

A Hot Hand

In this activity, you will learn how to use the Vernier EasyTemp™ temperature probe and the Vernier EasyData™ application. You will measure the temperature of the palm of your hand and the palm temperatures of your lab partners. You will then compare the results and determine who has the hottest hand.

OBJECTIVES

In this experiment, you will

- Use a Vernier EasyTemp probe to measure temperature.
- Calculate temperature averages.
- Compare results.

MATERIALS

TI-84 Plus or TI-84 Plus Silver Edition calculator	beaker
Vernier EasyTemp probe	water
Vernier EasyData application	paper towel

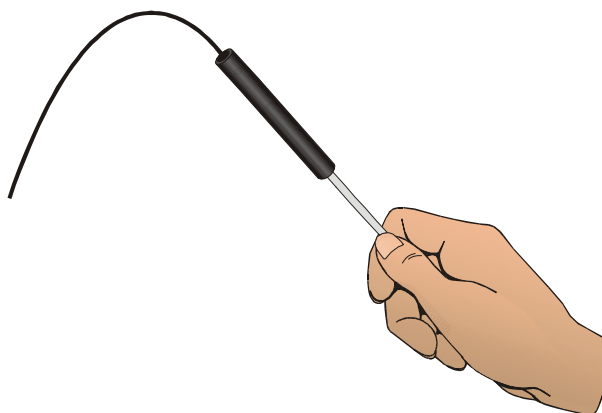
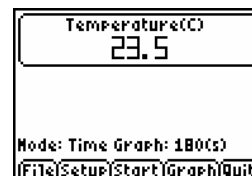


Figure 1

PROCEDURE

1. Turn the calculator on and make sure that the calculator is on the home screen. Plug EasyTemp into the calculator's USB port. The EasyData application will automatically start and the Main screen will be displayed. The main screen shows the connected sensor and its current reading. The Main screen also has five options (File, Setup, Start, Graph, and Quit) that appear above the five calculator keys (Y=, WINDOW, ZOOM, TRACE, and GRAPH). These options are selected by simply pressing the calculator key that appears below the option.
2. Select File from the Main screen and then select **New**.
3. Measure the temperature of the palm of your hand.



- a. Select $\overline{\text{START}}$ to begin data collection.
 - b. Pick up the Temperature Probe and hold its tip in the palm of your hand as shown in Figure 1. A graph of temperature vs. time will appear on the calculator. The graph will show an increase in temperature as the probe warms up to the temperature of your palm. Once the temperature levels off, select $\overline{\text{STOP}}$.
4. Record your highest temperature.
 - a. When data collection is complete, a graph of temperature vs. time will be displayed. Use $\overline{\text{D}}$ or $\overline{\text{C}}$ to examine data points along the curve. As you move the cursor, the time (X) and temperature (Y) values of each data point are displayed below the graph.
 - b. Record your highest temperature (to the nearest 0.1°C).
 - c. Select $\overline{\text{MAIN}}$ to return to the main screen.
 5. Prepare the Temperature Probe for the next run.
 - a. Cool the Temperature Probe by placing it into a beaker of room-temperature water until its temperature reaches the temperature of the water. The temperature of the probe is displayed in a box on the main screen.
 - b. Use a paper towel to dry the probe. Be careful not to warm the probe as you dry it.
 6. Repeat Steps 2-4 for each person in your group.

DATA

Student name	Highest temperature
	$^{\circ}\text{C}$
	$^{\circ}\text{C}$
	$^{\circ}\text{C}$
	$^{\circ}\text{C}$
Team average	$^{\circ}\text{C}$

PROCESSING THE DATA

1. Calculate your team average for the highest temperatures. Record the result in the data table above.
2. How did the highest temperatures of your teammates compare?
3. Who had the “hottest hand”?