

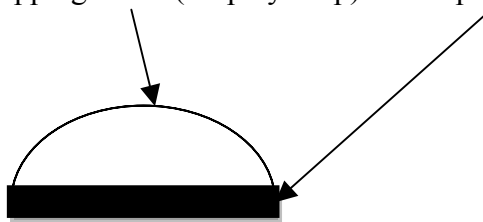
Name: _____

Group Members: _____

STATION 3

Purpose: 01. To review the scientific method
02. To see how surface tension and adhesion of water is affected by soap.

Introduction: There are many properties of water that are due to the **hydrogen bonding** of water molecules. **Cohesion**, **adhesion**, and a **high specific heat** are three of these properties. Since it takes a lot of energy to change the heat of water, it has a **high specific heat**. **Adhesion** refers to water attaching to something else. **Cohesion** is the attraction of water to itself. **Surface tension happens because of cohesion**. Surface tension refers to water's ability to "stick to itself," acting like a net on the surface of water. Both surface tension and adhesion can be measured and observed by dropping water (drop by drop) onto a penny.



Initial Observation/Research: Observe surface tension by seeing how many drops of water can fit on a penny.

Number of Drops _____

Experimental Question: How does soap affect the water's surface tension?

Hypothesis: Develop a hypothesis that answers the experimental question. Write your hypothesis below. (3pts)

Experiment: Test your hypothesis by comparing the number of drops of tap water that can fit on a penny to the number of drops of soapy water that can fit on a penny. Because water drops may vary depending on how well you drop the water, run 5 trials and take an average. Record your results (data) in the table below.

Procedure:

1. Place the penny, heads up, on one sheet of paper towel.
2. Use the pipette to slowly drop tap water on the penny.
3. Record how many drops the penny holds before it overflows.
4. Dry off the penny and start again. Do this a total of 5 times.
5. Once you've done the procedure 5 times, start with the soapy water.
6. Use the pipette to slowly drop soapy water on the penny.
7. Record how many drops of soapy water the penny holds before it overflows.
8. Dry the penny off and start again. Do this with soapy water a total of 5 times.



Results: (12pts)

	Trial 1	Trial 2	Trial 3	Trial 4	Trial 5	Average # of Water Drops
Tap Water						
Soapy Water						

Analyze the data and draw conclusions. In complete sentences, use your results to explain how soap affects the surface tension of water. Support or reject your hypothesis. Suggest a reason for your results (Why did it happen?). (6pts)

Post-Lab Questions

Answer the questions. Write using complete sentences.

1. What are the three properties of water and why do they happen?
2. Explain what surface tension is.
3. Why were many trials taken and averaged?
4. In this experiment, what was your control group (remember, it's always the same as the observation)?
5. Identify the independent variable (what did we change) in the experiment.
6. Identify the dependent variable (what happened? what were we looking for?) in the experiment.
7. What were the constants (things that were kept the same) for this experiment?