Lesson 7: Three Types of Heat Transfer

There are three types of heat transfer:

Heat Transfer

When the energy is carried through or across one substance to another.

1) Conduction

When heat transfers from one object to another object that it is in **contact** with. This only happens in one direction, from hotter —> colder.

Example: When you touch a hot stove with your cooler hand, the heat is conducted to your hand.

Metals are good conductors, air is not.

2) Convection

When warmer areas of a liquid or gas rise to cooler areas in the liquid or gas. In liquids and gases, convection is usually the most efficient way to transfer heat. You have probably heard the expression "Hot air rises."

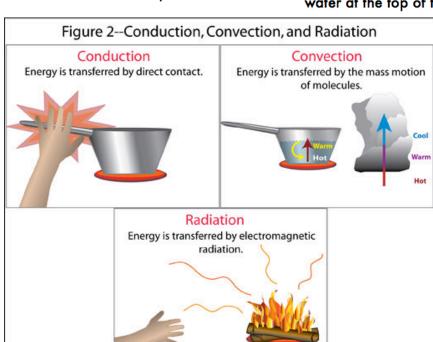
Convection explains this.

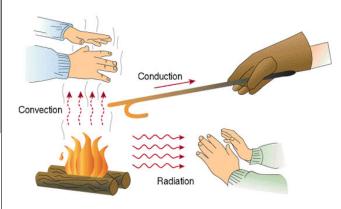
Example: When you boil water in a pan, the bubbles of water that rise are the hotter parts of the water rising to the cooler area of water at the top of the pan.

3) Radiation

When heat transfers between matter without any contact or the movement of particles. Radiation is the transfer of energy by invisible waves.

Example: When we feel the heat from the sun's rays, even though they do not touch us.





Action Item:

On the page provided, create a comic, poster, diagram or mind map that demonstrates on of the types of energy transfer: conduction, convection or radiation.

Make sure to include information about:

The name of the heat transfer

How the heat transfer works (which direction does heat travel? How does it travel? Why is this?)

travel? Why is this?)

A real-life example

An image or diagram that explains the transfer

Conduction

-Transfer of heat between two materials with different temperatures that are touching

- Liquids, gases or solids

Real World Example:

Oven mitts were designed to prevent the conduction of heat from hot pans to cool hands from causing burns

Convection

-Transfer of heat within a fluid that has different temperatures by currents

Real World Example:

When you heat up your room using a furnace, or cool it down with an air conditioner, convection currents of air are used.

-Transfer of heat by invisible waves called **infrared wave**s (no touching)

-Must be

touching

Particles move

-Method of

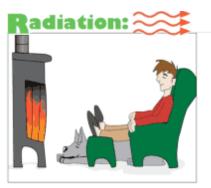
heat

ransfer

Real World Example:

In the summer, asphalt is very warm because it absorbs the **infrared** waves of the sun and is heated.

Radiation



"Hey Duke, doesn't that fire feel good."



"Ouch! That poker's too hot to hold with my bare hands."



"I'll turn on the fan. All the warmest air is up near the ceiling."