**NAME\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 **Period\_\_\_\_\_\_\_\_**

**The Chemistry of Bigger Bubbles Lab # 3**

**Objectives:**

1. **Students will demonstrate water tension and understand how soap breaks water tension.**
2. **Students will practice creating a controlled experiment, manipulating variables, measuring, and graphing results.**
3. **Students will also be introduced to the Hypothesis.**

Part 1. Water tension

**Question: How does soap help with creating bubbles?**

1. Place penny on desk and fill small cup with some water.
2. Using a pipette add 30 drop of water to the penny without letting it spill over. – Draw
3. Now SWITCH to the BLUE pipettes and fill with soap solution. Place ONE drop of soap solution on water. Draw what happened.

Step 3 Drawing

Step 2 Drawing

1. Describe what happened when you placed a drop of soap solution in the water

USING THE TEACHER EXPLAINATION ABOUT WATER TENSION AND HOW SOAP INTERACTS ANSWER THE FOLLOWING:

1. How does soap help with creating bubbles?
2. How does glycerin help prevent bubbles from popping?

**PART 2. Experiment: Find the Optimal amount of Glycerin to add to soap solution**

**Question**: What is the optimal amount of Glycerin (0, 10, 20, 30, 40, 50, 60, 70 drops) to add to soap solution in order to form the largest bubble?

**Hypothesis** Def: a proposed statement based on limited evidence that can be proved or disproved and is used as a starting point of an investigation. Uses If …… then…. Format.

**3) Hypothesis \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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**Procedures**

1. Each table group member will place 2ml of solution on desk and spread out as before
2. Each group member will blow own bubble and record diameter in table below.
3. Repeat 4 times, then rinse out cup, get new solution and repeat.
4. Once done, students will get table partners info and record on table below.
5. Students will calculate the average bubble size in cm for each solution tested.
6. Students will create a line graph as shown with teacher example. If time permits calculate a Class avg and add to graph

**Data Table in cm**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Glycerin Drops** | **Bubble #1**  | **Bubble #2** | **Bubble #3** | **Bubble #4** | **Average Bubble** | **Class Avg. Bubble** |
| **0** |  |  |  |  |  |  |
| **10** |  |  |  |  |  |  |
| **20** |  |  |  |  |  |  |
| **30** |  |  |  |  |  |  |
| **40** |  |  |  |  |  |  |
| **50** |  |  |  |  |  |  |
| **60** |  |  |  |  |  |  |
| **70** |  |  |  |  |  |  |

**Conclusions:**

1. **What was the independent variable? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Why? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
2. **What was the dependent variable\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_? Why? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
3. **Was this a fair Test, explain.**
4. **Based on the data collected what was the optimal amount of glycerin required for large bubble making? Did your results match your hypothesis?**
5. **If you were to test the solutions again, what would be your new hypothesis?**

 **NEW hypothesis \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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