is labeled with the name of the IV found in the data table.
2. y axis is labeled with the name of the **DV** found in the data table.
3. Title: The effect of _____ (the IV) _____ on _____ (the DV) _____ or Mass vs. Volume.
4. Scale the axes (numbers)
5. Show the origin
6. Draw a best fit lines or curves (trend line)
7. If your graph is a straight line include the linear equation of each line ($y = mx + b$). If your line is a curve include a function to describe your curve.
8. Show the 5% test calculation and if your y-intercept is equal to or less than 5% of the maximum y value (mass) then state that your y intercept is negligible and should be considered zero: rewrite the equation excluding the value of ‘b’.
 - a. If your value of b is $> 5\%$ max y, try 10% test instead of the 5% test.

Conclusion

25 points _____

- State the purpose of your experiment.
- Summarize the results and state whether or not they support your hypotheses. Use your data to justify your statements
 - The relationship between the variables is discussed and trends/patterns logically analyzed.
 - Predictions are made about what might happen if part of the experiment were changed or how the experimental design could be changed.
- Then relate the results to previous research, discussing whether they are similar or dissimilar to previous findings.
 - Discuss any weaknesses in the design or procedures and how this may have affected your results. Make predictions about what might happen if part of the experiment were changed or how the experimental design could be changed.
- End this discussion by commenting on the significance of your research. Explain how your research is connected with important issues in the real world and why your research is important.
- Discuss implications of the findings and any potential directions for future research.

General Format and Writing

10 points _____

The following items are graded: logical organization, sentence/ paragraph structure, grammar, spelling, footnotes, bibliography,

Total Points

100 points