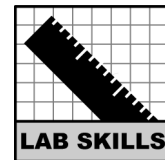


Name: _____

Date: _____



8.2 Measuring Temperature

How do you find the temperature of a substance?

There are many different kinds of thermometers used to measure temperature. Can you think of some you find at home? In your classroom you will use a glass immersion thermometer to find the temperature of a liquid. The thermometer contains alcohol with a red dye in it so you can see the alcohol level inside the thermometer. The alcohol level changes depending on the surrounding temperature. You will practice reading the scale on the thermometer and report your readings in degrees Celsius.

Materials

- Alcohol immersion thermometer
- Beakers
- Water at different temperatures
- Ice

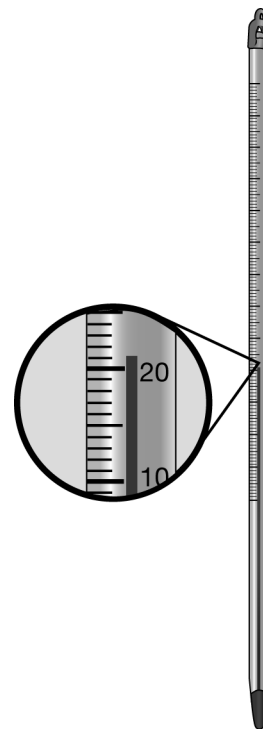
Safety: Glass thermometers are breakable. Handle them carefully. Overheating the thermometer can cause the alcohol to separate and give incorrect readings. Glass thermometers should be stored horizontally or vertically (never upside down) to prevent alcohol from separating.

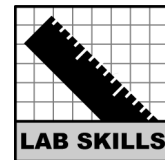
Reading the temperature scale correctly

Look at the picture at right. See the close-up of the line inside the thermometer on the scale. The tens scale numbers are given. The ones scale appears as lines. Each small line equals 1 degree Celsius. Practice reading the scale from the bottom to the top. One small line above 20 °C is read as 21 °C. When the level of the alcohol is between two small lines on the scale, report the number to the nearest 0.5 °C.

Stop and think

- What number does the large line between 20 °C and 10 °C equal? Figure out by counting the number of small lines between 20 °C and 10 °C.
- Give the temperature of the thermometer in the picture above.
- Practice rounding the following temperature values to the nearest 0.5 °C: 23.1 °C, 29.8 °C, 30.0 °C, 31.6 °C, 31.4 °C.
- Water at 0 °C and 100 °C has different properties. Describe what water looks like at these temperatures.
- What will happen to the level of the alcohol if you hold the thermometer by the bulb?





Reading the temperature of water in a beaker

An immersion thermometer must be placed in liquid up to the solid line on the thermometer (at least 2 and one half inches of liquid). Wait about 3 minutes for the temperature of the thermometer to equal the temperature of the liquid. Record the temperature to the nearest 0.5 °C when the level stops moving.

1. Place the thermometer in the beaker. Check to make sure that the water level is above the solid line on the thermometer.
2. Wait until the alcohol level stops moving (about three minutes). Record the temperature to the nearest 0.5 °C.

Reading the temperature of warm water in a beaker

A warm liquid will cool to room temperature. For a warm liquid, record the warmest temperature you observe before the temperature begins to decrease.

1. Repeat the procedure above with a beaker of warm (not boiling) water.
2. Take temperature readings every 30 seconds. Record the warmest temperature you observe.

Reading the temperature of ice water in a beaker

When a large amount of ice is added to water, the temperature of the water will drop until the ice and water are the same temperature. After the ice has melted, the cold water will warm to room temperature.

1. Repeat the procedure above with a beaker of ice and water.
2. Take temperature readings every 30 seconds. Record the coldest temperature you observe.

