**Double Stuff Oreo Lab**

**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 the cream filling. Mass is the amount of matter in an object and is measured by using a triple beam balance or an electronic scale.

**Create a Hypothesis & Null Hypothesis**

Hypothesis:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Null Hypothesis:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Variables**

Independent variable (what you manipulate/change) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Dependent variable (what you measure/count) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3 Constants (what is the same for both Oreos) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Control (what are you comparing to) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Procedures**

1. Obtain the following materials from your teacher:
   1. An electronic scale
   2. 10 regular Oreos
   3. 10 Double Stuff Oreos
   4. Plastic knife
   5. Paper towel (2 sheets)
2. Label one paper towel “Regular” and one paper towel “Double Stuff”
3. Carefully remove all of the filling from **ONE** regular Oreo onto the paper towel labeled “Regular” with your plastic knife.
4. Weigh the filling.
5. Fill in the chart below.
6. Repeat steps #3-5 for **EACH** of the other 9 regular oreos.
7. Now carefully remove all the filling from **ONE** Double Stuff Oreos onto the paper towel labeled “Double Stuff” with your plastic knife.
8. Weigh the filling.
9. Fill in the chart below.
10. Repeat steps #7-9 for **EACH** of the other 9 oreos
11. Graph the following:
    1. Averages of regular Oreo and double stuff.
12. Perform a statistical test. Use the following website to see examples of how to calculate the following statistical data: <https://www.biologyforlife.com/statistics.html>
    1. Average
    2. Mean
13. Write a conclusion according to the claim, evidence, and 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.

**Data and Observations**

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|  |  |  |
| --- | --- | --- |
| **Oreo #** | **Regular Oreo Filling Mass (g)** | **Double Stuff Oreo Filling Mass (g)** |
| **1** |  |  |
| **2** |  |  |
| **3** |  |  |
| **4** |  |  |
| **5** |  |  |
| **6** |  |  |
| **7** |  |  |
| **8** |  |  |
| **9** |  |  |
| **10** |  |  |
| **Average** |  |  |
| **Mean** |  |  |