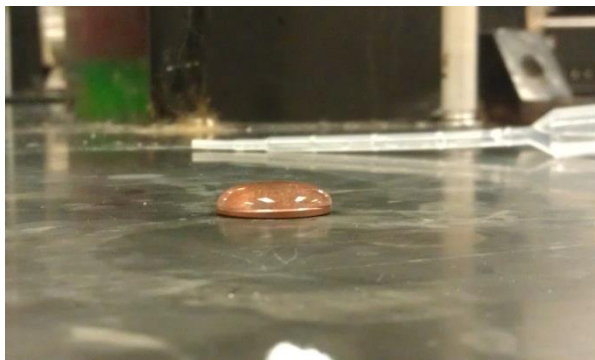




California State University of Bakersfield, Department of Chemistry

## Surface Tension



### Standard:

2-PS1-1. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.

### Introduction:

*You're about to see three important forces tugging on droplets water: gravity, cohesion, and adhesion. Gravity flattens the droplets, cohesion holds the droplets together, and adhesion holds the drops on the surface of the coin. The cohesive force is the pull of the water molecules on themselves. Each successive drop sticks to the water that's already on the coin. We often call this cohesive force "surface tension". It's what makes water drops look like they're wrapped in invisible skins. Soap reduces the cohesive force, and breaks the surface tension. Soapy water makes smaller drops than plain water. Since soapy drops are smaller, more soapy drops will fit on a penny than plain water drops.*

### Materials:

- An eye-dropper
- A penny
- Liquid dish-soap
- A glass of water

### Safety:

- Always have an adult with you to help you during your experiment.

- Always wear eye protection and gloves when doing chemistry experiments

**Procedure:**

Part 1

1. Guess how many water drops you can fit on the front of a penny.
2. Try it. How many drops will stay on the face of a penny without spilling water off the sides?
3. Repeat the experiment, say, three times. The number of drops will probably come out about the same each time.
4. Each time you do it, write down the number of drops.

Part 2

1. Add a tablespoon of dish soap to your glass of water. Stir gently, don't make too many bubbles.
2. How many soapy drops can you fit on the front of a penny now?

**Questions:**

How many drops did you get on the penny with only water?

How many drops did you get on the penny with soap and water?

**References:**

1. Billnye.com. <http://www.billnye.com/for-kids-teachers/home-demo-details/> (accessed July 17, 2012).