**Name:**

**Date:**

**School:**

**Facilitator:**

3.01 Water Properties Lab

# You will need the following materials to complete this lab:

1. Penny
2. Liquid dish detergent
3. A small tray with sides to catch any spilled water (a pie plate should do)
4. A container of tap water
5. Paper clips (metal)
6. An 8 oz. cup or slightly larger
7. Dropper/pipette
8. A permanent marker
9. One sheet of clean copy paper (can be colored if necessary)
10. Scissors
11. Ruler
12. Timer (a clock, watch, or cell phone timer should do)

**Directions Part A: Complete the following procedures, fill in the table, and answer the question.**

1. From your materials, grab a penny, tray, dropper, and container of water.

2. Predict how many droplets of water will fit on the top of your penny and record your number in the table below.

3. Place your penny in the middle of a tray to contain any water that may spill.

4. Fill the dropper with water.

5. Continue to place water drop-by-drop onto your penny until it spills over.

6. Record how many drops fit on your penny in the table below.

|  |  |
| --- | --- |
| **Number of drops predicted** |  |
| **Actual number of drops** |  |

The water you dropped onto your penny should have formed a rounded surface. The reason this occurs is because of      . This property of water is what allows the water to stick together and not fall off easily.

**Directions Part B: Complete the following procedures, fill in the table, and answer the questions. The steps look similar to Part A, but this time you are smearing liquid detergent on the face of the penny.**

1. From your materials, grab a penny, tray, dropper, and container of water.
2. Smear a small drop of liquid dish detergent on the face of the penny.
3. Predict how many droplets of water will fit on the top of your penny and record your number in the table below.
4. Place your penny in the middle of a tray to contain any water that may spill.
5. Fill the dropper with water.
6. Continue to place water drop-by-drop onto your penny until it spills over.
7. Record how many drops fit on your penny in the table below.

|  |  |
| --- | --- |
| **Number of drops predicted** |  |
| **Actual number of drops** |  |

Did you predict the number of drops would be the same or different from Part A? Why or why not?      

What caused the number of drops the penny could hold to be different in Part A and Part B?

**Directions Part C: Complete the following procedures, record your measurements, and answer the question.**

1. From your materials, grab a marker, one sheet of paper, scissors, a cup, a ruler, a container of tap water, timer, and a tray.
2. Cut a 1 inch strip (on short side unless your cup is very tall) from your clean copy paper.
3. Using your permanent marker, draw a line across the bottom about one inch from the end.
4. Fill your cup with tap water until it is ¼ full.
5. Place your strip (line side down) into the cup so that the end is completely immersed and the line is just above the water. Then, fold the paper so that it will remain in the same place by hanging on the cup.
6. Start your timer and record your observations. As the water moves up the paper, measure its movement from your original line in 5 minute increments. When the water reaches the top of the paper, remove the paper.

|  |  |
| --- | --- |
| **Time (minutes)** | **Distance (inches)** |
| **0** |  |
| **5** |  |
| **10** |  |
| **15** |  |
| **20** |  |
| **25** |  |
| **30** |  |

In this experiment, water *climbed* the paper. This property of water is what allows plants to take up water and nutrients through their roots. This is called      .