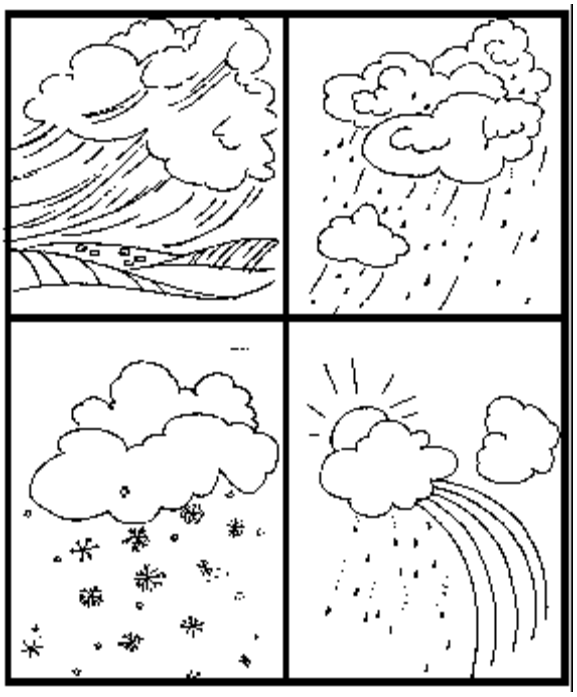
Water Cycle

The Earth's Gift

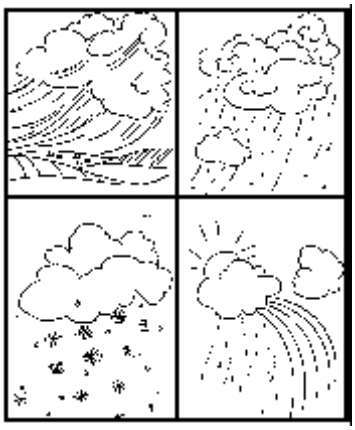
FIRST GRADE

WEATHER



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.*

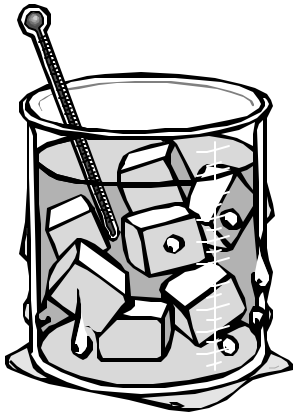
WATER CYCLE - WEATHER (1)

PRE LAB

Students learn about how to measure temperature.

OBJECTIVES:

1. Introducing the concept of measuring temperature.
2. Comparing hot and cold.



VOCABULARY:

centigrade
fahrenheit
weather

MATERIALS:

Snow is Falling by Franklyn Branley
worksheet

BACKGROUND:

Changes in temperature have been noted since any living organisms touched an ice cube or felt fire burning. It wasn't until the 17th century in Italy that meteorology became a science. Galileo Galilei made the first thermometer around 1600. Gabriel Fahrenheit, a German instrument maker invented in 1714, put mercury in a glass tube and created a scale of temperature and called it a thermometer. His name is still used for the English system of reading temperature. In devising a scale he chose as the zero the lowest temperature obtainable with a mixture of ice and common salt, and first proposed to divide the interval between this temperature and that which is normally found to characterize the blood of a healthy man into 12 divisions. In other words some arbitrary points which had significance in a real world.

The centigrade thermometer, which most countries now use is based on freezing of water and boiling of water as its end members. Anders Celsius (1701-1744) a Swede, first proposed the use of the intervals that are now in wide use on the Centigrade thermometer. The thermometer is based on 0º for freezing and 100º for boiling of water. Water is used because of its importance to our everyday lives.

PROCEDURE:

1. Ask students to define weather by asking them how it feels outside? List words students used to describe the weather, for example sunny, hot, cold, windy, or rainy. Ask what

the words "hot" and "cold" mean, which refer to temperature.

2. Ask if they know what we use to describe temperature when we want to measure it. Write on the board the temperature as 25< F and then put 25< C. These are two different ways of measuring. F refers to Fahrenheit and C refers to Centigrade. In the United States we use Fahrenheit, but scientists and most of the other countries use centigrade, which is a metric way of measuring.

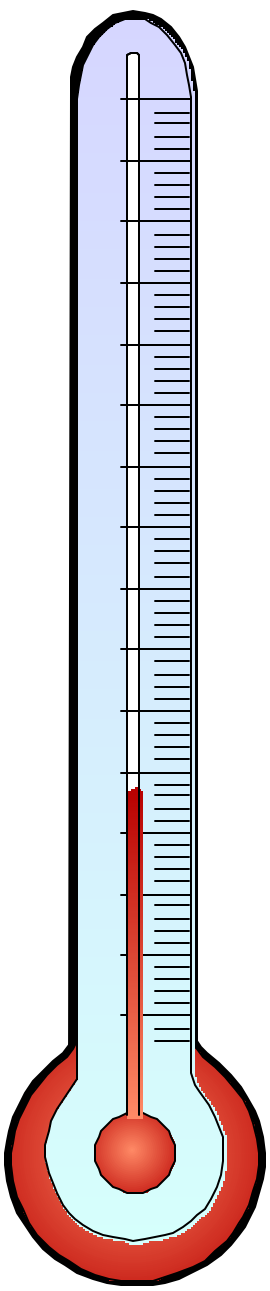
3. Ask them how cold they think it usually gets around here in the winter and in the summer. Compare it with some of the hottest temperatures, Death Valley, July 10, 1913 the temperature was 43°C (134°F) in the shade and the coldest was -33°C (-127°F) in 1960 in Antarctica.

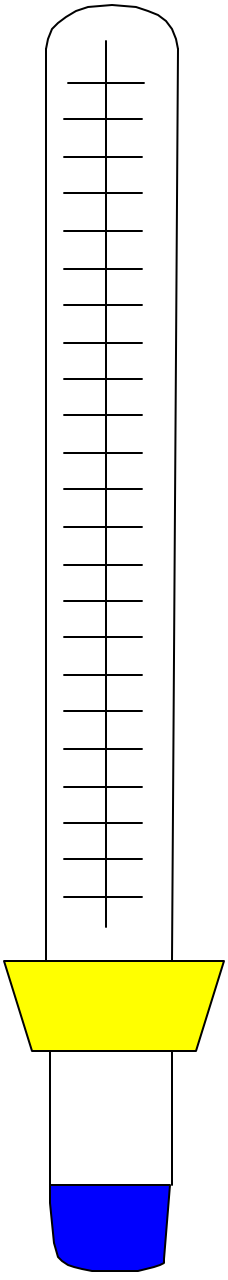
4. Ask what instrument measures temperature (thermometer) and show them how to read one by using the work sheet. Please remember this is not an easy task for children, make sure they can see the difference Between fahrenheit and centigrade and that they should also see what type of thermometer they are using. Have them put the degrees in depending on the thermometer they are using.

5. Have children read *Snow is Falling*. The part that will be amazing for students is that snow actually helps animals stay warm. After they read the book, have a discussion on how igloos work.

6. On the worksheet, use different temperatures and have the students record it. You may want the students to divide one of the thermometers in Centigrade and the other in Fahrenheit.

MEASURING TEMPERATURE





WATER CYCLE - WEATHER (1)

LAB

Students learn to use a thermometer.

OBJECTIVES:

1. Discovering how to use a thermometer.
2. Recording information on temperature.

VOCABULARY:

temperature
thermometer

MATERIALS:

thermometers
containers of warm and cold water
ice cubes

BACKGROUND:

Thermometers are useful in our everyday life. Students are familiar with their parents watching the morning news for information on the temperature. It helps them decide what to dress for the day. Temperature is a practical thing to know!

Many thermometers use mercury in a glass chamber. Mercury is an element that is liquid at normal temperatures and very sensitive to heat and cold. However, many thermometers today may have different substances in them. For instance, mercury with a little bit of nitrogen in it, will be more accurate and longer lasting. In schools, mercury thermometers have been banned by many school systems. Mercury, if ingested by children, can cause long term nerve damage. So many school thermometers have what many refer to as "spirit thermometers." The spirit is usually methyl alcohol, which is also sensitive to heat and cold.

PROCEDURE:

1. Ask students where they would normally measure temperature around the house. Make a list of these places which should include the following: oven, heater temperature, refrigerator, and fevers.

2. You may want to tell students that the thermometer used to find your body temperature should not be used to measure ovens or refrigerators. Thermometers are made to measure different things.

3. Measuring temperature can be exciting for students. Just to see the "red" liquid move up and down is somehow magical for children. In this exercise have the students use different containers of water and record on their lab sheets the measured temperature. You will be measuring in centigrade, but if you have other thermometers you can still use the worksheet. Have students label the degrees that are on the thermometer they are using.

4. You may want the students to predict which one is hot and which ones are cold before they start measuring with the thermometers by putting their fingers in the cup. We do not suggest using hot boiling water.

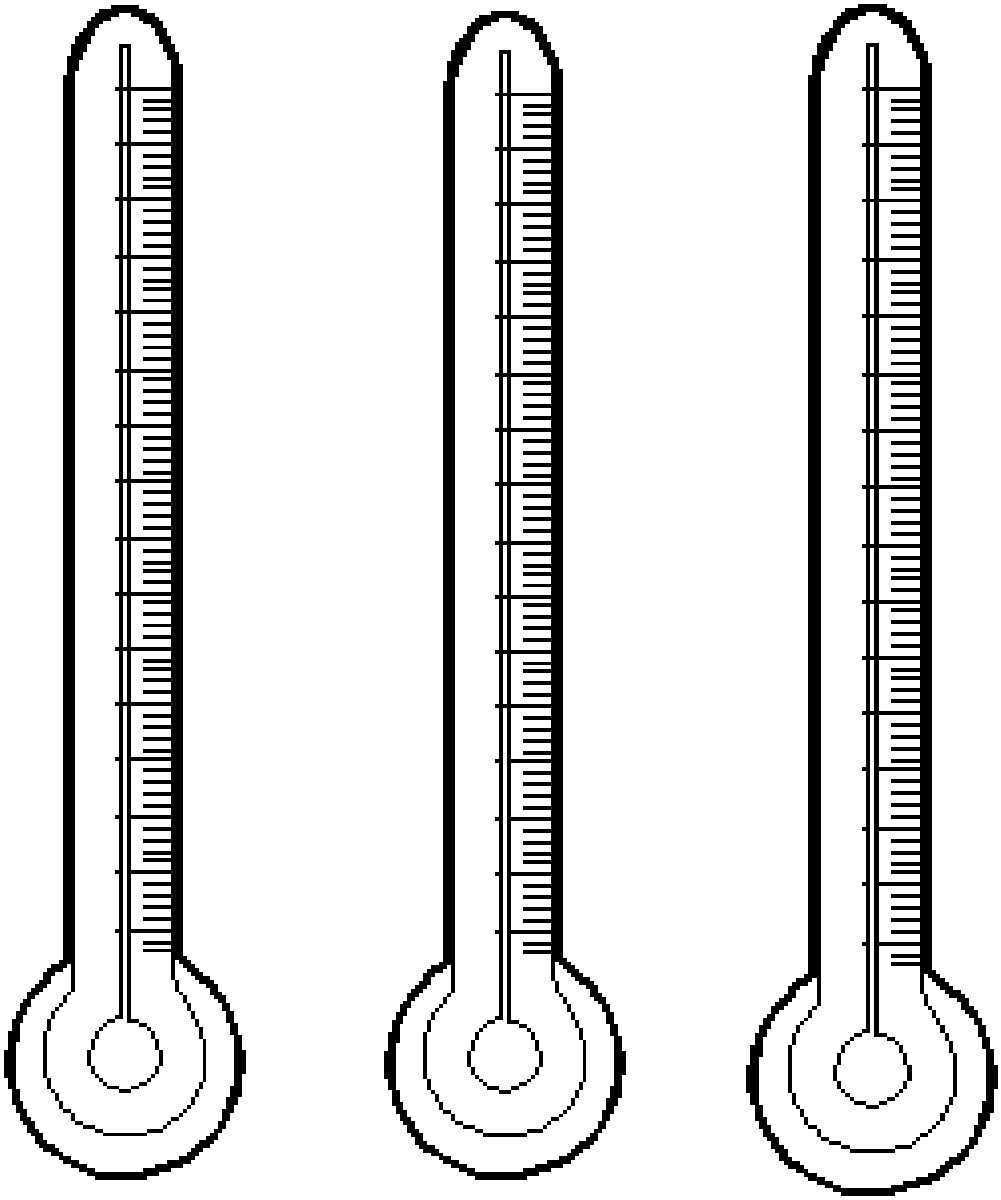
5. Tell the students to put the thermometer in the different containers and watch the red line go up or down. They should record the information on their lab sheets. On the worksheet there are 3 thermometers that the students can record. You determine what the students measure. If you want more than 3 stations you may want to provide students with more worksheets.

6. If you have an outside thermometer you should measure the temperature outside over the next few days. Make sure the measurements are taken at the same time each day. Talk about which days were coldest, which were warmest, and which were the most comfortable.

7. You will probably use a glass thermometer for this exercise. Caution the children to be careful. Do not push the thermometer into anything. But if a child does break one, tell them to tell you immediately. If the thermometers are alcohol, they will not cause any damage. In most place mercury thermometers for elementary age students are prohibited.

WATER CYCLE - WEATHER (1) LAB

STATION 1. STATION 2. STATION 3.



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WATER CYCLE - WEATHER (1)

POST LAB

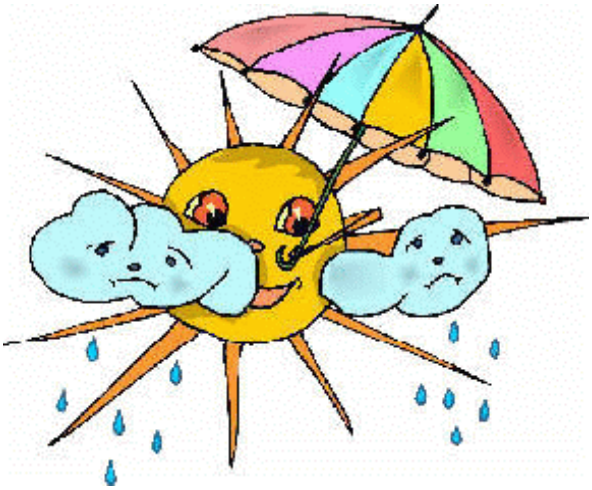
Students find information on a weather placemat.

OBJECTIVES:

1. Gathering information.
2. Understanding that the weather changes everywhere.

VOCABULARY:

atmosphere
rain
sun
weather
wind



MATERIALS:

Weather Placemat

BACKGROUND:

Students should have learned that the weather we experience is due to many factors. It depends on how close we are to land, water, and mountains. But it also depends on how the Earth rotates through space. Movement of the atmosphere throughout the world helps explain the weather patterns that we see. A combination of air in the atmosphere and water from the oceans interact will influence our weather greatly.

Weather changes all the time. Weather is created in the atmosphere that envelops the Earth. Weather changes so much because the Earth is constantly spinning. Lands and water bodies heat up differently that cause constant atmospheric change. Also note that "seasons" are not the same as weather. Seasons have to do with the angle of the solar radiation we receive caused by the tilt of the Earth on it's axis. Seasons are explored in the Universe Cycle.

PROCEDURE:

1. Go over the different parts of the Weather Placemat. The middle of the placemat is a Weather Map showing areas of different weather. Review east, west, north, and south. Also review the symbols that you will be asking them questions about (calm wind, clear day, partly cloudy). Ask students to point out the following:
    a. Areas of snow. (northwest - north central, into Canada)
    b. area of calm wind (west)
    c. clear day (west, north west)

d. partly cloudy (toward east coast)
e. cloudy (north central)

NOTE: Do not question them about fronts, this is for a later grade.

2. Name the four elements of weather. (Note that elements refers to how we describe the weather in a basic way.)
   a. wind
   b. temperature
   c. air pressure
   d. moisture

3. Ask students what instruments help us measure the weather.
   a. anemometer - wind
   b. thermometer - temperature
   c. barometer - air pressure
   d. rain gauge - moisture from rain

4. Where does most weather occur?
   a. Troposphere or 8-18 km above our head.

5. The Earth spinning helps understand how what moves?
   a. wind

6. How are clouds formed?
   a. when warm air meets cool air and moisture forms.

7. Is the Water Cycle important to understand weather?
   a. Yes, the Water Cycle explains how moisture moves throughout the Earth.