

THERMAL ENERGY TRANSFER

NOTES

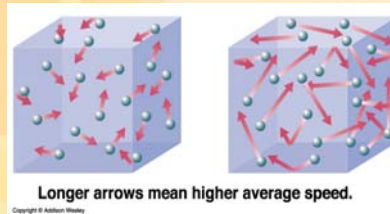
Objectives

- Students will know how thermal energy is transferred (3 types)
- Students will give examples of each type of thermal energy transfer
- Students will know some characteristics of each type of thermal energy.
- Students will gain knowledge for experiments demonstrating each type of thermal energy transfer

HEAT:
The transfer of a form of energy that is transferred by a difference from a high temperature to a low temperature.

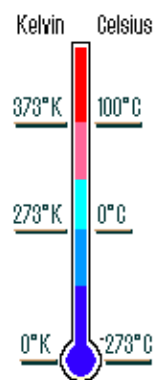
THERMAL ENERGY

- Total amount of energy in an object's moving molecules.
- **Heat**--flow of thermal energy from a warmer object to a cooler object



Definition of Temperature

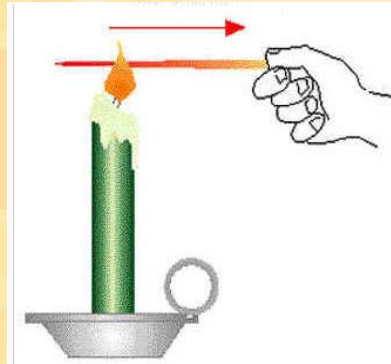
Figure 1. Temperature Scales:



- the measure of the average motion of all the molecules and or atoms in an object.

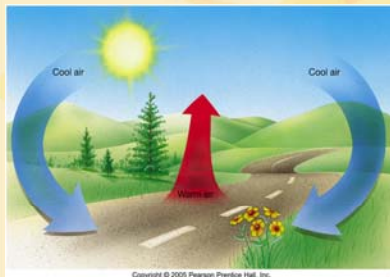
Types of Heat Transfer

- **Conduction**: transfer of thermal energy through matter which moves from warm to cold when objects **touch**
- Example: stove top, Hand on steel during cold weather, hands on hot chocolate mug



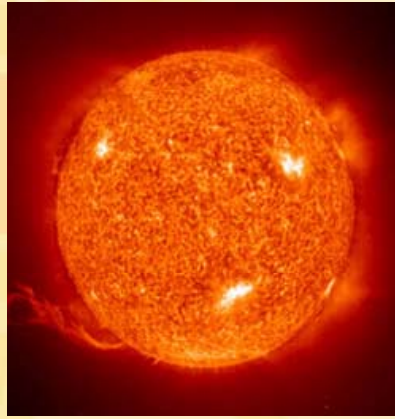
- **Convection**: energy transfers by a moving fluid (liquid or gas) and needs matter to travel.

Example: wind, ocean currents, steam from hot chocolate mug, Macaroni noodles rise and fall in boiling water.



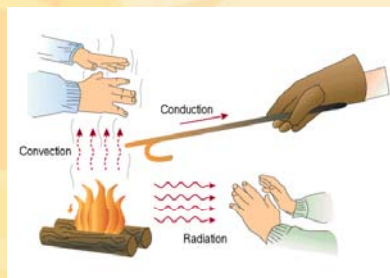
- **Radiation**: thermal energy moving through space and does not require matter.

Example: Warmth from a fire, light from the sun, electromagnetic spectrum



REMEMBER

- Energy always travels from an area of **HIGH** energy to **LOW** energy!



Objects and Energy Flow

- Conductors
Help energy move
Examples: metals



- Insulators slow down energy flow
Examples: plastic, air, styrofoam



Review

- Name the three types of Energy transfer ?
- Define Each type of energy Transfer.
- Give examples of each type.
- Give example on helping and restricting energy.
- What benefit can you think this would have in science?
- How can this help you understand your world around you?