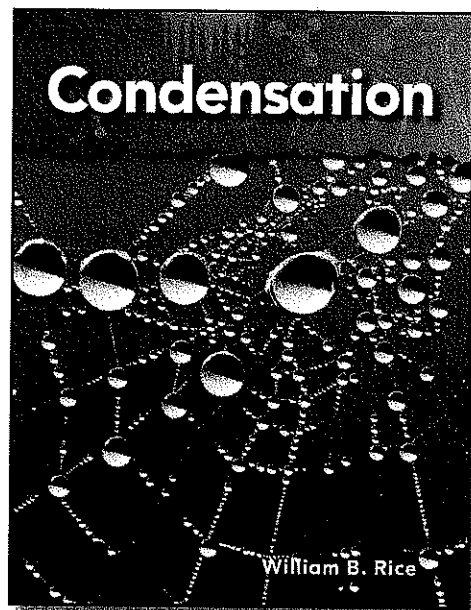


Science Readers: A Closer Look

Lesson Plan for

Condensation



Author

Kathleen Kopp, M.S.Ed.

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Consultant

Scot Oschman, Ph.D.
Palos Verdes Peninsula Unified
School District
Rancho Palos Verdes, California

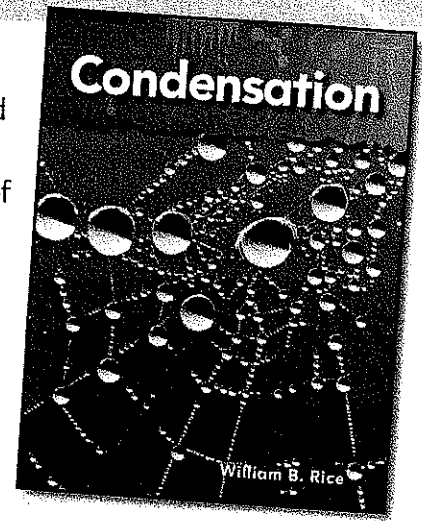
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Condensation Reader Lesson Plan

Learning Objectives

- Students use reading skills and strategies to understand and interpret nonfiction. (Reading Objective)
- Students understand the main idea and supporting details of simple expository information. (Reading Objective)
- Students understand the structure and properties of matter. (Science Objective)
- Students know that water can be a liquid or a solid and can be made to change from one form to the other, but the amount of water stays the same. (Science Objective)
- Students know that things can be done to materials to change some of their properties (e.g., heating, freezing, mixing, cutting, dissolving, bending), but not all materials respond the same way to what is done to them. (Science Objective)
- Students understand and apply basic and advanced properties of the concepts of measurement. (Math Objective)

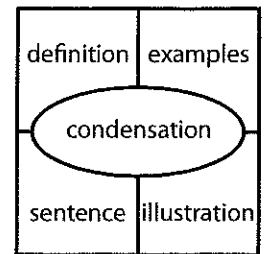


Materials

- *Condensation* reader
- chart paper or board, and markers
- two cups
- water at room temperature
- ice cubes
- drawing paper
- crayons or colored pencils
- *Liquid Magic* activity sheets (pages 6–7)
- *Follow the Water Cycle* activity sheet (page 8)
- *Reader Quiz* (page 9)
- materials for the Lab activity (page 12)
- *Clouds Up High* resource page (page 13)

Before Reading

1. Discuss the kinds of clouds that students have seen in the sky. Encourage students to describe how they looked. Distribute copies of the *Clouds Up High* resource page (page 13) to students. Read the information together. If possible, look outside to see if clouds are in the sky. Ask students how these clouds are alike and different from other clouds they have seen. Have students talk with partners to explain how they believe the clouds got there. Record the students' ideas on a chart.
2. Discuss how water can exist in all three states of matter: as a solid, as a liquid, and as a gas. Have students give examples of solid and liquid water. Place two cups on the table. Pour room-temperature water into each one. Explain that this is water as a liquid. Then, place a few ice cubes in one of the cups. Explain that an ice cube is water as a solid. Set the two cups aside.
3. Write the vocabulary words on the board. As a class, discuss the words and what they mean. On a sheet of chart paper, create a concept map similar to the one shown to the right. Help students create this concept map on a sheet of drawing paper. Tell students to write the word *condensation* in the center. Brainstorm examples of condensation as a class and have students write these examples on their concept maps. The concept map will be finished later in the lesson.



Vocabulary

condensation dew liquid precipitation

4. Look at the cups of water from Step 3 above. Have students observe the cups. They should hypothesize why water appeared on the outside of the cup with ice, and why water did not appear on the outside of the other cup.

During Reading

5. Instruct students to skim through the reader once. Have them make a prediction about how condensation affects the world around them.
6. Read the chapter title on page 4 of the reader together ("Misty Mirror"). Then read each sentence to students and have them echo read that same passage. If possible, give each student a small hand mirror to breathe on, or demonstrate this with a larger hand mirror. Discuss what happens to the mirror. Before reading on, have students predict what has happened.
7. Have students preview pages 6–9 of the reader. Read these pages as a group. Discuss and clarify why the mirror mists up when someone breathes on it. List three steps that occur for this to happen: (1) warm breath meets the cold mirror; (2) the cold mirror cools the warm air that touches it; (3) the air changes from gas to liquid mist.

During Reading (cont.)

12. Write the definition of *condensation* on the board. Have students copy the definition onto their concept maps.
13. Have students preview pages 10–13 of the reader. Read this section as a group. Discuss and clarify how *condensation* and *evaporation* are opposites. Have students write a sentence about condensation on their concept maps.
14. Assign each pair of students one example of condensation from the reader (*dew* on pages 14–15; *clouds* on pages 16–17; *water on a glass* on pages 18–19; or *steam* on pages 20–21). The partners should read about their example of condensation. They should each become an expert on their assigned example and explain it to the whole group.
15. Distribute copies of the activity sheets *Liquid Magic* (pages 6–7) to students. Read the information and directions to students. Complete this activity as a group.
16. Have students preview pages 22–27 of the reader. Explain the steps of the water cycle using the diagram on page 23. Discuss how condensation is part of the water cycle. Then, choral read pages 22–27. Ask students why condensation is important in the water cycle.

After Reading

17. Have each student share with a partner what he or she learned from reading this book. Then, students should finish their concept maps with illustrations describing condensation.
18. Remind students that before water falls back to Earth as precipitation, it condenses in the form of clouds. (**Note:** Review the *Clouds Up High* resource page, if desired.) Then, distribute copies of the activity sheet, *Follow the Water Cycle* (page 8) to students. Read the information and directions to students. Decide if they will complete this page as a group or with a partner.
19. Use the *Reader Quiz* (page 9) to further assess student learning. Depending on the reading abilities of the students, consider reading each test question aloud to the students before they record the answer.
20. Gather all students together as a whole class to complete the Lab activity (pages 11–12).

Extension Ideas

Have students read *A Scientist Today* on page 32 of the reader. Ask students what it means if a lake is “dying.” What do they think Martha Davis does to help save Mono Lake?

Give each student a sheet of drawing paper. Have students draw a cartoon that shows what it would be like if they were each an air particle that condenses. They may turn into mist on a mirror or window, water on the outside of a glass, a cloud in the sky, or dew on the grass. Show students how to use speech bubbles to show what the air or water particle might say as it changes from a gas to a liquid.

Name _____

Liquid Magic

Directions: Condensation happens all around us. Use the words in the Word Box below to fill in the sentences. Then, draw a picture of each sentence. The first one has been done for you.

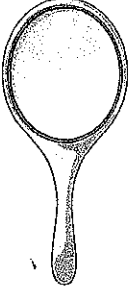
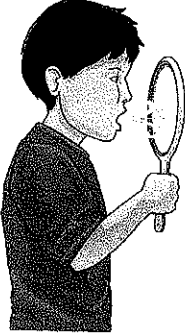
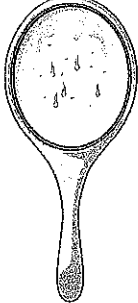
Word Box

cloud

dew

mist

water on the glass

<p>EXAMPLE:</p> <p>The mirror is COLD.</p> 	<p>My breath is WARM.</p> 	<p>Condensation on the mirror is MIST.</p> 
<p>1. The grass is WARM.</p>	<p>The air is COLD.</p>	<p>Condensation on the grass is _____.</p>

Liquid Magic *(cont.)*

Directions: Condensation happens all around us. Use the words in the Word Box below to fill in the sentences. Then, draw a picture of each sentence.

Word Box

cloud

dew

mist

water on the glass

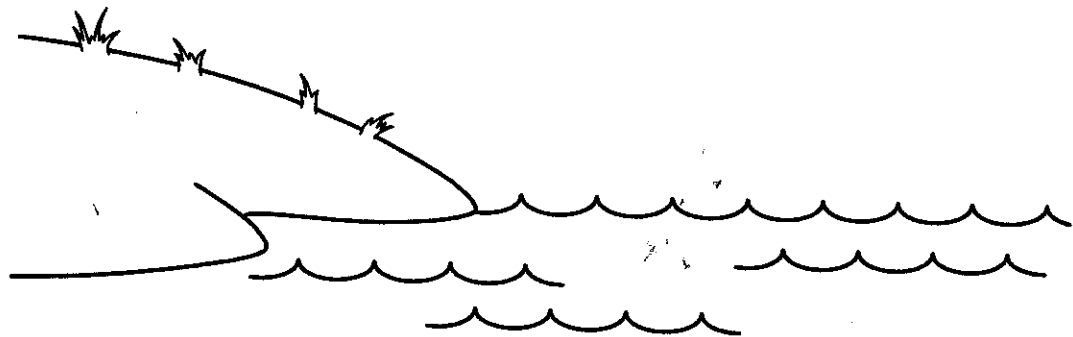
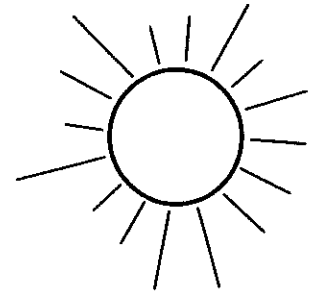
<p>2. The air RISES from ground to sky.</p>	<p>The air COOLS.</p>	<p>Condensation in the sky is a _____.</p>
<p>3. The water in the glass is COLD.</p>	<p>The air is WARM.</p>	<p>Condensation on the glass is _____.</p>

Condensation

Name _____

Follow the Water Cycle

Directions: Read about the water cycle. Follow the steps of the water cycle written below. Draw arrows on the picture to show where the water goes. Use a different color to show each step.



1. Water evaporates. It moves from the sea to the sky.
2. Water vapor cools as it moves higher in the sky over the land. It condenses. It makes a cloud.
3. The cloud gets heavy. There is too much water. This makes precipitation.
4. The water moves over land. It moves to the sea.
5. What does condensation look like in the water cycle?

Name _____

Reader Quiz

Directions: Circle the best answer.

1. When condensation happens, what do you see?
 - a. a liquid
 - b. a solid
 - c. a gas
 - d. I cannot see condensation.

2. Which of the following is NOT condensation?
 - a. clouds
 - b. mist on a mirror when you breathe on it
 - c. steam
 - d. dew

3. Think about the water cycle. Where does water go after it condenses and forms a cloud?
 - a. Water moves over land.
 - b. Water moves from the sea to the sky.
 - c. Water turns into clouds.
 - d. Water falls to Earth as rain or snow.

4. Caleb sets a glass of ice water on the table. Soon, there is water on the outside of the glass. How did it get there?
 - a. The ice melted.
 - b. The glass leaked.
 - c. The water evaporated
 - d. The water in the air condensed to a liquid.

Directions: Answer the question. Draw a picture with your answer.

5. What is condensation?

Condensation Answer Key**Liquid Magic** (pages 6–7)

1. dew
2. cloud
3. water on the glass

Follow the Water Cycle (page 8)

1. arrow from ocean to sun
2. arrow from sun to cloud
3. arrow from cloud to land
4. arrow from land to water
5. Answers will vary.

Reader Quiz (page 9)

1. a
2. c
3. d
4. d
5. Answer should include that condensation happens when water vapor turns back into liquid water. Drawings will vary.

Lab Lesson Plan: What Is Condensation?

Before the Lab

1. Review with students what they learned about liquids and how air (a gas) can turn into a liquid through the process of condensation.
2. Ask students to list some examples of condensation. Discuss what caused the condensation. Write the steps that led to condensation on sentence strips.

Example: Dew on the ground

Step 1: The grass became cool.

Step 2: The warmer air touched the cooler grass.

Step 3: This formed water droplets on the grass.

Introduce the Lab

1. Read the introductory information and list of materials with students. Without reading the Procedure, have the students predict how they can use these three materials to create condensation.

Conduct the Lab

1. Read and conduct the Procedure with students through Step 6. If desired, use a stopwatch to time how long condensation takes to appear on the cups.
2. Discuss the students' observations of the cups. Ask them why two cups formed condensation and one did not. Read Step 7 of the Procedure to confirm the students' ideas.

After the Lab

1. Develop a class definition of *condensation*. Add this term along with a simple drawing to a word wall.
2. Give each student a sheet of drawing paper. Help students fold the paper into thirds, like a letter, to make three columns. In each column, have them draw and label each of the three cups: plain cup; cup with cold juice; frozen cup. Then, have students label whether each liquid had condensation by writing "yes" or "no" next to each drawing. Help students articulate why this happened.

*Condensation***Lab: What Is Condensation?**

See condensation in action by doing this lab.

Materials

- 3 glasses, all the same size
- freezer
- cold colored liquid such as fruit punch

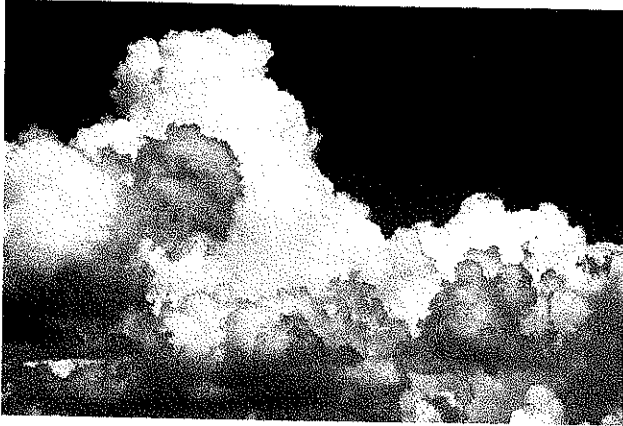
Student readers have identical instructions on pages 28 and 29.

Procedure

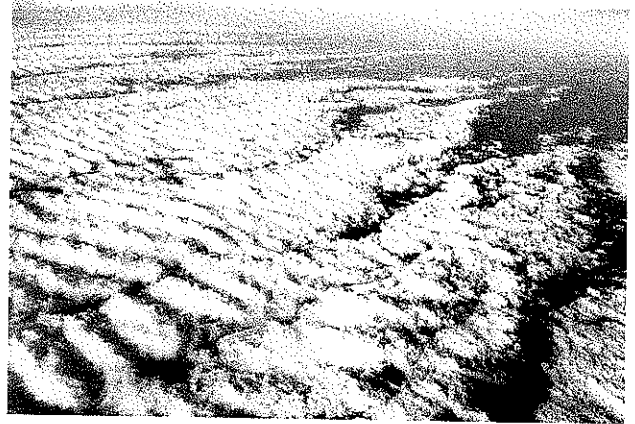
1. Look at the glasses. See how they are all the same.
2. Put two glasses on a table, away from each other.
3. Leave the first glass empty. Pour cold colored liquid in the second glass.
4. Put the third glass in the freezer.
5. Leave the glasses for 15 minutes.
6. Take the glass out of the freezer and put it on the table away from the others.
7. Look at the glasses. Which ones have condensation and why? The empty glass that stayed on the table has no condensation. The two other glasses have condensation. They got colder than the air around them. The warmer air touched the cold glasses. That turned the air into a liquid.

Clouds Up High

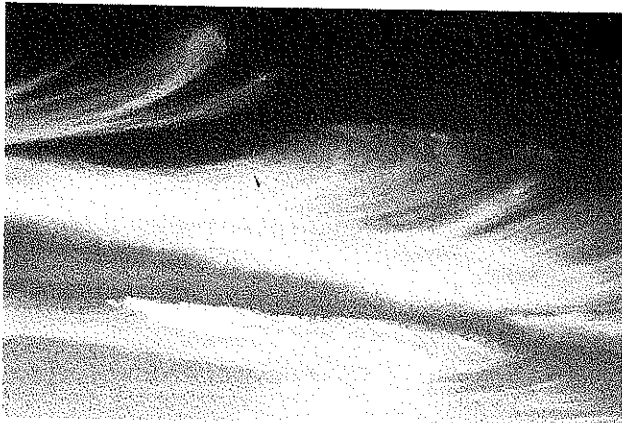
How are these clouds alike? How are they different?



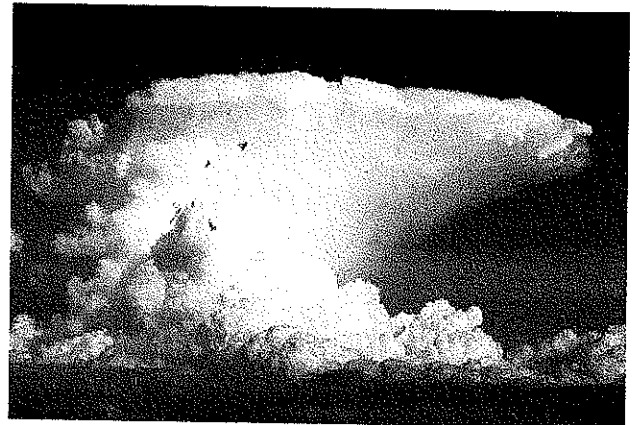
Cumulus



Stratus



Cirrus



Cumulonimbus



Nimbostratus