



CLOUDY DAYS IN NARNIA

“Rising genius always shoots out its rays from among the clouds, but these will gradually roll away and disappear as it ascends to its steady luster.”
—Washington Irving

NAME _____
DATE _____

While the White Witch controls Narnia, it is a cold and frozen land where we can easily see water in three of its states: solid, liquid, and gas.

When water changes its state, it changes its physical properties and appearance. Chemically, however, it never actually changes. Water is still water, whether it is frozen in ice, flowing in rivers, or floating in clouds.

WHAT ARE CLOUDS?

Clouds exist as collections of water vapor—tiny little droplets of water that are suspended in the air. Obviously, great big clouds have billions and billions of these tiny droplets. Depending on the air temperature, those droplets may or may not be frozen. So, if the air is freezing, then the clouds are probably frozen too. Either way, though, the droplets have to be small and light enough to float in the air in order to stay in the cloud. If they get too heavy and need to fall, they become rain or sleet—and stop being part of their cloud!

Scientists and meteorologists have developed a system for classifying clouds based on their appearance and where they are in the sky. Below is an overview of how clouds get named.

First, decide where the cloud is located in the sky.

CIRRUS CLOUDS are the highest clouds. They are 18,000 feet above the ground.

ALTO CLOUDS are closer to the ground, but still higher than 6,500 feet.

STRATUS CLOUDS are closest to the ground, lower than 6,500 feet.

Once you know the cloud's location, then consider its appearance.

CUMULUS CLOUDS are puffy and look like cotton.

CIRRUS CLOUDS are thin, wispy, feathery clouds.

STRATUS CLOUDS are flat and look like blankets in the sky.

When any of these kinds of clouds begins to have droplets start falling it becomes a rain cloud which is called a Nimbus cloud.

Now, put the location together with its appearance and you get these groupings.

CIRRUS = high, wispy clouds.

CIRROCUMULUS = high, puffy clouds.

CIRROSTRATUS = high, flat clouds.

ALTOCUMULUS = mid-sky, puffy clouds.

ALTOSTRATUS = mid-sky, flat clouds.

NIMBOSTRATUS = mid-sky, flat clouds that have begun to release water.

STRATUS = low, flat clouds.

STRATOCUMULUS = low, puffy clouds.

CUMULONIMBUS = low, puffy clouds that have begun to release water.



RISE TO THE CHALLENGE!

If you decide to study meteorology, you'll learn much more about clouds. You'll discover that there are even more ways to classify clouds. Experts can recognize and identify cloud types in an instant using dozens of different names.

TRY THIS!

Cloud Formation

Observe how water vaporizes from liquid to gas and becomes part of a cloud.

Things you need:

An adult! This activity requires adult supervision.

Hot water (Not boiling, just hot tap water.)

Matches

2-Liter Clear Plastic Soda Bottle with Cap

DIRECTIONS:

1. Prepare the plastic bottle. Make sure the bottle has been rinsed clean and allowed to dry. Remove any outer labels so that it is completely clear.

2. Fill the bottle to about 1/3 of the way with hot tap water. This will leave 2/3 of the bottle empty, filled with just air. Cap the bottle immediately. As the hot water cools and evaporates, it will add water vapor to the air inside the bottle. You may see droplets begin to form as condensation on the inside walls.

3. Squeeze the sides of the bottle to force the water vapor to move closer together. Release the bottle and the water vapor will spread back out. This contracting and releasing simulates the changes in air pressure that effect cloud formation and behavior.

4. Carefully light a match. Open the bottle cap. Add smoke to the inside by holding the match near the opening and then dropping the lit match into the water. Quickly replace the cap, trapping the smoke inside.

5. If the cloud does not appear immediately, begin to squeeze and release the bottle. The changes in air pressure inside the bottle should cause the cloud to form.

Notice:

Forming a cloud requires water vapor, changes in air pressure, and smoke to visualize the effect. In nature, other particles in the air besides smoke get caught up in the cloud. In some crowded cities, air pollution forms clouds called smog as all of the smoke and gases interact with water vapor in the air.