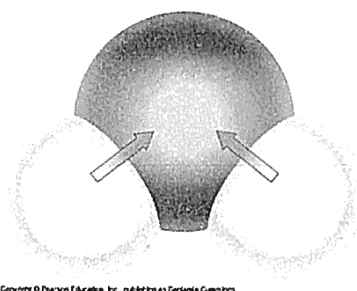


Properties of Water Lab:

Introduction: Water is a simple molecule, yet it's most vital to all living things. It has the highest specific heat of everyday substances. Unique properties of water enable it to carry out functions that no other substances can. In a neutral aqueous solution, five molecules of water are bonded together by weak hydrogen bonds. Furthermore, due to the electronegativity of oxygen, water is a polar molecule. Due to its polarity, water is classified as the universal solvent. You will investigate the life-sustaining properties of water throughout this lab.

Part One: Polarity

Label the diagram of water below. Make sure you label the oxygen, hydrogen atoms as well as the partial charges which creates water's polarity.



1. What causes polarity?
2. Why does polarity allow water to be such a good solvent?
3. Measure 10 grams of NaCl and add this to a beaker of 100 ml water.
 - a. Stir the salt with a spoon to dissolve. Record how long it takes to dissolve all of the salt. _____
 - b. What should we call the resulting solution? _____
 - c. Which is the solute? _____
 - d. Which is the solvent? _____

Part Three: Adhesion, Cohesion, Surface Tension

Adhesion is the ability of water to stick to other substances. For example, water can stick to the side of a swimming pool. Cohesion is the ability of water molecules to stick to themselves (H-bonds). Cohesion causes the surface of the water to have tension and tests can be done to measure the relative tension of different aqueous solutions. In this portion of the lab, you will test these three properties and apply them to the concept of capillary action.

Procedure: Obtain two pennies, 2 pipettes, and a beaker of tap water and some paper towel. You will also need your solution of salt water made in part one.

Use your pipette to drop tap water onto a penny, one drop at a time. Count how many drops you can add before any water spills over the edge. Record the number of drops in your data table. Repeat this 4 more times and find the average number of drops of tap water a penny will hold. Be sure to completely dry your penny between each trial. Repeat with your solution of salt water and then answer the questions below. Give the data table a title:

trials	tap water	salt water
1		
2		
3		
4		
5		
average		

1. Which type of water had more cohesion? How do you know?
2. Give an explanation for your results in terms of hydrogen bond and cohesion.