

WATERDROPS

Water Cycle

Teacher's Guide

Welcome to the water cycle issue of WaterDrops! As part of the Splash! Water Resources Education program, the Southwest Florida Water Management District (SWFWMD) offers this water resources newsletter for elementary students. The newsletter is correlated to grades 3–5 of the Common Core State Standards and the Next Generation Sunshine State Standards and provides an interesting way for students to increase their awareness and respect for our precious water resources. To help you prepare your students for testing, we have included WaterDrops Challenge, which contains items similar to those that may appear on the Florida Comprehensive Assessment Test (FCAT).

This issue of WaterDrops focuses on the water cycle. It includes fiction, nonfiction, writing, drawing and problem-solving activities, games, and websites to explore. You may also contact us for a free hydrologic cycle poster to display. Let WaterDrops make a splash in your classroom today!

Many other free materials are available from the SWFWMD and can be ordered online at WaterMatters.org/publications/. We also offer water resources workshops for teachers. Please contact us if you have any questions or suggestions about our water resources education programs.

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Page 1

Hello Readers!

Water is one of our most important resources. Discuss the need to use water wisely. Ask students to list ways to conserve water. Examples might include: take shorter showers, turn the water off when washing your face or brushing your teeth, don't toss into the toilet what can go into a wastebasket, check for leaks or drips in faucets or toilets, etc.

Page 1

Water Drips & Drops

It's fun to learn facts about water. Discuss the concept of water going through a never-ending cycle since the beginning of time.

Pages 2 & 3

Feature Story

Read the story together and discuss the different parts of the water cycle. Point out how each part relates to other parts in the cycle. Discuss solar energy, evaporation, condensation, precipitation, transpiration and percolation. Explain the importance of each part to the continuous cycle. Ask students to complete the writing assignment. Share a few of the stories with the class.

Page 4

Take It Home

Prepare your students for the activity they will do at home. You may want to perform a demonstration of the experiment in the classroom. Make sure students have the materials they need to complete the experiment. Ask students to read the directions for making the miniature water cycle. Encourage students to try the experiment at home. Ask students to share their notes and draw conclusions about what they learned about the water cycle.

Page 4

Ask Water Cycle Wanda

Select two students to play the roles of Sherita and Water Cycle Wanda. Ask these students to read their parts. Identify places where students may be able to locate additional information about trees and the process of transpiration. Sources of information may include books, pamphlets, the Internet, etc.

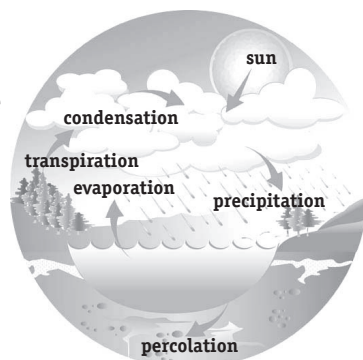
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Using the terms and definitions, discuss the different parts of the water cycle. Help students complete the labeling activity. For an additional activity, ask students to make up sentences using each of the terms.

Parts of the Hydrologic Cycle

Answer Key:

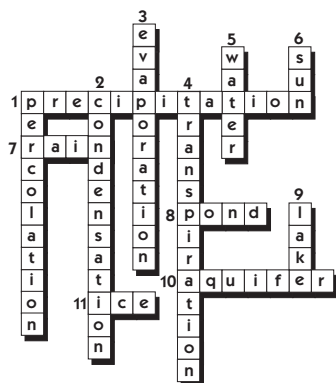


Before reading the article, ask students to describe the meaning of condensation. Read the article together and ask students to complete the sentences at the bottom of the page.

Fill-in-the-Blank Answer Key: rains, cools, hydrologic or water

Water Cycle Crossword Puzzle

Answer Key:



Surf Bill Nye's website, nyelabs.com, for interesting topics about water. Enter the site and click on "Episode Guides" on the top of the page. Click "Shows By Number." Enter Episode Number 47 and hit "Go." As an extended activity, ask students to prepare research questions and search for answers on the Internet.

Answer Key: We need clean, fresh water to keep us alive and healthy.

This closing activity can be submitted by an individual student or as a classroom set.

WATERDROPS Extended Activities

(See page 3 of this Teacher's Guide)

Number 1: The Flight of Water

Results will vary.

Number 2: A Water Cycle Everywhere

A large bulletin board could be made to include the students' pictures or photos.

Number 3: Sharing the Water

Be sure to point out that the water we use has gone through an extensive cleaning process to make sure it is clean and healthy.

Number 4: Water Cycle Matching Game

For a variation of the game, have students play the game with a partner.

WATERDROPS Challenge

(See page 7 of this Teacher's Guide)

Items included in the Challenge are similar to those presented on the Florida Comprehensive Assessment Test (FCAT). Make copies of the Challenge and distribute them to students. Emphasize that taking the Challenge will provide good practice for preparing for the FCAT. Students should be allowed to use the *WaterDrops* issue, if necessary.

Answers to multiple-choice items: 1-c, 2-a, 3-c, 4-b

Answers to extended-response items:

Question 1. Responses will vary. Students should be able to demonstrate a basic understanding of a few of the different parts of the water cycle as described on page 5 of the newsletter.

Score 2 points if . . . The response indicates that the student has a basic understanding of the different parts of the water cycle. The student has provided a response that is accurate and complete.

Score 1 point if . . . The response indicates that the student has a partial understanding of the different parts of the water cycle. The student has provided a response that includes information that is essentially correct, but the information is too general or too simplistic.

Score 0 points if . . . The response is inaccurate, confused, and/or irrelevant.

Question 2. Responses will vary. Students should understand that an aquifer is an underground area where water is held and released and our drinking water is pumped out of an aquifer through a well.

Score 2 points if . . . The response indicates that the student understands what an aquifer is and how our drinking water comes from an aquifer. The student has provided a response that is accurate and complete.

Score 1 point if . . . The response indicates that the student partially understands what an aquifer is and how our drinking water comes from an aquifer. The student has provided a response that includes information that is essentially correct, but the information is too general or too simplistic.

Score 0 points if . . . The response is inaccurate, confused, and/or irrelevant.

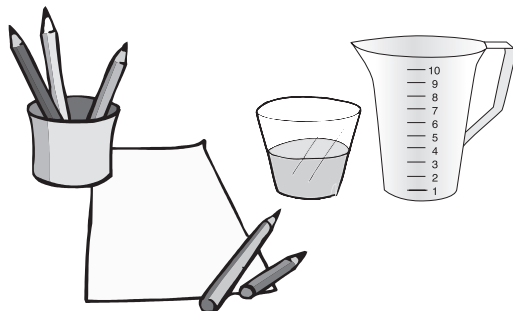
WATERDROPS Extended Activity Number 1

The Flight of Water

You learned that evaporation is part of the water cycle. It happens outdoors when the sun heats the water in our lakes, streams, rivers and oceans. Water actually rises into the air. It also happens indoors in our homes. Do you think water evaporates faster indoors or outdoors? Try this experiment and find out!

Materials:

- 2 plastic cups
- water
- pencil



- measuring cup
- colored permanent marker
- paper

Directions:

1. Pour $\frac{1}{2}$ cup of water into each plastic cup. Use a permanent marker to draw a line around the cup at the water level.
2. Place one cup outdoors in a safe place where pets won't drink it. Label this cup OUTDOORS.
3. Place the other cup in a safe place somewhere in your home. Then label this cup INDOORS.
4. Make a chart like the one below. At the same time each day, make a small mark to show the water level on each cup. Decide whether or not the water level changed. Write *Yes* or *No* under each numbered day on the chart. Record your observations for 10 days.
5. Place the two cups next to each other and compare the markings. Discuss your chart with the rest of your class. Did your water take flight faster indoors or outdoors?

The Flight of Water										
<i>Water Level Changes (Write YES or NO under each numbered day)</i>										
	1	2	3	4	5	6	7	8	9	10
Cup Outdoors										
Cup Indoors										

Think About It

1. In which cup did the water evaporate faster? Why do you think this is so?
2. What changes could cause the water to evaporate faster or slower?



Extended Activity Number 2

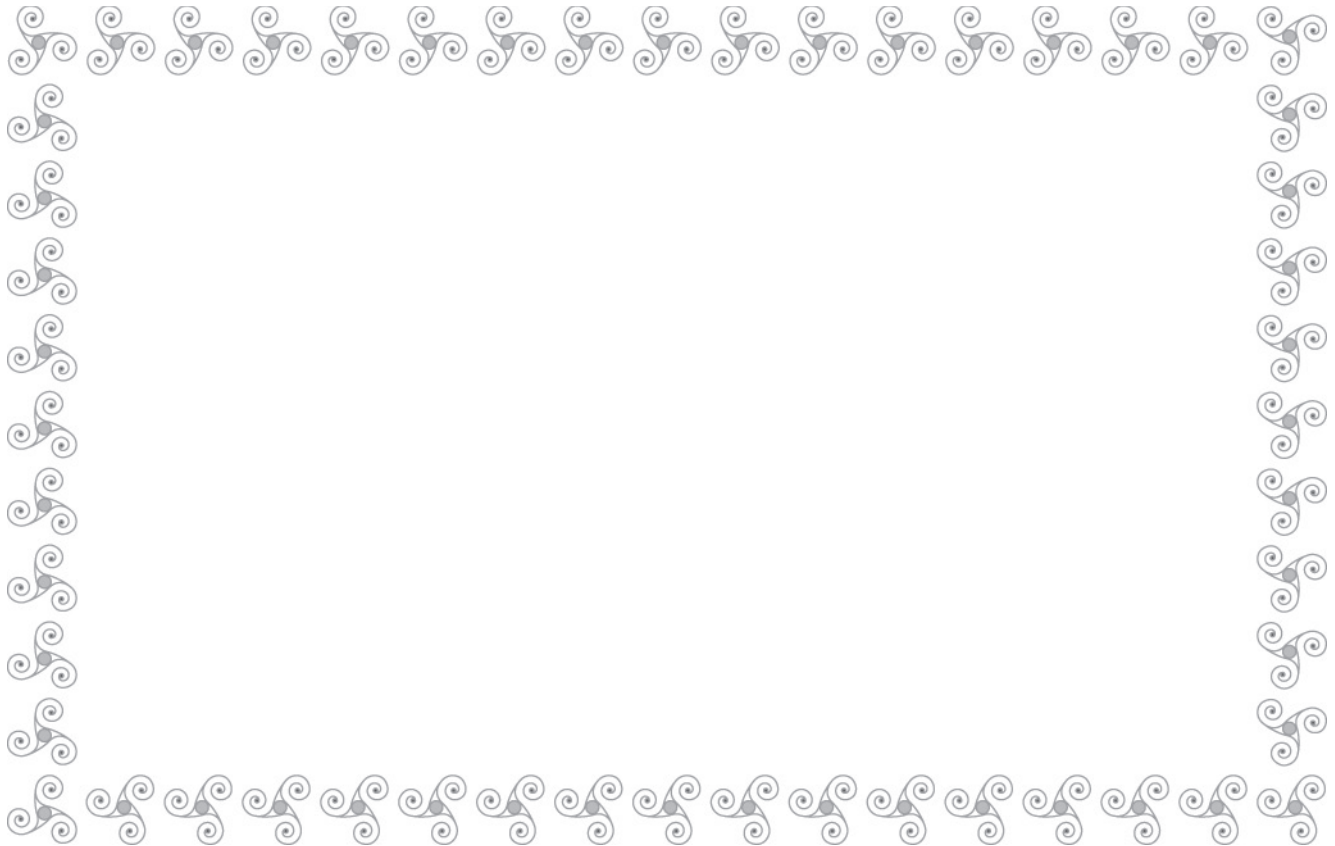
A Water Cycle Everywhere

Directions:

The water cycle is happening all around us. In this activity, you will select a place near your home or school. Use your artistic skills and draw a picture of the area. If you like to take photos, you could use a camera to take a picture of the area instead. You may want to design a frame for your picture like the one shown below. Be sure to label the parts of the water cycle using the correct terms.

Water Cycle Terms

sun	evaporation	transpiration	condensation	precipitation	percolation
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Extra Challenge

Draw or take photos of several different areas. Create a booklet with them to show that the water cycle is happening everywhere!

Sharing the Water

You learned in the story that the water we have today is the same water from ages ago. Dinosaurs drank our water. Pioneers drank our water. In fact, all living things have used the same water for millions of years.

Over time, we have shared our water resources with all kinds of plants, animals and people. Make a list of the living things that may have had a taste of your water in the past. Write them in each of the categories below. For extra fun, ask some friends to make a list too. Then compare the lists.

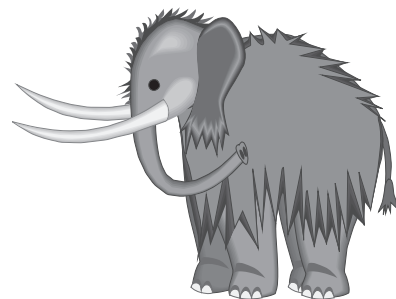
Famous People From the Past

1. _____
2. _____
3. _____
4. _____
5. _____



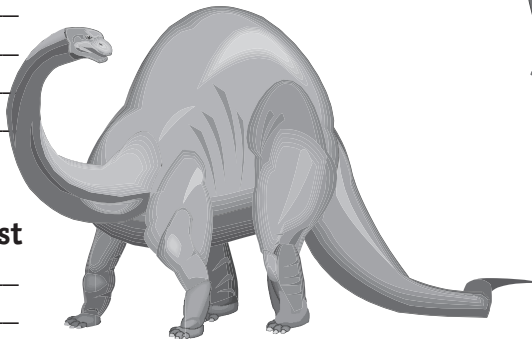
Relatives From the Past

1. _____
2. _____
3. _____
4. _____
5. _____



Creatures From the Past

1. _____
2. _____
3. _____
4. _____
5. _____



Trees and Plants From the Past

1. _____
2. _____
3. _____
4. _____
5. _____





Extended Activity Number 4

Water Cycle Matching Game

Let's create a matching game! Be sure to review the parts of the water cycle described on page 5 of the newsletter.

Directions:

1. Cut out the cards below or make a set of your own.
2. On the back of each card, write the words *Water Cycle*.
3. Spread out the cards so that only the words *Water Cycle* are showing.
4. Look at the clock and write down the time. Use page 5 of the newsletter so that you know the correct matches.
5. Turn over two cards. If the term matches the definition, set the pair aside. If they don't match, turn them over again.
6. Repeat step 5 until all the matches have been made.
7. Look at the clock and write down the time. Figure out how long it took you to make all six matches.

evaporation	sun	percolation
precipitation	condensation	transpiration
tiny droplets of water formed when water vapor rises into the air and cools	moisture released from clouds in the form of rain, snow, hail, etc.	vapor created when the sun heats water in lakes, streams, rivers or oceans
vapor created when plants and trees give off moisture	movement of the water through the ground	provides energy for the never-ending cycle

Extra Challenge

Play the game a few times to improve your time.

WATERDROPS Challenge

Directions:

Let's see how much you have learned about water resources and the water cycle. Do your best and meet the challenge!

Choose the best answer.

1. The earth has the same amount of water now as it did millions of years ago. How is this possible?

- a. because we have many lakes, rivers and streams
- b. because plants and trees give off moisture
- c. because water keeps moving throughout our environment
- d. because it rains a lot in our area

2. What is another term for the water cycle?

- a. hydrologic cycle
- b. transpiration
- c. life cycle
- d. evaporation

3. What is the source of energy for the water cycle?

- a. large clouds
- b. rain droplets
- c. the sun
- d. the earth

4. Which part of the water cycle describes what happens when rising water vapor cools and changes from a gas to a liquid?

- a. percolation
- b. condensation
- c. solar energy
- d. aquifer

WATERDROPS Challenge

1

READ
THINK
EXPLAIN

Name two parts of the water cycle and describe what happens during each part.

2

READ
THINK
EXPLAIN

How does the Floridan aquifer system provide us with fresh water?

Activities in ***WaterDrops Water Cycle*** address the following Common Core State Standards and Next Generation Sunshine State Standards for grades 3–5:

Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects

College and Career Readiness Anchor Standards

Writing: Text Type and Purposes

- W.CCR.1: Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
- W.CCR.2: Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.
- W.CCR.3: Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.

Writing: Research to Build and Present Knowledge

- W.CCR.8: Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.

Speaking and Listening: Comprehension and Collaboration:

- SL.CCR.1: Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.

Speaking and Listening: Presentation of Knowledge and Ideas

- SL.CCR.6: Adapt speech to a variety of contexts and communicative tasks, demonstrating command of formal English when indicated or appropriate.

Next Generation Sunshine State Standards for Science

- SC.3.P.9.1: Describe the changes water undergoes when it changes state through heating and cooling by using familiar scientific terms such as melting, freezing, boiling, evaporation, and condensation.
- SC.4.E.6.3: Recognize that humans need resources found on Earth and that these are either renewable or nonrenewable.
- SC.5.E.7.1: Create a model to explain the parts of the water cycle. Water can be a gas, a liquid, or a solid and can go back and forth from one state to another.
- SC.5.E.7.2: Recognize that the ocean is an integral part of the water cycle and is connected to all of Earth's water reservoirs via evaporation and precipitation processes.
- SC.5.E.7.4: Distinguish among the various forms of precipitation (rain, snow, sleet, and hail), making connections to the weather in a particular place and time.
- SC.5.N.1.1: Define a problem, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types such as: systematic observations, experiments requiring the identification of variables, collecting and organizing data, interpreting data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.