Name: _____ Date: _____ Period: ____

H_2O Olympics: Properties of Water

Objective: to explore and understand the properties of the water molecule.

Pre-lab Questions:

1. Is a water molecule neutral in charge?

2. Which end of the water molecule is slightly positive?

3. Which end of the water molecule is slightly negative?

4. What is cohesion?

5. What is adhesion?

Event 1: Pairs Figure Skating

Procedure:

1. Obtain two clean, dry glass slides.
2. Place slides on top of each other.
3. Try to pull slides apart and record your observations.
4. With slides apart, place a few drops of water on one of the slides and place the other on top.
5. Try to pull the slides apart and record your observations below.

Questions:

1. What happened when you tried to pull the two dry slides apart?

2. What happened when you tried to pull the two wet slides apart?

3. When trying to pull the wet slides apart there is obviously a strong attraction between the glass slides and the water. Is this an example of cohesion or adhesion? Why?

Name: _____ Date: _____ Period: ____

Event 2- Backstroke: Clipping Along

Procedure:

1. Fill a cup almost to the top with water.
2. Obtain a clean, dry paperclip and gently place it on the surface of the water.
3. After completing step 2, place a few drops of water on another paperclip and again try to float it on the surface of the water.

Questions:

1. What did you observe when you placed the dry paperclip on the surface of water?

2. What did you observe when you placed the wet paperclip on the surface of water?

3. The paperclip should have stayed afloat because of strong attraction between water molecules towards each other. Is this an example of adhesion or cohesion?

Name: _____ Date: _____ Period: ____

Event 3- Balance Beam: Water on a Penny

Procedure:

1. How many drops of water do you predict will fit on your penny before it overflows?

2. Drop water from the dropper onto the penny, keeping careful count of each drop.

3. Draw **three diagrams** below showing the shape of the water on the penny after one drop, when the penny is about half full, and just before it overflows. In order to make an accurate drawing, bend down so that the penny is at eye level.

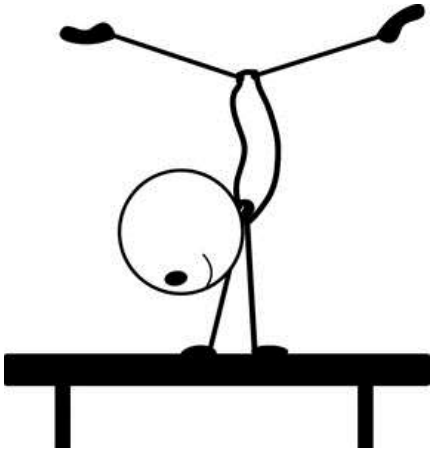
Single Drop | Half Full- ____drops | Near Overflowing- _____drops

Questions:

1. How many drops were you able to place on the surface of the penny before it overflowed?

2. If the number of drops is very different from your prediction, explain what accounts for the difference.

3. The penny was able to hold so many drops of water because of the strong attraction between water molecules. Is this an example of adhesion or cohesion? Why?



Name: _____ Date: _____ Period: ____

Event 3- Balance Beam Part 2: Water & Detergent on a Penny

Procedure:

1. With your finger, spread one small drop of detergent on the surface of a dry penny.
2. How many drops do you think this penny will hold after being smeared with detergent? _____
3. Is this number more, less, or the same as before? Why? _____

   _____
4. Using the same dropper as before, add drops of water to the penny surface. Keep careful count of the number of drops.
5. Draw **three diagrams** below showing the shape of the water on the penny after one drop, when the penny is about half full, and just before it overflows. In order to make an accurate drawing, bend down so that the penny is at eye level.

Single Drop	Half Full- ____drops	Near Overflowing- __drops

Questions:

1. How many drops were you able to place on the penny before it overflowed this time? _____
2. Did detergent make a difference? Describe the effect of the detergent.
3. What does the detergent do to have this effect on water?