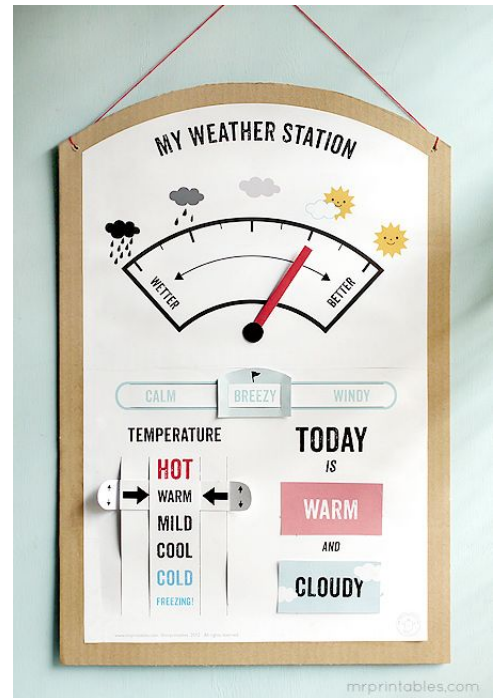


5K Weather Unit Activities/Investigations

Standard: The student will demonstrate an understanding of daily seasonal weather patterns.

Conceptual Understanding: Weather is a combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. Scientists measure weather conditions to describe and record the weather and to notice patterns over time. Plants and animals (including humans) respond to different weather conditions in different ways.



Ideas from www.pinterest.com



Performance Indicator K.E.3A.1 Analyze and interpret local weather condition data (including precipitation, wind, temperature, and cloud cover) to describe weather patterns that occur from day to day, using simple graphs and pictorial weather symbols.

Essential Knowledge

Recognize weather changes on a daily basis. There are many different types of weather conditions, for example, sunny, rainy, stormy, snowy, cloudy, windy, hot, wet, or cold.

Extended Knowledge

- Weather conditions may vary in other parts of the country or world.
- General weather patterns for specific regions in the United States (I.E. longer winter weather in northern states; drier weather conditions in mid-west states, etc.)

Assessment Guidance

The objective of this indicator is to *analyze and interpret* local weather condition data. Therefore, the primary focus of assessment should be for students to *analyze and interpret data from observations, measurements, or investigations* to understand patterns and meanings in local weather conditions and patterns. This could include but is not limited to students developing a simple graph using pictorial weather symbols after observing weather conditions over a period of time.

Lesson Idea: Why did you wear what you wore to school today? Why didn't you wear a bathing suit today? Who is going swimming this week? How do we decide what clothes we should wear?

Lesson Idea: Go to www.wcnc.com/weather. Watch the video of Larry Sprinkle or John Wendel give the day's forecast. Discuss. Look at the numbers they show, discuss how the numbers indicate daily temperature—higher numbers mean it warmer outside, etc. What other types of weather did he mention—rainy, windy, snowy, cloudy, etc.? *Meteorologist* may be a term to introduce.

Lesson Idea: Who can remember what the weather was like yesterday? How is today like yesterday? Who can predict what tomorrow will be like? Use a chart like the one below for students to draw a weather symbol to indicate each day's weather.



The weather outside is...				
Monday	Tuesday	Wednesday	Thursday	Friday

If you prefer to do this for a month, you may print calendar pages here:

<http://www.calendarlabs.com/printable-calendar.php?template=tL1m>

Lesson Idea: What are some things that you have seen fall from the sky? Hopefully students will say things like water, rain, snow, etc. They may say leaves, acorns, feathers, etc. Use this to introduce the term *precipitation*. Precipitation is any form of water that falls from the sky. Discuss plants need for water. That water is needed to fill lakes and streams for fish to swim and water soaks into the ground and becomes the water that come out through our sinks and bathtubs.

Students will be familiar with rain, but may not be so familiar with hail, sleet, or snow. Obtain a container of ice from the cafeteria to show what hail looks like. Tell students that if there is also wind during a hailstorm, hail can cause damage to homes other buildings. Students may cut snowflakes out of coffee filters as a snow demonstration. These can be hung around the classroom.

Here is video of falling snow.

<http://www.cleanvideosearch.com/media/action/yt/watch?v=RuqVnqNPYCO>

Here is a video of children playing in falling snow.

http://www.cleanvideosearch.com/media/action/yt/watch?v=XRZodL9_80o

Lesson Idea: Ask parents to send their children to school dressed for a rainy day. Discuss: What are some things we can do to protect ourselves from precipitation?

-Students may ask why we need to be protected from precipitation. It may be cold, it may be windy, and in general precipitation makes us uncomfortable.

-Hopefully student will come to school carrying umbrellas, wearing raincoats, snowboots, galoshes, etc. -Discuss the importance of seeking shelter during a storm involving precipitation.

Discuss the importance of watching the forecast in order to know what weather is likely to occur so that they can be prepared.

-Discuss materials—why are certain materials better for protecting us from rain than others?

-Make a line graph of the number of items students brought to protect themselves from the rain.

6						
5						
4						
3						
2						
1						
	Raincoats	Coats with Hoods	Umbrellas	Galoshes	Ponchos	Rain hats

Performance Indicator

K.E.3A2: Develop and use models to predict seasonal weather patterns and changes.

Essential Knowledge

Recognize weather changes on a daily basis. There are many different types of weather conditions, for example, sunny, rainy, stormy, snowy, cloudy, windy, hot, wet, or cold.

Extended Knowledge

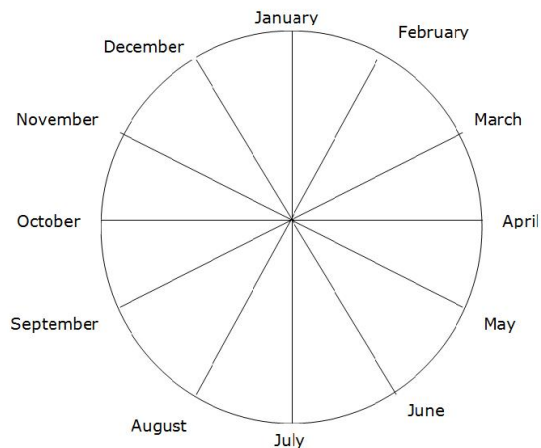
- Weather conditions may vary in other parts of the country or world.
- General weather patterns for specific regions in the United States (I.E. longer winter weather in northern states; drier weather conditions in mid-west states, etc.)

Assessment Guidance:

The objective of this indicator is to *develop and use models* to predict seasonal weather patterns and changes. Therefore, the primary focus of assessment should be for students to *develop and use models* to understand and represent seasonal weather patterns and changes. This can include but is not limited to students applying the model to explain the differences in characteristics of the seasons.

Lesson Idea: Discuss the seasons in relation to the months. Dec, Jan, Feb are winter months. Mar, April, May are spring months. June, July, Aug are summer months. Sep, Oct, Nov are fall months. (All of these are generalized, for example the start of summer is June 21.)

Have students color or glue a seasonal symbol onto the pie chart of the months. Discuss that after December is a new year, but the winter season overlaps the year.



During which season(s) do we have the most sunny weather?

During which month(s) do we have the most snow?

During which season(s) do we have the most rain and sun?

What season is it on your birthday?

Lesson Idea: Obtain 4 boxes of equal size and shape (such as the boxes that our paper comes in). Label each box as Spring, Summer, Fall, or Winter. Set the boxes up so that the bottom is the back wall. Decorate the boxes by placing things inside that represent each season.

Example. The winter box may be spray-painted white inside, lined with cotton balls on the bottom to represent snow. On top of the snow are some bare tree branches. There may be snow flakes hanging from the sky, there may be a tiny sun in the corner. Maybe a miniature stuffed animal hibernating in the back corner.

Example: The summer box may be spray-painted yellow inside with a large orange sun in the corner. Inside there are flip-flops, bathing suits, sun glasses, a branch with green leaves, etc.

Performance Indicator K.E.3A.3 Obtain and communicate information to support claims about how changes in seasons affect plants and animals.

Essential Knowledge

- Some tree branches lose leaves in the winter season.
- Some plants form leaf and flower buds and bloom in the spring season.
- Some plants, like trees, have full grown green leaves during the summer.
- Some trees will stay green all year and that some lose their leaves each autumn (fall) and grow them back in the spring. It is essential for students to know that the seasons affect plant and animals.

Examples of ways plants are affected:

- Some plants shed their leaves and have bare branches in the winter season.
- Some leaves change color and fall off during the autumn/fall season.
- Some plants shed their leaves and have bare stems

Examples of ways that animals are affected are:

- Some animals store food for the winter season.
- Some animals grow warm winter coats and shed that fur when the temperatures warm up.
- Some birds fly to a warmer place before the winter season and return in the spring.
- Some animals, like bears, go to sleep for a long time during winter (hibernation)

Extended Knowledge

- Classify deciduous and evergreen trees. Evergreens do shed (for example, pine trees are evergreens that shed needles but constantly grow new ones that stay green all year long). It is the deciduous trees that lose their leaves each autumn (fall) and grow them back in the spring.
- Determine which animals hibernate.

Assessment Guidance

The objective of this indicator is to *construct explanations* to support claims about how changes in seasons affect plants and animals. Therefore, the primary focus of assessment should be for students to *construct explanations* of changes in seasons and its effect on plants and animals using student-generated observations and measurements, results of investigations, or data communicated in graphs, tables, and diagrams. This can include but is not limited to observing and communicating how seasons affect plants and animals (i.e. hibernation, leaves falling off trees in the Fall).

Lesson Idea: Use pictures such as these to discuss the changes that plants undergo throughout the year.

With *deciduous* trees, as shown here, they lose their leaves and enter a period of dormancy during the winter. They have made enough food to survive the cold months. During winter, the sun will not be as bright for them to make food anyway.



-In spring, there is more sunlight and the tree prepares to reproduce. It has flowers and tiny leaves.

-During summer, the sun is really bright and the tree makes lots of food. It is filled with leaves and animals seeking rest or shelter.

-During fall, the temperatures are lower, the days are shorter and there is less sunlight. These weather conditions trigger the tree to start preparing for winter—almost like a hibernation period. It reabsorbs its chlorophyll from the leaves (which is why they change from green to lots of other colors) and the leaves fall to the ground.

I began this explanation with winter because it will be winter when this unit is taught.

Some trees do not lose their leaves, these are called *evergreen* trees. Take students outside to look for evergreen and deciduous trees.

Lesson Idea: Discuss the changes that some animals undergo as the seasons change.

In winter, when many of the trees have no leaves or berries, many animals are in hibernation. They take a long nap in order to preserve their energy. Before hibernation they must eat lots of food and prepare a safe place for themselves and their young.

I'm thinking of an activity where students each bring a teddy bear and make (using teacher-provided materials) a place for it to hibernate...

Hibernation background info for teacher:

<http://www.bear.org/website/bear-pages/black-bear/hibernation/191-5-stages-of-activity-and-hibernation.html>

Video about bear hibernation: (2min 59sec)

<http://www.animalplanet.com/tv-shows/animal-planet-presents/videos/natural-world-bear-hibernation.htm>

Video about hibernation: <http://www.brainpopjr.com/science/animals/hibernation/>

Video about migration: <http://www.brainpopjr.com/science/animals/migration/>

Video about Canada Goose migration: (2min 32sec)

http://video.nationalgeographic.com/video/goose_canada?source=relatedvideo

Antelope Trek: (3min 31sec)

http://video.nationalgeographic.com/video/news/wild-chronicles/pronghorn-migration-missions_wcvin?source=relatedvideo

Performance Indicator K.E.3A.4

Define problems caused by the effects of weather on human activities and design solutions or devices to solve the problem.

Assessment Guidance

The objective of this indicator is to *construct a device or design a solution* to solve problems caused by the effects of weather on human activity. Therefore, the primary focus of assessment should be for students to *construct devices or design solutions to solve problems*; generate ideas; test solutions to determine if the problem is solved, and communicate the results of effects of weather on human activities. This may include, but is not limited to students

Essential Knowledge

To know that weather affects human activities.

Examples:

- farming-lack of/surplus of rain affects crops
- rain/storms-use of umbrella, rain coat, rain boots
- vacations-planning for the appropriate season(s)

Extended Knowledge

- Safety precautions for severe weather

Lesson Idea: Ask students to bring in an umbrella if they have one. Have students think and maybe draw situations during which an umbrella might be helpful. How can an umbrella be helpful in the sun? In the rain? In the wind?

Lesson Idea: Have students design a place for their dog to stay dry in the backyard if he does not have a dog house. What materials are best to use? (This relates back to the materials unit.)

Lesson Idea: Examine a simple house plan, which locations are best in which to seek shelter during a storm? (away from windows)