

Chemistry Discrepant Water Activities

Teacher Resource



Teacher Background Information

These simple water activities introduce the concepts of surface tension, capillarity, and electricity for the elementary student. In the surface tension activity, the student will be able to investigate how water can resist an external force. Surface tension is the area of measurement where In the capillarity activity, the student will investigate how water can move up an object through thin tubes and tiny holes, and this is referred to as capillary action. In the electricity activity, the student will investigate how an electric charge will change the direction of water.

Before each activity have the students state a hypothesis.

MATERIALS

Document Camera	Balloons
Personal Computer	Pound Cake (5cm cube)
Interactive White Board	Angel Food Cake (5cm cube)
Penny	3-oz Package of Gelatin
Eyedropper	2 Clear Beakers
Water	Soap

PROCEDURE

Activity 1 *Surface Tension*

1. Place a clean dry penny on the workspace.
2. Connect the document camera to the computer and open Applied Vision™ 4 Software.

3. Position the document camera to show a side view of the penny.
4. Choose *Record*.
5. Use the eye dropper to place a drop of water on the penny one by one.
6. Count how many drops it takes before the surface tension breaks.
7. Record your observations in a data table.
8. Dry the penny off and repeat steps 5-7 for 3 more trials.
9. Once finished with the 4th trial, Stop Recording.
10. Save the file as .avi use later in the lab report.
11. Repeat steps #1-10 but mix soap in the water as the solution.

QUESTIONS **Activity 1**

1. Record all observations in a data table.
2. Create a graph from the data collected.
3. How does the average number of drops change once you add soap to the water?
4. Is surface tension stronger or weaker when soap is added to the water?
5. Give two examples of organisms that benefit from surface tension.
6. Give two examples of organisms that benefit from reduced surface tension.

Activity 2 **Capillarity**

1. Each group will be given 120mL of liquid gelatin.
2. Each group will need a 5cm cube of angel food cake and a 5cm cube of pound cake.
3. Beaker 1=Angel Food Cake Beaker 2=Pound Cake
4. Set up the document camera on the beakers side by side.
5. Open Applied Vision™ 4 Software with a computer.
6. Choose *Time-Lapse Record*.
7. Choose your frames per second rate.
8. Choose to record as a movie and a playback rate.
9. Save the file as .avi and begin recording.
10. Pour 60mL of liquid gelatin into each beaker.

11. Place the angel food cake cube in beaker 1 and the pound cake cube in beaker 2 at the *same* time.
 12. Allow to record for 3 minutes then stop recording.
 13. Record your observations in a data table and share data with whole class.
 14. Save any images or time-lapse recordings to use later in the lab report.
 15. Put the cups in the refrigerator and add some whipped cream when they are gelled.
- Enjoy!

QUESTIONS **Activity 2**

1. In which cake does it move up the fastest?
 - a. Why do you think this is so?
2. What is capillarity?

Activity 3 **Electricity**

1. Blow up the balloon.
2. Focus a document camera on the stream of water and project the feed on an interactive white board.
3. Turn the water on in the sink so there is a very thin continual stream.
4. Rub the balloon on a student's hair to give the balloon an electric charge.
5. Bring the charged side of the balloon near the water.
6. Move the balloon back and forth, but do not touch the water.
7. Have students observe what is happening with the stream of water.

QUESTIONS **Activity 3**

1. What happens to the hair?
 - a. Why do you think this happened?
2. What does 'charged' mean?