

# Measuring Temperature

Levels



Grades K-4

## Overview:

During this project, students use the scientific method to determine the relative temperature of the classroom for two days.

## Objectives:

The student will:

- follow the basic steps of the scientific method;
- determine relative temperature over two days; and
- understand that investigations can be used to answer questions.

## GLEs Addressed:

### *Science*

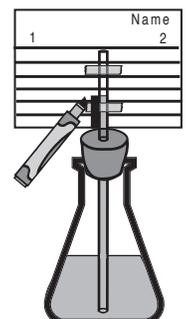
- [3-4] SA1.1 The student demonstrates an understanding of the processes of science by asking questions, predicting, observing, describing, measuring, classifying, making generalizations, inferring, and communicating.
- [3] SD3.1 The student demonstrates an understanding of cycles influenced by energy from the sun and by Earth's position and motion in our solar system by using recorded weather patterns (e.g., temperature, cloud cover, or precipitation) to make reasonable predictions.

## Materials:

- Model Thermometers
- Wide-tipped markers
- STUDENT WORKSHEETS:
  - Level I "Using a Thermometer"
  - Level II "Measuring Temperature"

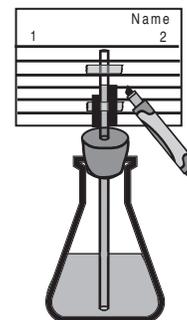
## Activity Procedure (Day 1):

1. Explain that the scientific method is a process for finding the answers to science questions. The first step of the scientific method is to ask a question that can be answered by a science experiment. Ask students if they think the temperature in the classroom will be the same for two days. Explain that this is a **testable question**.
2. Distribute markers and the student worksheets (Level I and II worksheets differ).
3. Explain that a **hypothesis** is a guess about the answer to a testable question. Discuss the hypothesis options (whether the temperature will be the same or different for two days) and ask students to choose a hypothesis. Ask Level I students to state a hypothesis and Level II students to check a hypothesis on the worksheet.
4. Explain to students that they will be conducting an **experiment** to see if the temperature in the classroom is the same for two days. Students will use their model thermometers. A thermometer is an instrument that measures temperature (how hot or cold something is). Direct students to where their thermometers are stored.
5. For **data collection**, instruct students to mark the level of the liquid in the tube by drawing a line from the level of the liquid, to the bottom of the card. The line should be drawn on the left side of the tube (Column 1). Explain that students have measured the temperature in the classroom for Day 1.
6. Leave the thermometers in a place where they will be undisturbed for 24 hours.



## Activity Procedure (Day 2):

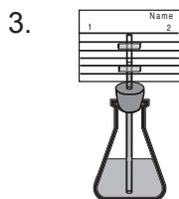
1. Ask students to mark the level of liquid in the tube on Day 2. This line should be drawn on the right side of the tube (Column 2). Explain that students have measured the temperature in the classroom for Day 2.
2. Ask Level I students to remove their thermometer cards and tape them to the appropriate space on their worksheets. Ensure the cards are right side up. Ask Level II students to copy the information on their thermometer cards to the bar graph on their worksheet. Ask students to count the number of lines below each bar on the thermometer card (starting from the bottom) and to then count the number of lines below each bar on the graph to make sure the same data is on both.
3. Measurements taken during an experiment are called **data**. Explain that after scientists have data they analyze it. Lead a class discussion explaining that a higher level of liquid in the tube means the temperature is warmer and a lower level of liquid in the tube means the temperature is colder (just like the thermometers students may have at home). Ask Level I students if the line for Day 2 was higher or lower than the line for Day 1. Ask Level II students to answer the **Analysis of Data** question on their worksheet.
4. Explain that the last step of the scientific method is to use what was learned to answer the testable question. This is called a **conclusion**. Ask students, "Did the temperature in the classroom change over two days?" Ask Level I students to circle the picture on their worksheet that looks most like their card and discuss the meaning of this picture. Then ask students to circle the instrument that measures temperature. Ask Level II students to answer the final questions on their worksheet.



Teacher Note: Bulb thermometers work because liquids change volume when exposed to different temperatures. The thermometer in this experiment is a simple type of bulb thermometer.

## Answers to Level I Student Worksheet:

1. Answers will vary.
2. Answers will vary.



## Answers to Level II Student Worksheet:

Hypothesis: Answers will vary.

Data: Answers will vary.

Analysis of Data: Answers will vary.

Conclusion: Answers will vary.

1. b. thermometer

Name: \_\_\_\_\_

# Using a Thermometer

## Student Worksheet

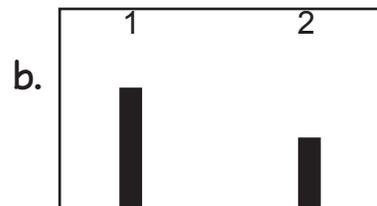


1. Tape your card in the space below:

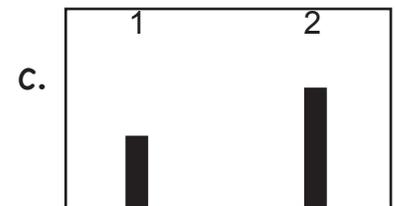
2. Circle the picture that looks like your card.



The temperatures were the same.



Day 1 was warmer.



Day 2 was warmer.

3. Circle the instrument that measures temperature.

