**The Properties of Water Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

As you move through the lab indicate which properties of water are shown in each experiment. The Number in parenthesis indicates how many properties you should identify. Be able to explain why!

**Objectives:**

1. Explain why water climbs a strip of paper.

2. Explain why oil and water don’t mix.

3. Explain why water is the universal solvent.

4. Design your own experiment.

**Supplies for first set of experiments:**

2 glass slides

Water

A 12” x 7” sheet of wax paper

Your brain with an understanding of the vocab words

What properties of water are exhibited here**? TAKE NOTES ON THIS PAPER.**

**THE NUMBER IN PARENTHESIS INDICATES HOW MANY PROPERTIES OF WATER YOU SHOULD BE ABLE TO EXPLAIN. If you need more room to write attach a piece of paper.**

1. Obtain a glass slide. Place a drop of water on the slide.

Turn the glass slide upside down. What happens with the water droplet? Explain. (2)

2. Obtain a second slide. Put the two slides together with the water droplet sandwiched in between them. Try to separate the slides without sliding them. Lift straight up. Describe what is happening when you try to separate the slides. (1) Explain

3. Make a **small** puddle of water on the lab table. Put a glass slide on top of it. Count to 5 and then pick it up without sliding it off the table. Clean up the puddle. (1) Explain

4. Obtain a piece of wax paper. Place several drops of water on the paper. Record your observations. Tilt the paper. Try cutting the drop in half. Record your observations. Explain. (3)

**Supplies for second set of experiments**

A penny Oil

Dropper

Tiny Beaker

How many drops of water can fit on a penny?

Part A: Perform a **Control** test for comparison with later results.

**Step 1**: Rinse a penny in tap water and dry completely.

**Step 2**: Place the penny on a paper towel.

**Step 3**: Use an eye dropper to place drops of water on the penny (one at a time) until ANY amount of water runs over the edge of the penny.

**Step 4**: Record the number of drops for that trial in the table.

**Step 5**: Repeat steps 1-4 three more times before calculating the average

|  |  |  |  |
| --- | --- | --- | --- |
| Trial 1 | Trial 2 | Trial 3 | Average |
|  |  |  |  |

Explain what properties are exhibited in this experiment(3)

Part B:

**Step 1:** Start with a “clean” penny. Rinse the penny in tap water and dry completely. Be sure to remove as much residue as possible without using soap.

**Step 2**: Coat the penny with oil.

**Step 3:** Place the penny on a dry spot on a paper towel. Place drops of Water on the penny (one at a time) until ANY amount of water runs over the edge of the penny.

**Step 4:** Record your observations and the number of drops for that trial in the table.

**Step 5**: Repeat step 1-4 three more times before calculating the average.

|  |  |  |  |
| --- | --- | --- | --- |
| Trial 1 | Trial 2 | Trial 3 | Average |
|  |  |  |  |

Explain what properties are exhibited in this experiment (4)

**Supplies for third set of experiments:**

Chromatography paper strip A graduated cylinder

Black magic marker Pepper

Scissor Petri Dish

**Experiment 1**

* Obtain a graduated cylinder not too big not too small. Cut a strip of chromatography paper that is just long enough to hang over the side of the cylinder (inside) and reach to the bottom.
* Run the paper strip along the edge of a scissors to take the curl out of it.
* Place a single small drop of ink from the black magic marker about one inch from the bottom. Let it dry completely
* Place enough water into the graduated cylinder so that the bottom end of the paper is immersed in water and the **drop of ink is just above the surface of the water. DO NOT IMMERSE THE INK!** Fold the paper over the top to secure it.
* Note the starting time below. When the water climbs to the top of the paper. (abt 10 minutes) remove the paper from the water and let it dry. (3)

Starting time \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Ending time \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Draw a sketch or take a picture of your chromatagram.

What properties of water are exhibited here?

**WHILE YOU ARE WAITING FOR THE ABOVE RESULTS DO THE PEPPER EXPERIMENT**

**Experiment 2-Pepper**

Shake enough pepper on top of the water in a small Petri dish. Use a toothpick to touch the water in the middle of the petri dish. Observe and record what happens. Now coat the dry end of the toothpick with detergent and the touch the middle of the water with it. Observe and record. (2)

**What was being affected, the pepper or the water? Design an experiment to prove whether the pepper was affected by the soap or the water was affected. Bring in all supplies tomorrow with a written proposal of your experiment.**

**Supplies for fourth set of experiments**

10 mL graduate cylinder Glass stirring rod

Oil

Water and Oil.

* Put 8 ml of water into a 10 ml graduated cylinder
* What do you think will happen when you add the oil?
* Gently add 2 ml of cooking oil into the graduated cylinder.
* What happened and why? (1) Don’t clean up yet…

Water, Oil and Detergent.

* Using the same beaker above add 10 drops of detergent.
* Mix
* Observe
* Explain (1)
* Now clean up

**Your Experiment and results.**