

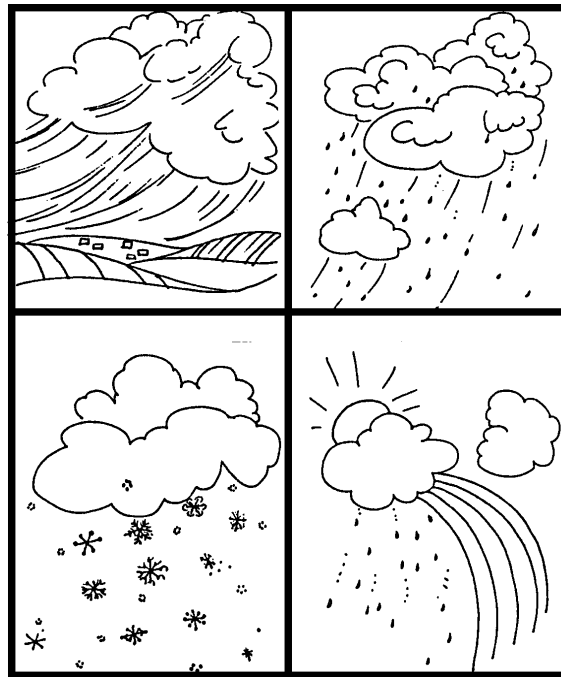


# Water Cycle

The Earth's Gift



## KINDERGARTEN ATMOSPHERE



1 WEEK  
LESSON PLANS AND  
ACTIVITIES

## WATER CYCLE OVERVIEW OF KINDERGARTEN

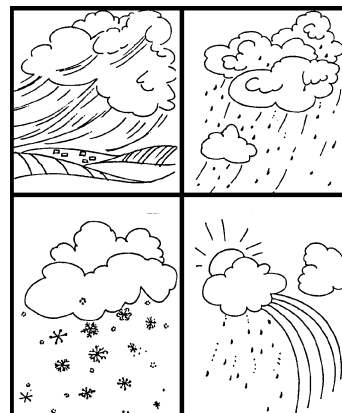
### WATER

#### 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.*

## WATER CYCLE - ATMOSPHERE (K)

### PRE LAB

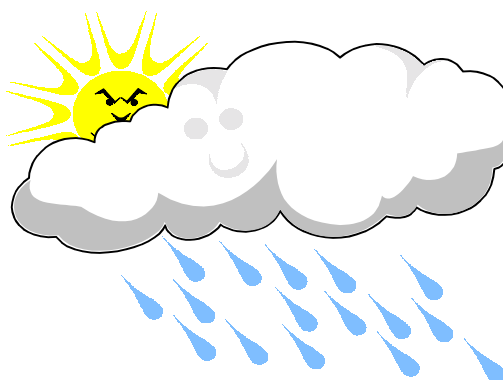
Students look at pictures of clouds using literature books.

### OBJECTIVES:

1. Investigating how water produces clouds.
2. Exploring how clouds are formed.

### VOCABULARY:

atmosphere  
cirrus  
clouds  
cumulus  
fog  
nimbus  
stratus



### MATERIALS:

Italian Dressing bottle  
Internet  
*Rain and Hail* by Franklyn Branley (Harper Collins)

### BACKGROUND:

Students learn early that clouds are "puffy balls of cotton" in the sky. However, many may not realize that clouds are really another form of water. Evaporation or the process involved in changing water from the liquid state to the gaseous state is very important in the conversion. Introduce to students that clouds are really the gaseous state of water and are produced within the atmosphere.

There are 4 major terms that help describe clouds. "Stratus clouds," are grey, and float low in the sky, flat as sheets and may bring rain or drizzle. "Cumulus clouds" are white, and pile high in the air. That means fair weather is coming. "Cirrus clouds" are white and curly. They float highest of all and bring a change of weather. "Nimbus" in a cloud name refers to clouds that are dark, which usually mean rain or snow. Cumulonimbus is a cumulus cloud that usually means rain in the forecast. Fog is just a cloud that lies on the ground.

Scientifically clouds are classified by their altitude and a combination of the stratus, cumulus, cirrus, and nimbus to further sort them. However, students need to associate nimbus, stratus, cirrus, and cumulus with correct images before they can really learn to describe the clouds that they see in the sky.

## PROCEDURE:

1. Ask students if clouds are in outer space. No, because clouds require air and water vapor to “live.” Clouds on our Earth exist in our “Atmosphere.” The atmosphere is an envelope of air and water vapor that surrounds the earth. Students sometimes have problems understanding that clouds are actually “lighter” than the air. Use the Italian Dressing (oil and vinegar with spices) to demonstrate that even though the oil looks heavier than the water, the oil will float. Remind students that “air” is a substance that takes up space.

2. Ask students if clouds are all the same shape. No, clouds, come in many different shapes. Ask students if clouds are the same color. No, mainly they are white, but can be dark gray. During sunset or sunrise clouds can reflect the colors of the Sun through the atmosphere and makes pretty colors.

3. Read *Rain and Hail* by Franklyn Branley. He describes how water vapor forms as moisture evaporates from the Earth. He explains how the vapor condenses to make clouds that bring rain, and sometimes hail.

4. There are many sites on the Internet that deal with clouds. Below is an example of a graphically rich sites that could be used for students to look at clouds. Key is for students to try and describe them in terms that they understand and can communicate.

### Internet sites on clouds

<http://australiansevereweather.simplenet.com>

This site is maintained by Michael Bath and Jimmy Deguara from Australia. Their site is rich with graphics that can really help children see clouds from down under.

## WATER CYCLE - ATMOSPHERE (K)

### LAB

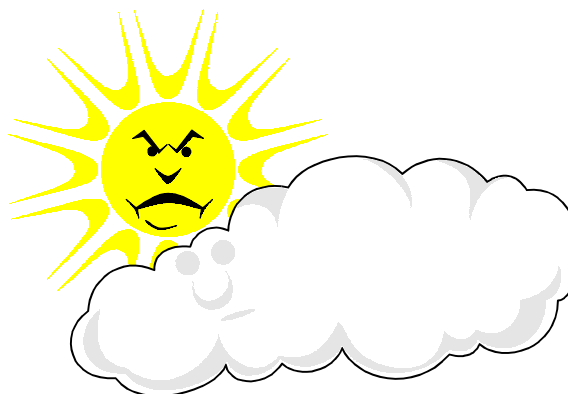
Students make a cloud chart.

### OBJECTIVES:

1. Analyzing the shapes of clouds.
2. Creating a cloud chart.

### VOCABULARY:

cirrus  
clouds  
cumulus  
stratus



### MATERIALS:

construction paper  
cotton balls  
glue  
worksheet

### BACKGROUND:

Clouds are groups of tiny droplets of water, or sometimes ice, that form around dust in the atmosphere. Water remains suspended in the air, because the drops are so tiny, Clouds are usually described by technical names (i.e., cumulus), but they can also be described by what they look like (i.e., puffy). Usually learning the technical names is not difficult for children, as long as they have an associated image. Do not give the children these terms unless you have pictures associated with them.

A system for naming clouds was developed by Luke Howard, an English pharmacist in 1803. He identified ten distinct categories of cloud, all of which are variations on three basic cloud forms including puffy cumulus clouds, stratus clouds forming in layers, and feathery cirrus clouds. This system proved so simple and effective that it is basically used by meteorologists today.

Cirrus are high clouds which are wispy, icy clouds which are often called "mare's tails." Cumulus or puffy clouds are mid-level clouds that are packed close together which are often called "cat's paw". Low clouds that are puffy but gray means that there may be rain soon. Very low clouds are called fog.

### PROCEDURE:

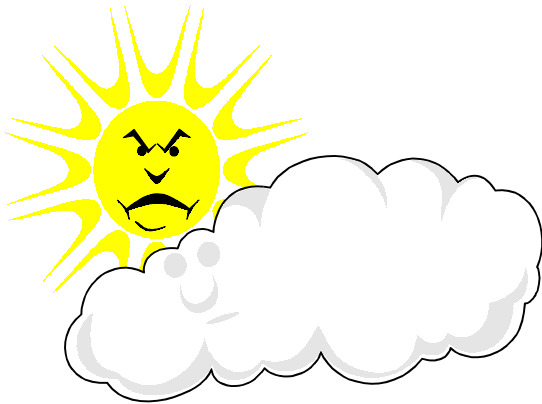
1. The object of this lab is for students to make a cloud chart. Give them the lab sheet and have them make a "cloud chart," after you discuss the different types of clouds.

Show them the example of the different drawings to help guide them. You can give them a blank piece of paper and have them divide the paper into quarters.

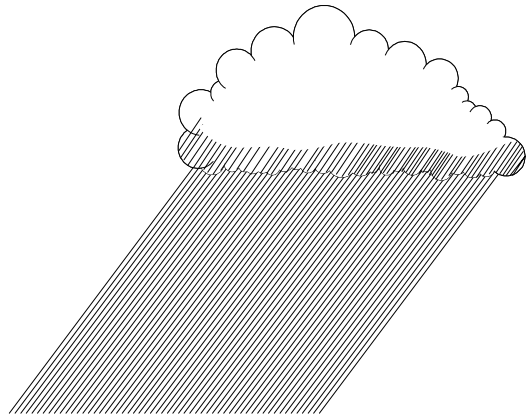
2. Take the students outside to observe the clouds. Let them look at the clouds for a while and have them come back and make the type of clouds they see on the lab sheet. Note: you may have to wait for clouds in the sky to do this lab. There is no right or wrong answer here. Just let them figure out the next day or so if their guess was right, and let them know that weather people are often wrong, too! If there are no clouds out, use the Cloud Chart and have students look at the pictures.

3. Have them describe the picture orally what it looks like to the rest of the class. Give them cotton balls and glue and tell them to construct the different clouds. The next page is a sketch to guide your students to arrange the cotton balls.

# CLOUD CHART



**CUMULUS**



**NIMBUS**



**STRATUS**



**CIRRUS**

## CLOUD CHART

<b>CUMULUS</b>	<b>NIMBUS</b>
<b>STRATUS</b>	<b>CIRRUS</b>



## WATER CYCLE - ATMOSPHERE (K)

### POST LAB

Students make a cloud in the classroom.

### OBJECTIVES:

1. Exploring how clouds are formed.
2. Demonstrating how clouds are formed in the atmosphere.

### VOCABULARY:

atmosphere  
clouds



### MATERIALS:

jar  
dish or margarine tub that fits on top of jar  
hot water  
ice  
refresher (spray)

### BACKGROUND:

Clouds may be very mysterious to children. If asked to look at the sky, they can “float” with the clouds. They can see the clouds move and don’t know if the wind is moving them or if the Earth is moving so fast that they just appear to move. Children wonder how a cloud can get in the way of the Sun warming the Earth. A shadow can be seen tracing the path of the cloud.

Cartoons and books portrait clouds as soft, pillow-like substances in the sky. But that is so very far from the truth!

### PROCEDURE:

In this demonstration you will illustrate the major components of cloud formation. You can make a cloud by following the instructions below. Describe each ingredient as you go. Let them know that the cloud is sometimes hard to see (but having students seeing you make a cloud will help them remember how clouds are formed.)

1. Boil water. Fill a jar with one third hot water.

2. Tell students that the steam represents the water rising from lakes and oceans. Tell them that the ocean is not hot, we are just speeding up the process. This is an experiment.

3. Spray a little refresher into the jar. This represents the dust in the air. Cloud droplets form around particles.

4. Put a dish or margarine tub on top of the jar and put ice in it. See diagram for set up. This represents the cooling high up in the air.

5. You will see some faint swirling of the steam inside the jar. Have the students look closely at the clouds.

6. Once you get the feel for making clouds, make a few stations for the students to observe the clouds. Refer to this experiment as a cloud in a bottle. Tell students if they want to make a cloud at home, they must ask their parents to help.

