

GRADE 7 SCIENCE

Unit 2: Heat

Chapter 4: *Temperature describes how hot or cold an object is.*

DESCRIBING TEMPERATURE

- How does temperature affect your daily life?
- Why do you feel warm playing outside on a cold winter's day?



Place one hand in cold water, one hand in “hot” water for 1 minute. Then at the same time put both hands in the luke warm water. Describe what each hand feels.

AN EXPERIMENT...

TEMPERATURE

○ How hot or cold something is



HOT



COLD

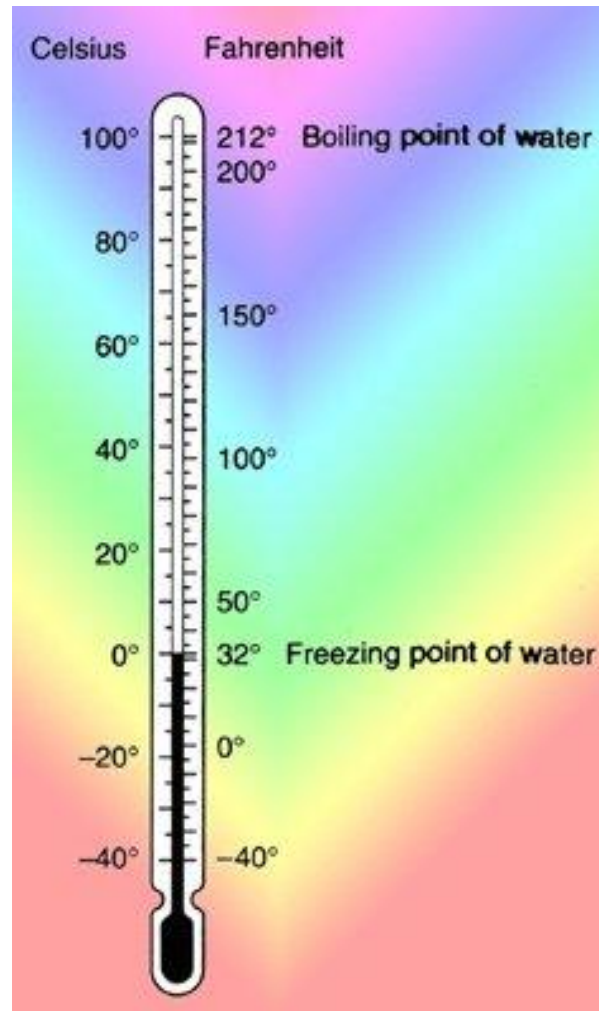
COMPLETE ACTIVITY 4-1 A
“BOILING HOT, FREEZING COLD”
PAGE 111

STANDARD TEMPERATURES

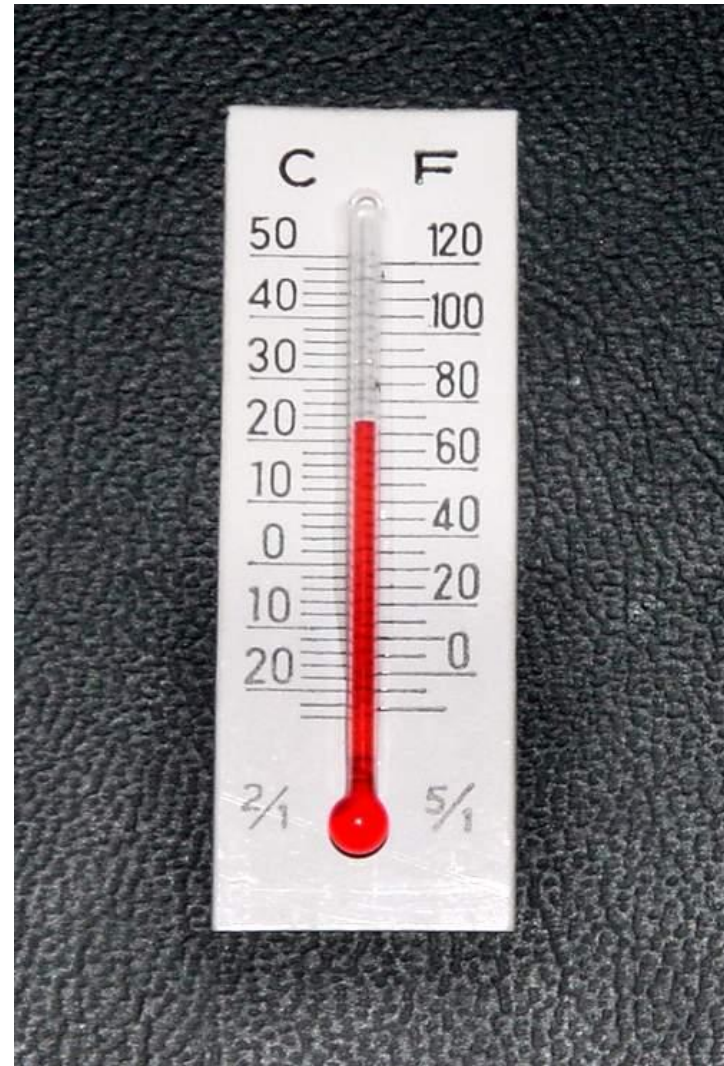
○ The human body



- ⦿ Boiling point of water
- ⦿ Freezing Point of water



◉ Comfortable room temperature



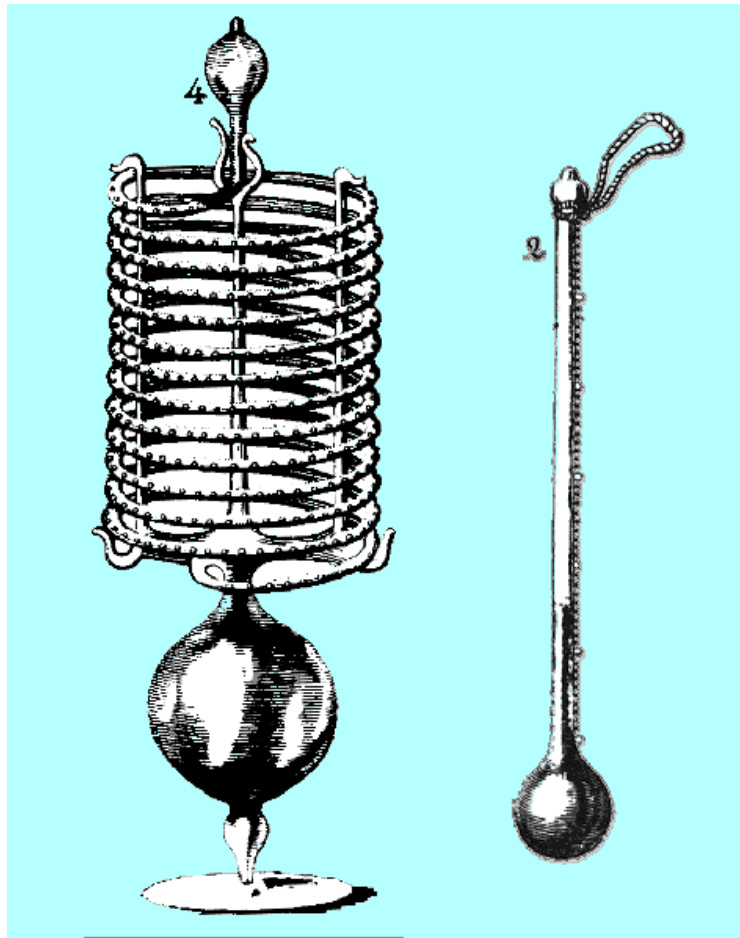
MEASURING TEMPERATURES

Early Thermoscopes...



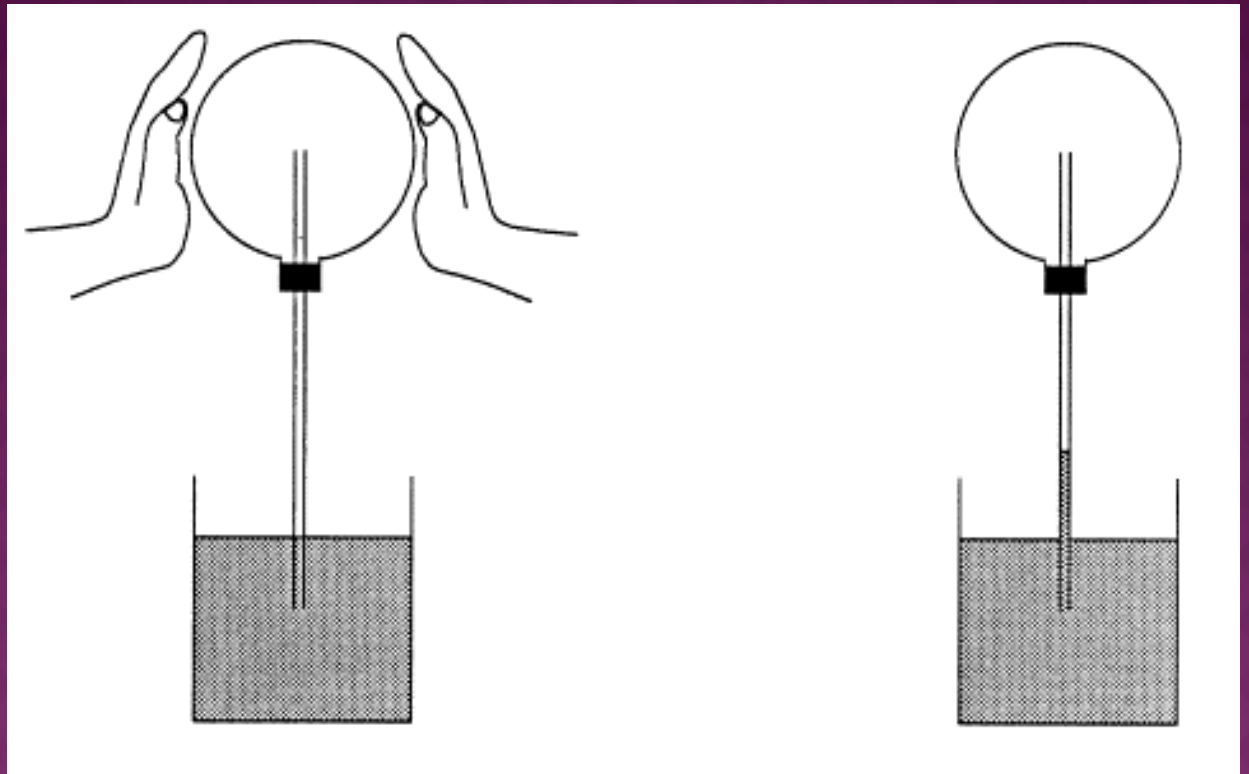
1. Galileo's Air Thermoscope:

As the air heats, the liquid drops and rises when air is cooled.



2. Early Liquid Thermometer:
Liquid rising up the tube shows the temperature is rising.

A DEMO...



Activity 4-1A
“Building a Thermoscope”
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TEMPERATURE SCALES

- Scales are necessary for temperatures to be accurate and comparable.

3 commonly used scales
are:

1. Fahrenheit
2. Celsius
3. Kelvin

FAHRENHEIT

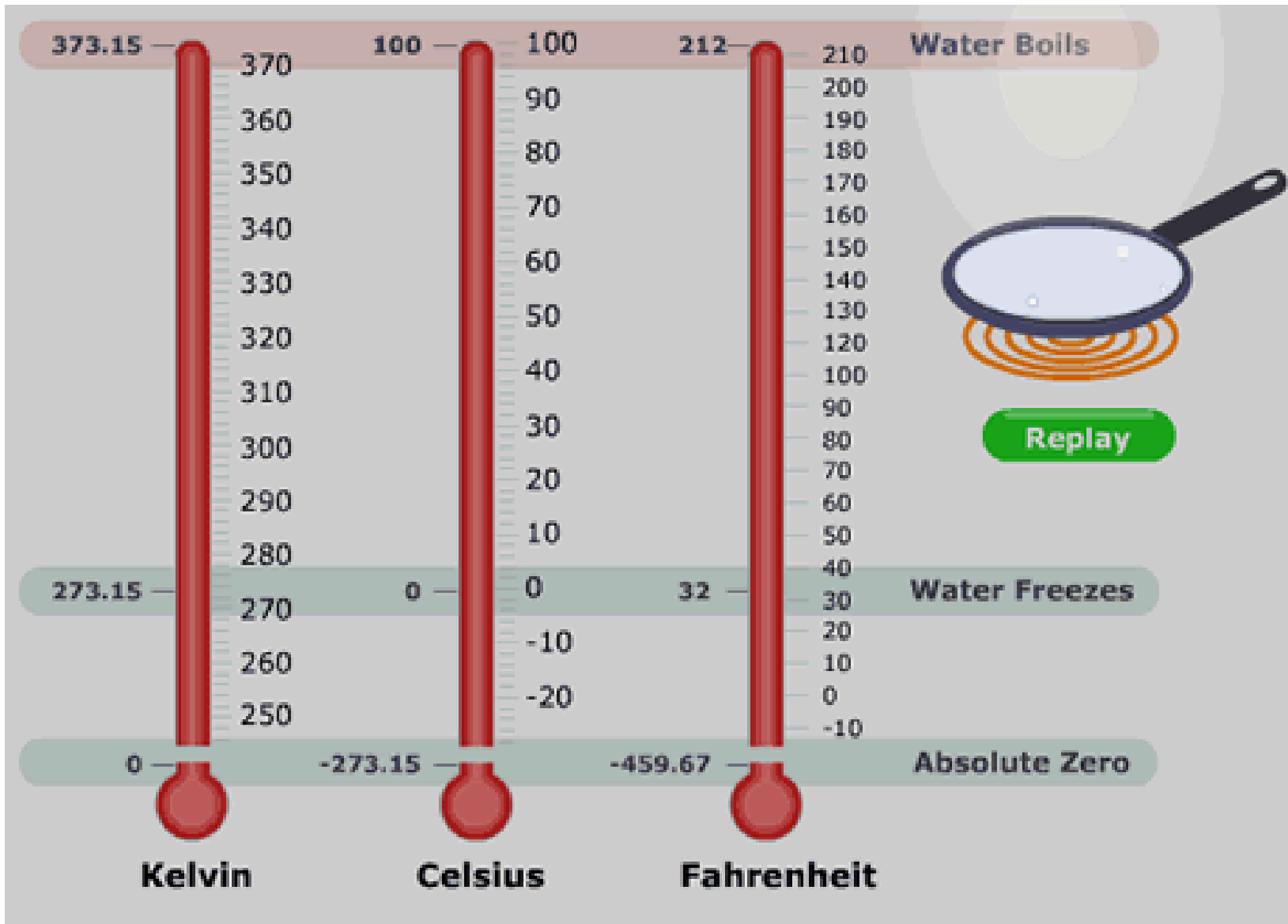
- Developed by Daniel Fahrenheit
- The first to be widely used

CELSIUS

- Developed by Anders Celsius.
- Based on the freezing and boiling points of water.

KELVIN

- Developed by William Thomson (Lord Kelvin)
- Scale starts at the coldest temperature possible - absolute zero (-273 °C)



MEASURING DEVICES

1. The Liquid-in-glass Thermometer

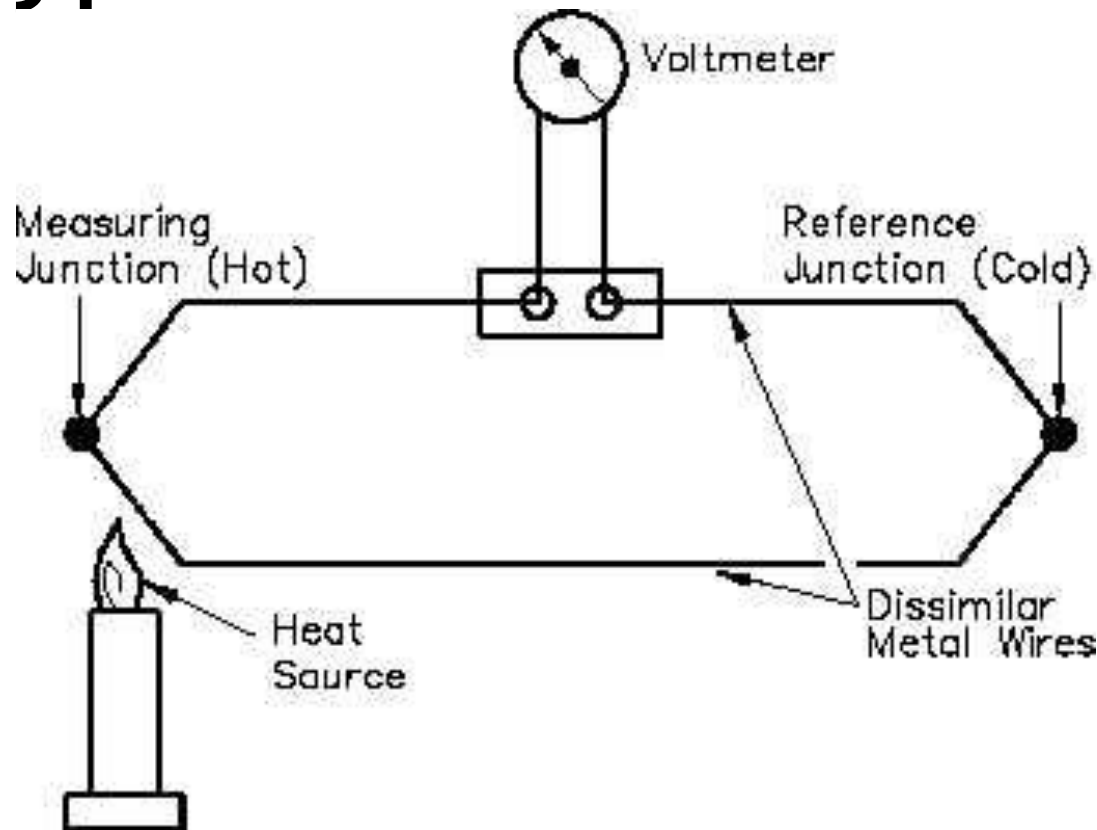


The lab thermometer contains colored alcohol rather than mercury for safety.

2. The Thermocouple

- Made of two wires of different metals.
- A temperature difference causes a current to flow through the wires. This current is measured by a meter.

- Can measure higher temperatures than typical thermometers.



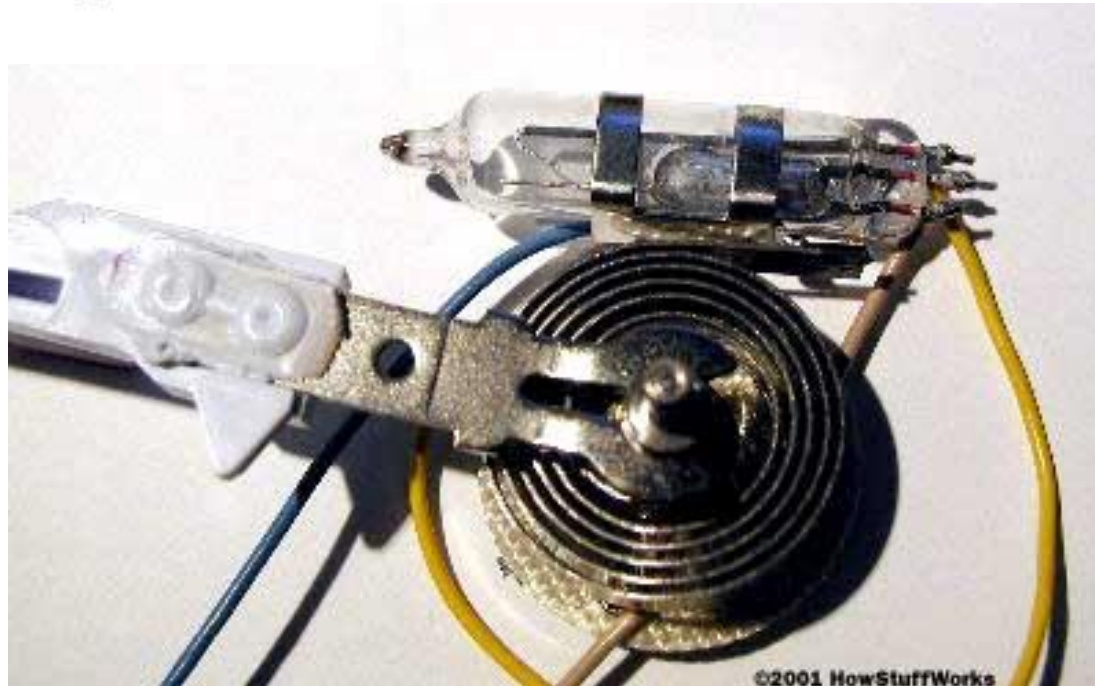
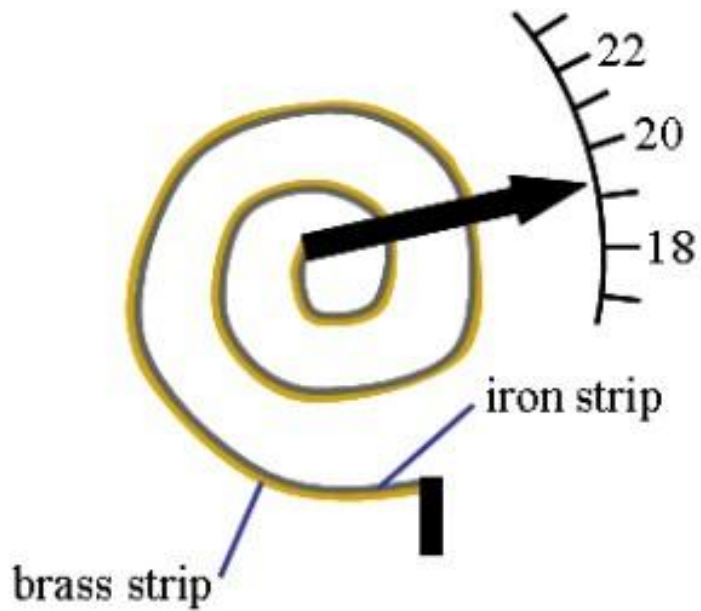
3. The Resistance Thermometer (*digital thermometers*)



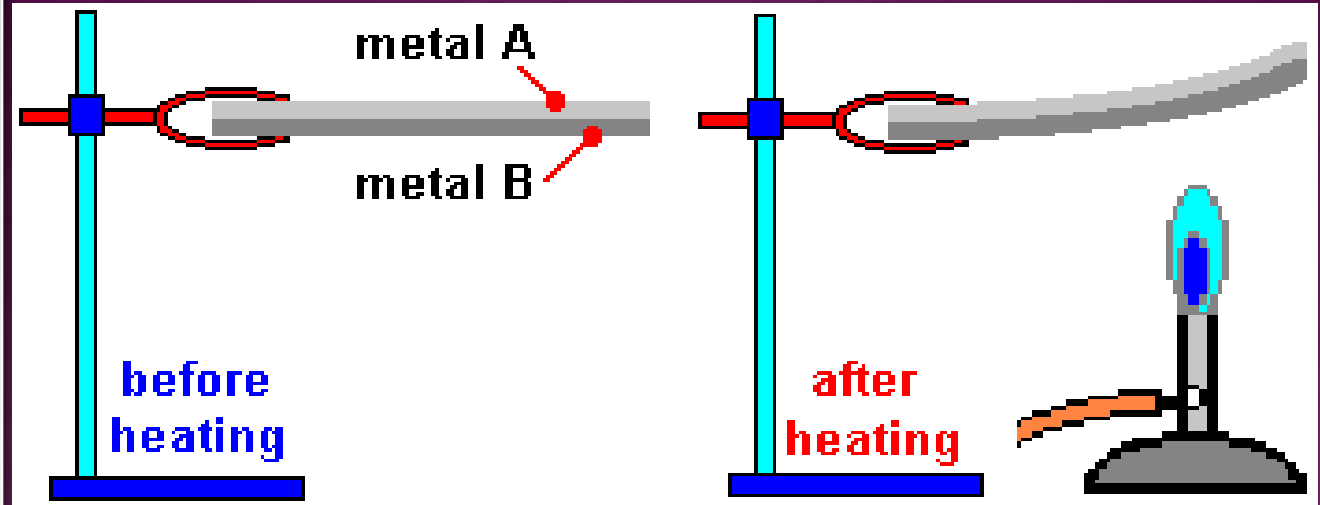
4. Bimetallic Strip (*thermostat*)

- Made of two different metals fused together.
- These metals expand and contract at different rates causing the strip to bend when heated.

Thermostat



A DEMO...



Heating and Cooling a Bimetallic Strip

5. Infrared Thermometer (*thermogram*)

- Converts infrared radiation into colors that can interpret a temperature difference.



*Can be
used to
measure
heat loss in
your home*

