

LAB – Physical and Chemical Properties of Water

OBJECTIVES:

- Understanding a water molecule's structure.
- Demonstrating surface tension.
- Understanding capillary action.

MATERIALS:

- worksheet
- cup
- paper clips
- aluminum pan
- dropper
- fork
- penny

BACKGROUND:

Water has unique physical and chemical properties. Water molecules are attracted to each other, as well as other molecules. This is important for living things. The attraction between water molecules is called cohesion. The attraction of water to other molecules is called adhesion. Together, this is called capillary action. The cohesive force between water molecules form what is called surface tension.

PROCEDURE:

Part I – H₂ Olympics

1. Follow your instructions on the back of this sheet to demonstrate properties of water.

CONCLUSION

2. Draw several water molecules attracted to each other.
3. Define surface tension.
4. Define capillary action.

H₂Olympics Score Sheet

TEAM NAME: _____ Date: _____

Team member(s): _____

Event 1. Pole Vaulting: Over the Top!

Read the directions through before you begin this event. How many pennies do you think you'll be able to add before the water spills over? _____

Directions: Fill a clear plastic cup with water until it is even with the rim. Add pennies, one at a time. Keep track of the number of pennies added. Continue until the water spills over the side. Repeat for the other team member.

Describe or draw the surface of the water:

Number of pennies added,
team member 1: _____ team member 2: _____

Event 2. The Balance Beam: A Penny for Your Thoughts!

Read the directions before you begin this event. How many drops of water do you think you'll be able to put on the penny? _____

Directions: Using an eyedropper, place as many drops of water on the penny as possible without spilling over the edge. Keep track of the number of drops. Continue until water spills over or the water drop collapses. Repeat for the other team member. Record the scores.

Describe or draw how the water appeared on the penny before the drop collapsed:

Number of drops,
team member 1: _____ team member 2: _____

Event 3. Backstroke: Clipping Along!

Read the directions before you begin this event. How many paper clips do you think your team can suspend on the surface of water?

Directions: Try placing a paper clip on the surface of water. (Hint: Lay the paper clip on the prongs of a fork and lower it into the water.) Use a magnifying glass to observe the surface of the water where it comes in contact with the paper clip. Draw a picture or describe what this looks like.

See how many paper clips you can suspend on the water's surface. Repeat for your other team member.

Number of paper clips suspended on the surface of water,

team member 1: _____

team member 2: _____