

## QUESTION 1

# What Are Clouds Made Of?



## SCIENCE NOTES

A cloud is a large collection of very tiny droplets of water or ice crystals. The droplets are so small and light they can float in the air. All air contains water, but near the ground it is usually in the form of an invisible gas called water vapor. When warm air rises, it expands and cools. Cool air cannot hold as much water vapor as warm air, so some of the vapor condenses onto tiny pieces of dust that are floating in the air and forms a tiny droplet around each dust particle. When billions of these droplets come together they become a visible cloud. In this activity, children see clouds form when they breath on spoons. When warm, moist breath hits the cool spoon, water vapor condenses and turns into a cloud—or water you can see.

### PART 1: Make a Cloud

Students discover that clouds are made of water droplets.

### Materials

- ⊙ a can of shaving cream
- ⊙ 1 metal spoon per child

### Teaching the Lesson

1 Ask: What if clouds were made of shaving cream? Squirt a dollop of shaving cream onto each child's work space. Identify the shaving cream as clouds: That one is fluffy like a cumulus cloud. Can you make it wispy like a cirrus cloud or low and layered like a stratus cloud? Remind students to look at the cloud poster as they work.

2 Pass out wet paper towels and have everyone remove the shaving cream. The tables will be squeaky clean!

3 Continue the lesson: We know that clouds are not made of shaving cream, but what are clouds made of? Have children share their ideas.

4 Have children cup their hands around their mouths and exhale into their hands. Repeat several times. Help children to notice that their breath feels warm and moist.

5 Pass out the spoons. Have children notice that the spoons feel cool. Hold the back of a spoon close to your mouth and exhale. Have the children repeat this procedure. What do they see? (A tiny cloud will appear.) Help children understand that the tiny clouds on their spoons are like the clouds in the sky, formed when warm, moist air and cool air come together.



### ACTIVITY Extension

There is water in the air! Mix up a batch of icy lemonade in a glass pitcher. Before you serve it, set out the pitcher for all to see. Watch as water starts to drip down the sides of the pitcher. Challenge children to explain where the water came from. (When warm air comes in contact with the icy cold pitcher, water vapor condenses on the pitcher.)

**NOTE:** This demonstration works best on a warm, humid day.

## Literature Connection

If your class enjoyed the shaving cream clouds they will also enjoy *Cloudy with a Chance of Meatballs* by Judith Barrett (Macmillan, 1982). This story takes place in the town of Chewandswallow where it rains soup and snows mashed potatoes!

## PART 2: Introducing a Droplet

**This lesson helps children to visualize the many droplets that are in a cloud and also provides practice with estimating and counting by tens.**

### Materials

- ⊙ One Drop (see page 42)
- ⊙ overhead transparency
- ⊙ overhead marker
- ⊙ overhead projector
- ⊙ a cup of blue-tinted water
- ⊙ an eyedropper

### Preparation

Make a class set of the One Drop reproducible. Make a copy on an overhead transparency too.

### Teaching the Lesson

1 Use an eyedropper to place a drop of blue water on the screen of an overhead projector. Explain: This drop of water may seem small but it is huge compared to a cloud droplet. Clouds are made of droplets. A drop of water this size may contain as many as a million cloud droplets! While comprehending *one million* may be too abstract for young children, they love to consider big numbers and will have fun visualizing and discussing the many droplets in a raindrop. (See Literature Connection, page 36, to explore the concept of one million in greater depth.)

2 Dry off the projector screen and project the overhead transparency copy of One Drop. Explain that the tiny dots represent cloud droplets. Ask: How many droplets do

you think are in this drop? Demonstrate how you might estimate a large number by eyeballing groups of 10. (Do not reveal the total. There are 100 droplets.)

3 To help students get an idea of how big the number one million is, pass out a copy of One Drop to each child. Have children follow the directions to complete the page. Compare the numbers 100 and 1,000,000. Which is bigger?

4 Invite children to add more droplets to their drop to try to make one million. As they work, they'll probably stop often to ask "Is this a million?" Eventually, they'll get the idea that one million is a really big number—more than they can draw!

5 Have children cut out their drops, cluster together, and hold their drops above their heads to form a "cloud."



### JOURNAL Junctures

Invite children to use their experience clustering together like a cloud (see step 5, above) to write about how it might feel to be a cloud droplet.

### ACTIVITY Extension

Cover a bulletin board with blue paper. Add a title: *Clouds are made of water droplets.* Use white chalk or a white crayon to draw a cloud outline on the blue paper. Fill in the outline with the drops from the activity. Children who are interested will enjoy making additional drops for the display.

Name \_\_\_\_\_

# One Drop

1. How many droplets are inside of this drop?

My estimate \_\_\_\_\_

2. Circle groups of 10 droplets. Count by tens.

There are \_\_\_\_\_ groups of ten in this drop.

3. How many droplets are inside this drop?

My count \_\_\_\_\_

