





KINDERGARTEN WEATHER



1 WEEK LESSON PLANS AND ACTIVITIES

WATER CYCLE OVERVIEW OF KINDERGARTEN

WATER

WEEK 1. PRE: Defining the states of matter. LAB: Discovering the properties of water. POST: Analyzing the water cycle.

OCEANS



WEEK 2.

PRE: Demonstrating the contents of water.LAB: Experimenting with salt water and fresh water.POST: Investigating oceans and lakes.

ATMOSPHERE

WEEK 3.

PRE: Exploring how clouds are formed.LAB: Analyzing the shapes of clouds.POST: Demonstrating how clouds are formed in the atmosphere.

WEATHER

WEEK 4.

PRE: *Comparing different types of weather.* LAB: *Determining the direction of wind.* POST: *Exploring what makes weather.*

PRE LAB

OBJECTIVES:

- 1. Comparing different types of weather.
- 2. Exploring rain, snow, and sun.

VOCABULARY:

rain snow sun weather

MATERIALS:

worksheet crayons

BACKGROUND:

Students use a worksheet to describe different types of weather.



Weather is a phenomenon that children have experienced. They learn early to look outside before they dress to play outdoors. Television helps children "see" other types of weather around the world. So even though they don't experience it, they are familiar with the word. Some children have never seen snow, lightning, or a tornado. However, stories about severe storms have always entertained children.

Thunderstorms are generated by temperature imbalances in the atmosphere. The warming of the air near the Earth's surface and/or the cooling of the air above the surface causes instabilities and convective overturning of various layers of hot and cold air.

Lightning is an effect of electrification within a thunderstorm. As the thunderstorm develops, interactions of charged particles produce an intense electrical field within a cloud. A large positive charge is usually concentrated in the frozen upper layers of the cloud, and a large negative change, along with a smaller positive area, is found in the lower portions. Thunder is the sound produced by the explosive expansion of air heated by a lightning stroke. When lightning is close, the thunder sounds like a sharp crack and more distant strokes produce growling and rumbling noises. Because the speed of light is much greater than that of sound, we see a lightning bolt before we hear the thunder.

A severe thunderstorm may spawn a tornado, a violently rotating column of air which descends from a thunderstorm cloud system. On the average, tornadoes move about 30 miles an hour, however, some move very slowly while others speed along at 60 miles an hour or more.

Floods are a natural and inevitable part of life along the rivers of our country. Some

floods occur seasonally when winter or spring rains, coupled with melting snows, or torrential rains associated with tropical storms, drain. Other floods are sudden, resulting from heavy localized rainfall. These flash floods are raging torrents which rip through river beds, urban streets, coastal sections and mountain canyons after heavy rains, and sweep everything before them.

Hurricanes are storms that start over tropical waters. The blazing Sun beats down on the ocean waters day after day and the air above this water gets hot. As cold air moves in, it pushes the hot air straight up until the hot air reaches a cool layer of air. The water vapor condenses very suddenly and becomes a driving rain. Cooler air from the outside moves in, in a whirling motion, like water going down a drain. The center or "eye" of the hurricane is calm, but all around it the winds and rain are swirling.

PROCEDURE:

1. This introductory coloring exercise has the students looking at rain, snow, and sun dominated weather. Before the students color, direct their attention to some of the characteristics of that specific type of weather.

2. You might also want to go over some other weather types. Below is a list that can help guide your discussion.

Rain: Comes from clouds; wet liquid; different types of clouds produce different intensities of rain.

Snow: Comes from cold clouds; solid water; always has a hexagonal shape (an ice crystal grows in this pattern).

Sun: Clear day; depending on where the sun is in the sky controls how hot it is.

Hail: Frozen rain (not a crystal like snow).

Hurricane: High winds, lots of rain.

Tornado: High winds that swirl around violently.

DRAW A LINE FROM THE WORD TO PICTURE. WRITE THE NAME UNDER EACH PICTURE



LAB

OBJECTIVES:

1. Observing wind.

2. Determining the direction of wind.

VOCABULARY:

anemometer wind vane wind

MATERIALS:

pinwheels soapy water, straws anemometer and wind vane

BACKGROUND:

Wind can be defined as "moving air." Windmills can be used for things like generating electricity or grinding grain or pumping water. Winds push sailboats and windsurfers. The main reason we study winds is because of their importance in weather. Prevailing winds from the sea, like monsoons, carry rain, and winds from the desert bring heat. Strong winds can cause a lot of damage. Large cyclonic storms are called hurricanes in the Atlantic, typhoons in the Pacific, cyclones around India and willy-willies in Australia.

Winds are normally described by speed and direction. Wind speed may be described in miles per hour, which is measured with an anemometer. Wind causes the arms to rotate, and their speed can be measured.

Ancient people had many beliefs about the winds. The ancient Greeks thought that the winds were the children of the sky and the Earth. Unfortunately, the winds were very unruly, so Zeus decided that they needed a dependable guardian. He chose Aeolus, who kept them in a hollow cliff far out to sea. When one of the gods called for a wind, Aeolus would punch a hole in the cliff wall with his spear. Then he plugged up the hole until it was time for the wind to return. The North Wind was ice and wild. The South Wind dripped water from his beard, and would spread fogs that the sailors would get lost in Zephyr, the West Wind. Zephyr was gentle wind. He would clear the sky of clouds and give beautiful weather.



wind.

Students experiment with the

PROCEDURE:

1. Let the students help you define wind when you introduce the subject. Go over the uses of wind, by showing pictures. In the picture below, the wind is coming from the west. Describe a wind storm. Discuss how to find the direction of the wind by wetting a finger and holding it up or by watching the direction of a kite, pinwheel or bubbles.



2. Go outside with students and find the wind direction with the students by using their fingers, with a wind vane, with bubbles, and with pinwheels. Most students are not aware how to find out where the wind is coming from. The name of the wind refers to the direction its coming from. A west wind moves west to east. If you have an anemometer show the students how it works. Students can make bubbles by using a straw and put a little soapy water and blow softly. (You may want to do this exercise after milk time, and have the students save their straws.) Have the students observe which way the bubbles go. Discuss their results to see if they agree on the wind direction.

3. You may want to make an anemometer to show how you measure the speed of the wind. The directions below are for an inexpensive way to show the basic principles. It is not scientifically accurate.

ANEMOMETER

An anemometer measures the air speed by observing the physical effects associated with air motion. The most common anemometer utilizes the drifting of an object in air such as the rotating cup. The rotating cup anemometer



consists essentially of 3 or 4 cups, hemispherical or bluntly conical, placed at the ends of light arms arranged like spokes of a wheel around a rotating stick. The useful range of a standard cup anemometer is about 5-100 mph. As the anemometer rotates in the wind, the number of rotations can be mathematically calibrated to give the miles per hour of the wind.

MATERIALS: 3 or 4 conical cups (ice cream type), straws or thin strips of wood, post (wood or plastic), pins, nails, hammer, glue

4. You may want to make a wind vane to show how easy it is to make.

WIND VANE

MATERIALS: modeling clay, carton (large styrofoam cup), pencil with eraser, pin, straw, card, sticky tape

1. Make a hole in the middle of the bottom of the carton and push the pencil into the hole.

2. Fix the carton to the thick card with modeling clay.

3. Cut two small triangles of thin card and fix one in each end of the straw.

4. Push the pin through the middle of the straw and into the eraser.

5. Put the wind vane on a flat surface outside. Use a compass to mark north, south, east, and west on the carton.





POST LAB

OBJECTIVES:

- 1. Exploring what makes weather.
- 2. Comparing different types of weather.

VOCABULARY:

clouds rain snow sun weather

MATERIALS:

Feel the Wind by A. Dorros (Harper Trophy) Weather Placemat

BACKGROUND:

Review with students that the water, oceans, atmosphere, and weather are all related. Each one helps explain the others. The key ingredient to much of the subject lies in the understanding of water. Weather is part of our everyday life, but yet it is controlled by many factors.

There are four key elements of weather including temperature, moisture, pressure and wind. Each of the elements work together to give us different weather conditions. A change in one element usually causes a change in the weather.

PROCEDURE:

1. You may want to read *Feel the Wind*. This book is about air is always moving. We can't see air moving, though we can watch it push clouds across the sky, or shake the leaves of a tree. We can heart it whistle and feel it tickle our faces. The author, A. Dorros shows children gentle breezes to powerful hurricanes as they learn about what causes wind.

2. Give students a Weather Placemat to look at. Go over the different types of weather you can find on it. Look along the edges especially and have the students identify the different types of weather. Also have students look at the four elements which help describe weather on a daily bases.



Students make a data chart of

weather.

3. Temperature can be measured by a thermometer. Ask students why temperature is important to them.

4. Ask students what kind of weather is under "moisture." They should answer rain, hail, snow, and dew (or morning or night wetness).

5. Ask students if the air feels different when it rains and when it doesn't rain. Does the air ever feel heavier than other times? The answer is yes, but students may not have noticed this.

6. The power of the wind also defines the weather. Sometimes it feels cooler outside because of the wind.

7.You might want to discuss and compare the different types of weather. You may want to use a graph like below.

	RAIN	SNOW	SUNSHINE
do things get wet	yes	yes	no
do things get cold	not always	yes	no
do things get warm	no	no	yes