

# WEATHER AND CLIMATE (K.ES.NGSS)

## UNIT AT A GLANCE

### ACTIVITY 1 - Weather Watchers: Making Observations

**QUESTIONS:** What do we need to know about the weather, and what do we need to find out?

Time to Complete	Phenomena	Summary: Students Will...
Preparation: 15 minutes Activity 1: 3 classes Lesson 1A: 55–60 min. Lesson 1B: 45–50 min.	Outdoor observations of weather conditions in different areas of the schoolyard.	<ul style="list-style-type: none"> <li>• make weather observations and record findings.</li> <li>• raise questions based on weather observations.</li> <li>• record weather observations over a period of time.</li> <li>• identify different weather conditions for observation and data collection.</li> </ul>
Students Figure Out How To:	Practices	Performance Expectations (PE) at Lesson Level and Assessment
<ul style="list-style-type: none"> <li>• use daily weather observations to recognize patterns in data.</li> <li>• use patterns to make predictions in weather.</li> <li>• use weather instruments to record weather observations and data for a variety of weather conditions.</li> </ul>	<b>Asking Questions and Defining Problems</b> <b>Analyzing and Interpreting Data</b> <b>Cause and Effect</b> <b>Patterns</b>	<b>PE at Lesson Level</b> Develop an initial understanding of weather conditions and instruments used to measure weather conditions. Evaluate students' initial understanding of patterns and ability to recognize patterns. <b>Formative Assessment</b> Science Talk Journal Entry/Weather Observation Log

### ACTIVITY 2 - Temperature

**QUESTIONS:** How can we determine the difference in the temperature of the shade and direct sun? How can we reduce the amount of sunlight in a specific area?

Time to Complete	Phenomena	Summary: Students Will...
Preparation: 15 minutes Activity 2: 5 classes Lesson 2A: 55–60 min. Lesson 2B: 45–50 min. Lesson 2C: 55–60 min. 3 days	The air temperature in the sun is warmer than in the shade.  Animals react differently to the sun's heating of the earth.	<ul style="list-style-type: none"> <li>• make weather observations and record findings.</li> <li>• conduct an investigation to determine the difference in temperature in the sun and in the shade.</li> <li>• use resources to determine how animals react differently to the sun.</li> <li>• design and build a shelter that will protect an animal from the sun.</li> </ul>

## ACTIVITY 2 - Temperature - Continued

Students Figure Out How To:	Practices	Performance Expectations (PE) at Lesson Level and Assessment
<ul style="list-style-type: none"> <li>• use daily weather observations to recognize patterns in data.</li> <li>• collect data of the temperature in the direct sun and in the shade.</li> <li>• determine a cause-and-effect relationship between the sun and the warming of the earth.</li> <li>• make connections between information from resources and findings from their investigations.</li> <li>• select materials to design and build a shelter that will protect an animal from the sun.</li> </ul>	<p><b>Planning and Carrying Out Investigations</b></p> <p><b>Constructing Explanations</b></p> <p><b>Cause and Effect</b></p>	<p><b>PE at Lesson Level</b></p> <p>Plan and conduct an investigation into the sun’s warming of the earth. Use evidence to determine a cause-and-effect relationship between temperature in direct sunlight and shade.</p> <p><b>Formative Assessment</b></p> <p>Science Talk Activity Page</p> <p><b>Summative Assessment</b></p> <p>Journal Entry Engineering Design Product</p>

## ACTIVITY 3 - Blowing in the Wind

**QUESTIONS:** What senses do we use to tell if the wind is blowing?  
How can a windsock help in the daily observations of the weather?

Time to Complete	Phenomena	Summary: Students Will...
<p>Preparation: 10 minutes Activity 3: 2 classes Lesson 3A: 45–50 min. Lesson 3B: 45–50 min.</p>	<p>The wind can move objects.</p>	<ul style="list-style-type: none"> <li>• make weather observations and record findings.</li> <li>• raise questions about weather related to wind.</li> <li>• determine if the wind direction and speed changes with different locations around the schoolyard.</li> </ul>
Students Figure Out How To:	Practices	Performance Expectations (PE) at Lesson Level and Assessment
<ul style="list-style-type: none"> <li>• make a device to determine the direction and speed of the wind.</li> <li>• collect data on the direction and speed of the wind.</li> <li>• determine a cause-and-effect relationship between the motion of the windsock and the strength of the wind.</li> </ul>	<p><b>Constructing Explanations</b></p> <p><b>Planning and Carrying Out Investigations</b></p> <p><b>Developing and Using Models</b></p> <p><b>Analyzing and Interpreting Data</b></p> <p><b>Patterns</b></p>	<p><b>PE at Lesson Level</b></p> <p>Plan and conduct an investigation to measure wind direction and speed in different areas of the schoolyard. Design and build a device to measure wind speed and direction.</p> <p><b>Formative Assessment</b></p> <p>Class discussion Activity Page Observation chart</p> <p><b>Summative Assessment</b></p> <p>Journal Entry Science Talk Windsock Products</p>

## ACTIVITY 4 - Clouds

**QUESTIONS:** What is the effect of cloud cover on temperature and precipitation?  
How can we find out how clouds are formed and produce rain?

Time to Complete	Phenomena	Summary: Students Will...
Preparation: 10 minutes Activity 4: 2 classes Lesson 4A: 45–50 min. Lesson 4B: 45–50 min.	Clouds change shape and move across the sky.  Rain falls from the clouds.	<ul style="list-style-type: none"> <li>make weather observations and record findings.</li> <li>raise questions about weather related to clouds.</li> <li>determine if clouds have an effect on temperature and precipitation.</li> <li>gather information to determine that clouds are formed from water droplets that once were in lakes, rivers, ponds, streams, and oceans.</li> </ul>
Students Figure Out How To:	Practices	Performance Expectations (PE) at Lesson Level and Assessment
<ul style="list-style-type: none"> <li>design and carry out an investigation to find out what happens to water on land and how clouds are formed.</li> <li>use data to determine how fast water evaporates in different sized containers.</li> </ul>	Obtaining, Evaluating, and Communicating Information  Developing and Constructing Explanations  Developing and Using Models  Analyzing and Interpreting Data	<p><b>PE at Lesson Level</b></p> Plan and conduct an investigation to measure evaporation in different-sized containers. Use evidence to determine that clouds are made up of water from lakes, ponds, rivers, streams, and oceans. <p><b>Formative Assessment</b></p> Class discussion Activity Pages Observation chart <p><b>Summative Assessment</b></p> Journal Entries

## ACTIVITY 5 - It's Raining! It's Pouring!

**QUESTIONS:** What is the effect of cloud cover on precipitation?  
How can we find out how much rain or snow has fallen?

Time to Complete	Phenomena	Summary: Students Will...
Preparation: 10 minutes Activity 5: 2 classes Lesson 5A: 45–50 min. Lesson 5B: 45–50 min.	Rain falls from clouds.  Water in clouds comes from water in lakes, ponds, streams, rivers, and oceans.	<ul style="list-style-type: none"> <li>make weather observations and record findings.</li> <li>make rain observations using senses.</li> <li>determine if there is a cause-and-effect relationship between clouds and precipitation.</li> <li>measure precipitation.</li> <li>determine that temperature has an effect on the type of precipitation.</li> </ul>

## ACTIVITY 5 - It's Raining! It's Pouring! - *Continued*

Students Figure Out How To:	Practices	Performance Expectations (PE) at Lesson Level and Assessment
<ul style="list-style-type: none"> <li>design a rain gauge.</li> <li>plan and conduct an investigation into the amount of precipitation in different areas.</li> </ul>	<p><b>Planning and Carrying Out Investigations</b></p> <p><b>Constructing Explanations</b></p> <p><b>Analyzing and Interpreting Data</b></p> <p><b>Cause and Effect</b></p>	<p><b>PE at Lesson Level</b></p> <p>Recognize cause-and-effect relationship between cloud cover and precipitation.</p> <p>Recognize cause-and-effect relationship between temperature and type of precipitation.</p> <p><b>Formative Assessment</b></p> <p>Class discussion</p> <p>Science Talk</p> <p><b>Summative Assessment</b></p> <p>Journal Entries</p>

## ACTIVITY 6 - Weather Through the Seasons

**QUESTIONS:** What are the weather events and severe weather conditions that occur in each season? What are some of the activities of people and other animals in the different seasons?

Time to Complete	Phenomena	Summary: Students Will...
Preparation: 10 minutes Activity 6: 8 classes Lesson 6A: 50 min. 2 class periods Lesson 6B: 50 min. 2 class periods Lesson 6C: 50 min. 2 class periods Lesson 6D: 50 min. 2 class periods	<p>Each season has evidence of change from one season to the next.</p> <p>Severe weather varies from season to season.</p>	<ul style="list-style-type: none"> <li>make weather observations and record findings.</li> <li>describe severe weather events.</li> <li>determine safety procedures for severe weather events.</li> <li>collect evidence to determine the season.</li> </ul>
Students Figure Out How To:	Practices	Performance Expectations (PE) at Lesson Level and Assessment
<ul style="list-style-type: none"> <li>gather evidence to determine the current season.</li> <li>make observations of different animal and human activities during the different seasons.</li> </ul>	<p><b>Obtaining, Evaluating, and Communicating Information</b></p> <p><b>Analyzing and Interpreting Data</b></p>	<p><b>PE at Lesson Level</b></p> <p>Make observations to gather evidence of different weather conditions during each season.</p> <p><b>Formative Assessment</b></p> <p>Class discussion</p> <p>Science Talk</p> <p><b>Summative Assessment</b></p> <p>Summary Discussion</p> <p>Journal Entries</p>

## ACTIVITY 7 - Making Sense of Our Weather Data

**QUESTIONS:** What can we learn about the seasons by comparing weather data over a long period of time?  
What information can be gathered from weather data collected over a long period of time?

### Time to Complete

Preparation: 10 minutes  
Activity 7: 5 classes  
Lesson 7A: 45–50 min.  
2 class periods  
Lesson 7B: 45–50 min.  
3 class periods

### Phenomena

Patterns in weather data change with the seasons.

### Summary: Students Will...

- analyze and interpret weather data.
- relate data to seasons.
- find patterns in data.

### Students Figure Out How To:

- use patterns in data to determine cause-and-effect relationships among weather conditions.
- gather information from data.
- develop an informational book about weather and the seasons.

### Practices

**Obtaining, Evaluating, and Communicating Information**  
**Constructing Explanations**  
**Developing and Using Models.**  
**Cause and Effect**  
**Patterns**

### Performance Expectations (PE) at Lesson Level and Assessment

#### PE at Lesson Level

Use weather data collected over time to gather information.

#### Formative Assessment

Class discussion  
Science Talk

#### Summative Assessment

Journal Entries  
Seasons booklet  
Presentation