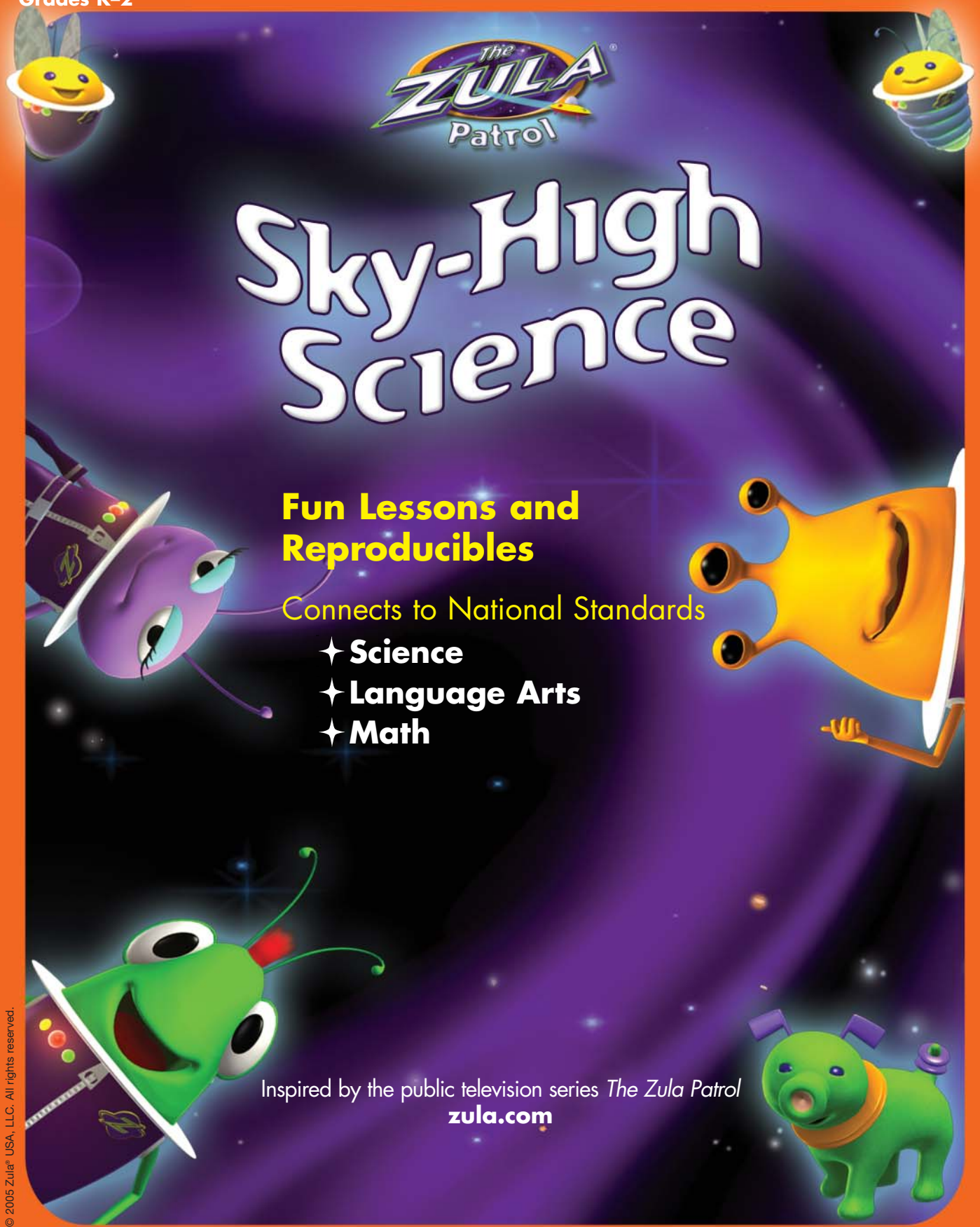
Teaching Guide and Poster
Grades K–2

Part 1 of 2



Welcome, Teachers:

> **"*The Zula Patrol* is a pre-K–2 teacher's dream."**
> —National Science Teachers Association

Get ready to lift off with dynamic new standards-based lessons and activities. Inspired by the award-winning public television program *The Zula Patrol*, **Sky-High Science** provides easy-to-use, fun materials that build important science, language arts, and math skills. You'll find great ways to guide students in observing and learning about the wonders of *weather* and *astronomy*. Best wishes on a successful launch of this program!

National Standards Matrix

	Lesson 1	Lesson 2
Science (NSTA & McREL)		
Content Standard D: Objects in the Sky (NSTA)	✦	✦
Content Standard D: Changes in the Earth and Sky (NSTA)	✦	✦
Knows vocabulary for different types of weather (McREL)	✦	✦
Knows vocabulary used to describe major features of the sky (McREL)	✦	✦
Knows basic patterns of the Sun and Moon (McREL)	✦	
Knows that the Sun supplies heat and light to Earth (McREL)	✦	✦
Language Arts (McREL)		
Uses mental images based on pictures and print to aid in comprehension of text	✦	✦
Uses reading skills and strategies to understand a variety of informational texts	✦	✦
Understands the main idea or message in visual media	✦	
Math (NCTM)		
Count with understanding and recognize "how many" in sets of objects		✦
Sort, classify, and order objects by size, number, and other properties		✦

Sources: National Science Teachers Association (NSTA), http://www.nsta.org/standards; Mid-continent Research for Education and Learning (McREL), http://www.mcrel.org/standards-benchmarks; National Council of Teachers of Mathematics (NCTM), http://standards.nctm.org/document/appendix/numb.htm.

Tune In to *The Zula Patrol*

Check your local listings for the groundbreaking program that has been described as "a space odyssey for kids that blends science education with comic characters" (*Nick Jr. Family Magazine*).

To learn how to contact your local PBS station with questions or feedback about the program, check out **www.pbs.org**.

Meet the Cast:

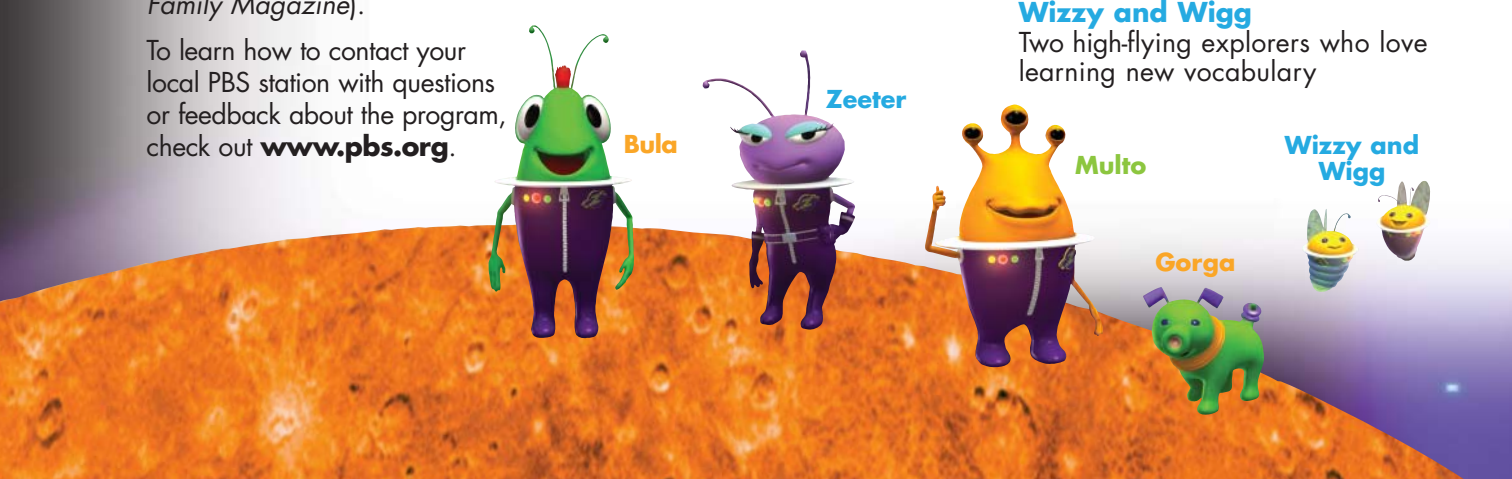
Bula
The fearless captain who is good at solving problems

Zeeter
Smart and talented, she works hard and learns through trial and error

Multo
An avid reader who believes in learning through books

Gorga
A spirited and loyal space pet who loves to investigate and collect data

Wizzy and Wigg
Two high-flying explorers who love learning new vocabulary



Lesson Overviews

Lesson 1: What's Up?

Objective: Through observation, students understand science vocabulary related to objects in the sky.

Time Required: 35 minutes

Materials: "Look Up!" classroom poster, "Definitions" list (Part 2), paper and colored pencils or markers (optional)

Steps:

1. Begin by inviting students to look up at the sky and to note what they see. Take students to a window, go outside, or look at photographs of the sky. (Remind students of sun safety tips: never look directly at the sun, wear sunscreen and a brimmed hat, wear sunglasses.)

2. Write "Things we can see in the sky" on the board. Ask students to name things in the sky; write down answers.

3. Display the "Look Up!" poster and invite students to examine it. Ask students: *What other things do you see on the poster that we haven't named yet? Have you ever seen any of these things? When did you see them?* (E.g., day, night, during a storm.)

4. Refer to the "Definitions" list in Part 2. Ask students what they think various poster items are made of or what they do. (Make sure to introduce definitions of cloud, lightning, rain, snow, sun, and wind in preparation for Lesson 2: "What's the Weather?")

5. Read definitions aloud, and ask students to correctly identify the poster image and/or word that matches the definition. You might also have students draw the image and/or write the word on paper.

Lesson 2: What's the Weather?

Objective: Students will gain understanding of *weather* through studying the science of elements in the sky that create weather.

Time Required: 25 minutes

Materials: "Look Up!" classroom poster, "Definitions" list, "What's the Weather?" reproducible, lined paper, pencils

Steps:

1. Begin by inviting students to look outside. Ask students: *What is the weather today? What was it yesterday? What do you think it will be tomorrow?* Make a list on the board titled "Weather Words." Invite students to add words to the list.

2. Now ask students what they think *weather* means. Refer to the "Definitions" list (weather: ever-changing conditions of the air around us).

3. Refer students to the poster. What (and how many) items do they see that are "weather" words? Encourage students to state the science definition of the six weather words on the poster: *cloud, wind, rain, lightning, snow, sun.*

4. Review other weather-related science on the poster. (E.g., rain and snow fall from clouds; lightning travels from clouds to Earth; sunlight reaches Earth when clouds don't block it; rainbows happen when sunlight passes through rain.)

5. Distribute the "What's the Weather?" reproducible. Instruct students to complete Part 1 of the reproducible. (*Answers:* 1. cloud; 2. wind; 3. rain; 4. snow; 5. sun; 6. lightning.)

As an alternative for pre-reading students, you might do the following: Provide each student with lined paper. Instruct students to choose at least four weather words from the poster, and to copy down the names of each chosen element. Invite students to draw a picture of each word as well.

6. For Part 2 of the reproducible, guide students to chart weather they observe over a few days. This activity can be done in class or at home.

Lesson Extensions:

• Introduce concepts of *space* and *atmosphere* to students (see the layers on the left side of the poster). Identify (and count) items on the poster that are found in the *atmosphere* and in *space*. Review definitions of these words with students.

• Create a "Weather Watcher" Wall Chart. After students have completed Part 2 of Lesson 2, create a class chart that shows the different types of weather that were recorded. The chart should show how many days it rained, snowed, was sunny, etc. Challenge students to tally up different types of weather.

• Ask students to name items in the sky that are not pictured on the poster (birds, insects, balloons, etc.). Add these words on sticky notes and have students place the notes near the area on the poster where they would be found.

Additional Activities:

See Part 2 for additional language arts/science reproducibles.

Family Activity Pages:

See the Family Activity Pages in Part 2 for a fun moon-tracking activity that reinforces skills at home. Extend the activity by creating a moon-tracking chart in class. Assign each student a day during the course of a month on which he or she will draw the moon as it appeared in the sky. Hang the drawings in chronological order to show students how the moon changes over the course of a month (*phases*).

Additional Resources:

www.nasa.gov/forkids
NASA's Web site for kids; links to valuable information for teachers

www.education.noaa.gov
National Oceanic & Atmospheric Administration's education site

www.weather.gov/om/reachout/kidspage.shtml
National Weather Service's Web site for kids; fun facts and information for classrooms

Also, visit **zula.com** for more great lessons, educational activities, games, and resources.

What's the Weather?

Your Name: _____

Part 1 Choose words from the **Word Box** that answer the weather clues below.

Word Box


cloud


lightning


rain


snow


sun


wind

1. I am made of lots of drops of water and tiny bits of dust.

_____

2. I am air that is in motion. _____

3. I am water that falls from clouds. _____

4. I am water that freezes in the clouds before falling to Earth.

_____

5. I am bright and hot and you can see me in the sky on clear days.

_____

6. I am a bright electric flash during a storm. _____

Part 2 Draw the different kinds of weather that you see over a few days. Then label each picture with the weather word that matches it.

_____	_____	_____	_____

"[*The Zula Patrol* is] *Sesame Street* in outer space."
—*The New York Times*

Dear Family,

In school, your child has been studying **Sky-High Science**. Inspired by the award-winning public television program *The Zula Patrol*, this program helps your child:

- build important **science**, **language arts**, and **math** skills
- observe and track science in the sky

On the next page is a fun and interactive activity to help build these skills at home. We encourage you to do this activity with your child!

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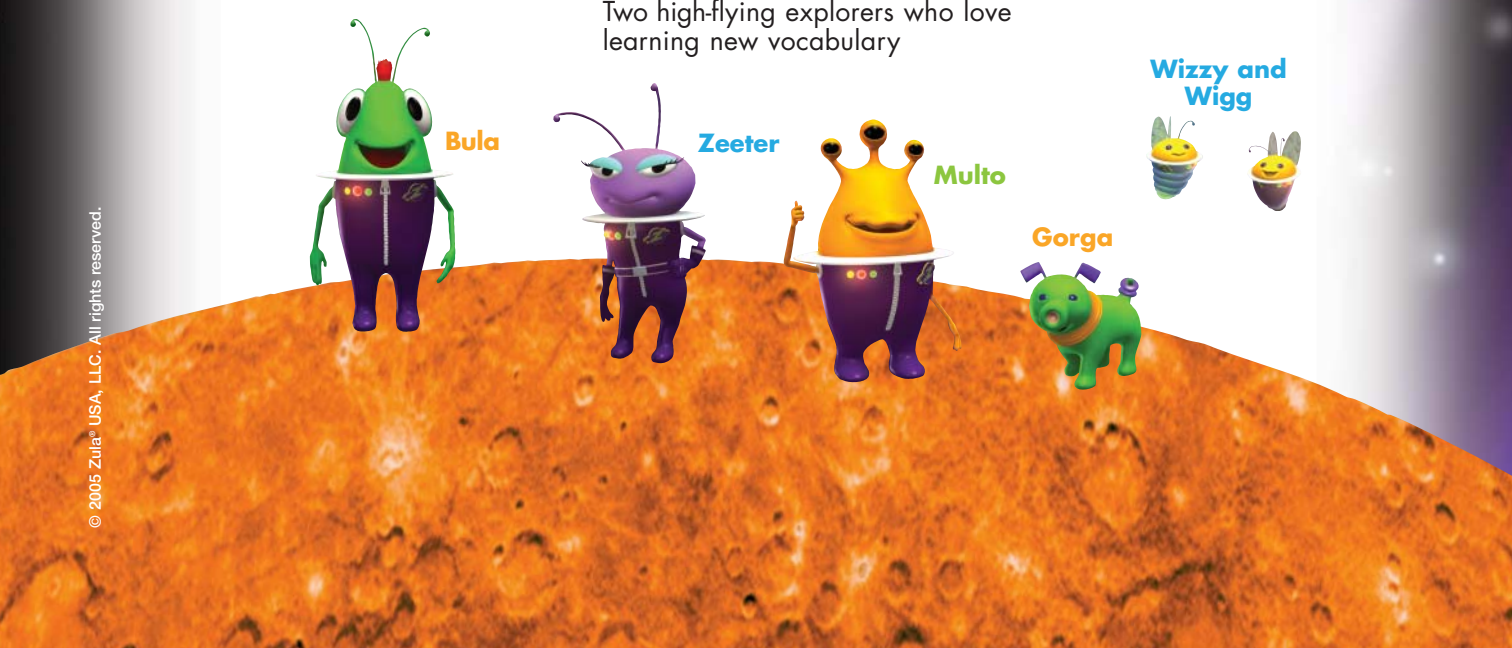


Activity

The Changing Moon

From Earth, we always see the same side of the moon. When we see the moon on different nights, the side that we see appears to change shape. That's because as the moon orbits, or travels around, Earth, the amount of sunlight reflected off the moon's surface changes. So we see different parts of the surface of the moon on different nights depending on how much light is being reflected from the sun. The different parts or shapes of the moon that we see are called *phases*. Complete the following activity to *observe* and *predict* the phases of the changing moon!

Step 1: Observe

On a clear night, observe the moon with your child. Guide your child to draw a picture of the moon as it appears.

Step 2: Predict

Look together at the "Moon Phases" chart to the right. Find the phase that looks most like the moon your child drew. Now guide your child to draw how the moon will look in its **next phase**.

Step 3: Observe (four days later)

About four days later, draw the moon again. How close is this picture to your prediction in Step 2?

Step 4:

On separate paper, make a chart to observe and predict the different phases of the moon you see over a month. Every four days, draw a picture of the moon that you see, and then predict what will come next!

Moon Phases

Phase 1: New Moon (At this phase, the moon is not visible.)

Phase 2: Waxing Crescent

Phase 3: First Quarter

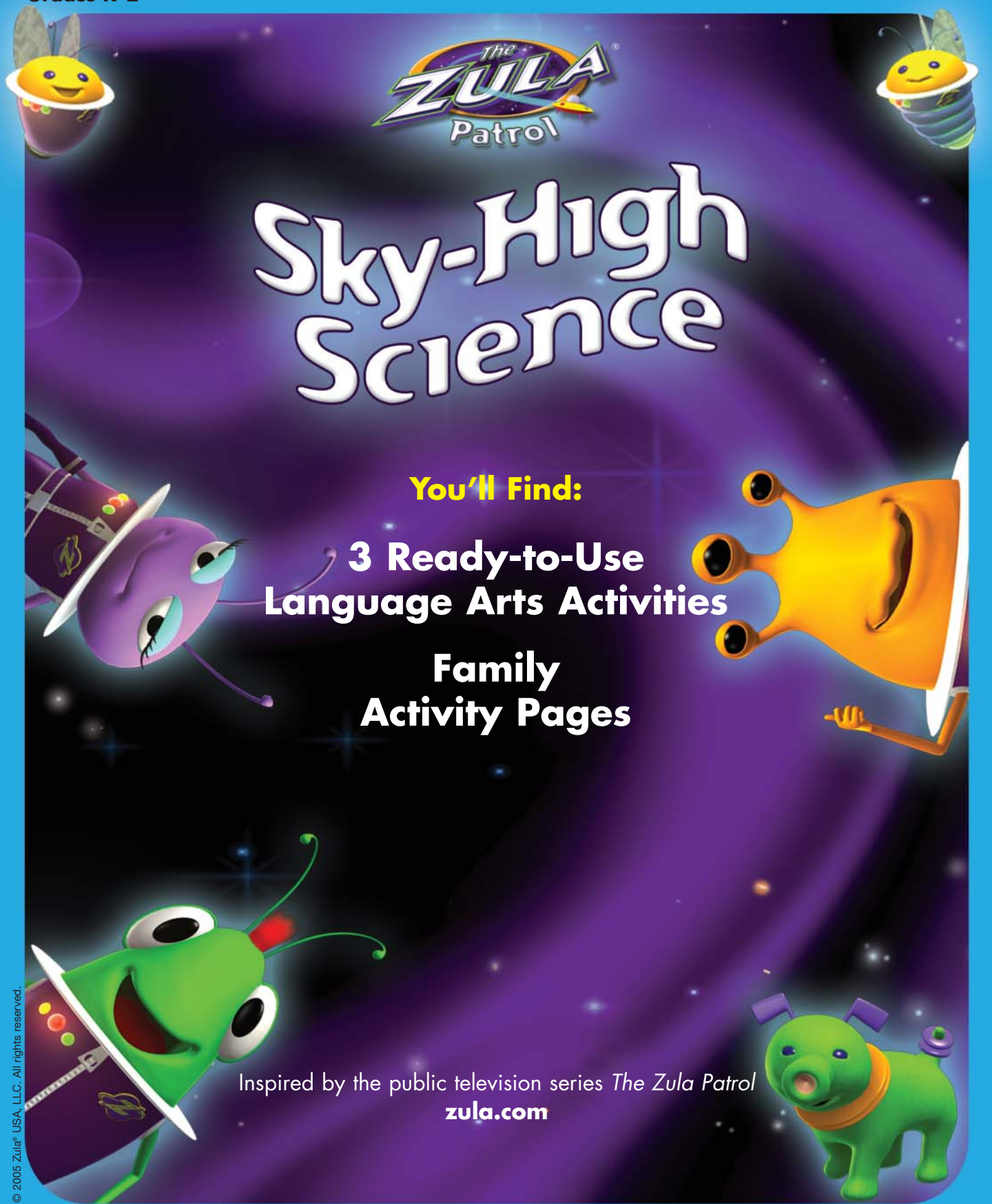
Phase 4: Waxing Gibbous

Phase 5: Full Moon (The entire moon is lit up at this point.)

Phase 6: Waning Gibbous

Phase 7: Third Quarter

Phase 8: Waning Crescent



Definitions

Review the definitions below to build vocabulary with your students. Then distribute the fun language arts reproducible activity that corresponds with your grade level.

Weather Words

cloud: made mostly of water and a tiny bit of dust

lightning: an electric burst caused by a buildup of static electricity in a cloud

rain: drops of water that fall to Earth when they become too heavy to remain in the air

rainbow: colorful bands of light that are made when sunlight passes through drops of water in the sky

snow: water drops that freeze in a cloud before they fall to the ground

weather: ever-changing conditions of the air around us

wind: air that is in motion

Space Words

atmosphere: a layer of air that surrounds and protects Earth from the heat of the sun and the coldness of space

Earth: the third planet from the sun; it is the only planet with people on it

Earth's moon: a large object made mostly of rock that orbits, or travels around, Earth; Earth's only natural satellite

meteor: a particle of matter in the solar system that we see as a streak of light as it enters Earth's atmosphere; also called a "shooting star"

rocket ship: a spacecraft that is powered by a rocket

space: the area above Earth's atmosphere that has many planets and stars in it

stars: large, bright balls of gas that give off heat and light

sun: the star that is closest to Earth and provides Earth's heat and light

Answers to reproducibles:
Sky-High Crossword: *Across:* 1. cloud; 2. sun; 3. rain; *Down:* 2. snow; 4. moon; 5. Earth
The Changing Sky: 1. clouds; 2. sun; 3. hiking; 4. stars, moon

Sky-High Crossword

Your Name: _____

Look at each picture clue below. Then choose words from the **Word Box** to fill in the crossword puzzle.

Across

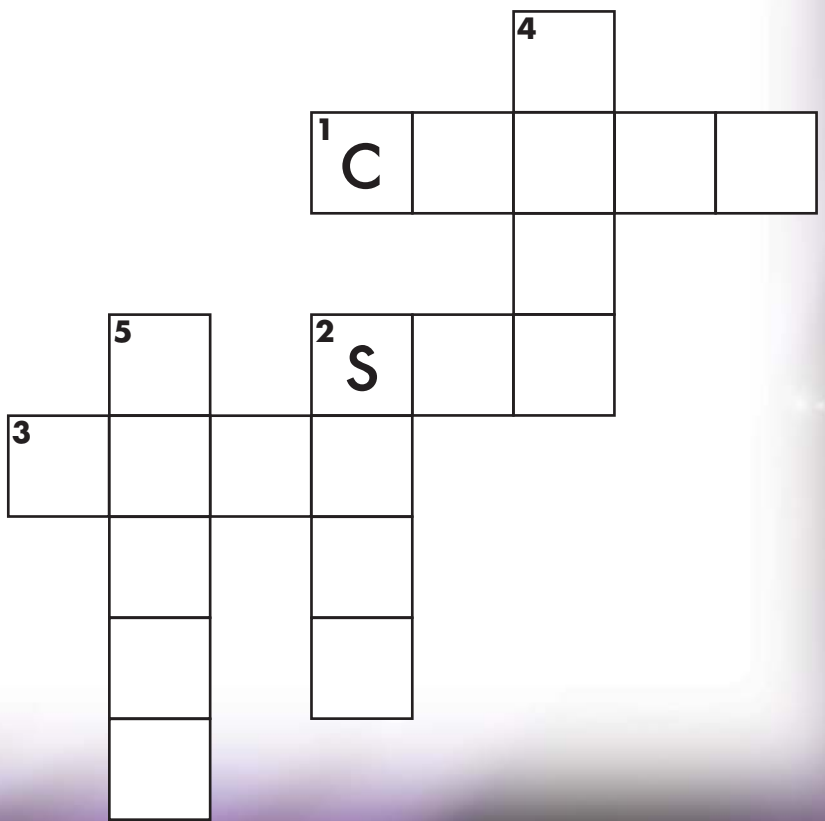
1. 
2. 
3. 

Down

2. 
4. 
5. 

Word Box

cloud
Earth
moon
rain
snow
sun



The Changing Sky

Your Name: _____

*The **events** in a story take place in a certain order. This is called the **sequence** of the story.*

Read the following story and then answer the questions about the order of events.

Tommy and Tammy went on a trip to a cabin with their family. When they arrived, the sky was full of dark clouds. Soon, it started raining. Everyone had to stay inside! But later in the day, the sun came out. Tommy and Tammy went on a great hike in the woods. At night, they ate dinner outside. They looked up at the big, bright moon and the many stars. They both wished that this vacation could last forever!

Circle the word or words that answer each question.

1. **What did Tommy and Tammy first see in the sky?**
   rainbows clouds sun snow

2. **What did they see after it stopped raining?**
   rainbows clouds sun snow

3. **What activity did they do next?**
   biking swimming hiking sleeping

4. **What two things did they see while they ate dinner?**
   stars birds moon rain

Now try this!

Think about a favorite time that you had outside in the weather. On a separate piece of paper, write four sentences that describe or tell what happened.

Special Series Part 1 of 3

BIG Science For LITTLE Kids From *The Zula Patrol*

WEATHER

SEVERE FLOOD WARNING!

Are you befuddled and befogged when your kids flood you with questions about weather like:

* "Why is the sky blue?"
* "Why can't we see wind?"
* "What are clouds made of?"
* "Where does rain come from?"

Don't worry! Learning about weather is a breeze with *The Zula Patrol*.

The Zula Patrol is an educational public television show that entertains and a resource for all things science and astronomy.

THE SKY'S THE LIMIT WITH *THE ZULA PATROL!*

The Zula Patrol helps your child develop lifelong observational and critical thinking skills, while encouraging curiosity, creativity, scientific inquiry and exploration.

FORECAST CALLS FOR CONTINUING BRAINSTORMS

In the next three issues of NICK JR. FAMILY MAGAZINE we will be bringing you fun and educational information and activities. This month, we are using WEATHER as the topic to ignite your child's sense of wonder.

The Rain Cloud Song

(to the tune of Yankee Doodle)

Water droplets they fall down
A-pourin' from a rain cloud.
They hit the pavement with a splash
And that's precipitation.

Water droplets rainin' down,
Water rainin' steady.
Mind the puddles where you step,
And have an umbrella ready.

Water droplets in the air
That's what clouds are made of
When the droplets get too heavy
That's when it starts raining.

EXCLUSIVE VIDEOS and DVD's are available online at www.zula.com. Use promo code NICKJR to save 25% off your entire order!

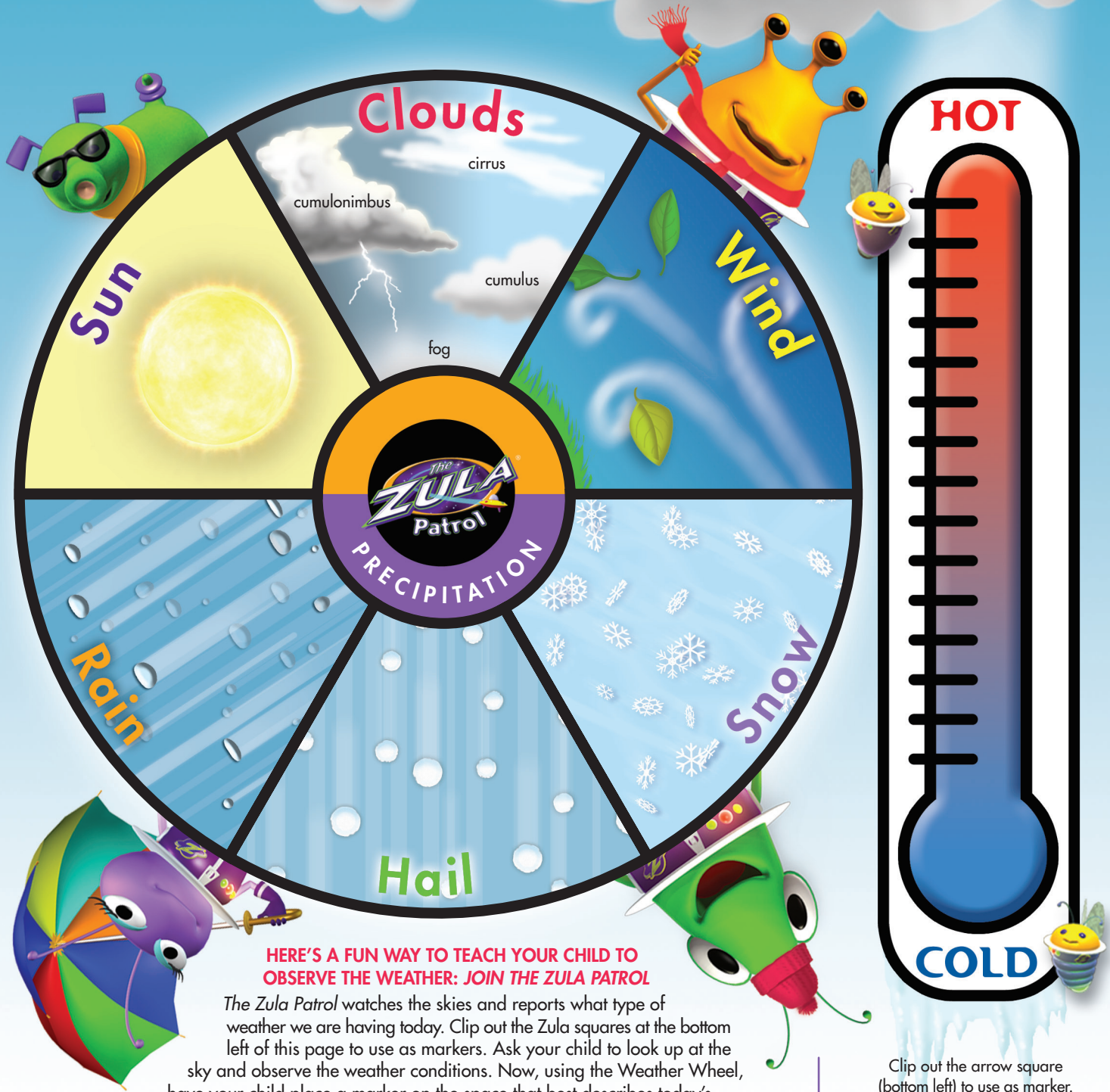
ZERO ZULA VISIBILITY?

If you can't find *The Zula Patrol* television show in your area, visit www.zula.com to contact your local public television station and ask about their plans to air Zula.

*** Visit zula.com today with your child to find the answers to these questions along with more science activities, exclusive episodes, games and more!**

zula.com

What's the Weather Today?



HERE'S A FUN WAY TO TEACH YOUR CHILD TO OBSERVE THE WEATHER: *JOIN THE ZULA PATROL*

The Zula Patrol watches the skies and reports what type of weather we are having today. Clip out the Zula squares at the bottom left of this page to use as markers. Ask your child to look up at the sky and observe the weather conditions. Now, using the Weather Wheel, have your child place a marker on the space that best describes today's weather. Be sure to let your child know that more than one description might apply; for instance, it may be Sunny and Windy, or it may be Cloudy with Rain. It may even be Cloudy and Windy with Snow. Point out to your child the conditions shown at the BOTTOM of the Weather Wheel are all PRECIPITATION conditions, meaning that rain or hail or snow is falling from the sky.

Clip out the arrow square (bottom left) to use as marker. Ask your child to tell how the weather feels today. Does it feel hot? Really hot? Or does it feel cold? Really cold? Now, using the thermometer on the right, have your child place the arrow at the point that best describes today's temperature.

zula.com

More The Zula Patrol What's the Weather Activities

Try these activities with your little scientist!

Collect & Measure Rainfall – Make a Rain Gauge

You'll need: rainy day or forecast for rain, tall, clear plastic bottle with flat bottom (e.g., a personal-sized water bottle), sharp scissors, ruler, pencil, and paper or Weather Journal.

1. Look up in the sky and observe. **Ask your child:** What's the weather like today? Is it wet or dry? How much do you think it will rain – a little – a lot? Let's find out by making a tool to measure the rain!
2. Very carefully cut off the top of the bottle about 4–5 inches from the top. (The top of the bottle is your funnel. The bottom is your collection container.)
3. Place the top part of the bottle upside-down inside the lower part.
4. Put your rain gauge in an open area away from trees or structures. Secure it so it won't tip (e.g., dig a shallow hole the size of the bottom or surround with stones).
5. Use a ruler to measure the rain that falls.
6. Record results on a chart or in your Weather Journal.

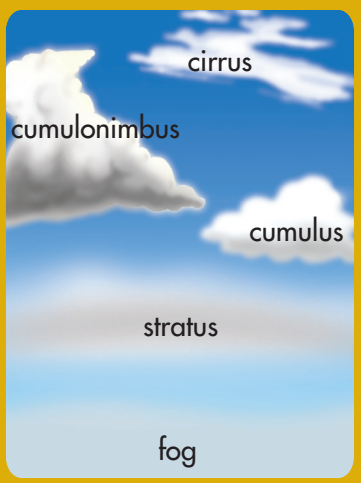
Keep a Weather Journal

Turn a notebook (or stapled scrap paper) into a Weather Journal! Record your findings in your journal.

Observe and Record Clouds – Create a Cloud Chart

You'll need: clouds, paper/posterboard, calendar, or Weather Journal. Divide the page into columns for Date, Cloud Picture (leave blank if clear), Cloud Name, and Other Weather Conditions.

1. Look up in the sky and observe. **Ask your child:** Is it cloudy or not cloudy? How do the clouds look? What color and shape are they? Show child the cloud chart or Weather Journal cloud-charting page. Invite your child to draw a picture of the clouds she or he observes in the sky. Record your child's observations in the columns.
2. Check the clouds in the sky over a period of time. Make connections between the clouds you see and the other weather conditions. (For example, if there are dark cumulonimbus clouds in the sky and it is raining, point out that the rain is coming from those clouds.)



Test & Compare Temperatures – Experiment with Ice Cubes

You'll need: two ice cubes (same size), two (identical) bowls.
Optional: thermostat and/or outdoor thermometer

1. Go outside and observe. **Ask your child:** How does the outside temperature feel? Is it warm, hot, cool, cold?
2. Go inside. **Ask your child:** How does the inside temperature feel? Is it warm, hot, cool, cold? Is it cooler or warmer inside or outside? Let's perform an experiment to compare the temperatures inside and outside!
3. Get two ice cubes and two bowls. Have your child place one ice cube in each bowl. Place one bowl inside your home and the other outside. Check the ice cubes frequently. **Ask your child:** What's happening to the ice cube inside? Is it different than what is happening to the ice cube that's outside? Why? Make the connection between the state of the ice cube and the temperature in each location.
4. Observe the temperatures on the thermostat/thermometer. Record them in your Weather Journal.