Water for Life

Lesson 1

Objectives

The student will be able to do the following:

- Explain why water is important
- List the many uses of water
- List the many locations of water on the earth
- Describe water as a solid, liquid, and gas
- Do simple calculations to estimate human use of water

Materials

A cup of water and/or ice (if desired for demonstration)
Copies of the reading material for students to read aloud
Copies of desired activity sheets or homework sheets
A globe or map (if desired)
Teachers may want to refer to items in the classroom during this unit (e.g. point to sink)

Background

This unit lays the foundation for future lessons on watersheds and water quality. This unit highlights the basic element in a watershed: water. It reminds students about the importance of water and introduces water forms and locations. The unit introduces the concept of Hydrogen and Oxygen, which may be left out at the teacher's discretion.

Advance Preparation

This is an introductory unit and can be done with little advance preparation.

Procedure

1. Introduce the topic of water. Teachers may use the cup of water or ice as a prop.
2. Ask students to describe water. What is it?
    a. Water is a molecule made up of two elements called hydrogen and oxygen
        i. Hydrogen and oxygen are present in the air all around us.
        ii. What is another reason that oxygen is important?
        iii. It may be helpful to draw the water molecule as "Mickey Mouse" – with a head of oxygen and two ears of hydrogen
    b. Water comes in three forms:
        i. Liquid
        ii. Solid
        iii. Gas

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3. A paragraph of text is also provided, in case the teacher wants students to read about water out loud. Questions are provided in the text as places for pause and discussion.
4. Ask students for ways in which they personally use water.
    a. Bathing, washing, cleaning, cooking, flushing, recreation, etc.
    b. Drinking – Human bodies are 75% water, so water is necessary for life
5. Ask students about other ways water is important.
    a. Grow and produce food, provide energy, manufacture and transport goods, mining, used to put out fires, inside all living organisms, etc.
6. Ask students where water is located. A globe or map may be useful.
    a. Air, atmosphere, lakes, streams, rivers, oceans, rain, oceans, inside living things, underground, in the ground (soil), frozen as ice in the ground or on the ground (ice caps on mountains), ice caps, glaciers; All around
        i. 75% of the earth's surface is covered with water
7. Depending on time, have students apply this learning through any of the activities or homework activities.

Activities

1. Have students write a poem about the importance of water using the first letters of the word "Water" (or possibly "Water for Life" if a longer poem is desired). Teachers may require students to use at least one vocabulary word.
2. Have students make a drawing of their environment and ask them to label as many locations of water that they can
3. Have students fill out the worksheet in class or as homework
4. As homework, have students identify all of the ways in which they and their family use water at home. One way to do this is to give them a checklist of possible water uses and ask them to count the ways; another way is to have them draw a floor plan of their home and identify all of the locations where water is used.

Other interesting facts

Of freshwater in the continental USA:

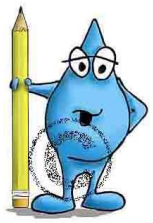
- 11% used in homes
- 8% used in mining
- 39% used to produce electricity
- 42% used in agriculture

97% of the earth's water is salt water
3% is freshwater
2% of the total is trapped in glaciers, ice caps, or as snow on mountains

- Only 1% of the earth's water moves through the short-term water cycle. (Source: EPA website)

One estimate of the total volume of water on earth: 326,000,000,000,000,000,000 gallons (326 million trillion gallons) (Source: howstuffworks.com)

Water droplet cartoon from - http://www.cartoonstock.com/lowres/thl0022l.jpg



Water for Life!

Water is important for life. In fact, water is one of the most valuable things on earth. Without water, there would be no life.

What is water?

Did you know that water is actually made up of tiny molecules? Water is made up of two elements called Hydrogen and Oxygen.

Where else can you find Hydrogen and Oxygen?

You might think of these elements as gasses. Hydrogen is the lightest gas. Now, breathe in… Oxygen is important when you breathe. When Oxygen and Hydrogen combine, they form water.

What does water look like?

You might recognize water as a liquid. But water is also found as a solid and gas. Think about ice. Ice is made out of frozen water. Have you ever seen steam from a pot of boiling water? Steam is water that has become a gas.

Why is water so important?

Water is tremendously important to living things. Human bodies are made up almost all of water. So are trees and all other living things. A human body is almost 3/4 water!

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Is water important to you? How do you use water?

You use water everyday. You drink it, and you use it to wash, clean, cook, and flush. <u>Occasionally</u> you use water for fun – like for swimming!

People also use water to grow and make food and to provide electricity. Ships travel on water. Water is used in factories making all sorts of things. Even firemen use water to put out fires.

Where can we find water?

Water is everywhere. Water is in the air and in lakes, streams, and oceans. Water is in clouds and underground. Water is also in the ground in soil. Water is frozen at the North and South Pole and in glaciers or snow on mountains. Water is in all living things.

There is a lot of water on earth, but did you know that only a little bit of the total water on earth is freshwater? Most of the water on earth is saltwater. In fact, 3/4 of the earth's surface is covered with water, most of it in the oceans. Humans can only drink freshwater.

All of the water on earth now is the same water that has always been on earth. The amount of water on earth always stays the same. It has nowhere to go! Water does not disappear, it just moves to different places.

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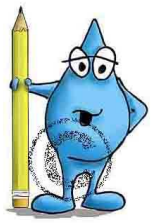
Name _____



Water for Life!

Write a poem about why water is important. Use each letter in the word "WATER" to start a line in your poem.

W

A

T

E

R

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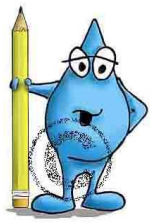


Water for Life!

1. Make three drawings showing water as a solid, a liquid, and a gas.

2. Water is made up of Hydrogen and _____

3. How much of the human body is made up of water?

One-half

Two-eighths

Three-fourths

4. What are some ways that water is used in school?

_____

_____

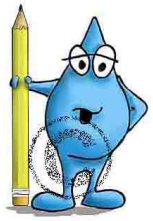
_____

5. Each person uses 150 gallons of water per day. Of this, 50 gallons per day are used to take a bath. What is the fraction of total water that is used to take a bath?

6. Where can we find water? Make a small drawing and label some locations of water.

7. If 4/10 of all water is used for electricity and 4/10 of all water is used to grow food, what fraction of water is left for other things?

Name _____



Water for Life!

For homework, circle all of the things in your home that use water:

Water fountain

Kitchen Sink

Bathroom Sink

Toilet

Dishwasher

Ice Cube Maker

Water Heater

Washing Machine

Sprinkler

Shower or Bathtub

Steam Iron

Plants

Pets

Can you think of anything else?

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