



Middle School Water Lab – Cohesion

Standards Met: NGSS: MS-PS1-1

Materials List:

- Penny
- 2 - eye droppers
- 2 - 250 mL beakers
- Water
- Water with dish soap
- Wax paper or parchment paper
- Paper towels

Procedure:

1. Fill the first beaker with water and label beaker #1.
2. Put several drops of dish soap in the second beaker. Fill the beaker with water and label it beaker #2.
3. Predict the number of drops of water a penny will hold.
4. Using an eye dropper, count and record the number of water drops that the penny will hold. Repeat three times and find the average.
5. Look at the shape of the resulting water drop. Make a sketch of it in your data.
6. Repeat steps 3-6 with the soapy water. Do not mix up the eye droppers.
7. Use the eye dropper to combine 2-3 drops of water together on the wax paper. Make 3-4 separate drops.
8. Observe the shape of the drops. What happens as you “blow” the droplets around with an empty eye dropper? Record your observations.
9. Repeat steps 7-8 with the soapy water. Do not mix these drops with the plain water.
10. Place 1 drop of soapy water onto each of the plain water drops formed. Record your observation.

Data:

	# drops predicted	# actual drops Trial 1	# actual drops Trial 2	# actual drops Trial 3	Average # drops
Plain water					
Soapy water					

Drawing of plain water on penny:

Drawing of soapy water on penny:

Observations of plain water on wax paper:

Observations of soapy water on wax paper:

Observations of soap dropped into plain water drops.

Explanation:

The force of attraction between the water molecules (cohesion) is very strong. This causes the molecules to “stick” together until their combined weight overcomes this force. When that happens, the water drop collapses.

When soap is added to the water, the water molecules are not so close together and the cohesive force is weakened.