

WATERDROPS

Weather Issue

Welcome to the weather 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 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 weather. It includes fiction, nonfiction, writing, problem-solving activities, a crossword puzzle and web sites to explore. All the information and activities are designed to teach students about weather. 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!

Weather plays an important role in our lives and affects us in many ways. People often must rely on the weather for several activities, including the following: taking a bike ride, having a picnic, going to the beach, fishing, etc. For additional information on weather, visit the web sites presented on page 8 of the newsletter.

Sunshine State Standards: SC.A.1.2.2, SC.D.1.2.3, SC.D.1.2.4, SC.H.2.2.1

Page 1

Water Drips & Drops

It's fun to learn facts about our weather and climate. Discuss the difference between the meaning of weather and climate. Ask students to describe Florida's climate during fall, winter, spring and summer. Then select a

Teacher's Guide

place much farther north and describe its climate for the different seasons. Ask students why they think Florida attracts so many people.

Sunshine State Standards: SC.H.2.2.1

Pages 2 & 3

Feature Story

Read the story together. Use the cloud illustrations to show that not all clouds are the same. Emphasize that all clouds are part of the hydrologic cycle. Then ask students to complete the writing activity.

Sunshine State Standards: LA.A.2.2.5, LA.B.2.2.3, LA.B.2.2.5, SC.A.1.2.2, SC.D.1.2.3, SC.D.1.2.4

Page 4

Take It Home

Prepare your students for the activity that they will do at home. You may want to demonstrate the experiment in the classroom. Make sure that students have all the materials required. Ask students to read the directions for making a rain gauge and encourage them to try the experiment at home. Then ask students to share their notes and draw conclusions about what they learned while collecting rainfall.

Sunshine State Standards: SC.D.1.2.4, SC.H.1.2.5, VA.A.1.2.1, MA.A.4.2.1, MA.B.1.2.2, MA.B.4.2.2

Page 4

Ask Water Cycle Wanda

Ask students if they have ever seen lightning strike or heard the sound of thunder. Then select two students to play the roles of Ashley and Water Cycle Wanda. Ask the students to read their parts. For an additional activity, ask students to draw a picture that illustrates the connection between lightning and thunder.

Sunshine State Standards: SC.B.1.2.2, SC.B.1.2.3, SC.H.2.2.1, MA.B.3.2.1

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Review the different parts of the hydrologic cycle and discuss how weather is related to the cycle. Ask students when they have followed weather forecasts and have them share their experiences. Study the five-day forecast and then have students take the quiz.

Sunshine State Standards: LA.A.2.2.8, SC.A.1.2.2, SC.D.1.2.3, SC.H.2.2.1, SC.H.3.2.2

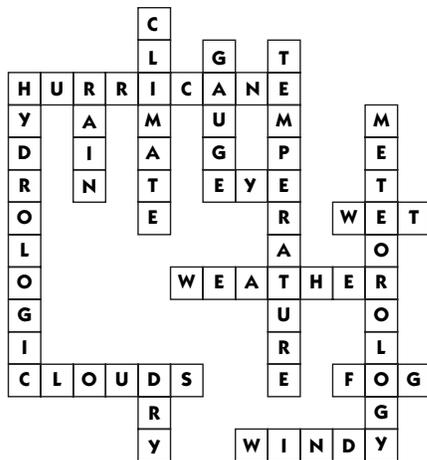
Answers: The first statement is False. The other statements are True.

Ask students to share any experiences they may have had with violent storms. Read about hurricanes, which are some of the most violent storms on the planet. Then ask students to complete the fill-in-the-blank exercises. Locate additional information about hurricanes by visiting the web sites listed on page 8 of the newsletter.

Sunshine State Standards: SC.D.1.2.3, SC.D.1.2.4, SC.H.2.2.1

Fill-in-the-blank answer key: eye, prepare, Weather

Weather Crossword Puzzle Answer Key:



A lot of information about weather is available on the Internet. Visit the sites listed as a launching point to help your students learn more about weather. Most of the sites listed include several links for more in-depth information.

Discuss the importance of understanding our weather. Ask students to think about what they learned from completing the newsletter. Then have them list four important weather facts they learned from the newsletter.

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WATERDROPS Extended Activities

(See page 3 of this Teacher's Guide)

Number 1: A Bottle of Clouds

Exact times will vary. Hotter water (and additional ice) will cause clouds to form faster.

Number 2: Measuring Rain Droplets

Measurements will vary.

Number 3: It's a Twister!

Emphasize that they are making a model of a real weather condition.

Number 4: Weather on the Web

Encourage students to research other topics related to weather.

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-b, 2-c, 3-b, 4-d

Answers to extended-response items:

Question 1. Responses will vary. Students should be able to demonstrate a basic understanding of the formation of clouds.

Score 2 points if... The response indicates that the student has a basic understanding of cloud formation. 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 cloud formation. 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 be able to demonstrate logical reasoning associated with the importance of meteorologists.

Score 2 points if... The response indicates that the student has demonstrated logical reasoning associated with the importance of meteorologists. The student has provided a response that is accurate and complete.

Score 1 point if... The response indicates that the student has partially demonstrated logical reasoning associated with the importance of meteorologists. 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.

Sunshine State Standards: LA.A.2.2.5, LA.B.2.2.3, LA.B.2.2.6, SC.D.1.2.3, SC.G.1.2.3, SC.H.2.2.1

WATERDROPS Extended Activity Number 1

A Bottle of Clouds



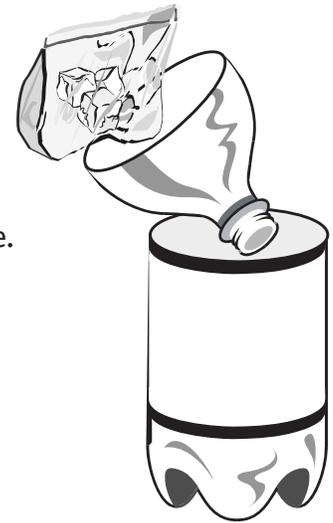
In the feature story of the newsletter, you learned how clouds form in the sky. Try the experiment below to create a few clouds of your own!

Materials:

- 2-liter plastic bottle
- pitcher of hot water
- several ice cubes or crushed ice
- thin Ziploc bag
- scissors
- watch

Directions:

1. Ask an adult to cut off the top $\frac{1}{4}$ of the bottle and remove the cap.
2. Pour 3 inches of hot water into the bottom of the bottle. Be sure to have an adult nearby.
3. Place cutoff top of the bottle upside down into the other part of the bottle. (See illustration.)
4. Fill the bag with several ice cubes or crushed ice.
5. Place the bag in the top section of the bottle.
6. Now watch to see what happens and record your observations below.



Observations

Date of Experiment _____

1. What happened when the hot water was placed in the bottom section?

2. What happened when ice cubes were added to the top section?

3. How long did it take for clouds to form?

Think About It

1. What changes to the experiment may have made clouds form faster?
2. What changes to the experiment may have made clouds form slower?
3. Give reasons for each of your answers.

WATERDROPS Extended Activity Number 2

Measuring Rain Droplets

Rain droplets can be all shapes and sizes. Some are huge and others are very, very tiny. In this experiment, you will collect a few droplets and measure them. Be sure to pick a day when it is only sprinkling outside because you only want to collect a few droplets.

Materials:

- shallow pie pan
- brightly colored sugar crystals
- tweezers
- ruler with centimeters
- magnifying glass
- plastic wrap
- black sheet of construction paper
- pencil
- 3" x 5" index cards



Directions:

1. Pour at least 2 centimeters (cm) of colored sugar crystals in pie pan. Gently shake pan so crystals are level.
2. When it begins to rain, carry the pan outside and collect a few droplets. Then quickly cover the pan with plastic wrap and bring it back indoors. Be careful not to shake the pan.
3. Set the pan aside for a while until each droplet has formed a clump.
4. Use tweezers to very gently remove the clumps and place them on the black paper.
5. Use a magnifying glass and ruler to measure each droplet. Write each measurement on a separate index card and draw a picture of the droplet's shape.

Questions:

1. What was the measurement of the biggest droplet?
2. What was the measurement of the smallest droplet?
3. What was the difference in size between the biggest and smallest droplets?



Extra Challenge

Share your cards with other students who also did the experiment. You should discover that droplets really do exist in many shapes and sizes!

WATERDROPS Extended Activity Number 3

It's a Twister!

Florida experiences many tornadoes each year. Tornadoes are also called twisters. You may have even seen one! A tornado has spinning winds that form a funnel beneath a thundercloud. A tornado moves over an area very fast and can cause damage to trees, homes and buildings.

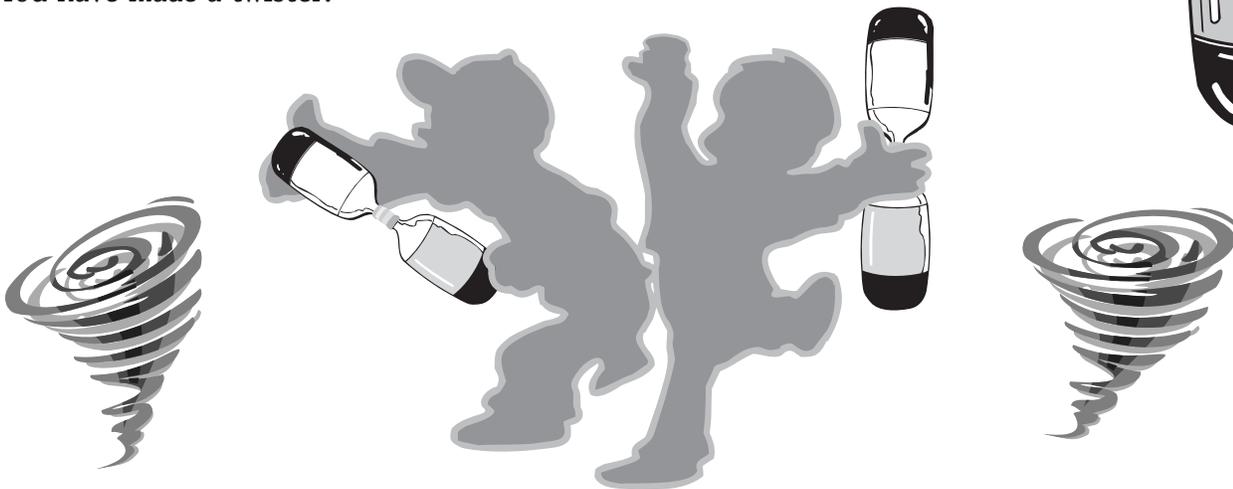
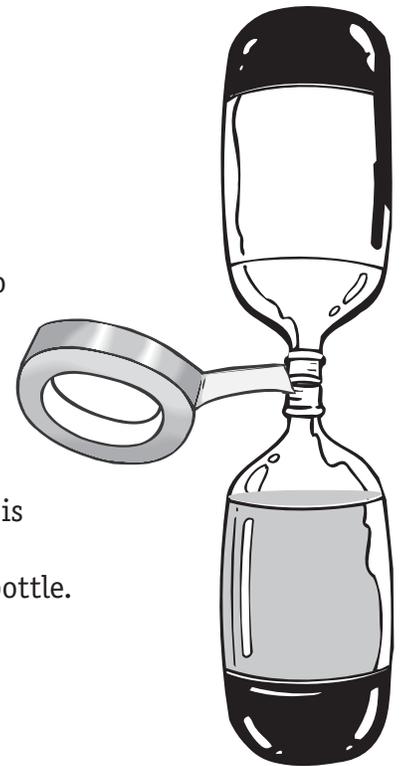
In this activity, you will make your own twister!

Materials:

- two, 2-liter plastic bottles
- water
- plastic tape

Directions:

1. Remove caps from both bottles.
2. Fill one bottle with water.
3. Turn other bottle upside down and directly over the filled bottle. The two open ends should be on top of each other. (See the illustration.)
4. Wrap tape around open ends so they are completely sealed.
5. Stand up and hold onto both bottles. Rotate the bottle in a clockwise direction so that the water in the bottle swirls. Continue this action for 15 seconds.
6. Stop rotating and quickly turn the bottles over so that the empty bottle is on the bottom.
7. Now watch the spinning motion of the water as it flows into the empty bottle. You have made a twister!



Extra Challenge:

Describe any experiences you may have had with real tornadoes.

Weather on the Web

Directions:

Several web sites about weather are listed on page 8 of the newsletter. Try to visit at least three of them. Then complete the survey below.

Web Site #1

Name of web site: _____

What are two interesting facts you learned about weather?

1. _____

2. _____

How would you grade this site (circle 1)? A B C D

Why? _____



Web Site #2

Name of web site: _____

What are two interesting facts you learned about weather?

1. _____

2. _____

How would you grade this site (circle 1)? A B C D

Why? _____

Web Site #3

Name of web site: _____

What are two interesting facts you learned about weather?

1. _____

2. _____

How would you grade this site (circle 1)? A B C D

Why? _____

Now share your review with others and compare your ideas about weather!

WATERDROPS Challenge

Directions:

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

Choose the best answer.

1. Clouds may exist in many shapes and sizes, but they can be grouped into three basic forms of clouds. What are they?

- a. **nimbostratus, stratus and cumulus**
- b. **stratus, cirrus and cumulus**
- c. **cumulus, stratus and fog**
- d. **hurricane, stratus and fog**

2. What causes lightning?

- a. **a special type of cloud near the ground called fog**
- b. **mostly sunny weather conditions**
- c. **static electricity that builds up inside clouds**
- d. **a person turning on a light inside clouds**

3. What is the purpose of using a rain gauge?

- a. **to measure the temperature**
- b. **to measure how much it has rained**
- c. **to make forecasts about tomorrow's weather**
- d. **to measure how fast the wind is blowing**

4. Where can you get weather forecasts for your area?

- a. **on TV**
- b. **on the radio**
- c. **at Internet sites**
- d. **all of the above**

