Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Period\_\_\_\_\_

**Dish Soap Market Testing Lab – DATA SHEET**

Scientific Method Activity

**Purpose: You will practice performing a scientific investigation and identifying all of its parts.**

**Objectives** Students will:

1. Perform a scientific investigation to determine what dish soaps yield the largest and smallest bubbles.
2. Form hypotheses, determine variables (constants, dependent, independent) and test their hypothesis with an experiment.
3. Practice performing calculations, gather/organize and analyze data, and write a conclusion supported by data from the experiment.

**Safety Concerns:** Soap can be irritating. If you touch the soap solution, keep hands away from your eyes and mouth.

**Pre-Lab Questions:**

1. **Hypothesis:**
   * Construct a hypothesis about which dish detergent solution will yield the largest bubble. (Remember hypothesis format.)
   * Explain what prior knowledge led you to make this hypothesis.
   * Make a qualitative observation before beginning the experiment.
   * Make a quantitative observation before beginning the experiment.

**DATA**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Soap Brand** | **Diameter of Bubble**  (cm to 1 decimal) | | | **Average Diameter of Bubble**  (cm to 1 decimal) |
| Palmolive |  |  |  |  |
| Dawn Ultra |  |  |  |  |
| Gain Ultra |  |  |  |  |

**Analysis Questions:**

1. Rank the detergents in order from largest to smallest average size bubble.
2. Make an inference about what bubble size means about a dish detergent.
3. List 3 constants (controlled variables) in this experiment.
4. What was the independent variable in this experiment?
5. What was the dependent variable in this experiment?
6. Explain what a controlled experiment is and explain WHY this experiment IS or IS NOT a controlled experiment. List SPECIFIC reasons why or why not.

**Write a Conclusion** on a separate piece of paper.

Your conclusion must be a minimum of 1 full paragraph with at least **4 COMPLETE SENTENCES,** proper spelling, grammar and sentence structure. NOTE: The conclusion is worth more points than individual questions because this is where you analyze and summarize the lab.

Include all of the following:

1. Restate the purpose (Summarize and put the objectives in your own words).
2. Restate your hypothesis.
3. Was your hypothesis supported or not? Support your decision with QUANTITATIVE data from the data table. Be specific.
4. Explain one error that you had in the lab and how it affected your data.

\*\*\*Even if you don’t believe you had an error, what possible sources of error COULD occur during the lab?

\*\*\* NOT following the procedure does NOT count as an error. (NO HUMAN ERROR)