Acknowledgments

Curriculum Package
COME A TIDE

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COME A TIDE Integrated Curriculum Package

Getting Started

Before beginning the Come a Tide unit, plan ahead with the following activities:

- **Arrange a field trip to a local television station** so children can see the behind-the-scenes preparation that is necessary to bring frequent weather forecasts to the public.

- **Invite a meteorologist to visit the classroom** to speak with the children about the work of weather forecasting, the training a meteorologist must undergo, and the instruments used to make accurate predictions.

- **Invite a Red Cross representative** to give a presentation informing students about local disaster services.

- **Collect children’s literature from the school library media center** and public library for display and student-use in a Weather-Wise Learning Center. See the annotated bibliography at the end of this curriculum guide for suggestions of fiction, nonfiction, and poetry related to weather and weather phenomena.

- **Collect materials for a Weather-Wise learning center** in the classroom.

- **Send home the Parent Letter on the next page** informing parents about the unit and asking for contributions of time and materials. A second parent letter is also available to address the topic of having a family disaster plan.
Dear Families:

In our classroom, we are beginning a unit of study centered around different types of weather, including violent weather and survival tips we all should learn to protect ourselves from storms, and to prepare for coping with the aftermath of severe weather. We have planned our unit around the book *Come a Tide* and the **Reading Rainbow** program of the same name. We will be sharing books, using a variety of materials as we learn about weather, and we will be making instruments to help measure and predict weather.

We need your help to collect the following materials:

- empty jars and plastic bottles with flat bottoms
- toothpicks
- waterproof tape
- empty snack cans with plastic lids
- rice or dried beans
- tape recordings of songs about the weather
- ingredients for a recipe: powdered sugar, graham cracker crumbs, soft margarine, flaked coconut, dried apricots, peanut butter, granulated sugar.

We also have some family projects involving weather that will help us with our language arts, math, social science, and science. Watch for news about that later!

Thank you for your contributions! Feel free to drop in anytime to help us learn more about predicting and preparing for weather!

Sincerely,
Using the COME A TIDE Curriculum Package

General Activities

The materials contained in the Reading Rainbow “prepare for weather survival kit”, most notably the Come a Tide book and videocassette, provide opportunities for students to engage in a variety of activities that will lead to a greater understanding of dramatic weather patterns, ways the public can prepare and protect themselves, and disaster services that are available should they be needed.

🌟 Set up a Weather-Wise Learning Center. Students can help create a corner of the classroom to serve as a weather station. Block the center off from the rest of the room using panels from large cartons. Students can paint the panels to look like various kinds of weather conditions. Inside the center have a bulletin board, maps, diagrams, posters, photographs, books about weather, weather-measuring instruments, and items made by students as they participate in activities found in this curriculum package.

🌟 Your School Weather Survival Plan. The most important part of preparing for the unexpected disaster is to have a schoolwide plan that is known by teachers, parents, and students. If disaster strikes, it is important for everyone to remain calm and patient. In order for this to happen, your plan must be practiced. Conduct fire and emergency evacuation drills on a regular basis in the school. Assign faculty members specific jobs to do, such as a key person to contact the hospital to report injuries, personnel to gather students into an auditorium or cafeteria to meet parents when they arrive, and key personnel to talk with the media.

🌟 Learn about disaster services of The American Red Cross. Find out what students know about the Red Cross and its role in providing for disaster relief. Have them think about the events that happened before and after the flooding in Come a Tide as they answer these questions:

- Give an example of severe weather that can be predicted so there is some warning time. (heavy rains that cause flooding, hurricane, blizzard)
- What do people usually do after a disaster strikes? (They try to take care of themselves and help one another.)
- After a disaster, how can the Red Cross help? (by providing shelter, meals, and emergency assistance)
- How do you think the Red Cross, Civil Defense, and people in a community prepare for a disaster? (They develop a plan for everyone to follow.)
Weather-related dates to remember. Depending on the
time of year when you use the Come a Tide curriculum pack-
age, mark your calendar for the following weather-related
dates and plan your own classroom observance.

February 5: Weather Forecaster's Day — This date com-
memorates the birth of John Jeffries, one of America’s first
weather forecasters, born on February 5, 1744. He was a
Boston physician who kept detailed records of weather con-
ditions.

March 23: World Meteorological Day — This is an interna-
tional day observed by meteorological services throughout
the world to promote natural disaster reduction through edu-
cation and the use of sophisticated weather prediction
devices.

May 4: National Weather Observer’s Day — This day cel-
brates amateurs and professionals alike who enjoy following
the everyday phenomenon known as weather.

September 15: Anniversary of the “World’s Largest Weather
Vane” — On this date in 1984 the world’s largest weather
vane was dedicated on the edge of White Lake in Montague,
Michigan. It is 48 feet high with a 26-foot wind arrow and is
adorned with a 14-foot schooner.

World Wide Web. Consult the following sites on the
World Wide Web for weather-related information:

Weather Channel: current weather conditions from around

Storms: a Usenet newsgroup focusing on major storms.
clari.apbl.weather.storms

http://www.attmos.uiuc.edu/wxworld/html/top.html

Weatherman: current weather forecasts and satellite pictures
from around the world.  http://www.pixi.com/-gattoga/
index.htm/

UNO: All About Hurricanes: This site contains all matter of
information on hurricanes, including how to prepare and
when to evacuate. Hurricane related links are also provided.
http://www.yatcom.com/neworl/weather/hurricane.htm/

Using the Reading
Rainbow Survival Kit

When the Come a Tide curriculum unit comes to an end,
the survival kit can still be an important tool. Should a school
evacuation be necessary, carry the kit with you. The first aid
materials can be used throughout the year as accidents do
happen.
Language Arts and Literature

Through a variety of activities related to the Come a Tide book and the Reading Rainbow program, students will have opportunities to:

- assume the roles of characters and news reporters to re-enact a story
- understand weather jargon
- create captions
- research information about hurricanes
- write an original story with a weather-related theme
- create a class Big Book of weather wisdom
- sequence events to explain the formation of a hurricane
- use simile to describe weather conditions
- write cinquain poetry
- appreciate poetry
- create tongue twisters
- organize information on a chart

Language Arts and Literature Activities

Eye witness News Reports. Revisit the video or refer to the book Come a Tide to have students recall:

- how the characters in the story were informed about the storm and flood warning. (Grandma’s prediction, the sounding of the whistle, the radio report, neighbors calling out)
- what happens during the evacuation (some characters had excuses why they were not yet ready to leave)
- how the community copes during the aftermath of the storm (cleanup, rebuilding, rescue wagon)

Suggest that students work in small groups. One or two group members can assume the role of news reporters while the others become story characters. Together they can plan questions the reporters will ask and responses the characters will give. Set aside time for each group to present their skit.
Understanding weather jargon. Challenge students to discover the difference between a hurricane, cyclone, and typhoon. Write the words on self-stick notes and invite students to use them to label a world map, indicating where the storms by these names occur. Here are a few other strange names given to seasonal winds: monsoons (bring the rainy season to India), mistral (mees-TRAHL: cold, dry winds that blow across southern France during winter), khamsin (calm-seen: strong winds that whip across the deserts of Egypt stirring up stinging sands), purga (winds that bring snow and bitter cold temperatures to Siberia), chinook (from the Native American word meaning “snow-eater”: unusually warm winds that blow across the western U.S. and are capable of melting two feet of snow within 24 hours). Invite students to create their own names for wind conditions outside today. Do the names chosen indicate how fast or slowly the wind is moving?

Cloudy characters. Students can work in small groups of four members to write and perform a skit to inform an audience about four types of clouds and how they are predictors of weather. Each group should begin by researching information to discover what the cloud types cirrus, stratus, and cumulus look like and what they indicate with regards to weather conditions. Include thunderheads as a fourth type as the video does. Start students off by making copies of the reproducible titled “Calling All Clouds” found on page 17 at the end of this section. Group members can then write a script with the clouds doing the talking, describing themselves and the weather they bring. Costumes can be made by cutting large cloud shapes from poster board with a hole in the center so the performer’s face can be seen. The cloud shape can be held as the performer speaks. Arrange a time to perform before a younger audience to teach about clouds.

Creating captions. Return to the video and focus on the before and after scenes in South Carolina during the aftermath of Hurricane Hugo. Invite students to create captions for the scenes.

Note to teacher:
A hurricane, cyclone, and typhoon are actually the same thing. Hurricanes are the most familiar to us because they occur in our part of the world, the Atlantic and Eastern Pacific Oceans. However, when a hurricane occurs in the Indian Ocean it is called a cyclone and in the Western Pacific and China Sea it is called a typhoon. An Australian hurricane is known as a willy-willy!
What's in a name? The tradition of naming hurricanes started in the United States in 1953. Originally all hurricanes had female names, but in 1979 male names were added. If the first hurricane of the year has the name of a girl, the next would be named after a boy. The following year a boy’s name heads the list, and the pattern continues. The names follow the letters of the alphabet, excluding letters with few names. Hurricanes in the Eastern Pacific Ocean have a different set of names from those in the Atlantic. Some names have been retired, such as Agnes, Allen, Camille, David, Gilbert, Hazel, and Andrew because famous hurricanes have already been given those names and the meteorologists would not want to confuse anyone! Students can use The World Almanac or other reference book to research the names chosen for the current year and keep a running record of names used throughout hurricane season. They may even want to make a list of their own favorite names should they ever be called upon to name a hurricane.

Big Book of Weather Wisdom. Over the years weather observations that proved to be reliable eventually became know as bits of weather folklore or wisdom. Even today some of the following sayings can be fairly accurate for short-term predictions. Ask students to work in pairs or individually and select one of the following sayings to copy and illustrate on large sheets of drawing paper. Display the pages in the room for sharing and then compile them into a class Big Book to be placed in your Weather-Wise Learning Center. Periodically refer to sayings to test their reliability. Sixteen examples are:

- Flies will swarm before a storm.
- Halos around the moon or sun mean that rain will surely come.
- Moss dry means sunny sky. Moss wet means rain you’ll get.
- When bees stay near the hive, rain will soon arrive.
- Sea gulls sitting in sand mean rain is surely at hand.
- A cow’s tail to the west is weather coming at its best.
- A cow’s tail to the east is weather coming at its least.
- High clouds bring good weather.
- When grass is dry at morning light, look for rain before the night.
- Crows gathered around the ground means that rain will soon come down.
- Rain before seven quits before eleven.
- No weather is ill, if the wind be still.
- A rose red sunset means fair skies are coming.
- A morning rainbow in the west means rain.
- A pale yellow sunset means rain is on the way.
- An evening rainbow predicts fair weather.

Reading Rainbow tie-in: Bringing the Rain to Kapiti Plain (program #4) View the weather folklore segment of this video to hear more examples of weather wisdom based on nature. Add these to your class Big Book.
Spin a stormy tale. Invite students to imagine themselves as an outdoor object, a wild animal, or even an insect. Then have them imagine that dramatic weather is occurring. Have them write a story telling what it is like to experience the storm from the point of view of the object or animal they have chosen as the character. Provide students with copies of the “Spin a Stormy Tale” reproducibles found on pages 19 and 21 at the end of this section. They can follow the directions for cutting out and mounting the wheels. One empty space on each wheel allows students to add an idea of their own. They can then turn the inside wheel to create different writing ideas, combining the character on the inside wheel with the storm on the outside wheel. Set aside time for story sharing and display finished stories in the classroom Weather-Wise Learning Center.

Sequence of events. Return to the video to recall the steps that occur in nature to form a hurricane. Students can work together to illustrate and label each step and arrange the pages in order to form an accordion-style information booklet.

Rain came down like curtains! Revisit the video to recall figurative expressions Levar uses to describe the clouds: “clouds look like a spinning wheel...a whirlpool in the sky; the earth looks like it’s covered with cotton candy.” The author George Ella Lyons uses simile to describe the rain and the rising creeks in Come a Tide. Share the story again and find examples. Then invite students to look outside at weather conditions and describe what they see using comparisons with the words like or as.
Language Arts & Literature Activities (Continued)

Writing Weathergrams. Invite students to write a special poem about weather. Then they can allow the weather to finish the poem for them. How can this be? First, have students write their poems, using a simple five-line format called cinquain:

- line one: one word to name the weather
- line two: two words describing the weather
- line three: three words expressing an action caused by the weather
- line four: four words expressing one’s feelings about the weather
- line five: one word synonym for the first word

Write the poem on a 3 by 6 inch piece of tagboard using a permanent marking pen. Punch a hole in the top of the tagboard and insert a length of yarn. Hang the finished poem outdoors on a tree branch, bush, a porch rail, or any place passers-by can read and enjoy. After a month of weathering by wind, rain, snow, and sun, it becomes a weathergram in the truest sense of the word!

More poems about weather. Many poems have been written about weather. See a list of suggested readings in the Appendix. One such poem is in the form of a prayer from the Hopi nation. Read the following poem to students or write it on chart paper for all to read. Talk about what the Hopi people are asking. Then tie in with the activity Dancing for rain found on page 44 in the Social Sciences section.

HOPI PRAYER

Come here, Thunder, and look!
Come here, Cold, and see it rain!
Thunder strikes and makes it hot.
All seeds grow when it is hot.
Corn in blossom,
Beans in blossom,
Your face on gardens looks.
Watermelon plant, muskmelon plant,
Your face on gardens looks.
Aha-aha-ehe-ihe.

Anonymous
• Reading Rainbow tie-ins: Summer (program #103) and Snowy Day: Stories and Poems (program #80) Use the sights and sounds of the seasons and the poetry about winter shown in these programs as inspiration for writing poetry about all kinds of weather.

Creating tongue twisters. You will never want to be caught outside during a twister, and students will not want to be caught being unable to say tongue twisters written by classmates.

Invite students to write their own tongue twisters, focusing on weather themes. They can write them on long strips of construction paper and wrap them around a pencil to twist the paper. Display these twisters in your Weather-Wise learning center where students can challenge one another to say the tongue twisters slowly at first and then fast! To get you started:

Twisting tornadoes tried to turn three tall trees topsy-turvy.

When the weather turns foul. The type of foul weather determines the precautions people must take. Give students a copy of the reproducible “Weather Survival Tips” found on page 23 at the end of this section. Brainstorm or have students write ideas of their own based on experiences. They can add to their charts as you progress through the Come a Tide curriculum package. Then make a large version of the chart on butcher paper and have students compile their ideas into one chart as you conclude the use of the program.

Display this class chart in your classroom Weather-Wise learning center. Refer to the chart whenever the threat of severe weather occurs in your area and your school is forced to take precautions for safety. Early on you may want to do the Weather Survival Know-how activity found on page 39 in the Social Sciences section, having students put together a weather survival kit.
Getting to Know the Author and Illustrator

George Ella Lyon was born on February 25, 1949, in the mountains of eastern Kentucky in a town called Harlan. (Use a map of the U.S. to locate her birthplace.) George Ella grew up in a family that loved to read. Her love for words came from the many stories family members shared with her. Her grandfather built the house she grew up in and her parents, who loved books, designed a special room over the garage to be the library. So it was no wonder that early on she wanted to be a neon sign painter so she could make words glow. Through her young years she also wanted to be a tightrope walker, a vet, a singer, and a translator at the United Nations. Occasionally some of her dreams are realized today through her stories.

The writing that interested her most during her early years was poetry. She began writing poems in the second and third grade and continued throughout high school and college. In 1972 she began to try to publish a collection of poems. Eleven years later she succeeded! She was awarded the Lamont Hall Award in 1983 for her poetry chapbook titled Mountain. One question children often ask of George Ella is, “Are you rich?” Her response is always “yes,” because she gets to do what she loves to do and through her writing others can see a bit of themselves. For a list of books written by George Ella Lyon, see the Appendix, page 94.

Stephen Gammell was born on February 10, 1943, in DesMoines, Iowa. His interest in drawing developed after his father, who was a magazine art editor, started bringing home pencils and paper in assorted colors and sizes. His father would help him draw by supplying him with paper and pencils, but he would never tell him how to do it. Stephen feels that being able to draw well got him through the elementary grades, because if you could draw the bigger kids wouldn’t bother you. In fact, they were rather in awe of you!

Stephen began his career as an artist by drawing ads for local stores, creating posters, making signs for regional colleges, and illustrating articles for local magazines. His association with children’s books came about quite by accident. It seems that he was in New York visiting a friend in the early 70’s. While there he decided to present his work to a publisher. Impressed by Stephen’s talent, the publisher asked him to submit drawings to accompany a children’s story. Stephen tried his hand at writing and illustrating children’s books. He has four books to his credit. The titles of these books can be found on page 95 of the Appendix. He finds writing much more difficult and prefers to illustrate other writers’ books as long as he is offered good manuscripts. His talents have been rewarded several times. Of the numerous awards he has received the most impressive are the Caldecott Honor Book Award in 1982 for Where the Buffaloes Begin and in 1986 for The Relatives Came as well as the Caldecott Medal Award in 1989 for Song and Dance Man. A list of books Stephen has illustrated can be found on page 95 of the Appendix.
Author and Illustrator Corner

Establish a special center in your classroom to honor George Ella Lyon and Stephen Gammell. Based on the information you have shared with children, let them help you set up the center. You may want to include a map of the U.S. to mark their birthplaces; books by both the author and illustrator; supplies for writing childhood stories, poetry, and letters to the author or illustrator; a collection of colorful paper and pencils for children to illustrate in the style of Stephen Gammel; lots of comfortable pillows or rugs for children to sit and read, and a picture of both the author and illustrator.

(Contact the publishing house, Orchard Books at 387 Park Ave. South, New York, NY 10016. Or phone (212)686-7070, or visit a local library and find their pictures in Something About the Author, volumes 68, 81.)

Using the READING RAINBOW Review Books

The three review books featured in the Come a Tide program can serve as a springboard for additional activities.

Storms by Seymour Simon is one science book in a prestigious collection of more than one hundred written by this author for children. In this book, the author examines quick and violent changes in the atmosphere. These violent changes are called storms. Simon tells young readers how thunderstorms, tornadoes, and hurricanes form and why they eventually die out. Knowing how to protect oneself during potentially dangerous storms is important advice the author shares.

Seymour Simon’s book is chock-full of interesting facts about storms. Some are quite unbelievable. Involve students in making a Weather Wise game based on the information given in this book, as well as other books about weather such as the review book, Weather by Rena K. Kirkpatrick, and information they have learned using this curriculum package.

The game can consist of a reproducible gameboard, such as the one found at the end of this section on page 25 along with Weather Wise game cards that have true and false statements about weather. Students can make their own cards but a sample set is provided as a reproducible on page 27 at the end of this section.

To play: Give two to four players a gameboard and set of game cards, a spinner or die, and tokens to move along the gameboard.

Players take turns choosing a weather card to read and tell whether the statement is true or not. If correct they can use a spinner or roll the die and move the number of spaces indicated. Play until everyone has reached the end.

Note to teacher:
Answer Key for game:
2. True  6. False 10. True
3. True  7. True  11. False
**Tornado Alert** by Franklyn M. Branley explains what a tornado is, how it develops and moves along, and how we can protect ourselves during such a violent storm. He uses easy-to-understand language and illustrations to share his information. Branley explains that tornadoes, also known as twisters and cyclones, are the fastest blowing wind on Earth. Knowing how to prepare and what to do when such a powerful storm threatens a community will save lives.

The school should have a plan for violent weather. Make certain a list of rules are provided for each classroom along with times set aside for drill. Find out how your community prepares for violent storms. Contact your local emergency management or civil defense office and your local Red Cross chapter. Now would be a good time to send home the special family letter that addresses a family disaster plan found as a reproducible on page 29 at the end of this section.

**Weather** by Rena K. Kirkpatrick addresses weather jargon, different kinds of weather, professional weather forecasting, and provides lots of experiments students can try on their own. The question-answer format involves children by encouraging them to make their own observations about weather based on what they have experienced and what they know. Support is given with the detailed explanations and drawings that are provided.

- **Make a K-W-L-S chart** such as the following to have students brainstorm what they already know about weather, what they want to know, what they learn, and what they still need to learn. As books are shared, activities are done, and experiments are performed, students can fill in the chart with topics that interest them, what they know and have learned and further questions they might have. Start off by exploring weather concepts such as temperature, rain, thunder, lightning, fog, wind, and rainbows.

### WEATHER

<table>
<thead>
<tr>
<th>What I already know</th>
<th>What I want to know</th>
<th>What I learned</th>
<th>What I still need to learn</th>
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Clouds have family names just as people do. The three main families are cirrus, stratus, and cumulus. The word cirrus means "curls of hair." Cirrus clouds are clusters of tiny ice crystals that are formed high in the sky. They get comma-like tails when some of the ice crystals start to fall, thus the nickname mare's tails. Stratus clouds are the lowest clouds in the sky and are named for their "sheet like" appearance. These flat layers form when a layer of warm, moist air rises or when it's forced up by a layer of air moving below it. When stratus clouds seem to cover the whole sky like a gray blanket, they indicate rain may be on the way. These clouds are called nimbostratus, with nimbus meaning "rain." Cumulus clouds are white and fluffy, appearing like cotton balls or cauliflower. The word cumulus means "pile" or "heap." They form when blobs of warm, moist air float up from the earth. When members of the cumulus family pile up and start to turn dark gray, they become "thunderheads," and a storm may be fast approaching!
Spin a Stormy Tale

Cut out the inner and outer wheels. Glue the larger wheel on construction paper. Attach the smaller wheel on top using a brass fastener. Draw your ideas in the blank sections. Turn the inside wheel to match pictures and create different writing ideas. Combine an object or animal character with a storm to write a story.
Spin A Stormy Tale

Tornado

Hurricane

Rain

Blizzard

Lightning
## WEATHER SURVIVAL TIPS

<table>
<thead>
<tr>
<th>Hurricane</th>
<th>Tornado</th>
<th>Lightning Storm</th>
<th>Flood</th>
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# Weather Wise Game Cards

Cut apart the cards.

<table>
<thead>
<tr>
<th>1. 16 million thunderstorms occur around the world each year.</th>
<th>2. In a matter of minutes a cloud can grow several miles wide and 40,000 or more feet high.</th>
<th>3. Hailstones can range in size from a small pea to the size of a baseball or grapefruit.</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. It is safe to use a telephone during a lightning storm.</td>
<td>5. A tornado occurs when spinning winds inside a thunderstorm form a funnel-shape cloud.</td>
<td>6. It is a good idea to go outside and video tape a tornado as it approaches.</td>
</tr>
<tr>
<td>7. Hurricanes are storms that can stretch over hundreds of miles.</td>
<td>8. A weather vane is an instrument that tells how fast the wind is blowing.</td>
<td>9. It is perfectly safe to be outside during a hail storm.</td>
</tr>
<tr>
<td>10. Weather satellites orbit the earth and send back pictures to tell about weather.</td>
<td>11. Clouds in the sky always mean that it will rain.</td>
<td>12. One way to measure temperature is with a thermometer.</td>
</tr>
</tbody>
</table>
Dear Families:

As you know, we have been studying weather and the effects it can bring. Unfortunately disaster from hurricanes, flash floods, fire, hazardous material spills, earthquakes, tornadoes, and winter storms can strike at any time. We cannot prevent these tragedies from happening, but we can learn how to better prepare for them. Some tips for you:

Assemble a Weather Survival Kit with items you may need during an evacuation. Use a sturdy container such as a backpack or duffle bag and include a three-day supply of water, a change of clothing and footwear per person, a blanket per person, first aid supplies, prescription medicine, battery-powered radio, flashlight, extra batteries, extra car keys, cash, sanitation supplies, extra pair of eyeglasses. Keep important family documents in a waterproof container.

Create a survival plan by discussing disasters that could happen and what to do in each case. Pick a place for the family to meet. Plan how to care for pets. Choose an out-of-state friend or relative as a contact person. Give this contact number to your family members. Should disaster strike, you can contact this one person, and your extended family can then call the contact to find out how you are. Practice and maintain your plan.

When you have to evacuate, do as instructed. Wear protective clothing. Take your Survival Kit and lock your home. Use travel routes specified by the authorities. If time allows, shut off water, gas, and electricity and make arrangements for your pets.

Work with neighbors and plan how you can help one another. Know special skills your neighbors have and consider the needs of the elderly or handicapped. Make arrangements for children if parents cannot get home.

Sincerely,
Mathematics

Through experiences with the Come a Tide book and Reading Rainbow program, students will have opportunities to work with these mathematics concepts:

- sorting and classifying
- measurement
- basic math calculations
- calculating averages
- reading a thermometer
- graphing information
- recognizing shapes
- counting
- using a formula to make calculations

Mathematics Activities

Sort and Classify. Have students use the duffle bag from the support materials to make an activity. First, they can browse through magazines in search of pictures of items that would be good to have in an emergency kit and other items that would not be practical. Next, have them cut out the pictures and store them in the bag. Teams can then take turns removing the pictures to sort and classify them into two groups. Ask them to explain their choices.

Cooking Up a Storm. Loss of electrical power often occurs during a storm. In an area devastated by a hurricane, blizzard, flood, or tornado, residents can be without electrical power for weeks. The following recipe is one that does not require the use of electricity. If students are “hungry for hailstones” have them work together to make the following recipe. This recipe is available as a reproducible on page 35 at the end of this section. Provide copies for students to take home and prepare for the family or send a note home to invite family members to visit the classroom to help with this activity.

No-Bake Hailstones

2 1/2 cups (625 ml) powdered sugar
2 cups (500 ml) graham cracker crumbs
1 cup (250 ml) soft margarine
1 cup (250 ml) flaked coconut
3/4 cup (175 ml) finely chopped dried fruit such as apricots
1/2 cup (125 ml) chunky peanut butter
1/3 cup (75 ml) granulated sugar
1 teaspoon (5 ml) vanilla
granulated sugar to coat

Directions: 1. Combine powdered sugar, graham cracker crumbs, margarine, coconut, dried fruit, sugar, and vanilla in a bowl. 2. Stir until blended. 3. Shape into one-inch balls. 4. Roll in granulated sugar to coat. 5. Eat up a storm!

Depending on class size, you may need to have students calculate the amounts needed to double the recipe.
No fuss, no cook, no bake cookbook. As a follow-up activity, students can collect or write other recipes that do not require cooking or baking and compile them into a cookbook to place inside their survival kit. They can ask family members for ideas too!

Calculating average temperature. Position the thermometer from the support materials outside the classroom window. At designated times of the day such as once every hour, volunteers can read the thermometer and record the temperature. At the end of the school day have students add the temperatures and divide by the number of entries to calculate the average. Students can then take the daily averages and divide the number by five to calculate an average temperature for the school week.

Graphing annual precipitation. Invite each student to select a favorite state and research its average annual precipitation. This information can easily be found in The World Almanac or other book of records. Engage students to record their information on a bar graph so that comparisons can be made. Have the states listed alphabetically in the first vertical column. Students can list rain amounts in inches across the bottom of the graph. Color bars can then be filled in to indicate amounts. Once the graph has been completed, invite students to ask questions of one another such as which state has the most annual precipitation? Which has the least? How much more precipitation does Alabama have than Arizona? Why do you think so?

<table>
<thead>
<tr>
<th>State</th>
<th>Precipitation (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td></td>
</tr>
<tr>
<td>Alaska</td>
<td></td>
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<tr>
<td>Arizona</td>
<td></td>
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<td>Hawaii</td>
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<tr>
<td>Michigan</td>
<td></td>
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<tr>
<td>Oregon</td>
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</table>

Note to teacher:
If younger children can count by twos or fives, you may want to make a pictograph to show rainfall amounts. Each raindrop symbol can represent two or five inches. Children can count the raindrops to determine the amount of annual rainfall.
Mathematics Activities (Continued)

Weather in Rainbow Village. Ask students to explain how they would calculate an average high temperature for one month. (Refer back to the Calculating average temperature activity in this section.) Then talk about why you would consider the average temperature when choosing clothing to wear or planning outdoor activities. Provide students with copies of the reproducible “Weather in Rainbow Village” found on page 37 at the end of this section. Read the temperature chart together and then have students use the information to answer the questions. Students might enjoy working with a partner to complete the activity.

What shape is a raindrop? Do the following experiment to take a closer look at a raindrop. You will need:
- a shallow lid from a box or a pie tin
- flour
- mesh sieve
- bowl

Directions: Pour 1/2 inch of flour in a box lid or pie tin. Smooth it out to flatten and level the flour. Put the lid out in the rain until it catches a few raindrops. Once back inside, carefully pour the flour through the sieve over a bowl so you can save and use the flour again. Look at the raindrops. What shape are they? Can you measure them in millimeters and inches?

How far away is lightning? The next time students experience a thunder and lightning storm, teach them how to calculate how far away the lightning is. Count or use a clock to determine the number of seconds between the flash and the thunder. Divide the number of seconds by five. The number will tell how many miles away the lightning is. (Every five seconds equals one mile or 1.6 kilometers.) If you see a flash of lightning and hear thunder at the same time, it’s right above you! See the Electrifying facts activity found on page 56 of the Science section to engage students in an experiment to help them understand how lightning occurs.

Note to teacher:
Raindrops are actually round when they begin to fall. When we draw raindrops we often picture them like tear-drops. They actually look more like miniature pancakes. On the way down wind resistance flattens the round shape.

Note to teacher:
A flash of lightning will heat the air around it. Imagine this heated air rushing out in all directions. The heated air slams into cooler air making it shake. This is what causes the rumble of thunder. The harder it slams, the louder the crash!
No-Bake Hailstones

2 1/2 cups (625 ml) powdered sugar
2 cups (500 ml) graham cracker crumbs
1 cup (250 ml) soft margarine
1 cup (250 ml) flaked coconut
3/4 cup (175 ml) finely chopped dried fruit such as apricots
1/2 cup (125 ml) chunky peanut butter
1/3 cup (75 ml) granulated sugar
1 teaspoon (5 ml) vanilla
granulated sugar to coat

Directions:
1. Combine powdered sugar, graham cracker crumbs, margarine, coconut, dried fruit, sugar, and vanilla in a bowl.
2. Stir until blended.
3. Shape into one-inch balls.
4. Roll in granulated sugar to coat.
5. Eat up a storm!
Weather in Rainbow Village

<table>
<thead>
<tr>
<th>Month</th>
<th>Average Temperature</th>
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<tbody>
<tr>
<td>Jan</td>
<td>23°F</td>
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<tr>
<td>Feb</td>
<td>25°F</td>
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<tr>
<td>Mar</td>
<td>36°F</td>
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<tr>
<td>Apr</td>
<td>47°F</td>
</tr>
<tr>
<td>May</td>
<td>58°F</td>
</tr>
<tr>
<td>Jun</td>
<td>72°F</td>
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<tr>
<td>Jul</td>
<td>80°F</td>
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<tr>
<td>Aug</td>
<td>75°F</td>
</tr>
<tr>
<td>Sept</td>
<td>65°F</td>
</tr>
<tr>
<td>Oct</td>
<td>51°F</td>
</tr>
<tr>
<td>Nov</td>
<td>40°F</td>
</tr>
<tr>
<td>Dec</td>
<td>28°F</td>
</tr>
</tbody>
</table>

Use the information on the chart to answer these questions:

1. Would you be able to build a snowman in February? Tell why.

   ____________________________________________________________
   What other outdoor things could you do? _______________________

2. Would you be able to go on a picnic in October? Tell why.

   ____________________________________________________________
   What could you do instead? _________________________________


   ____________________________________________________________
   What else would you wear? ________________________________

4. How much warmer is an average day in June than in May? ______
   Which of these months do you think has better weather?
   ___________________________  Tell why ________________________

5. What month is your birthday? ________________________________
   What can you do outdoors to celebrate? _______________________

6. Write a question about the chart to ask a friend.

   ____________________________________________________________
Social Sciences

Through experiences with the Come a Tide curriculum package, students will have opportunities to:

- become acquainted with disaster survival techniques
- work as a group to solve a problem
- explore careers in meteorology and other weather-related fields
- become familiar with Morse Code
- utilize universal symbols to produce a weather map
- create a game using weather symbols
- explore suitable clothing for all types of weather
- research average monthly temperatures for their geographic area
- become familiar with multicultural traditions associated with weather
- explore the effects of weather in other parts of the world

Social Sciences Activities

Weather Survival Know-how. Talk about precautions a community takes when drastic weather conditions threaten. Perhaps the Red Cross begins to set up shelters. Civil defense sounds warnings on the television, radio, and by using sirens. The public is told what to do and where to go.

Present the support materials, the nylon duffle bag and flashlight. Invite students to help you choose and accumulate items to place in the bag for a weather disaster survival kit (water bottles, first-aid supplies, nonperishable foods, batteries, a transistor radio, blanket, money which can be represented by play money, candles and a lighter, etc.) Make a chart and invite volunteers to sign their names next to the items they will bring to fill the kit. Talk about reasons why the same kind of kit should be prepared at home.

Family escape plan. If students' families had to take cover in a safe part of the house during a tornado warning or evacuate their homes in a moment's notice in the event of an emergency, would they be able to do this quickly? They can develop a plan with their families using the house floor plan reproducible found on page 45 at the end of this section.

First they should draw the layout of the house including all doors, windows, and stairways leading to a basement or second floor. Then they can use symbols from the Map Key to fill in normal and escape routes, a safe place to wait out a tornado, and the location of the other important items shown in the key. Families should post the plan in a prominent place.

Keeping an eye on the weather. Brainstorm with students the names of people in occupations other than meteorology who keep close watch on weather conditions. Why would a farmer or a fisher keep an eye on the weather? What about a cruise ship captain or even a family who is taking a sailing trip?
• **Reading Rainbow** tie-ins: Bringing the Rain to Kapiti Plain (program #4) The jobs of a number of people working at the National Center of Atmospheric Research in the Colorado Rocky Mountains are explored. Keep the Lights Burning, Abbie (program #37) presents the true story of a young girl who kept her lighthouse signal light burning during a tremendous storm. After viewing the video, talk about how modern technology has changed the use of lighthouses as portrayed in the story and why it is important for all travelers in the sea to be aware of weather conditions.

🔍 **Tomorrow’s forecast calls for...** Use the blank reproducible calendar found at the end of this section on page 47 for students to use as a weather prediction chart. Each student can choose a day for which to make a weather prediction. Have them write their names on the calendar as “meteorologist of the day.” Two or three days before their assigned dates, students should be following weather patterns as reported on the television news or in the newspaper. Then they are to write in their predicted high and low temperatures for the next day and draw a symbol to show the weather outlook. On the following day write in the actual temperatures to determine just how accurate each amateur meteorologist is! Talk about how easy or difficult it is to predict and what students used to help them.

<table>
<thead>
<tr>
<th>Date</th>
<th>Name</th>
<th>High</th>
<th>Low</th>
<th>Actual</th>
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<tbody>
<tr>
<td>11</td>
<td>Samantha Myers</td>
<td>78</td>
<td>56</td>
<td>77</td>
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<tr>
<td>12</td>
<td>Kim Nguyen</td>
<td>74</td>
<td>60</td>
<td>77</td>
</tr>
<tr>
<td>13</td>
<td>Kyle Gibbons</td>
<td>75</td>
<td>58</td>
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</table>
Social Sciences Activities (Continued)

信号 for help. There are ways to send a message without using paper and pencil. Sign language is one way and semaphore signaling with flags is another. But suppose your students were in a disaster situation and needed to signal from a distance? They could send messages using the International Morse Code. Provide students with copies of the reproducible featuring the code found on page 49 at the end of this section. Suggest that students figure out the code for their names or a simple message. Then darken the classroom and use the flashlight from the support materials to signal by clicking the flashlight on and off, fast for dots and slow for dashes. Students can take turns allowing the others to interpret the code. Talk about other times when such a method of signaling for help might be needed and other ways it might be done, such as with sound or sunlight and a mirror.

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Symbols on weather maps. A weather map shows the high and low pressure areas across the country as well as warm and cold fronts. H stands for a high-pressure area which usually means good weather and L stands for a low-pressure area which often results in unfavorable weather conditions. The fronts which are edges of warm and cold air masses are also marked. Some weather maps use other symbols to give additional information. Provide students with copies of the weather symbols found on the reproducible on page 51 at the end of this section. First, ask students if they can tell what each symbol means and then identify them as follows. You may want to make a master list with labels for reference in the classroom Weather-Wise learning center.

- low pressure system **L**
- high pressure system **H**
- cold front 
- warm front
- stationary front
- wind direction
- haze
- rain
- drizzle
- showers
- thunderstorm
- lightning
- freezing rain 
- snow 
- snow flurries 
- ice
- sleet
- fog
- hurricane
- tornado
- clear
- sunny
- cloudy
- partly cloudy

Note to teacher:
Samuel Morse was an American inventor and artist. He devised his code in 1832 as a means of sending messages by telegraph. His code is internationally known and consists of a series of dots and dashes in various combinations to represent each letter of the alphabet. Ask students why they think the letter e is one dot and the letter t is one dash. (These letters are the most frequently used in the English language, so they were given the simplest symbols.)
**Additional Activities**

- Students can use the symbols to make their weather maps for the Weather prediction devices activity found in the Science section on page 53.

- Cut out a copy of the symbols and tape to the front of self-stick notes. Students can use and reuse the symbols and place them on a large classroom map of the U.S. to role play being a meteorologist.

- Suggest that students take home the symbols and quiz family members as to their meaning. Compare the symbols with those used by the meteorologist on the nightly news.

- Students can create a gameboard using the symbols such as a start-to-finish game. Draw a long path on posterboard and mark off sections. Cut out and glue a weather symbol in each section. Players use a spinner or roll a die to determine the number of spaces to move a plastic token or button along the path. The player must identify the symbol and give a weather forecast for the space landed on.

- Younger children may enjoy a Weather Bingo game. Provide blank Bingo Cards with twenty-five spaces. Children can cut apart and glue the symbols on the gameboard leaving the center space FREE. To play, the symbol is covered as its name is called out. Follow the rules of Bingo to determine a winner.
Social Sciences Activities (Continued)

Rainy season around the world. Revisit the video or literature to recall the reason why the characters in Come a Tide were threatened with spring floods each year. Locate India on a globe. Explain that wet monsoon winds sweep in from the Indian Ocean in the summer and dump torrential rains. If available, show students photographs of homes built on stilts in various rural parts of countries such as Laos, Vietnam, and Thailand. Ask students why they think this is necessary. Countries such as these have rainy seasons that last for months. Find Nigeria and Tanzania on the globe. When the heavy rains come to these countries there is no school, since it is too difficult to travel. Ask students to name ways heavy rains have affected their lives.

Hot and cold fashions. Write the following Mother Goose rhyme on chart paper and read with students.

One misty moisty morning
When cloudy was the weather,
I met with an old man
Clothed all in leather;
He was clothed all in leather
From his foot unto his chin,
Saying: “How de-do and how-de-do,
And how-de-do again.”

Invite students to describe the weather in the rhyme. Then ask if they think leather would be the proper clothing to wear in such weather. What would they wear? Discuss the importance of wearing proper clothing for protection from all kinds of weather. Then work as a group to make a twelve-month clothing chart. Use The World Almanac or other reference books to determine the average temperature for each month where you live and record it on the chart. Then pairs or small groups of students can draw or cut catalog pictures of appropriate clothing for each month to finish the chart.

• Reading Rainbow program tie-in: Snowy Day: Stories and Poems (Program #84) Students can take a look at the protective clothing and equipment that can be used to ensure fun outdoors when it’s freezing cold.

Weather survival clothing. Talk about why a change of clothing and shoes should be placed in a weather disaster survival kit. Place a sample in your classroom kit as a reminder of what families should include in their home kits.

Note to teacher:
Light colors and white reflect light energy. Dark colors tend to absorb light energy. When light shines on dark-colored clothing, the fabric absorbs the light energy. The absorbed light energy causes the electrons in the atoms of the fabric to vibrate and release heat which makes the fabric and the wearer warmer. It’s more comfortable to wear darker colors in winter and lighter colors in summer.
Dancing for rain. The characters in *Come a Tide* were hoping for the rain to stop. People in other parts of the world are faced with drought, or the absence of rain, each year. Because of this some cultures observe an annual ritual of dancing for rain. In New Mexico the Pueblo people perform such dances during summer months. Many African peoples perform rain dances throughout the year. In parts of Uganda rainmakers shake rattles as they dance to imitate the sound of rain. Students can locate these places on a globe or world map. Then see Make a rain rattle activity on page 70 of the Arts section for directions to make rain rattles. Encourage small groups to use the rattles and other rhythm instruments or a recording to create their own version of a rain dance. Begin by sharing the poem ‘Hopi Prayer’ found in the More poems about weather activity on page 11 in the Language Arts section.

- **Reading Rainbow** tie-in: Bringing the Rain to Kapiti Plain (Program # 4) Revisit the literature to have students discover how the problem of the drought in Kenya was solved.

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**Note to teacher:**
As scientists learn more about how weather works, some have attempted to invent ways to make weather happen. One such way is “cloud seeding.” In the 1940s two Americans made rain fall by flying above the clouds and sprinkling tiny bits of dry ice, thus supplying the clouds with the moisture they needed to produce rain. Today a chemical called silver iodide is used. As silver iodide is released from a plane, it attracts moisture in clouds which accumulates and then falls in the form of rain as the air warms. Ask students to describe situations in which a community may want to try cloud seeding.
Family Escape Plan

If you need to find cover in case of a tornado, or escape your home because of fire or some other unexpected disaster, your family should be prepared by having a plan. Draw the floor plan of your home. Include all doors, windows, stairways, and large furniture. Indicate the location of each of these items shown in the map key. Draw a solid line to show normal exit routes and add broken lines to show alternate escape routes, such as through windows. Mark and label a place outdoors for everyone to meet.

FLOOR PLAN

Floor One

Floor Two

MAP KEY:

- Emergency Survival Kit
- Smoke Detector
- Tornado Safe-place
- Outdoor Meeting Place

Normal Exit Route ➔

Emergency Exit Route ➔

Fire Extinguisher ➠ Fire Extinguisher
Collapsible Ladder ➞ Collapsible Ladder
Utility Shutoff ➔ Utility Shutoff
Door ➔ Door
Window ➔ Window
Stairway ➔ Stairway
<table>
<thead>
<tr>
<th>Sun</th>
<th>Mon</th>
<th>Tue</th>
<th>Wed</th>
<th>Thu</th>
<th>Fri</th>
<th>Sat</th>
</tr>
</thead>
</table>
Morse Code

You can send messages by code using the system developed by Samuel Morse. The following dot-and-dash patterns represent the 26 letters of the alphabet. Use and dots and dashes to write a message to a friend. You can also send a message by signaling with a light or by tapping: fast for a dot and slow for a dash.

A   B   C   D   E   F   G   H   I   J   K   L   M   N   O   P   Q   R   S   T   U   V   W   X   Y   Z
..-  -....  -.-.  --.  -  .-  ..-  ...-  ..  ....-  .----  ..---  ...--  .--.  -..  .-.-.  --.  ....  -....  .--  .---  ..-.  ...  ---  --.  .-.  ---

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### Weather Map Symbols

<table>
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<tr>
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<th>H</th>
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<tbody>
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Science

Through experiences with the Come a Tide curriculum package, students are able to:

• explore weather-prediction devices
• recognize scientific advancements in weather predicting and the impact on people’s lives
• understand how rain forms
• make a rain gauge
• make a hair hygrometer to estimate the amount of moisture in the air and use this to make weather predictions
• perform an experiment to illustrate how lightning occurs
• use the Beaufort Scale to estimate wind speed
• investigate weather conditions on other planets

Science Activities

Weather prediction devices. Return to the video to recall the use of weather satellite photographs by meteorologists to make more accurate weather predictions. Explore what students see each evening during a local weather forecast. What different aids does the meteorologist use to show weather patterns? How far in advance can weather be predicted? What does Doppler radar show?

Provide copies of the reproducible map of the United States found on page 59 at the end of this section. Use the reproducible Weather Map Symbols, found on page 51 at the end of the Social Sciences section for reference. Students can cover the map with colors, numbers, and symbols to resemble a weather map they have seen. Invite students to share their maps within small group settings and then display them in your classroom Weather-Wise Learning Center.

• Reading Rainbow program tie-in: Bringing the Rain to Kapiti Plain (program #4) Today’s weather forecasts are almost twice as accurate as they were when students’ parents where in school. Revisit the video Bringing the Rain to Kapiti Plain to recall the work of the meteorologists, the pilots, and radar technicians. Since this is an earlier program, compare weather technology described in this video to what is featured in Come a Tide. What inventions aid meteorologists in their ability to more accurately predict the weather? How do these advancements affect our lives?

What makes rain. Interview students to ask them to explain in their own words what they think makes rain. Lead them to understand that three things must exist for rain to fall. There must be moisture in the air. The moist air must move upward where it cools and the water vapor turns from gas to liquid. There must be particles of dust in the air where the water collects, becomes heavy, and falls as rain.
**Make a rain gauge.** Return to the video and talk about how LeVar made his rain gauge, using a plastic bottle with a flat bottom and some waterproof tape. Demonstrate how easily the top of a plastic bottle can be cut off. The top is then turned upside down and is placed inside the bottom of the bottle to serve as a funnel. Secure with waterproof tape. Measure and use dark-hued fingernail polish to mark the sides of the container in inches or centimeters. Another option would be to place a funnel inside a clear jar and secure with tape. Mark the measurements on the outside of the jar using fingernail polish. Invite students to think of other materials they might use to make a rain gauge. Directions for making a rain gauge at home are found on the reproducible at the end of this section on page 61. Display these directions in your classroom Weather-Wise Learning Center. Talk about the best location to place the gauge so that it will not be upset and will be in the open to accurately measure rainfall. Have one gauge at school and encourage students to have their own gauge at home. On rainy days, have students report the amount of rainfall in various locations. Will the amounts always be the same?

**Safe from lightning.** Recall the formula used to determine how close lightning is. See the How far away is lightning? activity found on page 33 of the Math section. Then present students with copies of the reproducible “Where is it safe?” on page 63 at the end of this section to assess students’ ability to make wise choices during a lightning storm. The safest places to be are in the car or building. However, inside a building you should not be near electrical wires such as using a telephone. The most dangerous places would be in swimming in the lake, in the sailboat, under the tree, and riding on a motorcycle.

Note to teacher:
A single flash of lightning contains about one billion volts of electricity. This is enough energy to light a 100-watt bulb for three months or power an average home for about two weeks. Lightning has more than 100 times the power of your home’s electrical supply. If lightning should strike a house, the energy will travel into any appliances that are plugged in and the great surge of power can cause damage. It is best to unplug appliances during a lightning storm.
Science Activities (Continued)

Be a human rain predictor. Ask students if they know what part of the body can be used to predict rain. Explain that it’s growing on top of the head. When air becomes more humid, it is often a sign that rain is coming. Increased humidity actually lengthens your hair. A hygrometer measures the amount of moisture in the air. Make a class hair hygrometer using the following steps. Place the hygrometer in your classroom Weather-Wise Learning Center. A copy of these steps is featured on the reproducible found on page 65 at the end of this section should students want to make one at home. You will need:

- strand of human hair
- toothpick
- glue
- pipe cleaner
- glass jar

Directions: 1. Pluck a hair that is a few inches longer than the glass is tall, and wrap it around the center of a toothpick. Add a drop of glue to secure in place. 2. Bend a pipe cleaner to form a yoke across the top of a jar. 3. Wrap the free end of the hair around the center of the pipe cleaner so that the toothpick hangs just above the bottom of the jar. 4. Over a period of both fair and rainy weather, notice the change in the position of the toothpick. Use a colored marker to indicate “clear” and “rain” positions on the outside of the glass. The position should be consistent each time thus allowing you to make future predictions.

Note to teacher:
The first hair hygrometer was invented to predict rain in 1783. A long human hair was boiled in chemicals to get rid of its natural oils. Then the hair was tied to a needle and suspended in a container. The needle moved as the hair lengthened and shortened, indicating when rain was expected. For some reason blond hairs seem to work best. When students are making a classroom hygrometer, keep in mind that wrapping a hair around a toothpick takes a bit of time and patience. The hair will easily slip off the toothpick until the glue has dried. It might be best to make the hygrometer while students watch. They can then try at home.
Electrifying facts. Do a simple experiment to help students understand how lightning happens. You will need:

- a darkened room
- wintergreen flavored Life Savers candies
- a mirror

Directions: Have students chew on a few wintergreen Life Savers with the mouth open while looking in a mirror. Crunching the Life Savers rips apart the sugar crystals and creates tiny bits of candy, each with their own electrical charges. A spark of electricity leaps between the differently-charged candy bits and the wintergreen oil allows you to see it. Lightning happens in much the same way, although nothing is being crushed. The thunder cloud and the earth develop different electrical charges and electricity leaps between the two just as the spark did between bits of candy. A cloud carries a negative charge while positive charges collect on the ground. A “leader” charge zaps out of a cloud and creates a hot pathway in the air. When it gets within 150 feet of the earth, a positive charge called the “streamer” rises to meet it and this forms the lightning bolt you see. Some lightning does not reach the earth but travels from cloud to cloud. Reproduce this drawing to show students. Display it in your classroom Weather-Wise Learning Center.

The Beaufort Wind Scale. Students do not need a fancy instrument to determine how fast the wind is blowing. All they need is the Beaufort Scale. Use the reproducible on page 67 at the end of this section to make copies for students so they can rate the wind.

Enlarge the scale on poster board to display in your Weather-Wise Learning Center. The scale describes how the wind behaves at various speeds. For example, if you are having trouble taming your umbrella as it turns inside-out on you, the wind is given a rating of 6 and is called a strong breeze with wind speeds of 25-31 miles per hour. However, if you are enjoying a gentle breeze on a hot day and you notice your flag is blowing straight out, then you rate the wind a number 3 with a speed of 8 to 12 miles per hour. Have fun with the scale by having students rate the wind each day or have them create and act out weather scenarios of their own for the others to guess. If students make whirligigs from the Arts section on page 69, take them outside and rate their movement according to Beaufort. Refer to your Beaufort Wind Scale. Does it take a light breeze to move your whirligigs?
Science Activities (Continued)

Greetings from outer space. There may be times when we all complain about the weather on Earth, but it won’t take students long to discover why there is no place like home for weather conditions. Get them started by investigating daytime temperatures on other planets. They can help you make the following chart:

<table>
<thead>
<tr>
<th>PLANET</th>
<th>APPROXIMATE AVERAGE DAYTIME TEMPERATURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercury</td>
<td>770°F, 410°C</td>
</tr>
<tr>
<td>Venus</td>
<td>837°F, 447°C</td>
</tr>
<tr>
<td>Earth</td>
<td>57°F, 14°C</td>
</tr>
<tr>
<td>Mars</td>
<td>-193°F, -125°C</td>
</tr>
<tr>
<td>Jupiter</td>
<td>-220°F, -140°C</td>
</tr>
<tr>
<td>Saturn</td>
<td>-292°F, -180°C</td>
</tr>
<tr>
<td>Uranus</td>
<td>-357°F, -216°C</td>
</tr>
<tr>
<td>Neptune</td>
<td>-364°F, -220°C</td>
</tr>
<tr>
<td>Pluto</td>
<td>-382°F, -230°C</td>
</tr>
</tbody>
</table>

Just for fun have students pick a planet other than Earth. Provide index cards so they can design a postcard from that planet. Reference books will give ideas for scenes to draw and for additional planetary weather conditions. On the other side of the card students can write a message to classmates telling about their experiences while vacationing on the planet. Some pairs of students may wish to be travel companions and work together on their postcard greeting. Display them in the classroom Weather-Wise Learning Center for everyone to enjoy!
How to Make a Rain Gauge

You need:
- a jar with a flat bottom
- a ruler
- nail polish
- a funnel
- waterproof tape

1. Place a ruler inside the jar. Use nail polish to mark measurements in inches or centimeters on the outside of the jar. Remove the ruler.
2. Insert a funnel in the top of the jar and tape in place.
3. Place your rain gauge outside in a protected area so that it will not be knocked over.
4. After a rainfall, record how much rain fell. Check the local paper and compare rainfall amounts.
Where is it safe?

You were having fun at a family picnic at the lake. Suddenly a thunderstorm begins. Look at the scene and answer the questions.

1. Lightning fills the sky. Choose the safest place for you to be and draw a picture of yourself there.

2. Why did you choose to go there?

3. Draw the weather symbol for lightning on the places you think are the most dangerous to be.

4. List the places you have chosen. Talk about why they are dangerous.
Your Very Own Hair Hygrometer!

*Use a hygrometer to help predict when you can expect rain.*

You need: a jar, strand of human hair, toothpick, pipe cleaner, glue
1. Pluck a hair a few inches longer than the jar is tall.
2. Wrap one end of the hair around the center of the toothpick and add a drop of glue. Let the glue dry.
3. Bend the pipe cleaner to form a yoke over the top of the glass.
4. Hold the toothpick by the hair and lower it into the jar, making sure it hangs just above the bottom of the jar.
5. Then wrap the free end of the hair around the pipe cleaner and add a drop of glue. Let the glue dry.

Over a period of both rainy and fair weather notice any changes in the direction of the toothpick. You can mark "fair" and "rainy" pointer positions on the outside of the jar and use this to predict weather changes.
# The Beaufort Wind Scale

<table>
<thead>
<tr>
<th>Beaufort Number</th>
<th>Miles per hour</th>
<th>Kilometers per hour</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>less than 1</td>
<td>less than 1</td>
<td>Calm: smoke rises straight up</td>
</tr>
<tr>
<td>1</td>
<td>from 1 to 3</td>
<td>from 1 to 5</td>
<td>Light air: not enough to move a vane</td>
</tr>
<tr>
<td>2</td>
<td>from 4 to 7</td>
<td>from 6 to 11</td>
<td>Light breeze: wind felt on face; leaves rustle; weather vane moves</td>
</tr>
<tr>
<td>3</td>
<td>from 8 to 12</td>
<td>from 12 to 19</td>
<td>Gentle breeze: leaves and small twigs in constant motion; blows a light flag</td>
</tr>
<tr>
<td>4</td>
<td>from 13 to 18</td>
<td>from 20 to 29</td>
<td>Moderate breeze: raises dust and loose paper; moves small branches</td>
</tr>
<tr>
<td>5</td>
<td>from 19 to 24</td>
<td>from 30 to 39</td>
<td>Fresh breeze: small trees sway; wavelets form on lakes</td>
</tr>
<tr>
<td>6</td>
<td>from 25 to 31</td>
<td>from 40 to 50</td>
<td>Strong breeze: large branches move; umbrellas difficult to use</td>
</tr>
<tr>
<td>7</td>
<td>from 32 to 38</td>
<td>from 51 to 61</td>
<td>Near gale: whole trees in motion</td>
</tr>
<tr>
<td>8</td>
<td>from 39 to 46</td>
<td>from 62 to 74</td>
<td>Gale: twigs break off trees; hard to walk against the wind</td>
</tr>
<tr>
<td>9</td>
<td>from 47 to 54</td>
<td>from 75 to 87</td>
<td>Strong gale: slight damage occurs to buildings</td>
</tr>
<tr>
<td>10</td>
<td>from 55 to 63</td>
<td>from 88 to 102</td>
<td>Whole gale: trees uprooted</td>
</tr>
<tr>
<td>11</td>
<td>from 64 to 72</td>
<td>from 103 to 121</td>
<td>Storm: wide-spread damage</td>
</tr>
<tr>
<td>12</td>
<td>over 73</td>
<td>over 122</td>
<td>Hurricane</td>
</tr>
</tbody>
</table>
The Arts

Through experiences with the Come a Tide book and Reading Rainbow program, students will have opportunities to:

- create rain paintings
- use the art of origami paper folding to make a toy
- make a whirligig
- recreate an astronaut’s view of Earth
- explore musical sounds that represent various weather phenomenon
- make a rain rattle
- appreciate the musical selections of renowned composers
- sing songs related to weather themes
- write an original song

Arts Activities

Rainy Day Blues, Reds, and Yellows. The next time it is raining outside, invite students to experiment with colors with the help of Mother Nature. Have them sprinkle red, blue, and yellow powdered tempera paint on white paper plates. Set the plates outdoors for a few minutes and see what happens as the raindrops fall on the plates. Talk about the mixing of colors and display the works of art once they dry.

Make a whirligig. Students can see their own wind power in action by making a whirligig! They will need:

- a copy of the pattern on the reproducible from page 73 at the end of this section
- scissors
- crayons or markers
- glue
- new pencil or wooden stick
- pipe cleaner

Directions:
1. Color the whirligig pattern if students wish.
2. Cut out the 6-inch square and cut on each diagonal as far as the dots.
3. Curl up every other corner as shown on the reproducible and glue them in the center with the points overlapping.
4. Thread a pipe cleaner through the center. Bend the end of the wire to make a knot.
5. Securely twist the long end of the pipe cleaner around a pencil.
6. Move the whirligig around several times until it moves freely.

Now students are ready to go outside and put the whirligig to the test. Using the Beaufort Wind Scale featured on page 67 of Science section, can students determine if the speed of the wind is at least a number 2?

Note to teacher:

You can make this whirligig with paper but it also looks great when made with a piece of colored acrylic film which can be purchased from an art supply store. The acrylic is a bit like plastic but can easily be cut and does not crease.
**Origami Rainbow Glider.** Once a storm has passed, a rainbow often appears in the sky and gives people a feeling of hope. Children in the Philippines make wishes when they see a rainbow. In Ireland, people hope to find a pot of gold at the rainbow’s end. In many cultures the rainbow is seen as a bridge. The Shoshone people saw a rainbow as a giant serpent rubbing its back against the sky. The next time it’s raining outdoors, have students prepare a rainbow of their own indoors. Once the rain stops, they can take their rainbow glider outdoors to fly. Directions can be found on page 75 at the end of this section.

- **Reading Rainbow** tie-in: Bringing the Rain to Kapiti Plain (Program #4) Watch the segment from the video to recall how LeVar makes a rainbow of his own with a glass of water and some sunlight.

**Create an astronaut’s view of earth.** Return to the video to take another look at an astronaut’s view of earth. What colors and shapes do students see? Allow students to create their own version of this view of Earth. Make available a variety of art supplies they can use to show land and oceans as well as cloud cover. Display their finished pieces and invite them to explain how they made their creations and what they show.

**Musical weather.** Have students imagine what each different type of weather would sound like if it were music. What would a sunny day sound like? a breezy day? a thunderstorm? a soft spring rain? a tornado? Using objects, rhythm instruments from the classroom, and their own voices, allow students to experiment with their interpretations of the sounds of weather. Make a tape recording of the end results.

**Make a rain rattle.** If students wish to create their own instruments, one that is simple to make is a rain rattle. They will need an empty can with plastic lid such as one salty snacks come in or a plastic container with lid. Partially fill the container with rice or dried beans. Place the lid on the container. Cover the outside with decorative paper or trim with colorful ribbon and yarn. Turn and shake to simulate the sound of falling rain. Students can use the instruments to perform the Dancing for rain activity as described on page 44 of the Social Sciences section.

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**Note to teacher:**

For many ages throughout Japan, children and adults have been fond of origami, the ancient art of Japanese paper folding. Even today, origami plays an important role in the education of a young child because it promotes creativity and inventiveness. The constructing of the origami rainbow glider will not only be a source of fun for the students as they make and play with a toy, but it will also allow them to experience an art form from another culture.
The Arts Activities (Continued)

Master composers and weather. Once students have created their own musical weather, play a recording of a classical selection by a great composer. Do not reveal the name of the selection until students have had a chance to describe the weather being interpreted by the music. They may enjoy drawing or painting what they visualize as the music plays. Some good selections to look for are:

“The Snow is Dancing” from Children’s Corner Suite by Claude Debussy
The Four Seasons by Antonio Vivaldi
Clouds, Mists by Claude Debussy
“The Storm and the Calm” from William Tell Overture by Gioacchino Rossini
Raindrop Prelude by Frederic Chopin

Songs inspired by weather. How many songs can students think of that relate to weather? Have them research sky songs, wind songs, snow songs, rainy songs, and stormy songs. Solicit the help of parents who may be willing to lend the class a recording they have. Have a sing-a-thon of weather tunes one day!

• Reading Rainbow tie-in: Bringing the Rain to Kapiti Plain (Program #4) Start off your sing-a-thon with the song “Puddle Hopping” featured on this video!

Write your own song. What kinds of weather will inspire students to write a song? Choose one forecast and get students’ creative ideas flowing. The easiest way to start is to choose a familiar tune. Then write lyrics that match the notes in the melody. Use the reproducible found at the back of this section on page 77 to make copies on one song for students. Sing the song “Weather Forecast” to the familiar tune “A-Hunting We Will Go.” Have students finish the song by writing verses three and four. Opening lines are provided. Then encourage students as a group or in small teams to write songs of their own.
What a Whirligig!

You need: scissors, crayons, glue, a new pencil or stick, pipe cleaner

1. Color the whirligig pattern and cut out the square.
2. Cut on the dotted line of each diagonal and curl up four corners.
3. Glue in the center with points overlapping.
4. Thread a pipe cleaner through the front center and knot the end.
Origami Rainbow Glider

Each student will need:
† eight squares of construction paper, 4-inches square or larger in the colors of the rainbow: red, orange, yellow, green, blue, indigo, and violet along with a white square. [If the colors are not available, provide squares of heavy white drawing paper for children to color on one side.]
† white glue

1. Fold each square in half with the color side facing out.
2. Fold the top left corner down so it meets the bottom edge.
3. Fold the bottom right corner up so it meets the top edge.
4. To assemble, insert the open-ended point of the red section into the triangular pocket of the orange section. Push in as far as it goes and secure with a drop of glue.
5. Continue in the same way in this order: yellow, green, blue, indigo, violet, white. Form a circle as you go so that the white section fits in the red to close the circle.
6. Once the glue has dried and the rain has stopped outdoors, take the Origami rainbow disk outside and toss to one another.
Weather Forecast

[Sing to the tune "A-Hunting We Will Go."]

Oh the rain is falling down,
A-flooding in the town.
The forecast here is rain, I fear.
The rain is falling down.

Oh the snow is drifting down,
Five inches on the ground.
The forecast here is snow, I fear.
The snow is drifting down.

Oh the fog is rolling in,

Strong winds begin to blow,
Appendix
Selected Bibliography of Children’s Books

Realistic / Contemporary Fiction featuring Weather

Stina’s grandfather lives by the seashore. During her yearly summer visits, Stina hunts for feathers, smooth sticks, and other collectibles while Grandpa fishes. Stina’s curiosity leads to trouble when she ventures outdoors to see the storm. Rescued by Grandpa, together they safely watch the storm and the treasures it brings.

A young boy of India named Arjuna waits for the first rain of the monsoon season to hit his village.

A park keeper finds he always has room “for just one more” even in his tiny hut on a snowy, bitter cold night.

The sights and sounds of the first snow are described with alliterative language as two children watch for the snowplow, walk down to the mailbox, make snow angels, and await Christmas.

Following a heavy snowfall, a young boy marvels at the wintry landscape. He carries home to his mother a blue jay’s feather that he finds and calls “a piece of sky.”

It was the worst fog ever and the whole family was uneasy. Grandma finds a cure for the fog doldrums that keeps them home-bound. This is the perfect book to share on a bad weather or good weather day!

Hobie’s dreams of being a hero are dashed as he, a child for whom he’s babysitting, and Fido are rescued from the flood by know-it-all Molly. In the end, however, Hobie is given another chance to prove himself as he pursues Larry Lion to retrieve a bag of stolen treasures.
Hines, Anna Grossnickle. **Rumble Thumble Boom.**
As the thunder gets louder and louder, a small boy tries to reassure his dog by repeating his father’s words, “It’s just the air bumping into itself.” This reassuring story tells how a family safely and contentedly weathers the storm.

Hoban, Julia. **Amy Loves the Rain.** Illus. by Lillian Hoban.
In this one of four “Amy” stories, young readers experience a ride in the car on a rainy day from the viewpoint of a child in a car seat. The writer employs onomatopoeia as she describes the sounds and colors of a rainy day.

Stan retires from his bakery job to start his own hot dog business. When a blizzard strands him and a school bus, the kids and driver wait out the storm in Stan’s van. Stan fills their tummies full of hot dogs and their heads full of stories.

On Thanh-minh day in Vietnam, Keung and Nan go with their family to the graveyard to honor their ancestors. When they wander away to climb trees and pick fruit, they are frightened by the grave keeper, Ba-Nam. Later they are caught in a thunderstorm and it is Ba-Nam, a new-found friend, who finds and protects them from the threatening weather.

As a grandmother tucks her grandson into bed, she answers all his questions with soothing, gentle responses. The dialogue carries them from the sun and the moon to the wind and the rain.

Gray snow skies warn of the approaching storm. After the storm the town is white and still, buried in deep drifts. While children go out to build snowmen and sled, the adults of the community are busy digging out.

The story of a fisherman who encounters rough weather is told in rhyming text. All ends well as he returns home safely.
Realistic / Contemporary Fiction featuring Weather (Continued)

This book sends a multigenerational message to its readers as it shares the experiences of a visiting preschooler and her grandfather as they tour his farm before a summer rainstorm.

A grandmother helps her grandchild lose the fear of thunder. When a storm begins to brew, Grandma observes that it’s “Thunder Cake baking weather.” She quickly gathers the ingredients and by the time the storm arrives, a delicious Thunder Cake is baked and fears are dispelled.

The night before Jamie’s birthday a blizzard comes to town, and her party is cancelled. Luckily the storm brings more than ice and snow. It brings a stream of stranded travelers seeking shelter. They warm Jamie’s house and heart with their stories, games, and laughter, making it the best blizzard birthday ever!

As Nina and her mom are trudging up a mountain path to explore the early morning beauty around them, the girl wishes for a chance to walk in a cloud. When Nina’s wish comes true, she experiences an array of sensations, some of which are surprising.

Misty black-and-white illustrations combine with descriptive phrases to give the reader a sense of quiet beauty on a foggy morning. Such a morning is just right for blueberry picking! The reader can see, feel, hear, and smell the outdoors as the young girl describes her walk with her mother.

Dan and his best friend, Arthur, are alone in the house with Dan’s baby brother when a tornado strikes. They barely make it to the basement before the tornado completely destroys the house.

The magical world of snow is captured in this wordless picture book. The scenes show snow falling over a tiny rural train station from morning to night. As the snow falls thick and fast, the train comes and goes with passengers while the stationmaster patiently shovels the walk. By nightfall the station is buried in whiteness.
COME A TIDE

Bibliography

Schefler, Ursel. (Translated by Andrea Mernan). *A Walk in the Rain*. Illus. by Ulises Wensell. Putnam’s, 1986. The very youngest reader can follow Josh in his new yellow raincoat and boots as he goes out with his grandmother for a walk in the rain.


Spier, Peter. *Peter Spier’s Rain*. Doubleday, 1982. Two children’s adventures on a rainy day are chronicled in detail in this wordless picture book. Spier beautifully conveys the mood of excitement and wonder with full-color illustrations showing rainy days and nights with blustery winds and fun-filled activities.

Stolz, Mary. *Storm in the Night*. Illus. by Pat Cummings. Harper & Row, 1988. Thomas and his grandfather share a special relationship. One stormy night when the electricity is cut off, Grandfather helps Thomas overcome his fears by telling about a time when he was very scared indeed.

Szilagyi, Mary. *Thunderstorm*. Bradbury, 1985. A thunderstorm is vividly depicted in the full-page story illustrations. A young girl and her dog rush home as the storm begins. The girl’s fear subsides as she feels safe in her home once again, an experience all-too-familiar to many young children.


Zolotow, Charlotte. *The Storm Book*. Illus. by Margaret Bloy Graham. HarperCollins, 1952. Everything about a thunderstorm is new and thrilling for the very young boy featured in this story. Can your students remember the very first thunderstorm they experienced?
Historical Fiction featuring Weather

Twelve-year-old Marcella Abbott’s family faces bankruptcy during the flood of 1894. They are forced to sell their home in Portland, Oregon, and live year-round in their summer home on the coast of Washington. Marcy has trouble adjusting to her new lifestyle until meeting Sarah Kimball. The girls share gifts and confidences and together discover the identity of a mysterious lady of the sea.

The author recounts the disastrous 1889 flood in Johnstown, Pennsylvania. The story is told from a fictional family’s experiences when more than 2,500 people were killed because of a dam break in the western part of the state.

Theodoric of Freiburg, a curious 14th century Dominican friar, philosopher, and scientist, wondered how a rainbow gets its colors. To find out he builds his own raindrops.

A girl named Tattie shelters the animals in her home when heavy rains swell a river in a nineteenth-century farming community.

Humorous Stories and Fantasy featuring Weather

In this ever-popular tale, readers visit the unusual land of ChewandSwallow. The weather here is usually quite edible, but suddenly everything changes!

In this whimsical adaptation of a nursery rhyme, rain pours down on animal friends out for a walk. The animals hurry home for dry clothes and a hot lunch only to discover that the ducks are missing. Alarm causes the animals to go back outside where they find the ducks swimming in the river. At day’s end, the animals are all in bed with the sniffles for the exception of the ducks who must now wash the lunch dishes!
Beaver family overschedules their lives with aerobics, computer classes, dance classes, etc., etc. This all changes one morning when it was “snowing like crazy!” While snow-bound the family learns to relax and share quality time together.

Rose’s hat blows off and leads her on several pleasing adventures. Fortunate for Rose, she is assisted along the way by an array of comical beasts.

Maud and Mrs. Perkins were out blackberry picking when they heard a strange song. They watched as Winter appeared with his rake. The leaves twirled in his breath and the air turned cold. Maud was determined to stop him, because it was much too soon for winter to arrive.

This story is weather folklore at its best. Groundhog creates hilarious confusion among the animals when he mistakenly predicts an early spring.

Following forty days and nights of rain, Noah invites the animals to disembark in alphabetical order! However, when Noah gets to the letter z and the zebras, he still has an ark full of animals with all sorts of unusual names! Readers rotate the book to follow the trail of many exotic and some extinct or endangered animals as they make their way down the mountain.

The animals living by the pond scurry for shelter when rain threatens. The simple text and colorful illustrations depict each animal’s activity.

Young Beanie listens intently as Grandpa weaves his tall tale about the 1928 rain. It seems that the rain was so bad that “half the people in the state floated over into Ohio.”

On one warm January day at the turn of the twentieth century, the gigantic molasses tank near the Boston waterfront expands and explodes, flooding the city with a heavy, sticky slow-moving sea. Houses, trolleys, carts, and ferries float on molasses as they pass recognizable landmarks.
Humorous Stories and Fantasy featuring Weather (Continued)

Snow had fallen all night and by morning the world was white. Elsa played outdoors all day building snow castles, sledding, and making snow angels. She showed her brother the snow angel and told him a real snow angel had slept there. Each morning after, he tells his sister he has seen the angel for himself. Elsa thinks Jack is a good pretender until the morning when she meets the snow angel herself.

The animals in the forest race for shelter when they hear the rolling sound of thunder. Once the thunder subsides the animals are once again led home by a comforting rolling sound.

In this entertaining story about pioneer Iva Dunnit and her six children, comical situations arise as the family braves the elements. Iva prides herself on having children who “stay put.” This comes in handy as they use their wits to confront the Big Wind!

When a flash flood occurs, the life of a tiny mouse named Abel is threatened. Abel, however, learns the meaning of survival as he is swept away to a desolate island.

When Louie and Mary Ann begin to complain about playing in the rain, Grandpa shares a tall tale about a time when he was a boy and it rained so hard that the neighbors had to visit by boat, floating through the living room. Grandpa’s solution for ridding the house of water was to pull the plug in the bathtub!

When a heavy rainstorm comes, Fred the frog and Ted the turtle are astonished as they watch their puddle turn into a pool, then a pond, a lake, and finally a sea. The sun, however, eventually comes out and gradually turns the water into a puddle once again.

In this tall tale from the American West, Andrew Delaney McFadden tells two youngsters what happens one winter when hot chinook winds sweep down and turn blizzards into floods. It is not every year that tomatoes grow in February!
Children will be able to enjoy the lighter side of traumatic weather as they read this alphabet book about an imaginary town where everyone and thing is blown willy-nilly, but no one is ever hurt!

After the hurricane passes, two young brothers imaginations are kindled by a fallen tree. The tree becomes an adventurous place where the boys travel to jungles, oceans, and outer space. Even when the clean-up crew arrives with chain saws, the boys eye the remaining tree in the yard with hopeful eyes.

Bertha discovers a tumble-down, abandoned house. She sweeps, scrubs, mends, and patches until she has made it a home. One stormy winter evening, the foul weather brings cows, cats, birds, dogs, and other animals seeking shelter, and Bertha welcomes them in. They all depart come spring, except for the cat, but chances are they’ll return again next winter!

Ben dreams that flood waters take his house on a wondrous journey past such monuments as the Statue of Liberty and the Taj Mahal.

**Folk Literature featuring Weather**

This ancient Andean myth tells the tale of how a wise llama saves its family from the great flood and helps to bring about the rebirth of a new world.

In this cyclic story a raindrop returns to the river and when Big Sun smiles and warms Singing River’s heart, another cloud is born. The cycle of how rain is formed in nature is told in a poetic way.

This legend from England tells about an old Cornish cat who saves a village from starving by bravely taming the “Great Storm Cat” who fiendishly guards the harbor.

Inspired by the Russian tale “The Snow Maiden,” Cech retells the tale of a woodsman and his wife who wish for a child. When the first magic snow of the season falls, the woodsman shapes a snow child who comes alive. But in the spring the child disappears and the distraught parents search for her. The story ends with a happy reunion.
Chang saves an old man from drowning and is rewarded with a boat that can magically change sizes. A flood strikes and Chang uses the boat to save his mother and animal friends. Ying sees the powers of the boat and steals it to give to the corrupt Emperor. But Chang, with the help of his friends, is able to retrieve the boat.

Granny Rose and her beagle dog Henry go for a walk one morning to see the sun rise in the Ozarks. Suddenly a snowstorm hits and the two seek shelter in a cave that is already inhabited by a sleeping, furry giant. When the bear stirs, Granny quickly applies a folk remedy, consisting of stuffing the bear’s paw back into its mouth!

On a quiet summer day while fishing on the pond, two children begin to wonder what makes the wind blow, the rain fall, the sun, moon, and stars shine. Old Lillian Two Blossom suddenly appears and takes the children on a mystical boat ride to answer their questions by providing Native American interpretations for the wonders of nature.

In this Lenape tale from the American Northeast, Rainbow Crow, with beautiful feathers and melodic song offers to fly to the Great Spirit to seek protection from the wind and snow for the animals. Rainbow Crow is given a stick of fire which will warm the earth. Even though the animals are saved, the fire blackens Crow’s feathers and dries up Crow’s song. Not to go unrewarded, Crow is given a wonderful secret for readers to share.

**Nonfiction Books featuring Weather**

Chock full of facts, stuff to do, riddles, and things to remember, this book will answer any young child’s questions about weather. A tear-out weather wheel helps children learn the meaning of weather words.

A raindrop named Johnny is featured in four short stories. Various types of rain and storms are explained, including a spring shower, hailstorm, summer thundershower, autumnal rain, and an ice storm.
This overview of weather changes and weather forecasting involves the reader by asking questions, making suggestions for observations and predictions, and through performing simple experiments.

The text chronicles famous floods in history, providing some information on the causes and prevention of floods. Students will find the photographs interesting.

Readers follow the journey of a raindrop through the water cycle. The concepts are simple with illustrations that enhance and clarify the text.

The author offers a clear and effective explanation of thunderstorms for younger readers. The bright illustrations enhance the explanation. Understanding how storms occur may help alleviate some fears.

Information and folklore about rain, snow, hurricanes, lightning, smog, tornadoes, and clouds are presented in an easy-to-read format accompanied by black-and-white illustrations and charts.

The process of where rain and hail come from and how they are made is described in a clear and personal way. The clear text and cartoonlike colorful illustrations make the concepts easy to understand. Examples from everyday life help to describe the processes.

Easy-to-read text and full-color illustrations explain how snow can be both helpful and harmful to people, animals, and plants. Simple experiments for primary classrooms help explain snow’s role in the ecology.
Ms. Frizzle’s class experiences a hurricane firsthand from the air, the sea, and land. Readers learn how changes in the air result in different kinds of weather, including wind, rain, thunder, and lightning.

In this volume of the Let’s-Read-And-Find-Out Series, readers are introduced to the basics of weather forecasting, characteristics of weather, and how meteorologists rely on instruments and scientific information to measure temperature, humidity, air pressure, and the speed and direction of wind to make their forecasts.

This Let’s-Read-and-Find-Out Science Book invites readers to use their senses to explore wind. Experiments that use children’s toys help extend understanding. Directions for making a weather vane are also included.

The reader is able to feel and see the approaching storm with Levi as he sits on the rocks on the jetty. With each double-page spread the approaching weather is described with language rich in alliteration and metaphor. Readers can think about their own special places to watch from when storms are approaching.

Detailed photographs show animal life on an Oklahoma wildlife refuge. Black-and-white pencil drawings are added to show a tornado forming and the effect it will have on the prairie dogs, buffalo herd, and other animals.

Professionals who predict the weather and the high-tech equipment they use are presented in this book. All the behind-the-scenes activities associated with producing a weather forecast for the public are described in this brightly illustrated book.

Air pressure, moisture, temperature, and other weather concepts are clearly explained in this easy-to-understand book. Labeled illustrations with cartoon-dialogue inserts add to and clarify the text. A list of interesting weather facts is included at the end of the book.
This is one book in a series called First Discovery Books. Each has been written and illustrated to teach basic concepts. In the volume on weather, transparencies allow the reader to superimpose rain, clouds, storms, and rainbows onto various landscapes.

A good source of both information and anecdote for weather units in school and family reading at home.

This is the story of two mountains. One was made by the earth, and one was made by a little girl named Elizabeth. The illustrations juxtapose the two stories as the reader learns how mountains, whether large or small, are transformed by sun, wind, and rain.

Water has a way of changing from fog, rain, and snow to puddles, creeks, and seas. Simple text and detailed pictures make the changes comprehensible. While water is changing from one form to another outdoors, a square inset on each page shows what is happening inside Tony’s house. Inside there is steam from the soup, moisture on the bathroom window, and a puddle on the sill.

Basic information describes a number of different conditions that produce winds. Attention is also given to the effect of wind on nature and wildlife.

The magnificence of our oceans is captured in full-page photographs. Readers will learn about currents, tides, and how oceans affect our weather patterns.

Readers are able to examine what weather is and how it changes. Cloud families and the weather they bring are described. Full-color photographs and clear text explore the many kinds of weather we experience day in and day out.
Poetry featuring Weather

Every month has its own couplet which describes a special characteristic for that time of the year. Each two-page illustration captures the outdoor feeling for the month, such as snow for January with tingly fingers and toes and rain for February bringing about an early thaw.

Poems by such greats as Langston Hughes, John Updike, and William Wordsworth describe the diversity of the seasons. The poems are accompanied by richly detailed oil paintings that beautifully depict the Hudson River Valley and the grandeur of nature.

In this diverse collection of thirty-eight poems, the mood of every season is captured by the works of many outstanding poets.

Young listeners and early readers will enjoy learning about weather through the rhythm and rhyme of outstanding poets. Silly verse such as “Snowflake Souffle,” beautiful imagery of “Sun” and onomatopoeic “Thunder” will surely satisfy the tastes of every kind of weather watcher.

This collection of poems about the sky focuses on topics ranging from sunrise to sunset and from rainbow to smog.

In this “must read-aloud” selection, the many moods and sounds of rain are interpreted in onomatopoeic language. Soft pastel artwork enhance the text. Readers will enjoy participating in the reading and adding their own musical accompaniment.

The mood of the winter season is captured in a collection of poems with images and metaphor that is appealing to young readers. Some poems are touched with humor while others with sentiment.
A lyrical, quiet mood offsets the violent storm in this poem. As a thunderstorm sweeps a field of dried corn stalks and vine-ripening pumpkins, streaks of lightning and cold rain send birds skittering to the trees, mice chittering to their nests, and woodchucks lumbering to their holes. All ends well as the sun finally bursts through the clouds!

This collection of poems describes weather that can be found outside just about any window during some time of the year. Sun, rain, snow, wind, and fog are cleverly and playfully described in the writings of several different poets.

**Additional Books by Author, George Ella Lyon**

The shapes of trees from aspen to zebrawood appear as silhouettes against the white pages of the book. Adult hands hold actual-size leaves of each tree for the reader to inspect. The book ends with a swirl of autumn leaves and a reminder of what trees provide.

Grandmother’s oak basket holds many special treasures. The basket becomes lost when Grandmother moves to the city. From then on, whatever is missing, she is sure will be found in the basket once the basket is found.

A child’s concerns and imaginings overwhelm him as he stays with neighbors waiting for his father’s return from the Civil War.

The story of Father Time is told in a tall tale narrative. It seems that Father Time has a vault in the clouds in which he stores 365 packets. Each day he takes one packet from the vault and tosses it down to Earth.

Two best friends are shown doing many things together such as building a house, cranking for ice cream, sailing, fishing, and eating a giant sundae together. The rhyming, lyrical text repeats the refrain, “Let’s put our heads together and dream the same dream.”

*Who Came Down that Road?* Illus. by Peter Catalanotto. Orchard, 1992.
A boy asks his mother about who came down the road. His mother responds by leading her son back through history to her grandparents, the Civil War, the Native Americans, the mastodons, and back to the beginning of time.
Books by Author/ Illustrator, Stephen Gammell

Git Along, Old Scudder. Lothrop, Lee & Shepard, 1983.
Old Scudder draws a map to get himself home. As the story continues and the character has further adventures, he adds landmarks such as Two Nose Pass and Sneaky Tree Road.

Once Upon MacDonald’s Farm. Four Winds, 1981.
In this comical twist to the popular song, the farmer has a dilapidated farm and no animals. He decides to buy animals, but not the ordinary kind. Instead he goes for zoo animals and has them doing all the wrong chores!

The Story of Mr. and Mrs. Vinegar. Lothrop, Lee & Shepard, 1982.
This story was adapted from an old fairy tale about a foolish man who trades away his pot of gold for items of decreasing value. This humorous noodle-head story will make young readers groan at every turn of the page. The small-sized book seems quite appropriate for two tiny people who live inside a vinegar bottle.

A bear who has hibernated through seven Christmases is determined not to miss another. Waking to his alarm on Christmas Eve morning, he decorates a tree and is then visited by a jolly old fellow who invites him to go on a ride in a sleigh pulled by reindeer.

Books illustrated by Stephen Gammell

Grandpa appeared on the vaudeville stage during the “good old days, the song and dance days.” Grandpa reenacts his younger days and stages a show for his grandchildren when he takes them to the attic and reveals his treasures tucked away in an old trunk.

This rapping rhyme tells the tale of Old Black Fly who goes buzzing around having a very busy bad day. The fly annoys his way through the alphabet and the house. Is it any wonder that the refrain “Shoo fly! Shoo fly! Shoo!” is repeated throughout?

When Ora Mae Cotton of Crabapple Orchard loosens her tooth in the middle of her spaghetti, she hurries to bed to dream about what she can buy with the money the tooth fairy will bring. When morning comes she discovers her tooth is gone, and she sets out in pursuit of the thief who stole it.
An ancient oak tree that stands in a farmer’s field is the center of attention in this contemporary fable. The tree represents different things to different people who rally round to save it from being cut down.

Original poems as well as old favorites make up this collection of poems. Reader reaction will be both laughter and fright!

Even though mammoths are extinct, one is alive and well in Will’s imagination. He spends many a day romping with his mammoth along with many other beasts.

A station wagon arrives from Virginia one summer day and delivers an entourage of relatives in every shape and size. In spite of the crowded conditions, the hugging, laughing, and good times make the visit a memorable event.

This is a collection of poetry that combines both the ancient and the modern. Selections from both the oral tradition and contemporary tribal poets are included.

Matthew’s new house doesn’t suit him well. He finally decides he likes his new home best after going on three imaginary wild adventures.