

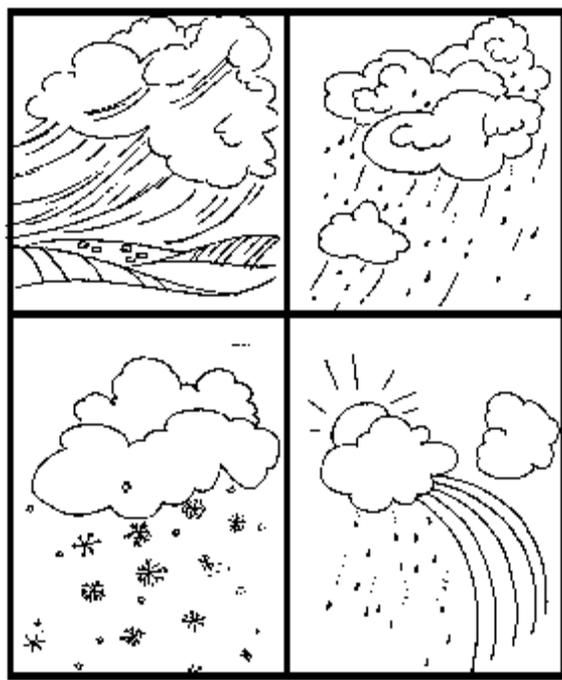
Water Cycle

The Earth's Gift



FIRST GRADE

WATER



1 WEEK
LESSON PLANS AND
ACTIVITIES

WATER CYCLE OVERVIEW OF FIRST GRADE

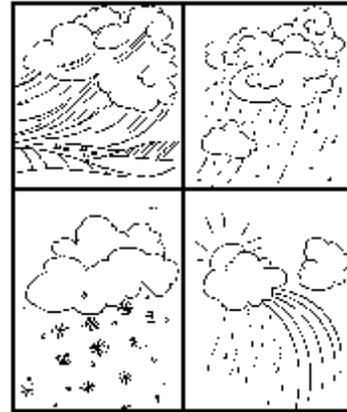
WATER

WEEK 1.

PRE: *Investigating the water cycle.*

LAB: *Experiencing surface tension.*

POST: *Discovering how water is used by humans.*



OCEANS

WEEK 2.

PRE: *Discovering bodies of fresh and salt water.*

LAB: *Dissolving salt in water.*

POST: *Exploring how the oceans became salty.*

ATMOSPHERE

WEEK 3.

PRE: *Discovering that air is all around us.*

LAB: *Experimenting with air.*

POST: *Demonstrating the movement of air.*

WEATHER

WEEK 4.

PRE: *Comparing hot and cold.*

LAB: *Discovering how to use a thermometer.*

POST: *Understanding that the weather changes everywhere.*

WATER CYCLE - WATER (1)

PRE LAB

Students create a picture of the water cycle.

OBJECTIVES:

1. Investigating the water cycle.
2. Exploring water's three states of matter.

VOCABULARY:

evaporation
gas
liquid
precipitation
solid
water cycle



MATERIALS:

scissors
worksheet

BACKGROUND:

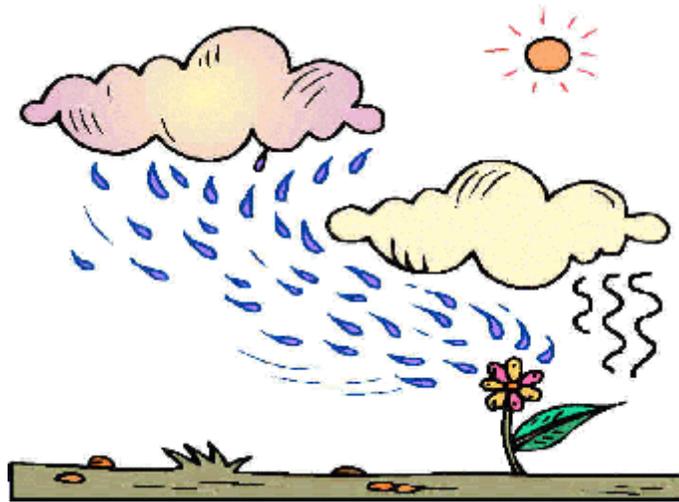
The hydrologic or water cycle is a major driving force on our planet. Water is in constant motion, evaporating into the atmosphere to form oceans, lakes, rivers, and streams. When the atmosphere can no longer support the moisture within the clouds we experience rain, snow, hail, or sleet. Some water is locked in the form of ice at the polar caps and in alpine glaciers. Water is returned to the system through drainage, which results from the melting of snow that has accumulated during the winter months. This water flows on the surface of the Earth and percolates through the Earth as groundwater. Water is not actually consumed but is continuously recycled.

Water is important to our everyday lives. First graders see water all around them, but many do not realize its importance. Ask students if we can survive without food or water longer. They are usually amazed that humans can survive without food much longer than water. Humans can only last about 3 days without water. After that time the kidneys will no longer function, and we will not be able to get rid of the wastes that accumulate in our bodies. Our bodies need fresh, clean water; so polluted or salty water will not help our bodies.

Water circulates in the atmosphere through the water cycle. The water on Earth evaporates (or becomes gas) into a cloud. When conditions are right, the cloud releases water or precipitation.

PROCEDURE:

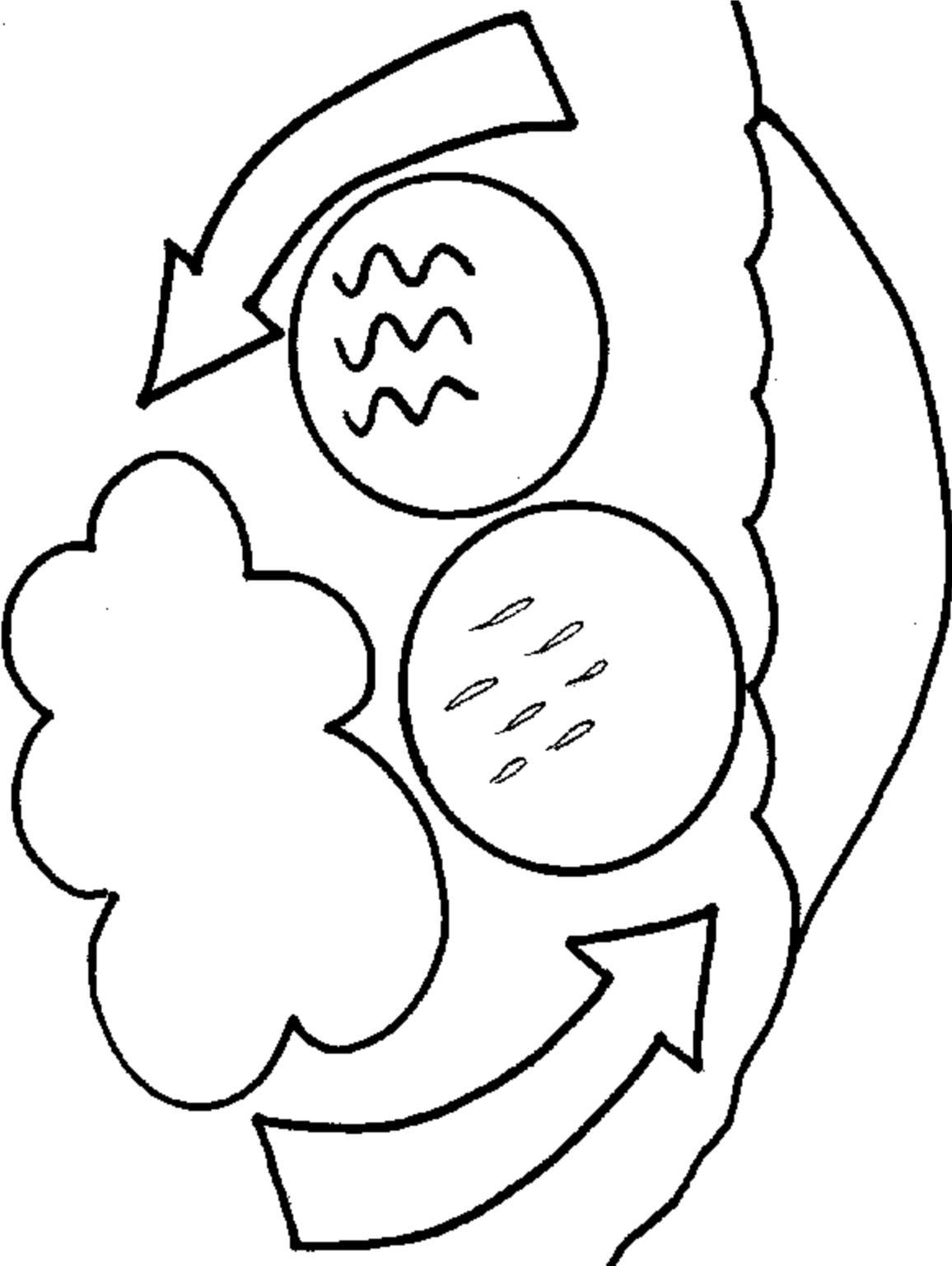
1. Discuss the different components of the water cycle by using a diagram like below. The rain represents “precipitation” and the wavy lines represent “evaporation.”



2. Make copies of the worksheet for students. Instruct students to color worksheet and cut out the pieces. You can enlarge the worksheet and cut out the necessary components if you want to make a display for yourself.

3. Have the students create their water cycle with the pieces. Go over the components of the water cycle with the students slowly. Evaporation from the water forms clouds and then precipitates. The cycle is repeated over and over again. Repeat the words over and over so they become familiar with the terms.

WATER CYCLE - WATER (1) PRE



WATER CYCLE - WATER (1)

LAB

Students experiment with water to

OBJECTIVES:

1. Discovering properties of water.
2. Experiencing surface tension.

VOCABULARY:

flow
fluid
surface tension
water



MATERIALS:

2 clear plastic glasses
beakers
water
eyedropper
penny

BACKGROUND:

Water remains a liquid over a very wide temperature range, namely, a range of 0°C to 100°C , between freezing and vaporization. This spans the temperatures of most parts of the Earth where life can occur.

Water has a very high specific heat, which means that it can absorb or lose much heat before its temperature changes. This is important in maintaining body heat in mammals, such as ourselves. It takes a lot of energy to start evaporation because water has a high latent heat of vaporization. For this reason, water evaporates slowly from ponds and lakes, where many life forms are dependent on it.

Water is less dense in its solid state than in its liquid state, so that ice floats instead of sinking. This property permits life to develop in polar regions and subpolar regions where ice floats and allows life to continue living below the surface. If ice were heavier than water, it would sink, and more ice would form on top of it. As a result, all life in the waters would be trapped in the ice in the many areas of the world where it gets cold enough to freeze water.

Water's surface tension (the ability of a substance to stick to itself) makes it an excellent substance to float heavy objects upon. Water not only sticks to itself, but also to other surfaces, and this allows it to move against gravity, which is very important to plants when transporting water from the soil to their leaves. This upward motion is known as capillarity or

capillary movement.

PROCEDURE:

This exercise consists of two parts. First, the students will discover how water flows and secondly, the students will discover how many drops of water they can put on a penny.

1. In the first exercise give each child two cups. Have them measure 1 cup of water into one cup. Let them hold both cups and ask them the following questions: Which cup contains a fluid? Which cup contains melted ice? Which cup contains air? What is the fluid?

2. Next ask the students to pour the liquid. Ask them to describe the liquid. The water is flowing; it is a fluid called water.

3. In the second exercise give each student an eyedropper and penny. First discuss surface tension by using the following illustrations. Surface tension is what allows a water strider (insect) on water not to sink and explains why heavier items in water, float. In this exercise the students will experience surface tension by seeing how many drops of water they can put on a penny with an eyedropper. Ask students to predict how many drops can fit on a penny. You are going to have to illustrate and demonstrate very carefully how to use an eyedropper.

4. Using an eyedropper, gently let water drops fall into the center of the penny. Count how many you can put on before the water runs off. (It will be between 20 and 34.) Let the children try this. Their numbers will be lower than yours, and will change depending on whether they are letting the drops fall into the center of the penny or on the edge.

5. You may want to extend this lab by seeing how many drops they can place on a nickel. Go over their results. You may also want to repeat the experiment with alcohol. It has a much lower surface tension and will not be able to hold as much liquid.

6. The key concept here is to have the students experience surface tension and to be able to observe surface tension when they leave the classroom.

WATER CYCLE - WATER (1)

POST LAB

Students use a worksheet to learn about ways to clean water.

OBJECTIVES:

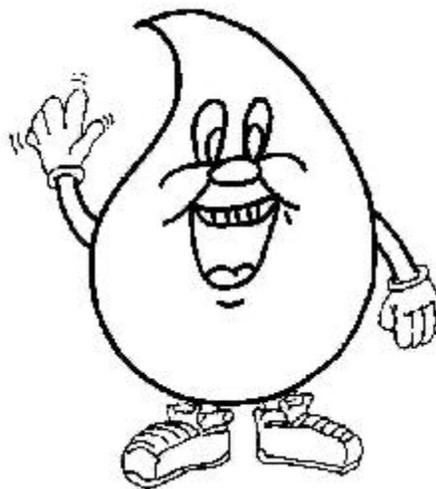
1. Exploring components of water.
2. Discovering how water is used by humans.

VOCABULARY:

hydrogen
oxygen
water

MATERIALS:

worksheet
periodic placemats



BACKGROUND:

Water is a chemical combination of hydrogen and oxygen. Water is a colorless, odorless, and tasteless substance. Point out hydrogen and oxygen on the periodic chart. Ask the children if they know what hydrogen is. The element hydrogen is a gas. Ask the students if they know what oxygen is. The element oxygen is a gas. Water, therefore, is a combination of two gases that form an entirely different substance and state of matter!

Water is very important to our everyday lives. Emphasize to your students, because they are so familiar with water, that they take it for granted. You may want to interject some environmental concerns that clean water is important for humans and most organisms to survive.

Water is an important commodity to all organisms that live on Earth. Although it appears as if we will never run out of water, only 3% of all of the earth's water is fresh (2/3 is locked up as ice, 1/3 as groundwater, lakes, and atmosphere), 97% is salt water which is unusable by most land organisms' metabolic systems.

Humans demand clean water. In some areas there are more people than clean water. Methods to clean used water are becoming more widespread. The end product is referred to as "recycled water." Instead of nature cleaning the water, humans have created factories that accelerate cleaning the water. They use filtration, chemical additions, disinfection, and microorganisms to clean water. The term "recycled water" implies that water has been cleaned naturally or by methods developed by people to reclaim water.

Water can be recycled for billions of years. Once water is formed on Earth, it has the

ability to change forms easily. If water becomes dirty or polluted when it is a liquid, it can clean itself through evaporation process, form a cloud, and then come back as clean rain water.

PROCEDURE:

1. Show students hydrogen and oxygen on the periodic table of the elements. Discuss that both are gases, and when they join to make a compound it is a liquid at normal temperatures.

2. Discuss the importance of clean water for every organism on Earth. Bring out that water can be cleaned by nature and also cleaned by humans through different methods.

3. Use the worksheet to facilitate a discussion on what happens to water that has been used in the past and how it is cleaned. For instance the dinosaur is drinking water, but as all organisms, it must come out. The dinosaurs will go to the bathroom, but nature will naturally filter the liquid through different rocks and soil. It will clean the water so it can be used again. This is nature's way of recycling water.

WATER CYCLE - WATER (1) POST

