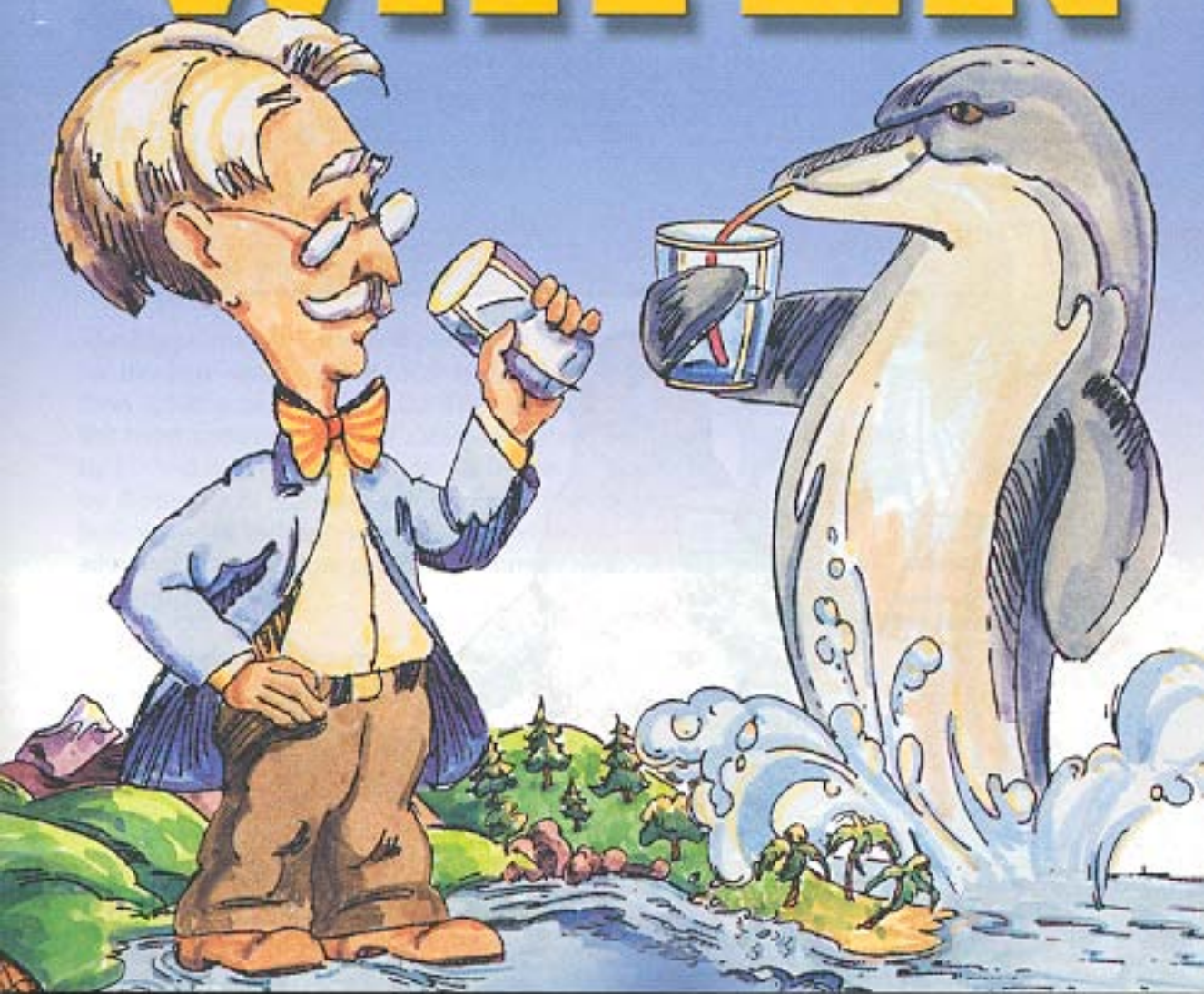
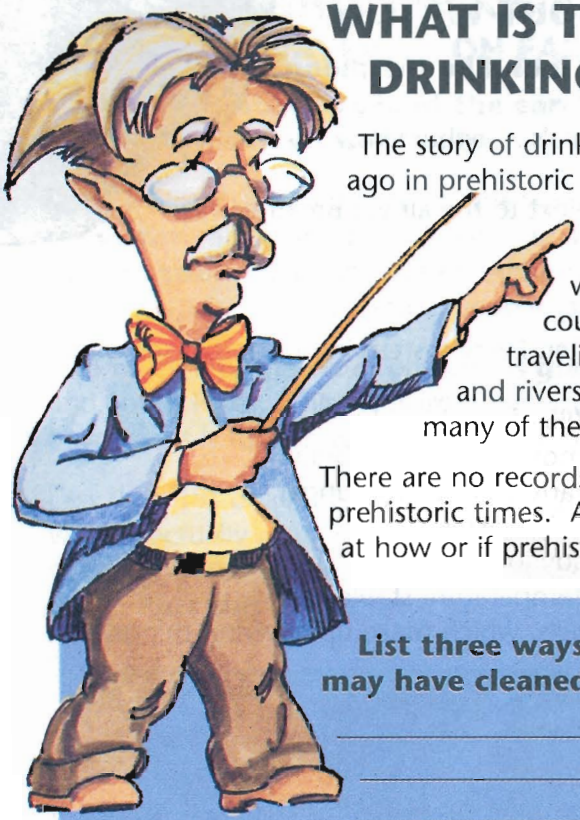
THE STORY OF DRINKING WATER



WHAT IS THE STORY OF DRINKING WATER?



The story of drinking water begins thousands of years ago in prehistoric times. People who lived during these times built their homes on lakeshores or along rivers so they would have water to drink and wash in, and so they could easily move from place to place, traveling on the waters. The water in lakes and rivers was much cleaner back then because many of the impurities that exist today didn't then.

There are no records of how water was cleaned in prehistoric times. And, without records, we can only guess at how or if prehistoric people cleaned their water.

List three ways you think prehistoric people may have cleaned their water.

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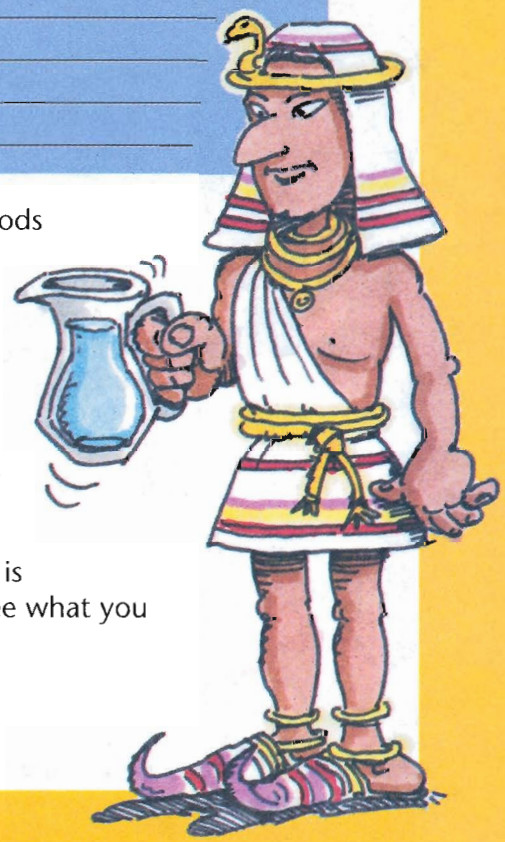

The Egyptians were the first people to record methods for treating water. These records date back more than 1,500 years to 400 A.D. They indicate that the most common ways of cleaning water were by boiling it over a fire, heating it in the sun, or by dipping a heated piece of iron into it. Filtering boiling water through sand and gravel and then allowing it to cool was another common treatment method.

Water treatment is much more complex today and is discussed a bit later in this booklet. But first, let's see what you know about water.

WHAT DO YOU KNOW ABOUT WATER?

Without water, the earth would look like the moon.

There wouldn't be any trees ... or animals ... or humans.

All living things need water to live. Next to the air we breathe, water is our most important need.

The human body is 70% water. Every system in our body uses water.

- Water makes up 83% of our blood.
- Water makes up almost 70% of our brain.
- Water makes up nearly 90% of our lungs.
- Water transports body wastes.
- Water lubricates body joints.
- Water keeps body temperature stable.
- Water is a part of cells, which make up all living things.

Human beings can live several weeks without food, but only a few days without water. We must drink six to eight glasses of water each day. But drinking water or other liquids provides only part of the water we need. The other part comes from the foods we eat.

For example:

- A tomato is about 95% water.
- An apple is about 80% water.
- A pineapple is about 80% water.
- An ear of corn is about 80% water.
- Bread is about 35% water.

List other foods that have water in them.

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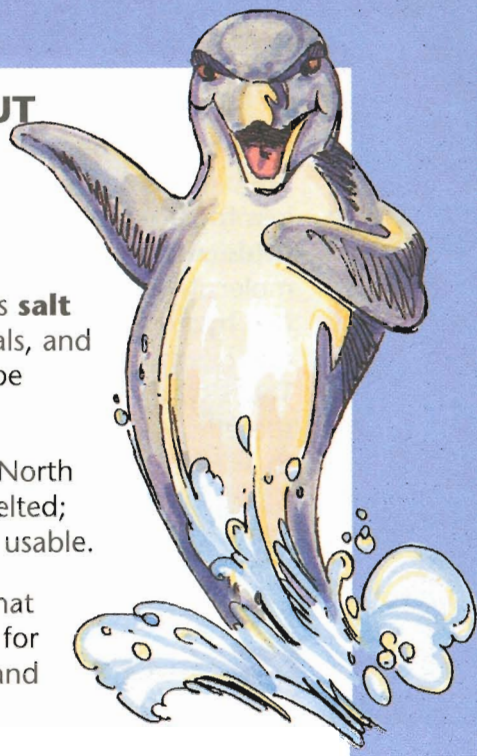
*All foods have water in them.

WHAT DO YOU KNOW ABOUT WATER ... ON EARTH?



About 70% of the earth's surface is covered with water.

Ninety-seven percent of the water on the earth is **salt water**. Salt water is filled with salt and other minerals, and humans cannot drink this water. Although the salt can be removed, it is a difficult and expensive process.

Two percent of the water on earth is **glacier ice** at the North and South Poles. This ice is fresh water and could be melted; however, it is too far away from where people live to be usable.

Less than 1% of all the water on earth is **fresh water** that we can actually use. We use this small amount of water for drinking, transportation, heating and cooling, industry, and many other purposes.

List some of the ways you use water in your life. Which do you think is the most important?

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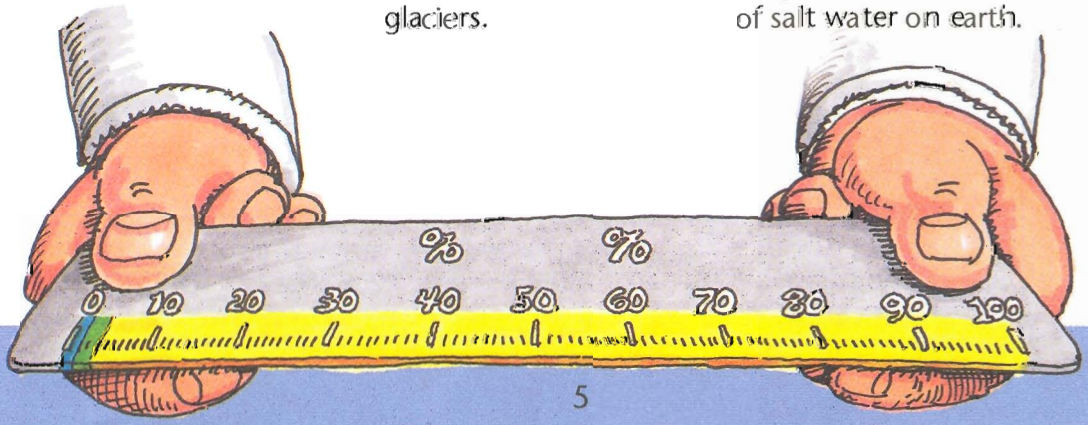
Water on the earth

This ruler has 100 spaces representing 100% of the water on earth.

One space of **Blue** is 1% of the spaces on the ruler. This shows the fresh water we can use.

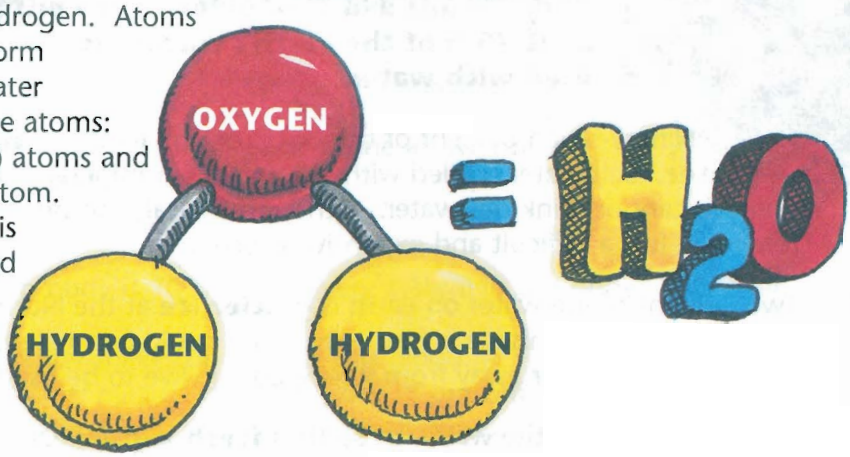
Two spaces of **Green** are 2% of the spaces on the ruler. This shows the water frozen in glaciers.

Ninety-seven spaces of **Yellow** are 97% of the spaces on the ruler. They show the amount of salt water on earth.



WHAT DO YOU KNOW ABOUT THE WATER MOLECULE?

Everything is made of **atoms**. An atom is the smallest particle of an element, like oxygen or hydrogen. Atoms join together to form **molecules**. A water molecule has three atoms: two hydrogen (H) atoms and one oxygen (O) atom. That's why water is sometimes referred to as H_2O. A single drop of water contains billions of water molecules.



What is a **solvent**?

A solvent is a liquid that can dissolve other substances. Water is the most common solvent in nature. This is why many minerals are found in water. How do we take advantage of this ability of water to dissolve almost anything?

We use water to dissolve many things.

Even when we cook, we use water as a solvent.

What drinks or foods do you mix in water?

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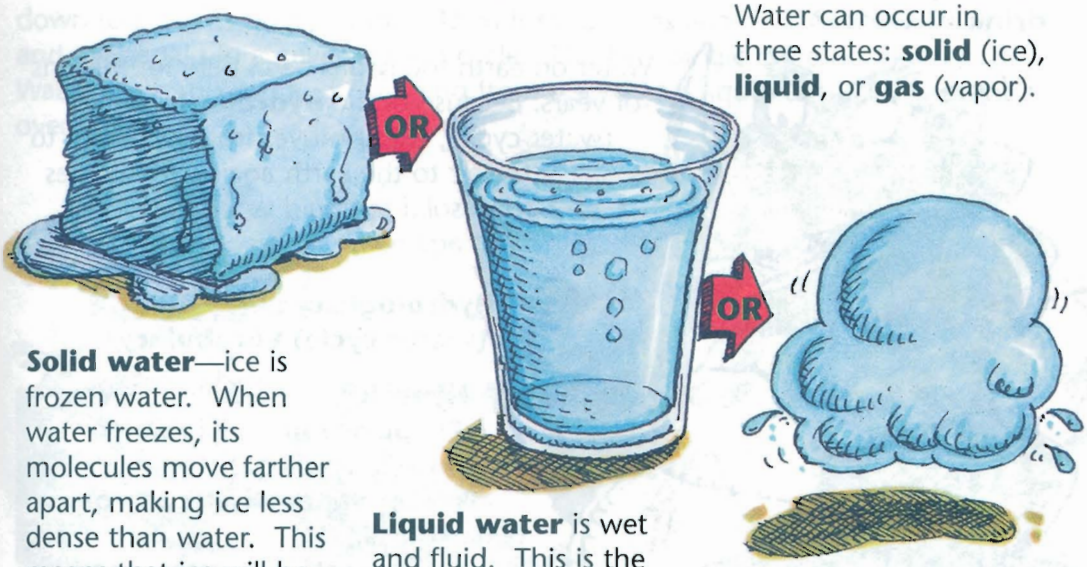
WHAT DO YOU KNOW ABOUT WATER AND ITS THREE FORMS?

Pure water is tasteless, odorless, and colorless. Water can occur in three states: **solid** (ice), **liquid**, or **gas** (vapor).



Solid water—ice is frozen water. When water freezes, its molecules move farther apart, making ice less dense than water. This means that ice will be lighter than the same volume of water, and so ice will float in water. Water freezes at 0° Celsius, 32° Fahrenheit.

Liquid water is wet and fluid. This is the form of water with which we are most familiar. We use liquid water in many ways, including washing and drinking.

Water as a gas—vapor is always present in the air around us. You cannot see it. When you boil water, the water changes from a liquid to a gas or water vapor. As some of the water vapor cools, we see it as a small cloud called steam. This cloud of steam is a miniversion of the clouds we see in the sky. At sea level, steam is formed at 100° Celsius, 212° Fahrenheit.

The water vapor attaches to small bits of dust in the air. It forms raindrops in warm temperatures. In cold temperatures, it freezes and forms snow or hail.

What do you think would happen if ice did not float? What would happen to the fish and plants in the water? How does the ice on top of a lake help the fish and plants that live underneath?*

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*If ice did not float, lakes would freeze from the bottom up. The plants and fish would also freeze, and most of them would die. But the ice on top keeps the water underneath protected from the cold. It is like a blanket that keeps the water at a safe temperature for the living things in the lake.