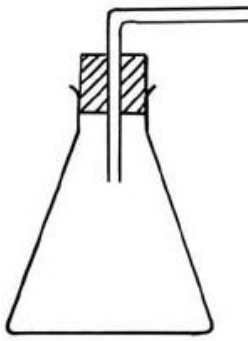
Water Thermometer:



A, **Notice** that the thermometer is a flask of **WATER** with an extended tube for calibrations (marks).

B. You may work with ONE other person, but each of you is responsible for warming, cooling and drawing.)

#1 Starting Temperature:

a. Move the marking tape #1 to mark the starting water level.

#2 Higher Temperature:

b Warm the flask of water with your hands as you watch the water level in the tube.

c. When you get a change, mark the new level with tape #2.

#3 **Lower Temperaure:**

d. Cool the flask with ice or cold water. When you get a change, mark the level with tape #3.

C. Remember this:

1) **Particles of a substance move FASTER when warmer (have more energy),and particles move SLOWER when cooler (have less energy).**

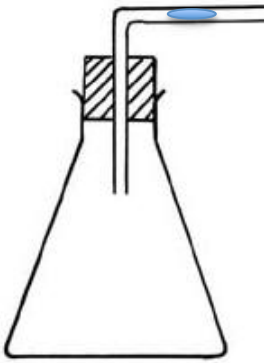
2) **Particles that move FASTER take up more room so the object or volume becomes LARGER.**

D. Draw this thermometer using particles to explain 2 temperatures.

Key: O→ = Cooler (less energy)

O--→ = Warmer (more energy)

AIR Thermometer:



A, **Notice** that the thermometer is a flask of **AIR** with an extended tube for calibrations (marks).

B. An AIR thermometer should have **some water in the tube to use as a marker**. You may need to add water to the tube.

C. You may work with ONE other person, but each of you is responsible for warming, cooling and drawing.)

#1 Starting Temperature:

a. Move the marking tape #1 to mark the starting air level.

#2 Higher Temperature:

b Warm the flask of air with your hands as you watch the air level in the tube.

c. When you get a change, mark the new level with tape #2.

#3 **Lower Temperaure:**

d. Cool the flask with ice or cold water. When you get a change, mark the level with tape #3.

D. Remember this:

1) **Particles of a substance move FASTER when warmer (have more energy),and particles move SLOWER when cooler (have less energy).**

2) **Particles that move FASTER take up more room so the object or volume becomes LARGER.**

E. Draw this thermometer using particles to explain 2 temperatures.

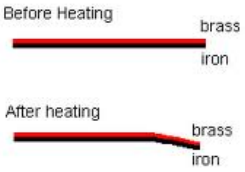
Key: O→ = Cooler (less energy)

O--→ = Warmer (more energy)

Bimetallic Strip Thermometer:

A, **Notice:** The thermometer is bi(2)-metal strip.

B. You may work with ONE other person, but each of you is responsible for warming, cooling & drawing.

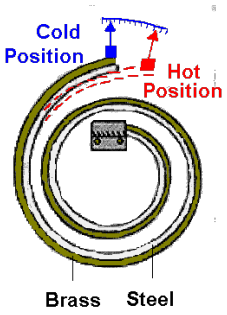


#1 Starting Temperature:

a. Note the "top" and "bottom".

b. Draw the actual bimetallic strip, edge or side view.

#2 Higher Temperature:



Read this: SAFETY RULES:

→Keep hands away from burner.

→DO NOT TAKE STRIP AWAY FROM BURNER AREA.

→Keep STRIP over heat or on HEAT SAFE AREA

c Warm the strip with a burner or stove.

d. When you get a change, draw again.

#3 Lower Temperaure:

d. Cool the strip by taking it off of the burner and placing it on the safe table next to the burner.

C. Remember this:

1) **Particles of a substance move FASTER when warmer (have more energy),and particles move SLOWER when cooler (have less energy).**

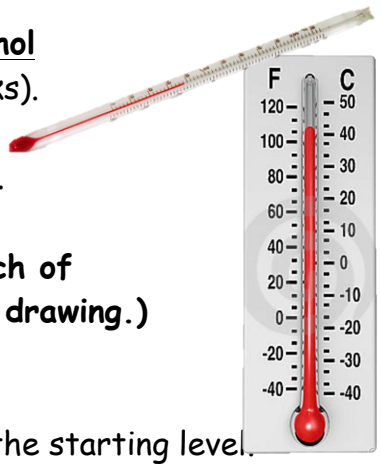
2) **Particles that move FASTER take up more room so the object or volume becomes LARGER.**

D. Draw this thermometer using particles to explain 2 temperatures. Remember BRASS expands faster than IRON, so becomes longer and is the outside of the curve. (THINK about the outside lane of a racetrack).

Key: O→ = Cooler (less energy)

O--→ = Warmer (more energy)

Alcohol and Mercury Thermometers:



A, **Notice** that the thermometer is a bulb of **alcohol** or **mercury** with a tube for calibrations (marks). Mercury is a health hazard, so most tube thermometers are now alcohol thermometers.

B. You may work with ONE other person, but each of you is responsible for warming, cooling and drawing.)

#1 Starting Temperature:

a. Move the marking tape #1 to mark the starting level.

#2 Higher Temperature:

b Warm the bulb of the thermometer with your hands as you watch the level in the tube. You may use warm water.

c. When you get a change, mark the new level with tape #2.

#3 **Lower Temperaure:**

d. Cool the bulb with ice or cold water. When you get a change, mark the level with tape #3.

C. Remember this:

1) **Particles of a substance move FASTER when warmer (have more energy),and particles move SLOWER when cooler (have less energy).**

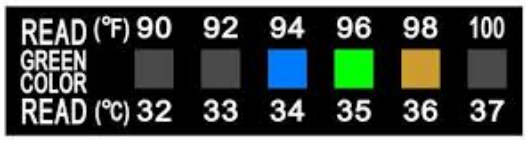
2) **Particles that move FASTER take up more room so the object or volume becomes LARGER.**

D. Draw this thermometer using particles to explain 2 temperatures.

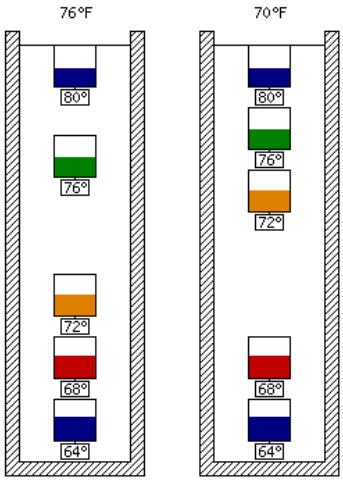
Key: O→ = Cooler (less energy)

O--→ = Warmer (more energy)

Thermometer Notes:



A **Liquid Crystal Thermometer** or **plastic strip thermometer** is a type of thermometer that contains heat-sensitive (thermochromic) liquid crystals in a plastic strip that change color to indicate different temperatures. [1] Liquid crystals possess the mechanical properties of a liquid, but have the optical properties of a single crystal. Temperature changes can affect the color of a liquid crystal, which makes them useful for temperature measurement. The resolution of liquid crystal sensors is in the 0.1°C range. Disposable liquid crystal thermometers have been developed for home and medical use. For example if the thermometer is black and it is put onto someone's forehead it will change colour depending on the temperature of the person.



A **Galileo Thermometer**

(or **Galilean thermometer**)

is a thermometer made of a sealed glass cylinder containing a clear liquid and several glass vessels of varying densities. As temperature changes, the individual floats rise or fall proportion to their respective density.

It is named after Galileo Galilei because he discovered the principle on which this thermometer is based—that the density of a liquid changes in proportion to its temperature—and invented a thermoscope based on this principle.

http://en.wikipedia.org/wiki