ScienceSource 7 > Chapter 10 > Investigating Temperature Data

Background:

The purpose of this activity is to use the Temperature Sensor to record the temperature of cold and hot liquids before and after they are mixed.

Task:

What happens to temperature when you mix hot and cold water?

Materials:

- temperature sensor
- beaker, 250 – 400 mL
- graduated cylinder, 100 mL or measuring cup
- ice
- hot water

Procedure:

For this activity, a temperature sensor is used to track the temperature of mixed hot and cold water.

Step 1:

Connect the temperature sensor to your computer.

Step 2:

Configure the data collection software to collect temperature data over time.

Step 3:

Use the graduated cylinder to measure 100 ml of ice water. Pour the 100 ml of ice water into one of the glass containers. Use the graduated cylinder to measure 100 ml of hot water. Pour the hot water into the other glass container.

Step 4:

Place the temperature sensor into one of the containers of water. Start recording data. Watch the graph for about 10 seconds.

Step 5:

Move the temperature sensor to the other container and watch the graph for another 10 seconds or so. Stop recording data.

Step 6:

Try different ways of changing the temperature, such as putting the tip of the sensor directly on an ice cube, mixing the hot and cold water in several different ways, or taking the sensor out of the water and blowing on the tip of it.

In your notes, keep a list of the things you try. For each thing you try, write down your predictions about what will happen to the temperature before you do the experiment.

Step 7:

When you have finished collecting your temperature data, you are ready to analyze it. Re-scale the graph so the data fills the whole window.

Find the lowest temperature you recorded. (If you are using DataStudio software, click on the 'Smart Cursor' button . The cursor becomes a crosshair which you can drag over the graph in order to more easily determine the coordinates at any particular point.) Write down this temperature in your notes.

Find the highest temperature you recorded. Write down this temperature in your notes.

Forming Conclusions:

- What was the most amount of change you were able to produce in the temperature?
- Which temperature change took the least amount of time? Which took the longest?
- Which of your predictions turned out as you expected? Which predictions did not agree with the results?