

## Unit 1: Building Strong Communities

### WEEK 3 Lesson 1

# Science and Engineering

## Observing the Sky: Measuring Temperature

<b>S &amp; E Big Ideas</b>	Weather describes the condition of the air outside. Temperature describes how hot or cold something is. Temperature is measured using a thermometer. Clouds are composed of droplets of water. The sun and moon can be observed moving across the sky.
<b>S &amp; E Guiding Questions</b>	How do we measure temperature? What is a thermometer?
<b>Content Objective</b>	I can measure and record data about the outside temperature. (1-ESS1-2, Practice 5)
<b>Language Objective</b>	I can describe what I notice about measuring temperature. (SL.1.1)
<b>Vocabulary</b>	<b>weather:</b> the condition of the air outdoors <b>weather conditions:</b> the state of the weather, such as temperature, cloud type, rainfall, and wind speed and direction <b>meteorologist:</b> a person who studies the weather <b>temperature:</b> a description of how hot or cold something is <b>thermometer:</b> a weather instrument used to measure temperature expand: to become larger
<b>Materials and Preparation</b>	<ul style="list-style-type: none"><li>● <a href="#">Temperature-First Science by Kay Manolis</a>, epic! text There is a quiz at the end of this book. Decide if the quiz will be completed as a whole group or independently.</li><li>● thermometers, one for each pair of children and one for demonstration Check the thermometers prior to the experiment to make sure they are working and safe to use.</li><li>● basins, at least 2</li><li>● cold and warm water, to be placed inside the basins</li></ul>

	<ul style="list-style-type: none"> <li>● paper towels</li> </ul> <p>If it is necessary to stay indoors for this investigation, set up the following temperature stations. Children can work in small groups with thermometers to visit each station and take temperatures.</p> <ul style="list-style-type: none"> <li>● a basin of warm or hot water</li> <li>● a basin of ice-cold water</li> <li>● air by the window</li> <li>● a basin of water in sunlight</li> <li>● a cup of sand</li> <li>● air by the doorway</li> <li>● air in a closed area</li> </ul>
<p><b>Opening</b> 1 minute</p>	<p><i>As meteorologists, we have been learning about different weather conditions. By now, we know that weather is the condition of the air outside. What are some different conditions we can observe? [temperature; humidity; dryness; rain; snow]</i></p> <p><i>We will spend some time exploring the temperature, or how hot or cold the air is.</i></p>
<p><b>Text</b> 5 minutes</p>	<p>Read the text, <i>Temperature-First Science</i> by Kay Manolis.</p> <p>Show the demonstration thermometer.</p> <p><i>This is a tool that people use to measure temperature. It's called a thermometer. The numbers on the side of the thermometer are a scale. In the United States, the country where we live, we use a scale called Fahrenheit; most other countries use a scale called Celcius. This tube in the middle contains a solution that expands, or becomes larger, as the temperature gets warmer. When this happens, the liquid moves up the tube. As the temperature gets cooler, it goes down. If the liquid goes all the way to the top, what do you think the temperature would feel like? [hot] What if it was all the way down to the bottom? [cold]</i></p> <p>Show the thermometers and basins of water.</p> <p><i>We will spend some time working with thermometers and noticing how they change when they are exposed to different temperatures. Right now, in the air of our classroom, the thermometer reads _____ degrees Fahrenheit. Now I'm going to place the thermometer in this water. [Place in the warm water] Watch the liquid in the thermometer. How is it moving? Now I'm going to switch to this one. What do you notice happening now?</i></p>

<p><b>Investigation or Discussion</b> 20 minutes</p>	<p>Bring the class outside. Distribute a working thermometer to each pair of children. Have children hold the thermometers out in the air. Remind them to hold the sides (not the bulb) of the thermometer to get an accurate reading. Allow a few moments for the thermometers to adjust to the outside temperature.</p> <p>As a group, move to a different spot in the schoolyard (perhaps in a more shady or sunny spot). Measure the temperature. Repeat this process once more in a different spot.</p> <p>Move back into the classroom. <i>What did you notice as you moved with the thermometer throughout the schoolyard?</i></p>
<p><b>Closing</b> 1 minute</p>	<p><i>At the Science Literacy Station you'll be responding to this question: What does a thermometer tell us about the weather? At the Science and Engineering Studio this week, you'll make your own model thermometers!</i></p>
<p><b>Standards and Practices</b></p>	<p><b>Practice 5.</b> Using mathematical and computational thinking</p>
<p><b>Ongoing assessment</b></p>	<p>Reflect on the class discussions. What do children understand about thermometers? What words do children use to describe the temperature? [hot, warm, cool, cold, freezing]</p>

**Notes**