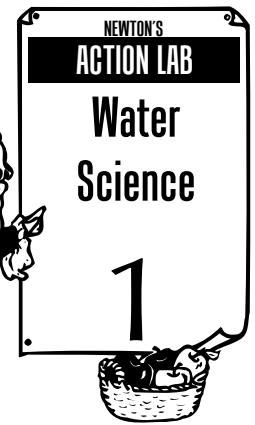


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Water Science



Newton Wants You to Know

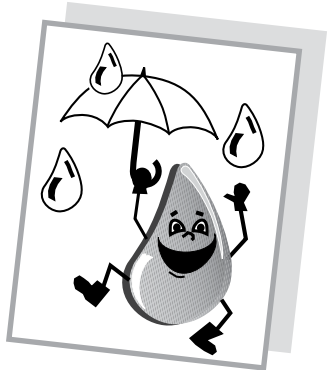
Water is the main substance in living things. Most living things are at least one-half water. Your own body is two-thirds water.

You couldn't grow and change without water. You couldn't keep your size and shape without water. You couldn't even move without the water in your body.

Water is a molecule. It is made of two hydrogen atoms and one oxygen atom. The water molecule is called H₂O.

Water makes up 75% of the Earth's surface. Water is a gas in clouds, a liquid in the soda we drink and a solid in the ice we skate on. Without water in the environment, there would be no life on Earth.

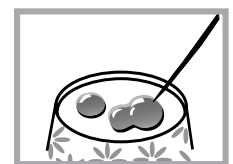
1. Place a few drops of water in the palm of your hand.
2. Close your eyes and let your mind dwell on the watery sensation, on your daily need for pure, unpolluted water and on your origin as a minute creature in a warm, drifting sea.
3. Combine your poetic and scientific skills to develop an eight-line poem of great significance.



Water Experiments

Tense Water

The surface of a water drop forms a "skin" that helps the water drop keep its typical shape. Scientists call this surface tension. Surface tension explains most of the water drop experiments you are going to do in this lab.



1. Place three different size drops in three different areas of an upside down paper cup. Its waxy surface has very little attraction for water molecules.

Name _____

2. Use a toothpick to roll the drops around. Combine and separate them. Roll them into and away from the cup sides.
3. Describe how your drops react to being pushed around.

Moving Water

Your drops of water appear to be still and motionless. Let's find out if anything is moving inside.

1. Fill the inverted bottom of your cup with water. It doesn't have to bulge upward.
2. Add only one drop of food coloring to one side of the inverted cup.
3. Do not shake the cup in any way. During the next two to five minutes, observe the coloring's movement in the water. What happened to the coloring in the water?



Why did the coloring diffuse (spread out) throughout the water?

Newton Hint: What must the individual molecules of water be doing to cause diffusion?



Fun with Water Drops



A drop of water can take many shapes. You are going to observe a few different kinds of drops.

1. Use an eyedropper or dispensing bottle on these experiments.
2. Have a friend form water drops falling by your eyes as shown.
3. Observe the drops carefully both at normal eye level and when they near the ground

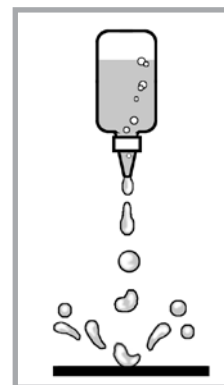
Name _____

Describe the water shapes you created.

4. Let the drops fall continuously till the individual drops form a stream. Describe what you see.

5. Place your full dropper at eye level. Let some water drops fall from eye level on various surfaces such as wood, glass, metal, tile, etc.

6. Which surfaces gave you the highest water drop bounce?



Newton Wants You to Measure a Water Drop

Here's one way that Newton knows to measure the volume of a drop of water. It can be done using kitchen materials. This will give you an estimate rather than an exact answer.

1. Hold a teaspoon steady and level on a table.
2. Count the number of drops it takes to completely fill the spoon. Number of water drops to fill a teaspoon. _____

A teaspoon contains 0.17 fluid ounces.

3. Divide 0.17 by the number of drops to find the volume of just one drop.
Example: You counted 30 drops in your teaspoon.

$$\begin{array}{r}
 .0056 \\
 30 \overline{) .1700} \\
 \underline{150} \\
 200 \\
 \underline{180} \\
 200
 \end{array}$$

Stop dividing after two numbers beyond the zeros.
One drop = .0056 fluid ounces

3. Follow the example and do the math for your teaspoon experiment.

Your drop = _____ fluid ounces.

