Double Stuff Oreo Lab

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Research Question:

Is a Double-Stuff Oreo cookie really "double the stuff" of a regular Oreo cookie?

Purpose (Why are we performing this lab?:

To determine if a Double-Stuff Oreo cookie has twice the filling than a regular Oreo cookie.

Background information:



There are many ways that scientists could design a lab to test this scientific question. We will be testing it by measuring the mass of each cookie and cream filling. Mass is the amount of matter in an object and is measured by using a triple beam balance or an electronic scale.

Hypothesis (an educated prediction of what is going to happen and why)

If the mass of a regular Oreo and a Double-Stuff Oreo are measured, then the

Double-Stuff will containt	the mass of filling than
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the regular Oreo, because

<u>Variables</u>

Independent Variable (what you manipulate/change)

Dependent Variable (what you measure/ count)

Constants (What is the same for both Oreos?) List at **least** three below:

Control of the Experiment (What are you comparing to?)

Collect the following materials from your teacher:

An electronic scale, 3 regular Oreos, 3 double-stuffed Oreos, 2 paper plates, plastic knife, piece of waxed paper

Procedure:

- 1. Lay out the regular Oreos on one paper plate and number the plate 1,2,3.
- 2. Lay out the double-stuffed Oreos on the second paper plate and number 1,2,3.
- 3. Be sure that your scale is on the right unit. You should see a "g" for gram.
- 4. Put on a piece of waxed paper and "tare" you scale. Remember this sets it to zero. Your scale should read "0.0 g" after each cookie. If not, "tare" it again.



COLUMN A

- 5. Mass each whole cookie and record your data in column A in your table. Be sure to return the cookie to the correct plate and number.
- 6. Find the average of all of the Regular Oreos and record in the "**averages**" section in the top section of the data table in Column A
- 7. Find the average of all of the Double "Schtuffed" Oreos and record in the "averages" section in the bottom section of the data table in Column A

COLUMN B

- 8. Regular Oreos: With your plastic knife, gently scrape off as much of the filling as possible. Set aside the knife and filling, and mass **JUST the 2 wafers**. Record the data in the top of Column B on the data table.
- Do step 8 for each Double Stuffed Oreo. Record data on bottom of the data table in Column B.

COLUMN C

FINDING THE MASS OF THE FILLING:

- 10. To find the mass of the filling for each Oreo subtract the mass of just the wafers (Column B) from the mass of the whole cookie (Column A) and record in Column C.
- 11. Find all the averages of the data and record on the table in the row called "averages"

Data and Observations Table A: Lab Group Data

(must have a title) Independent Dependent Variable Variable Column A Column B Column C Mass of the entire Mass of just Mass of the filling cookie (g) the 2 wafers (g) (A - B) (g) Regular Oreos 1 2 3 Averages Double SCHTUFFED 1 Oreos 2 3 Averages

Table B: Class Average Data

(must have a title)

	Average mass of the Whole cookie (g)	Average mass of the filling (g)
Regular Oreo		
Double "Schtuffed" Oreo		

Name_

Conclusion Questions:

Discuss these questions with your group and answer them in complete sentences. (You may agree or disagree with your group, but the answers should be in your own words, and not identical to your group members.) You will need a separate sheet of paper to write out your answers.

- 1. Compare the average mass of the two types of whole cookies. (reference your data and what the data indicates).
- 2. Compare the average mass of the filling of the two types of whole cookies. (reference your data and what the data indicates).
- 3. Is the mass of the whole cookie important to this experiment? Explain your answer.
- 4. What is the conclusion your group can draw from your results?
- 5. Was your hypothesis supported (correct) or rejected (wrong) by the results? Explain

Every lab has room for some errors. They may be caused accidentally by humans, or they may be a mechanical error that we cannot prevent from happening.

- 6. What were some possible errors in this experiment?
- 7. How could you improve this experiment?

Graph:

- 1. Create a graph to display the relationship between the type of Oreo and the amount of filling it has. Graph your data, as well as the class average.
- 2. Include a title, labels (including units) for both axes, and use a ruler to make your bars. Be sure to make the X-axis show the Independent variable, and the Y-axis show the Dependent variable.

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Explain how the memory aid "DRY MIX" might help someone to remember how to set up a graph.