

Dear Teachers,

The following pages have been designed with you in mind. Flip through this book to find exciting, hands-on ideas for teaching weather concepts with a pocket chart! (LER 2206)

Pocket Chart Science – Weather has been developed to provide creative teaching ideas and reproducible activities to support the use of a pocket chart. Suggested activities are designed to attract all types of learners. They encourage listening, speaking, observing and manipulating words and pictures to familiarize children with weather concepts. In addition, this book contains 152 ready-to-use cards to aid you in teaching weather. The cards display illustrated pictures and/or words to use within each lesson, and are color-coded for handy organization. A Cards-At-A-Glance chart shows what is pictured on each card, and is located in the back of the book for easy reference. Also included is a Reading List to help you build a classroom library to encourage an interest in weather, seasons, and meteorology.

This book quickly becomes a compact storage file! Tear out the sheets of cards along the perforated lines. Laminate the cards for extra durability, cut them, and store them in the pocket provided on the back cover of the book. As you use them, tear out the blackline master pages for photocopying, then use the folder pocket on the inside front cover for storage.

Pocket Chart Science

Weather

Introduction Strategies



1. What is Weather?

Place the word *Weather* at the top of the pocket chart. Ask students what they think weather is. From their suggestions, lead them to understand that “weather is the condition of the air around us.” Explain that the air around us is called the *atmosphere*, and that most weather occurs in the atmosphere. Ask children if they know the name of someone who studies the weather. Take suggestions, and lead students to understand that a *meteorologist* is a person who studies, records, and forecasts the weather. Explain that they are going to become meteorologists as they start to learn more about the weather in this unit.

2. What We Know About the Weather

On a large piece of paper, chart what the children already know about weather and what they want to learn about the weather in this unit. Refer to the chart as you present different weather concepts to children.

3. Hands-On Weather Resources






Visit a weather station to see weather tools in action or do research on the Internet about weather facts and meteorologists. Invite children to list their weather questions before beginning the unit about weather, and refer to them at the end of the unit.









Teaching Notes: Types of Weather

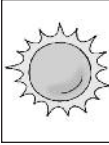


Cards needed: (red ☀)

Things we do	when it	is . . .	sunny	windy
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rainy	cloudy	stormy	snowy	a hurricane
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a tornado	foggy					
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-----------------------------------------------------------------------------------	-----------------------------------------------------------------------------------	-----------------------------------------------------------------------------------	-----------------------------------------------------------------------------------	-----------------------------------------------------------------------------------	-------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------

			
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Presenting the concept:

The weather really makes a difference in our day! We dress according to the weather, do different activities depending on the weather, and feel differently due to the weather. Invite students to name types of weather conditions. Place these words in a column down the left side of the pocket chart, as students say them. Then place the heading *Things we do when it is...* at the top of the pocket chart. Show the picture cards to students, and ask them to identify what is shown in the pictures and what type of weather allows for it to happen. Place the picture cards on the pocket chart next to each descriptive weather word. Some types of weather may have more than one picture.

Follow-up activity:

Have students recall a time when the weather affected their day. Invite them to share stories of how “things changed” because of the weather (mood, clothes, ability to do something). Have students write their stories and illustrate them for display on a weather bulletin board.



Name _____

Activity 1

Things We Do In Weather

Directions: Look at the following pictures.
Match the activities to the appropriate type of weather.



sunny

rainy

snowy

windy

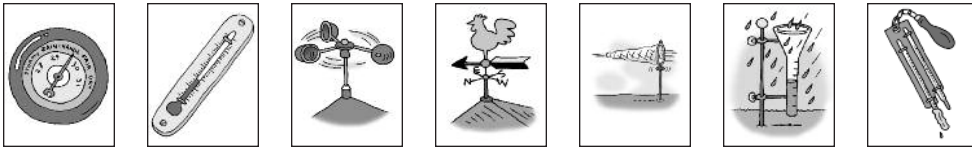
hurricane

tornado

Teaching Notes: Weather Tools

Cards needed: (orange ☀️)

Weather	Tools	A	measures	air pressure	anemometer
wind direction	wind speed	precipitation	humidity	temperature	barometer
rainfall	wind sock	rain gauge	thermometer	hygrometer	



Presenting the concept:

Ask children to name a tool that measures. Answers should include ideas like rulers (measure distance), measuring cups (measure solid and liquids), stopwatches and clocks (measure time), etc. Explain that there are also tools that measure the weather. Place the words *Weather Tools* at the top of the pocket chart. Ask children to brainstorm different aspects of the weather that can be measured (i.e., temperature, wind speed, etc.). As they guess, place the word cards in a column down the right side of the pocket chart. (Place the *A* under *Weather Tools* at top of the pocket chart.)

Introduce the tools used for each weather condition in the order that children suggested. Place the picture of each tool with its written name in a column down the left side of the pocket chart. Place the word *measures* between the two columns to form statements about weather tools. For example, “*A thermometer measures temperature*” would be one statement on the pocket chart.

Lead students to create these other statements:

“A hygrometer measures humidity.”

“A wind sock measures wind strength.”

“An anemometer measures wind speed.”

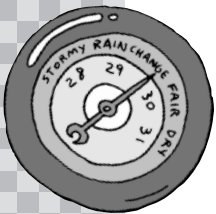
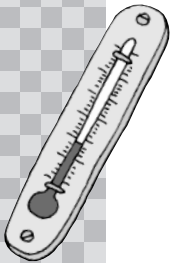
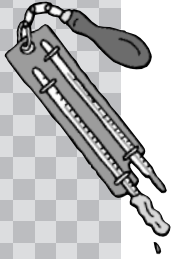
“A rain gauge measures precipitation.”

“A barometer measures air pressure.”

“A wind vane measures wind direction.”

Follow-up activity:

Remove all cards except for the written names of the weather tools. Ask students to describe a weather tool by how it works or what it measures, and have other students guess which tool they’re describing. For example, “This tool is made of two thermometers with a cloth dipped in water. It measures humidity, the moisture in the air,” (hygrometer). The person who guesses the answer can place the picture on the pocket chart next to the name of the tool.



Name _____

Activity 2

Weather Tools

Directions: Look at the pictures. Draw a line to match the picture to the name of the weather tool. Write what the tool measures on the line beside each name.

Tool _____ **measures . . .**



anemometer: _____



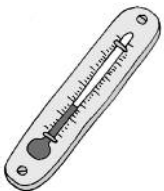
barometer: _____



hygrometer: _____



wind vane: _____



wind sock: _____





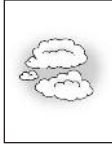



thermometer: _____



rain gauge: _____

Teaching Notes: The Water Cycle

Cards needed: (yellow ☀️)


The	Water	Cycle	evaporation	precipitation	condensation
					


Presenting the concept:





Ask children to observe clouds outside. Spark their interest with questions like, “What are clouds made of? How do they form? What makes them differ in size and color?” These concepts are easily explained by the Water Cycle. Place the pictures and words bolded below in a circle on the pocket chart to help you present this concept. (See page 7 for an example.)


The Water Cycle

Sun  shines and warms the water in lakes, streams, rivers, and oceans on Earth.

When water warms up, it changes from a liquid to a gas called water vapor, and is released into the air. This is called **evaporation**.  The water vapor rises high up into the sky. The higher it gets, the cooler the air temperature becomes. This causes the water molecules to hang in the air, gathering together with other water molecules to become water droplets again. This is called **condensation**.

When water molecules condense, they form a cloud.  As warm air rises off the Earth, it pushes the water vapor in clouds upwards, creating taller, fluffier clouds.

Sometimes the water molecules within a cloud become too heavy, and the cloud releases the water as **precipitation**.  Precipitation falls from clouds into lakes, streams, rivers, and oceans on Earth, and the cycle starts all over again. Precipitation takes on many different forms: rain, hail, snow, sleet, or ice.   

The color of clouds is determined by the amount of water in them. When the white light of the sun hits the water droplets in a cloud, our eyes see its scattered colors as white. That is why most clouds are white. Darker storm clouds contain a lot of water, so the white light of the sun cannot pass through them. 

Follow-up activity:

Invite children to come up to the pocket chart to reiterate what you’ve presented. For a review, remove all of the cards, and invite students to replicate the lesson using the pocket chart.

Activity 3

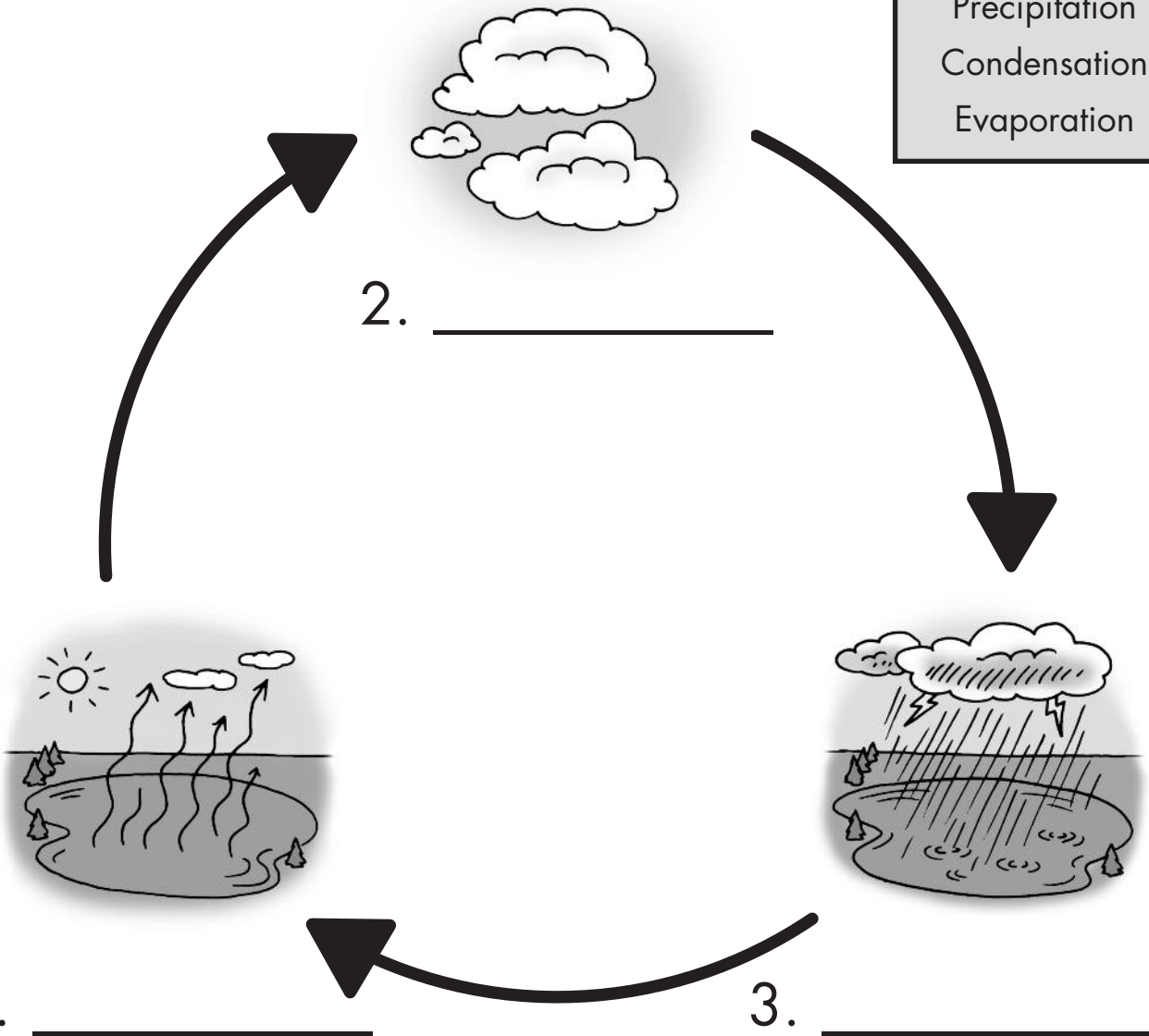
'Round and 'Round it Goes...

Directions: Look at the pictures below. Describe what is happening in each step of the Water Cycle. Choose from the Word Bank.

The Water Cycle

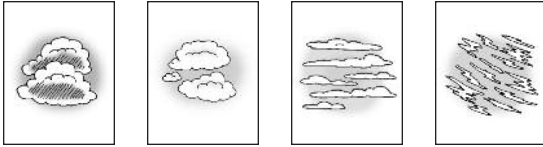
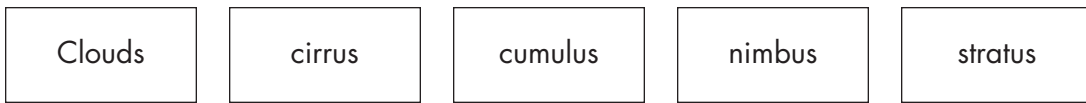
Word Bank

Precipitation
Condensation
Evaporation



Teaching Notes: Clouds

Cards needed: (green ☀️)



Presenting the concept:

After presenting the Water Cycle, children should be familiar with the process of how clouds are formed. The altitude at which clouds form, as well as the weather trends in which they are formed, make clouds appear in different ways. Take a look outside. Describe the clouds as you see them. Are they small and wispy like a horse's tail? Thick and clumpy like a cotton ball? Straight and gray like a winter blanket? Use words like these to help children describe the various types of clouds on different days.

Present clouds to children using a pocket chart! Place the title *Clouds* at the top of the pocket chart. Explain that different types of clouds have different names, based on where we see them in the sky and what they look like. Different clouds also predict various weather conditions.



Hold up a picture of a *stratus* cloud. Ask students to describe the weather when they saw this type of cloud. Explain that this is a *stratus* (STRAY tus) cloud, which lies low to the ground, blanketing Earth in straight layers. This cloud type often brings drizzle or snow. Place the cloud next to its name on the pocket chart.



Hold up the picture of a *cumulus* cloud. Ask how many students have seen or drawn a cloud like this before. Explain that this is a *cumulus* (KEW mew lus) cloud. It looks like a cotton ball or cauliflower, and is seen most often on sunny days. *Cumulus* clouds often billow in the center, as warm air pushes the water molecules up within a cloud. Place the cloud next to its name on the pocket chart.



Hold up a picture of a *nimbus* cloud. In Latin, the word *nimbus* (NIM bus) means "rain," and this cloud is very indicative of such weather. We see dark, *nimbus* clouds right before a rain or snowstorm. Cumulonimbus clouds are often called "anvil clouds," as they can rise up to 11 miles in height, looking like an anvil in the sky. Place the cloud next to its name on the pocket chart.



Hold up a picture of a *cirrus* cloud. *Cirrus* (SEER us) clouds are the light, wispy clouds that hang highest in the air. The farther away it is from Earth, the colder air gets. Warm air can hold more moisture than cold air. That explains why lower clouds in warmer temperature zones are fluffier and fuller than the light wispy clouds high up in the colder air. *Cirrus* clouds are situated in the coldest of air temperatures, so they are actually made of ice crystals. Place the cloud next to its name in the pocket chart.

Follow-up activity:

Review the names of clouds you've presented on the pocket chart. Explain that these four basic types of clouds can also be combined to form other clouds which have characteristics of both types. Create your own pocket chart word cards for other cloud types: cumulonimbus, nimbostratus, stratocumulus, altostratus, altocumulus, cirrocumulus, cirrostratus. Hold up each card and read it together with the class. Ask children, based on the name alone, what they think the cloud would look like, where it would be seen in the sky, and what type of weather it would bring. Use the books listed on page 32 for further research.

Name _____

Activity 4

Clouds

Directions: Look at the pictures below. Name the cloud on each line by choosing a word from the Word Bank. Then draw a line to match the word to its description.

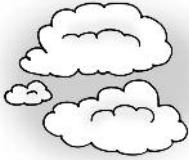
Word Bank

stratus

cumulus

nimbus

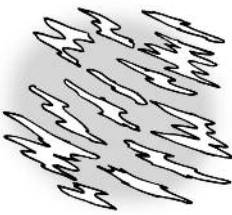
cirrus



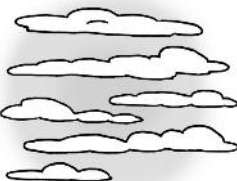
lies low to the ground,
blanketing Earth in
straight layers



looks like a cotton ball
or cauliflower, and is
seen most often on
sunny days



dark, full clouds seen
right before a rain or
snowstorm

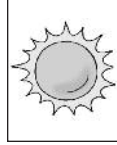


light, wispy clouds that
hang highest in the air


Teaching Notes: Rainbows



Cards needed: (blue ☀)

rainbow



Presenting the concept:

Ask children, "What color is the Sun?" Explain that even though the Sun looks yellow, and we usually draw it yellow, it is actually made up of seven different colors: red, orange, yellow, green, blue, indigo and violet, all jumbled together! Place  in the pocket chart. Explain that when the Sun shines through particles of dust in the air, certain colors shine through more vividly. For instance, sometimes the sky appears pink and purple. The red and purple colors of the sunlight are being caught by the dust particles in the air.

If the Sun is shining during a rainfall, the true colors of the Sun are seen in a rainbow. A rainbow is a circle of seven colors that we see on Earth as an arch. A rainbow can only be observed if the sun is behind you, shining through the raindrops in front of you. (Place  to the right of the Sun, and place  to the the right of that, like an equation.) Summarize by saying, "As the Sun shines through the drops, the white light of the Sun is bent into the seven colors of the rainbow, seen as a beautifully colored arch in the sky."

Follow-up activity:

Experiment with rainbows. With the Sun behind you, spray water from a garden hose, and observe a rainbow being formed. If you can't do an outside activity, use prisms or a cut piece of glass from a chandelier or figurine at a sunny window, and reflect tiny rainbows inside the room! Encourage children to illustrate rainbows, or bring in pictures of rainbows they've photographed or seen in magazines.



Name _____

Activity 5

In Search of Rainbows

Directions: Look at the Word Bank below.
Highlight or circle all of the words in the word search.



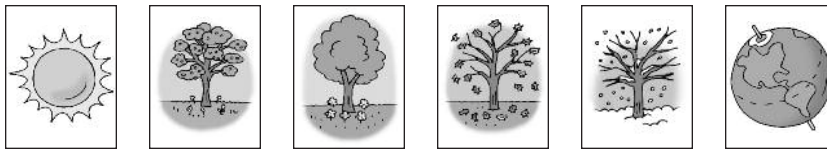
Word Bank		
sun	reflect	green
rain	red	blue
drops	orange	purple
white light	yellow	



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


Teaching Notes: Seasons


Cards needed: (purple ☀️)



Presenting the concept:

Place the title *The Seasons* in the Pocket Chart. Ask students, “What is a season?” Invite them to give examples. Ask them to share their thoughts on the seasons, a fond seasonal memory or why a particular season is their favorite. Ask students, “What makes the seasons occur?”

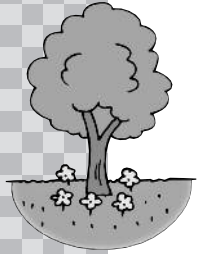
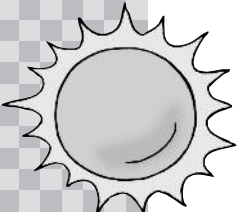
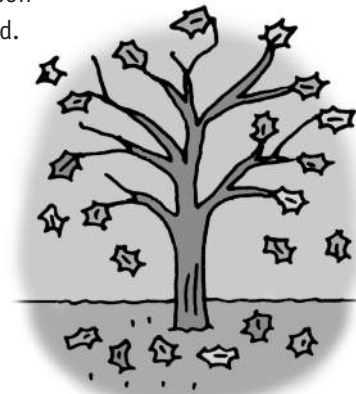
Explain that Earth is a sphere that rotates, or moves in a circular direction, on a tilted axis every 24 hours, (one day). (Display  in the pocket chart.)

As it spins on its axis, it also revolves in an orbit around the Sun. (Display  in the pocket chart.) It takes the earth 365 days (one year) to make one complete revolution around the Sun. The position of Earth at a given time of year is different due to its revolution and rotation on its axis.

Through the center of Earth is an imaginary line called the equator. The equator separates Earth into two halves, or hemispheres. The top half is named the northern hemisphere and the bottom half is called the southern hemisphere. (Label the picture of Earth with *northern* and *southern* to illustrate.) Because Earth is on a tilt, the part of Earth that is positioned closer to the Sun experiences warmer seasons, like summer and fall, and the opposite hemisphere, tilted away from the Sun, experiences colder seasons, like winter and spring. This explains why it is summer in Australia when it is winter in North America. Place the season names in the pocket chart for reinforcement. Read them together aloud.

Follow-up activity:

Mix up the season names and the pictures of trees from different seasons in the pocket chart. Invite students to come up to the pocket chart and arrange the pairs appropriately. Review the concepts of how seasons change and what the weather is like during each time.

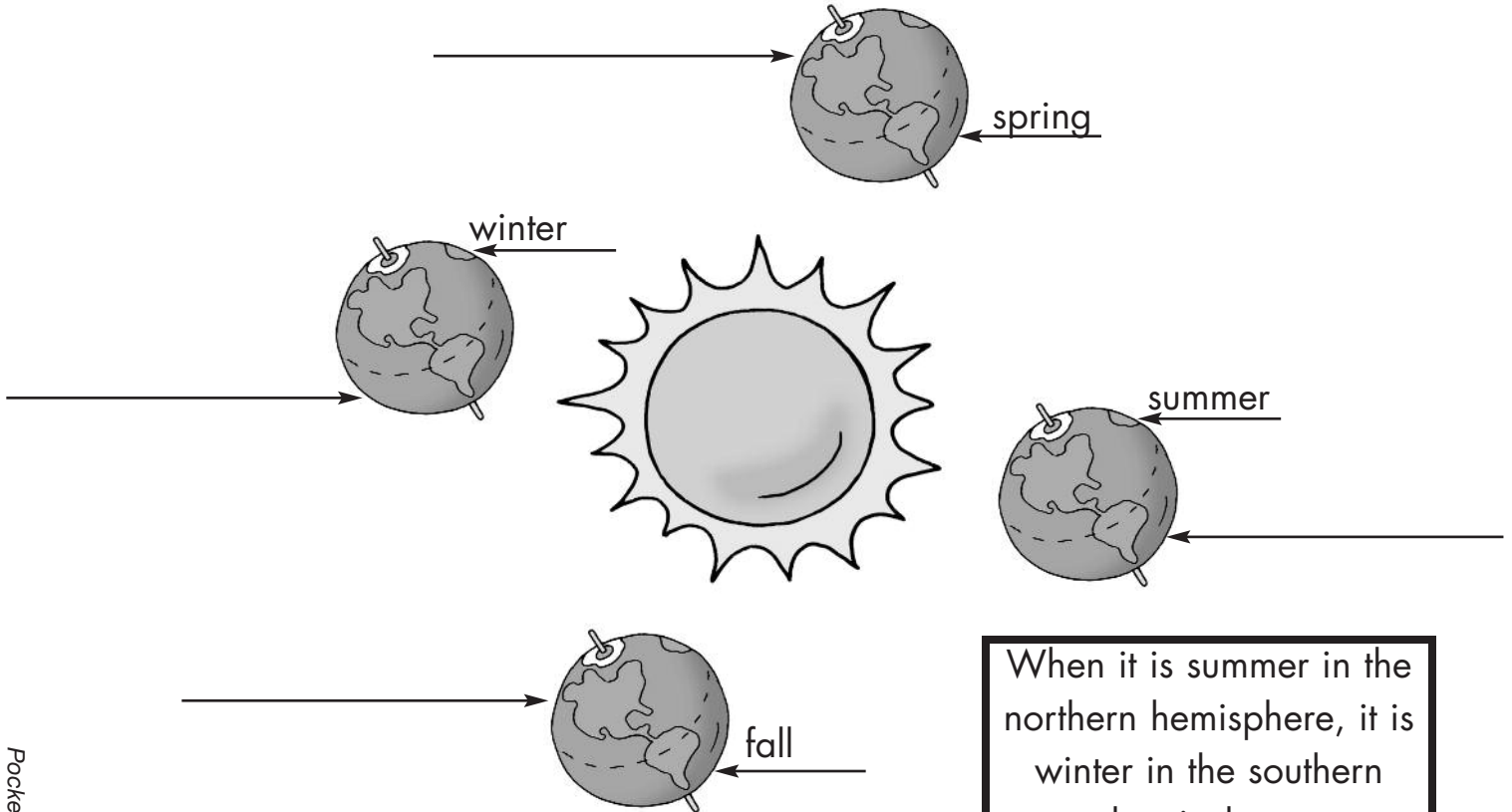


Name _____

Activity 6

Seasons

Directions: Look at the picture below. Write the name of the season that is occurring on the line next to each hemisphere. Some have been given for you!



When it is summer in the northern hemisphere, it is winter in the southern hemisphere.

Look at the pictures below.

Write a letter (W, Sp, S, F,) on the line for the season that is occurring.





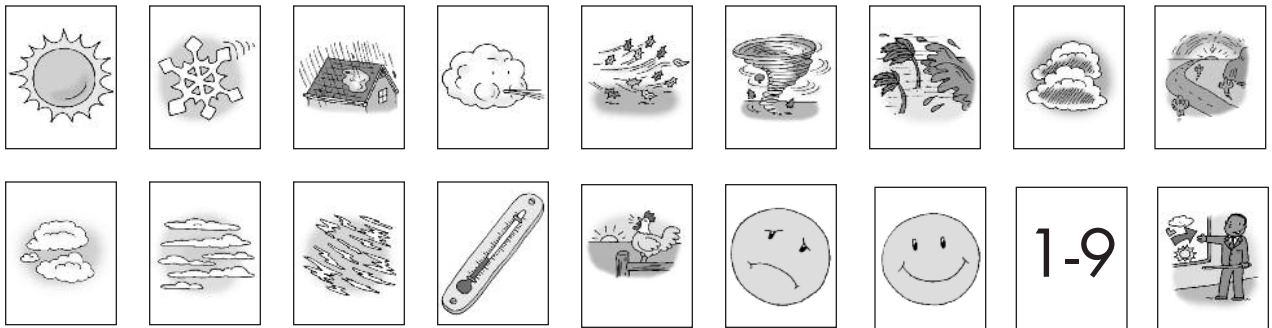




Teaching Notes: Be a Meteorologist

Cards needed: (pink ☀️)

Mon.- Fri.	The	is...	makes me	feel...	Fahrenheit
The weekend	Today	Weather	This	Week	Celcius
Trends	degrees	meteorologist	weather	we	



Presenting the concept:

Use the pocket chart to graph the weather for a week! Place the title *Weather This Week*, the *thermometer* picture, and the words *Fahrenheit* and *Celcius* at the top, with the days in a column down the left side of the pocket chart. Place the rest of the cards in a bag or box near the pocket chart. Each day, have a discussion about the weather, and invite a volunteer to place a picture describing the weather next to the day. Encourage students to describe the clouds they see, or any other weather conditions they observe. Report the temperature in numbers under the thermometer symbol each day. Introduce calculating Fahrenheit and Celcius degrees from a thermometer, if age level allows. To the right of the temperature, place a card depicting how this type of weather makes the children feel. Predict what tomorrow's weather will be, and invite a student to place a picture next to the following day. Check your predictions throughout the week. Review the weather at the end of the week, discussing any seasonal trends that students observe.

Follow-up activity:

Encourage kids to be a classroom meteorologist for a day! A meteorologist is a person who studies and reports the weather. Watch television weather reports or listen to a meteorologist on the radio together. Invite a local meteorologist to your classroom for a day. Enlist volunteers to present the weather to the class. Encourage students to use the pocket chart to display weather concepts during their presentation.

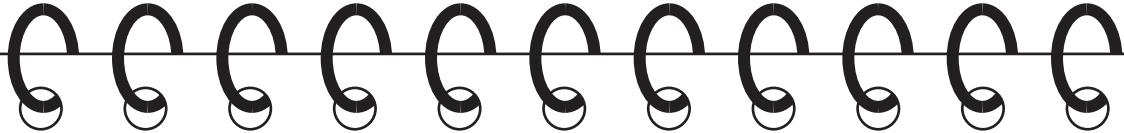


Name _____

Activity 7

Weekly Weather Chart

Directions: Fill in the blanks to record the weather for the week.
(Ask your teacher to make copies of this page.)



Day: _____

Today, the weather is... _____



It looks... _____

This weather makes me feel... _____

Things I like to do in this weather: _____

Clouds I observe: _____

Reading List

Can You See the Wind?
Allan Fowler
Children's Press, Chicago: 1999

The Cloud Book
Tommie dePaola
Holiday House, NY: 1985

Curious George in the Snow
Margaret Reys
Houghton Mifflin, Boston: 1998

Down Comes the Rain
James Graham Hail
HarperCollins Juvenile Books, NY: 1997

First Comes Spring
Anne Rockwell
HarperCollins Publishers, NY: 1985

The Magic School Bus: Wet All Over
Scholastic Trade, NY: 1996

Pink Snow and Other Weird Weather
Jennifer Dussling
Grosset and Dunlap, NY: 1998

Rain
Peter Spier
Doubleday & Co., Inc., NY: 1982

Snowtime
Dave and Julie Saunders
Bradbury Press, NY: 1991

Storm's Coming
Dave and Julie Saunders
Bradbury Press, NY: 1994

Sun Jack and Rain Jack
Ursel Scheffler
Gareth Stevens Publications,
Milwaukee: 1994

Sun Up, Sun Down
Gail Gibbons
Harcourt Brace & Co, NY: 1983
































































Weather Words and What They Mean
Gail Gibbons
Holiday House, NY: 1990

What Will It Rain?
Jane Belk Moncure
Children's Press, Chicago: 1977

Cards-At-A-Glance

Cards are shown as front-to-back pairs.

The	Monday	Tools	nimbus	spring	wind speed
weather	Tuesday	anemometer	a hurricane	winter	wind strength
makes me	Wednesday	barometer	a tornado	wind sock	This
Water	Thursday	thermometer	northern	hygrometer	Week
Cycle	Friday	rain gauge	Seasons	meteorologist	hemisphere
Things we do	The weekend	wind vane	spring	precipitation	hemisphere
when it	Today	sunny	humidity	evaporation	measures
measures	Trends	windy	temperature	condensation	measures
is...	rainbow	rainy	degrees	southern	measures
feel...	we	cloudy	Fahrenheit	A	measures
summer	cumulus	snowy	Celcius	rainfall	measures
winter	stratus	foggy	stormy	stormy	measures
fall	cirrus	fall	air pressure		
Weather	Clouds	summer	wind direction		

bike ride 		summer	cold 		fall	sun 		hygrometer
snowman 		globe	tornado 		rain gauge	sun 		precipitation
rainbow 		snowflake	hurricane prevention 		happy	sun 		meteorologist
stormy 	2		windy 		thermometer	sun 		stratus
rainy 		spring	tornado safety 		wind sock	snowflake 		sunset
stormy 		winter	leaves 		barometer	snowflake 		sunrise
at the beach 		nimbus	hurricane 		wind vane	snowflake 		sad
windy 	9		sun 		evaporation	snowflake 		cirrus
windy 		anemometer	hot 	7		stormy 		cloudy
windy 	1		globe 	8		stormy 		cumulus
windy 	4		globe 	3		stormy 		globe
windy 	5		sunny 	6		stormy 		daytime