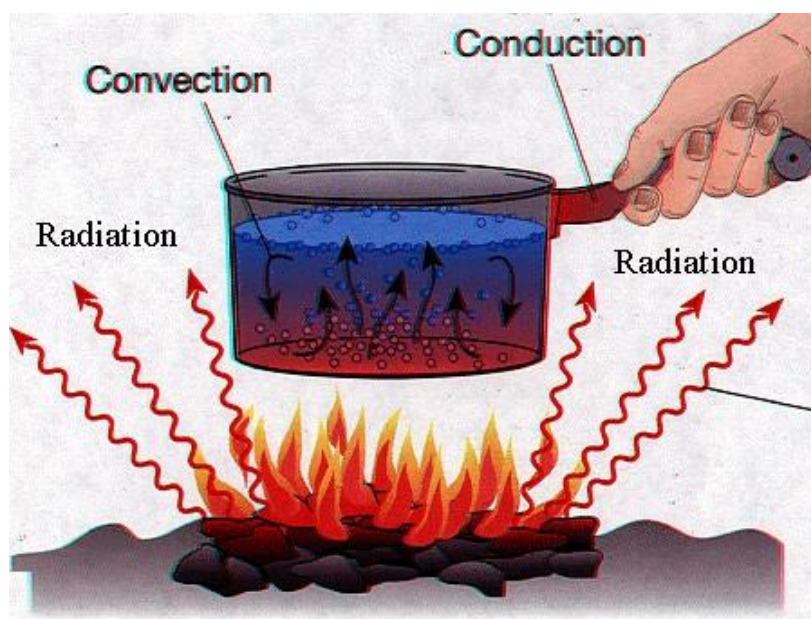


# Science 20F

## Heat Transfer

### Lesson 6



Notes! - Keep with you at home - don't return to this lesson to school.

Date: \_\_\_\_\_

**S2-4-03 Explain effects of heat transfer within the atmosphere and hydrosphere on the development and movement of wind and ocean currents. Including convection**

## Heat Transfer

Website and Video that can be very helpful available at:

<https://www.wisc-online.com/learn/natural-science/earth-science/sce304/heat-transfer-conduction-convection-radiation>

1. List three ways heat is transferred.

- Conduction
- Convection
- Radiation

2. On our planet heat is always moving from hot objects to cold objects

3. When energy travels from the sun as electromagnetic waves it is called Radiation.

4. Radiation can travel through empty space.

5. The transfer of heat between substances that are in direct contact with each other is called Conduction

6. Give an example of conduction: Hot pot on a stove, the heat is transferred through the pot to the food in the pot.

7. Complete the table:

Conductors	Insulators
Copper	Wood
Silver	Styrofoam
Iron	paper
Steel	plastic

Glass

Air

8. The up and down movement of gases and liquids is called Convection
9. As a gas or liquid is heated it: warms up, expands, and it rises because it is less dense.
10. When a gas or liquid cools it becomes more dense and sinks.
11. As the gas or liquid warms and rises or cools and falls, it creates a convection current
12. List four examples of convection
  - hot water at the surface of a pool or lake
  - wind currents
  - hot air balloons
  - upper floors in buildings and houses are warmer because warm air rises

# Conduction

Conduction occurs when heat travels slowly through a substance.

The atoms or molecules close to the heat source collide with surrounding atoms or molecules and transfer their energy.

All substances can transfer energy by conduction but this is seen mostly in solids.

# Convection

Convection is the rapid transfer of heat in fluids (liquids and gases). When a liquid or gas is heated, the molecules move farther apart.

The molecules of liquids or gases occupy more space but are less dense than molecules of solids and will rise. Water and air on Earth are heated by convection.

Convection currents move heated air around the earth, and the difference between warm and cold air provide the energy needed to create weather.

# Radiation

Radiation is the transfer of heat by any hot object. Hot objects give off invisible waves of heat such as infra-red radiation. These waves transport the heat to surrounding objects at a rate of 300 000km/sec. This is the only kind of heat that can travel through empty space.



It's the only type of heat that can travel across empty spaces!