

## PROPERTIES OF WATER LAB

**INTRODUCTION:** Without water, life would be impossible on Earth. Water has several features that are unique to it as a compound. First, water is an extremely good solvent. Many substances readily dissolve in water. This allows cells to get the dissolved gases and nutrients that they need to live. Also, water has adhesive properties. This means that water has the ability to “stick” to solid surfaces. Water also has cohesive properties which allow individual water molecules to bind to other water molecules. Because water is cohesive, it has the ability to move against the force of gravity in small tubes. This ability is called capillary action. Finally, because water is cohesive, it is able to maintain surface tension. The top layers of water molecules on the water’s surface act like a “skin”. In this laboratory exercise, you will be examining some of these very unique properties of water.

**MATERIALS:** Gather 10 paper dots, 1 toothpick, 1 penny-sized dot of liquid soap, 1 small beaker, 1 flask, 1 glass slide, 1 piece of wax paper, 1 eye dropper, and 1 capillary tube (see PART E).

**PART A:** Fill the small beaker about half way full of water. Let it settle for awhile until it is still. Gently place 5 paper dots on the water’s surface and watch them for awhile.

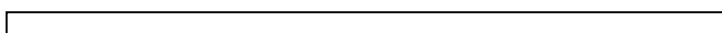
**Describe where the dots went. What property caused this to occur?**

**PART B:** Fill the flask to its very “tippy-top” so that water is heaped on top of the flask. Use the eye dropper to add drops of water to the top to get as much of the water in the flask without spilling over. (Try this a few times to see how much water you can really pile on!) Next, gently place 5 paper dots on the water. Observe the dots for awhile. Then, try to push a dot to the side with a toothpick.

**Describe where the dots went. What property caused this to occur?**

**PART C:** Place drops of water on the glass slide slowly so that each drop ends up being about the size of a penny. Have at least 2 drops on your slide. View the slides from the SIDE, not the top.

**Below, draw the drops from the SIDE VIEW.**



← Side view of slide

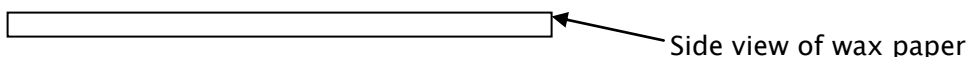
**PART C: Continued**

Now, place the tip of a toothpick into the liquid soap and then touch the drops of water with the soapy part of the toothpick.

**Describe what happened to the drops. What property caused this to occur?**

**PART D:** Repeat PART C, only this time use wax paper instead of a glass slide.

**Below, draw the drops from the SIDE VIEW.**



Again, put some liquid soap on the tip of the toothpick and touch it to the drops of water on the wax paper.

**Describe what happened to the drops. Explain what was different from when you did this while using the glass slide.**

**PART E:** Before starting this step, carefully wash your glass slide so that there is no soap residue. Next, obtain a few drops of colored water from the beaker at the front of the room. Get a capillary tube from your teacher. Then, place a colored drop of water (or two) on a clean slide. Take the capillary tube and place it next to the drop of colored water (just barely touching the water's edge). Adjust the angle of the capillary tube to make it take up as much water as possible.

**What properties of water are at work for capillary action to occur? Did you get all the water to go up the capillary tube? Why or why not?**