

# HOW DO SCIENTISTS COMMUNICATE WITH EACH OTHER?

## LAB REPORTS

A.

### Title (Should be centered):

Tell the reader specifically what your experiment is investigating.

*"Oreo Cookie Lab"*

*"The Amount of Filling in Regular Versus Double-Stuffed Oreos"*

### B. Research Question:

- Must be a clear, focused, testable question. This is the question that your lab is trying to answer.
- *Does a double-stuffed Oreo really have twice the filling of a regular Oreo?*

### C. Hypothesis

- "If... then..."
- Not a question.
- *If a double-stuffed Oreo really has double the filling, then the mass of the filling will be twice that of a regular Oreo.*

### D. Variables

- Independent Variable
  - What YOU are changing in the experiment. Think: "I change the independent variable."
  - ONE independent variable in an experiment. *Double Stuffed Oreo*
- Dependent Variables
  - What you measure. *The amount of filling in the cookie (mass measured in grams)*
  - Think: "The dependent variable depends on what you change."
- Constant Variables
  - These are kept the same between the two groups you are testing.
  - Experiments have MANY constant variables. *Electronic balance, Oreo brand, room temperature, etc...*
- Control Group
  - This is the group that is compared against the independent variable group.
  - No "treatment." *Regular Oreo*

### E. Materials

- A list of all the items you need to complete your experiment.

### F. Procedure

- Step-by-step of directions list to complete the experiment. Precision and detail is important. Can include pictures/diagrams.
- Anyone should be able to exactly re-create your experiment following your procedure.

### G. Data

- Organize it in a chart.
- **Must** have: specific title, units, headings for columns and rows, and percentages/averages if appropriate

### H. Graph

- Three things all graphs need: title, units, axis labels
- Must be appropriate to the data (line graph for trends over time, bar graphs for quantities whole number units, etc)
- X axis: Independent variable
- Y axis: Dependent variable
- Even spacing is important!

### I. Conclusion (Claim, Evidence, Explanation)

- **CLAIM:** Your first sentence. This sentence answers your research question.
- **EVIDENCE:** Specifically refer to your supporting data
  - "See graph" or "See data" is not enough here. You must describe the important data in words
- **Explanation**
  - Clearly explain the meaning of your results. Explain *why* your claim makes sense.
  - Is your hypothesis supported or refuted? Discuss. (it's OK if your hypothesis was refuted!)
  - Propose reasons **WHY** you got the results you did, especially if the results surprised you.
  - Address possible sources of error in your experiment (EVERY experiment has them).
  - Offer ideas for further research. If given the time, how might you continue this line of inquiry?
  - Use vocabulary and concepts we've learned in class.