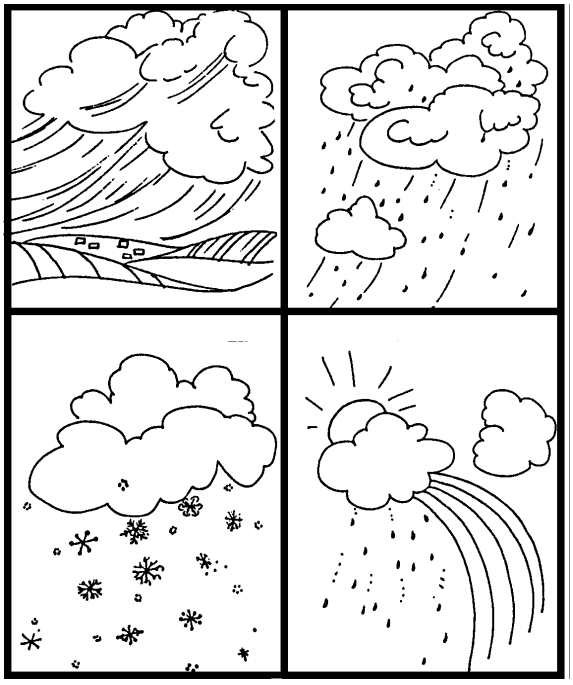
Water Cycle

The Earth's Gift

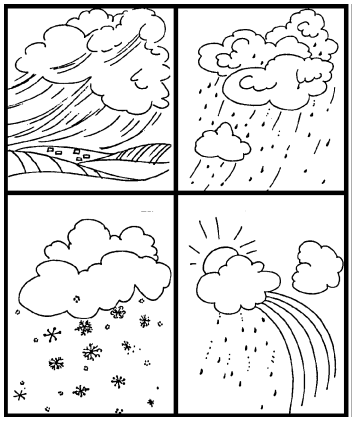
FIRST GRADE

OCEANS



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 - OCEANS (1)

PRE LAB

Students use a worksheet to compare fresh water with salt water.

OBJECTIVES:

1. Comparing fresh and salt water.
2. Discovering bodies of fresh and salt water.

VOCABULARY:

fresh water
ocean water

MATERIALS:

Inflatable World Globe

BACKGROUND:

Globes usually don't distinguish between fresh water and salt water, everything is colored blue! But there is a big difference between salt and fresh water. We cannot drink salt water and you certainly would not want to wash clothes or your hair in it. Fresh water is the fluid that our body needs. Discuss with students that most of the fresh water bodies are small and form lakes or rivers. Fresh water needs to have newly precipitated water to be salt free. Older lakes, like the Great Salt Lake in Utah, have more evaporation than precipitation and are considered salt lakes.

PROCEDURE:

1. Give students inflatable globes and have them locate different water masses. Make a list on the board as they tell you if a water mass is fresh or salty. The list should look similar to the one below.

FRESH WATER	SALT WATER
Lake Superior, USA Lake Michigan, USA Lake Huron, USA Lake Erie, USA Lake Ontario, Canada any local lakes	Pacific Ocean Atlantic Ocean Indian Ocean Arctic Ocean Salt Lake, Utah

2. Students may have trouble reading the oceans, seas, and lakes but it's never too young to learn geographic locations. You may want to tell students that ice is only made of water without the salt. The ice in the Arctic and Antarctica is salt free.

3. You may want to point out the 4 major oceans including the Atlantic, Pacific, Indian, and Arctic. Remember that the limits of the oceans are arbitrary, as there is only one global ocean.

4. Students may ask what are the smaller salty water areas called. The term sea is used to refer to smaller bodies of salt water like the Mediterranean Sea or the Red Sea. However, historically the term sea can also mean the larger oceans. The "Seven Seas" refers to bodies of water known to explorers in the fifteenth century.

5. The worksheet shows the eastern part of the United States. Instruct students to color the fresh water lakes (the Great Lake region) a different color blue than the Atlantic Ocean which is salt water. Color the land brown or green and have them label Atlantic Ocean, Gulf of Mexico, and Great Lakes. A gulf is a protected arm of an ocean.

WATER CYCLE - OCEANS (1)

GREAT LAKES
ATLANTIC OCEAN
GULF OF MEXICO

WATER CYCLE - OCEANS (1)

LAB

Students experiment with salt crystals.

OBJECTIVES:

1. Dissolving salt in water.
2. Observing how salt crystals form.

VOCABULARY:

evaporation
salt

MATERIALS:

salt
Epsom salt
trays
warm water
pan
rope-like string (mop string)
measuring beakers
two jars or beakers

BACKGROUND:

Salts originate from the erosion of the land. Evaporation prevents salts from going into the clouds, so the waters become full of various salts. The salt then precipitates if there is more salt than the water can "hold" within the molecules of water. You can explain this as referring to a large structure made of paper cups, if there are too many cups, the weight of the cups will make all the cups fall down. Precipitation is when the salt is "supersaturated" and the remaining salt falls to the bottom or precipitates.

Salt water is salt mixed with fresh water. However, salt in cold water does not dissolve as well as if the water is warm. Warm water has more room between the water molecules, allowing more salt to fit. Cool water molecules are tighter together and will not allow much salt to dissolve.

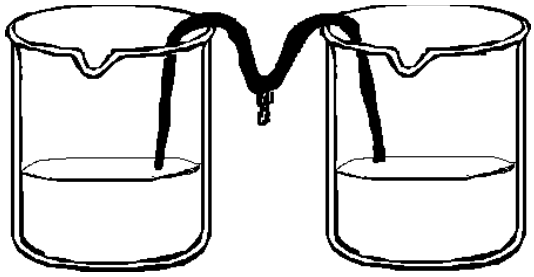
PROCEDURE:

1. Students will make salt from water. In this lab ordinary table salt will be used, but in reality the "salt" in salt water consists of various other compounds as will be discussed in the post lab.

2. Water can just take so much salt. Have the students measure about 10 ml of water into a jar. Have the students stir in 1 ml of salt. Discuss what happens. Provide the students with warm water. Have them repeat the procedure with the warm water. Discuss that the salt will dissolve more readily in the warm water.

3. Ask students if it is easy to tell if a liquid has salt in it without tasting it. You may want to pour some water from one source into a dish but do not label it. See if the children can guess, from its appearance whether the water is salty or fresh. Have them tell you why they guessed the way they did. Put the water in a place where it can evaporate and have the students see for themselves that the salt will be left behind.

4. Students should measure about 100 ml of warm water (with beaker) and mix with 5 ml of Epsom salt (with spoon) into the water. They will pour half of the solution in another jar and place one end of the cotton string (mop string) in each of the two jars with Epsom salt solution, as shown in the diagram on the right. Let the string dip between the jars and let the jars sit for several days. The solution should flow from each jar toward the middle, where it will drip, forming "salt" pillars. This will take a few days, so put the beakers in a place where they will not be disturbed.



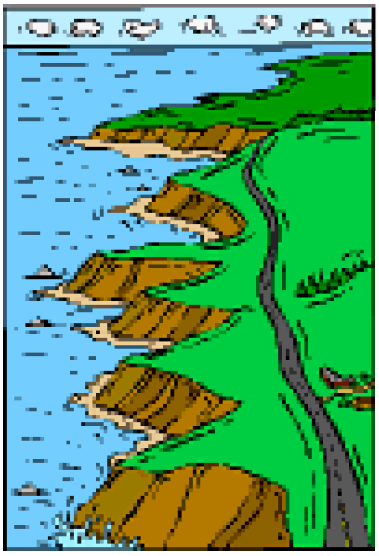
WATER CYCLE - OCEANS (1)

POST LAB

Students use a periodic table to look at what is dissolved in seawater.

OBJECTIVES:

1. Exploring how the oceans became salty.
2. Discovering the components of salt water.



VOCABULARY:

elements
erosion
evaporation
oceans
salt

MATERIALS:

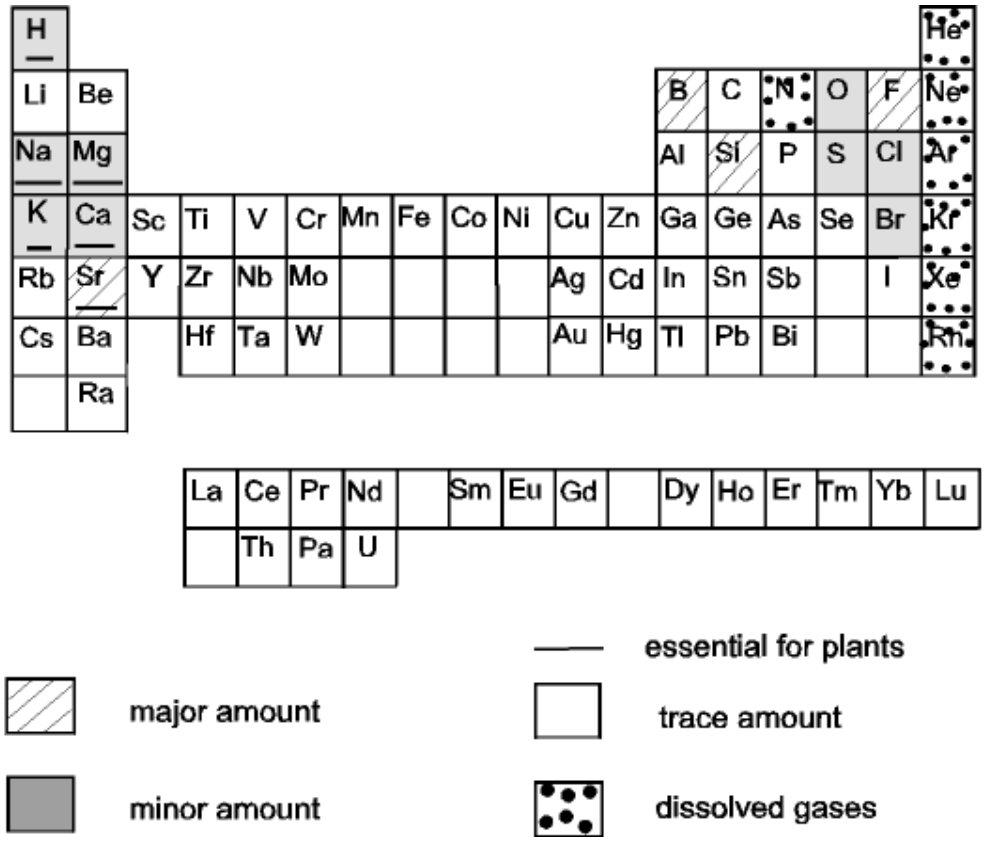
worksheets
crayons
Periodic Table Placemats
Inflatable World Globe

BACKGROUND:

Why are the oceans so salty? Rain on land causes rivers to wash salt minerals from the land and carry them to the oceans. Rivers not only carry salts to the ocean but also many other elements. In fact, the oceans contain gold and silver! If you calculate how much salt there is in the ocean, there would be enough salt to give millions of boxes of salt to each person living in the United States. That's a lot of salt! Salt is a very important commodity to people around the world. Before refrigerators, people had to salt their food in order to preserve it. Salt is important for preserving food and organisms need a balance of salt in their bodies in order to stay healthy.

PROCEDURE:

1. Compare the periodic table placemats with the elements that are in seawater figure. Students can then discover the components of salt water. Go over what each of the major constituent symbols including Na = sodium, Mg = magnesium, K = potassium, Ca = calcium, H = hydrogen, C = carbon, O = oxygen, S = sulfur, Cl = chlorine, and Br = bromine.



Elements in seawater.

2. Use the worksheet to illustrate that salt water is made during the movement of water on land. The diagram shows areas where salt is added to the oceans by volcanoes, water erosion of the land, and evaporation of pure water which leaves the salts behind.

3. ANSWERS: 1. Clouds do not have salt in them. Only water can evaporate. 2. Yes, large seas and old lakes have salt in them. Mediterranean Sea and Salt Lake are just a few. Students need to look at the globe. 3. Sources of salt: volcano and land; evaporation is occurring over the water; erosion is occurring on land and in parts of the ocean that moves.

WATER CYCLE - OCEANS (1) POST

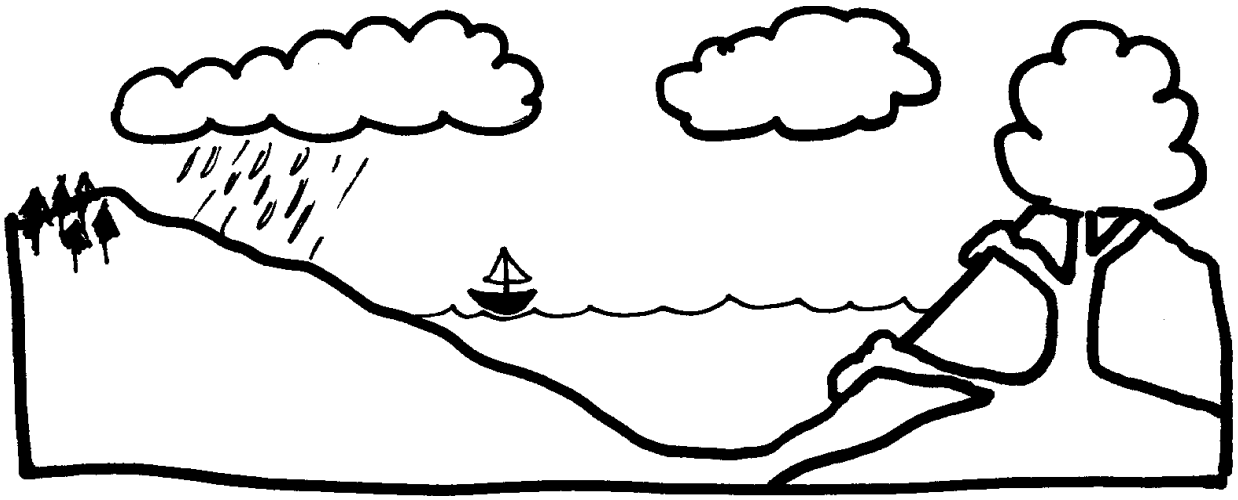
1. Do clouds have salt in them?_____

Why?_____

2. Are there any areas that have salt water other than the oceans? Name them.

_____

_____



3. Salt water is made during the movement of water on land. The diagram above shows areas where salt is added to the oceans. Label: evaporation, erosion, source of salts

Remember: the word "salt" does not just mean the kind of salt you eat!!