#____

Scientist: _____ _____

Date: ____-____-____ HR: _____

<----------Thermal ENERGY---------->

("thermal" means heat)

Thermal energy can be transferred between objects in these 3 ways.

Conduction

. . . is the direct transfer of thermal energy between objects that touch.

HEAT transfer between objects that touch!!

When solids transfer thermal energy to other solids, it is usually by conduction.

Metals are good conductors (a material that transfers heat easily.)
Examples:
iron, steel, copper

FYI: Insulators (materials that do not transfer heat easily) are poor conductors.
Examples: rubber, plastic, wood

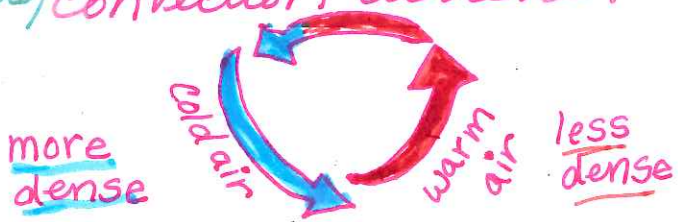
Examples:
- Touching a stove or being burned
- ice cooling down your hand
- Boiling water by thrusting a red-hot piece of iron onto it. (or sparklers)
- hold a metal rod in a bunsen flame
  (burner)

Convection

. . . . is thermal energy transfer as a result of a liquid or a gas.

Heat transfer by movement of a liquid or gas!

Examples:
- boiling H_2O
- hot air balloon
- an old fashioned radiator
- Cool air (very dense) pushes warm air (less dense) U P. Creates a convection current.



Radiation

. . . is the transfer of heat as waves.

Heat transfer in the form of waves through solids, liquids, gas, or empty space.

The only transfer that can occur through Solids, liquids, gases & empty space.

Examples:
- heat from a light bulb
- heat from sun warming your face.
- heat from a fire
- heat from anything else which is warmer than its surroundings.