

**Grade:** K-2

**Where Does Energy Come From?**

**Lesson #P4: Shady and Sunny**

**Time:** 1 class period

**Overview:**

Students investigate shade and sun with water, dirt, thermometers, and shadows.

**Essential Questions:**

What makes the earth warm?

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**Source:** New

# Shady and Sunny

Grades K-2  
1 class period

**Overview:** Students investigate shade and sun with water, dirt, thermometers, and shadows.

**Essential Questions:**

- What makes the land, air, and water warm?

**Assessment:**

Can students

- Apply their knowledge of energy from the sun by drawing a picture to show a use of sun or shade.

**Vocabulary**

- Shadow
- Shade
- Temperature
- Thermometer

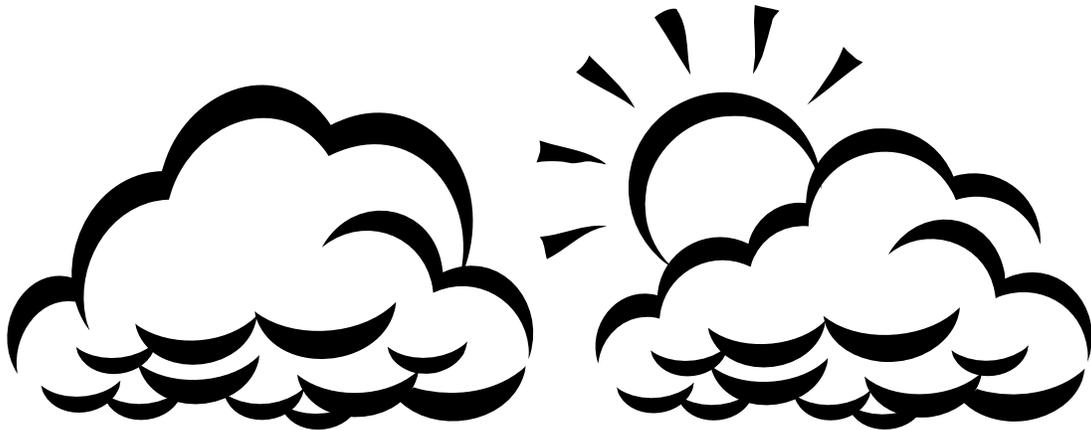
## Science Standards

Addressed:

AAAS "Benchmarks for Science Literacy"

By the end of 2<sup>nd</sup> grade, students should:

- Know that the sun warms the land, air, and water.
- Know that tools such as thermometers, magnifiers, rulers, or balances often give more information about things than can be obtained by just observing things without their help.
- Raise questions about the world around them and be willing to seek answers to some of them by making careful observations and trying things out.



## Teacher Information and Procedure

**Prior knowledge for students:** Students should have some experience with reading thermometers.

**Materials needed:**

- 2 Identical shallow pans filled with water
- 2 Identical shallow pans or boxes filled with dry soil
- 4 Thermometers
- Student thermometer handout
- Thermometer transparency

**What to do in advance:**

Wait for a sunny day to do this activity or use a heat lamp to simulate the sun. Put pans of water and dirt outdoors in sunny and shady locations several hours before you do this lesson. Use two pans of water and put one in a sunny place, outdoors or in a sunny window. Put the other in the shade. Do the same with two boxes of dirt.

**What to do during the lesson:**

**Gear up:**

Read a story or poem about shadows. Suggestions: "The Bear's Shadow" (Frank Asch), "Nothing Sticks Like a Shadow" (Ann Tompert), "A Child's Garden of Verses" (Robert Louis Stevenson)

Talk about what makes shadows and shade. Ask students to tell about times that they wanted to be in the shade, or out of the shade.

**Explore:**

Tell students about the dirt and water that you have placed in the sun and in the shade.

Ask them to predict how warm the dirt and the water will be in each of the pans?

Put a thermometer in each pan and leave it there while you give children the opportunity to feel the temperature of the dirt and water.

Read the thermometers and use the thermometer transparency to help children fill in the thermometer pages.

Which one is the warmest? What made the dirt and the water warm?

Do one or more of the following:

- Keep a weekly record of the temperature of the air, the ground, and the water near your school.
- Do an extended experiment to show that warmth from the sun helps a plant to grow.
- Take a walk to look for ways that plants and animals use the sun and the shade.
- Predict what will happen if you leave the water and dirt out overnight and measure the temperature early in the morning, and then try it.
- If there is a pond (or big puddle) near your school, measure its temperature first thing in the morning on a sunny day, and then again at the end of the school day.

***Generalize:***

What would it be like if there were no sun?

Which season is the warmest? Which season is the coldest?

Is the water in (name a local lake or pond) ever warm enough for swimming?

What makes the water warm?

***Assess:***

Draw a picture that shows a way that the sun or shade might help you!

***Related Resources in the AMEREF Kit:***

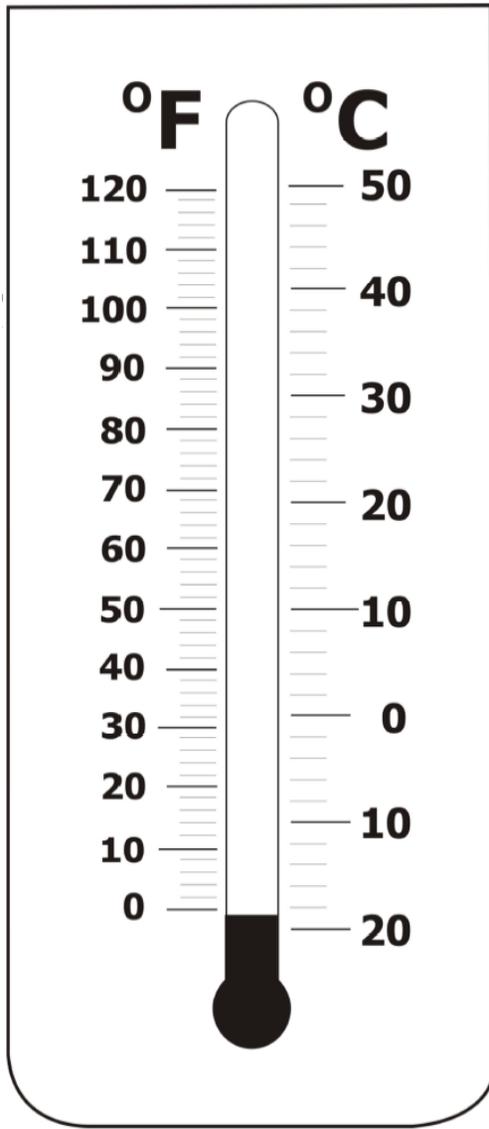
- NEED CD: Primary Science of Energy Teacher Guide p. 17-18 "Using a thermometer"
- NEED CD: Primary Stories, p. 18
- NEED CD: Primary Energy Flipbook, p. 22-26 Solar Energy

***Extensions, adaptations, and more resources:***

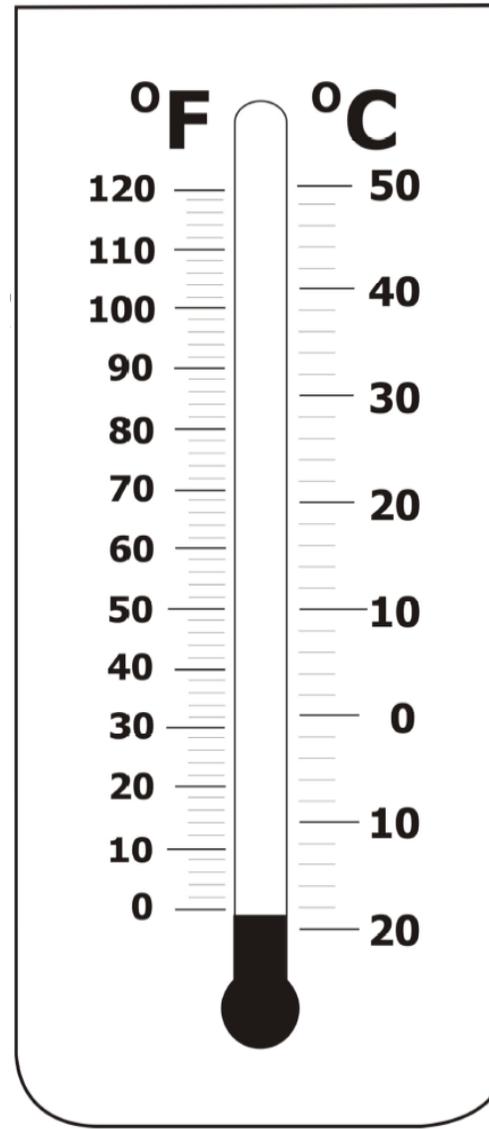
- Experiment with other objects in the shade and in the sun.
- Think of ways to test some of children's other questions about warmth from the sun.
- Put an ice cube or Popsicle in the shade and another in the sun, and see which one melts first.
- In the spring, look for patterns as the snow melts. Does it melt first in places that are sunny?

Name \_\_\_\_\_

Water in SUN

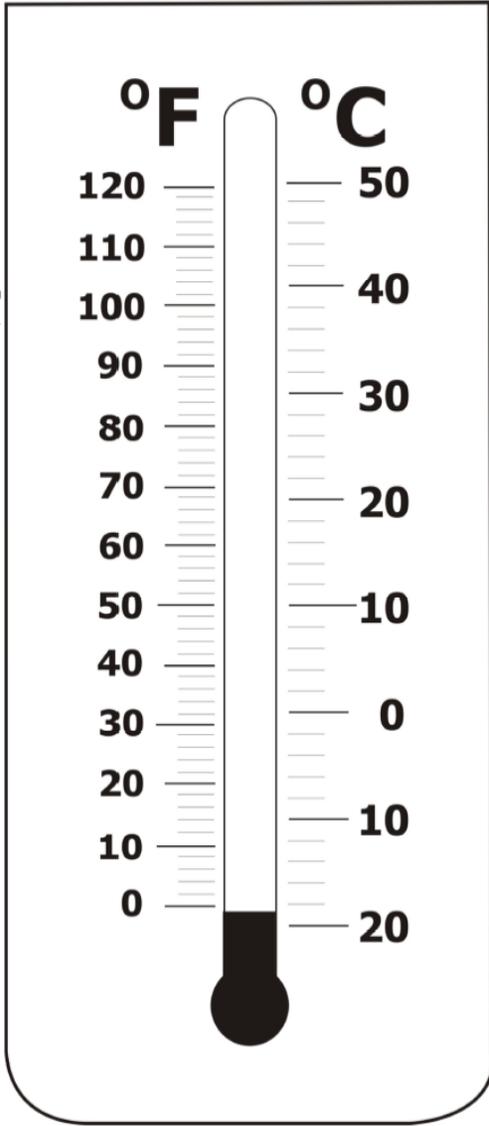


Water in SHADE

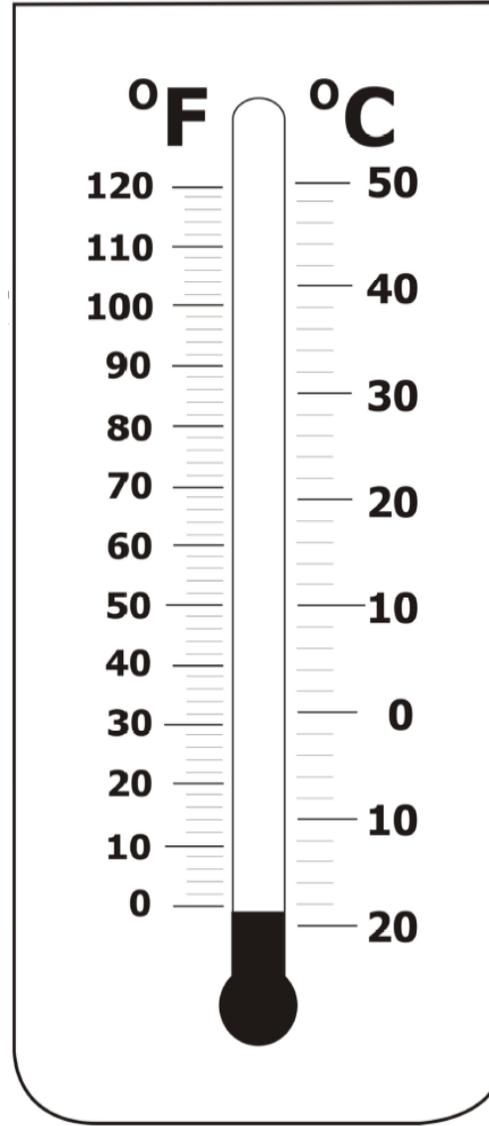


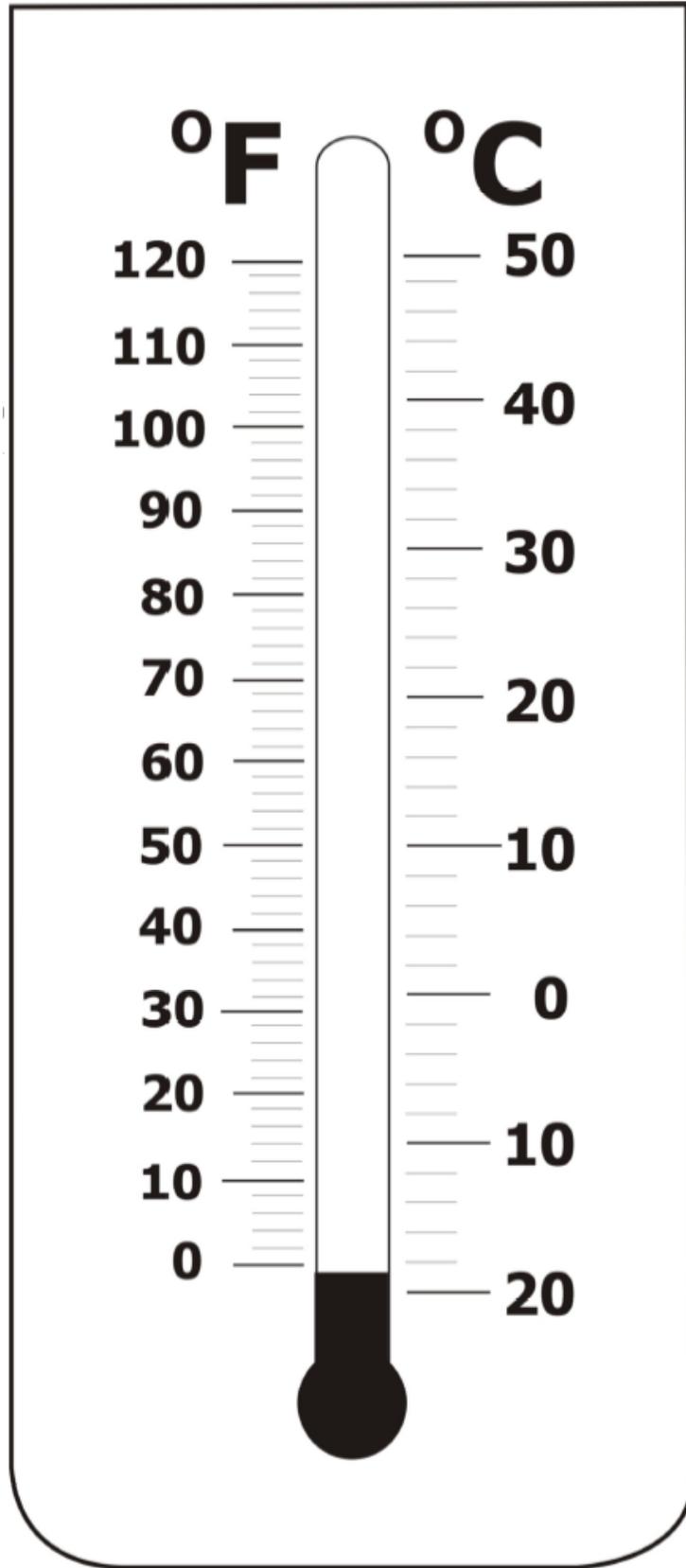
Name \_\_\_\_\_

Soil in SUN



Soil in SHADE





Transparency