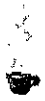
Types of Heat Transfer & Density of Materials

Part 1: Read the 3 short paragraphs and fill in the chart below.



Convection is the transfer of heat by the actual movement of the warmed matter. Heat leaves the coffee cup as the currents of steam and air rise. Convection is the transfer of heat energy in a gas or liquid by movement of currents. (It can also happen is some solids, like sand.) The heat moves with the fluid. Consider this: convection is responsible for making macaroni rise and fall in a pot of heated water. The warmer portions of the water are less dense and therefore, they rise. Meanwhile, the cooler portions of the water fall because they are denser.

Conduction is the transfer of energy through matter from particle to particle. It is the transfer and distribution of heat energy from atom to atom within a substance. For example, a spoon in a cup of hot soup becomes warmer because the heat from the soup is conducted along the spoon. Conduction is most effective in solids-but it can happen in fluids. Fun fact: Have you ever noticed that metals tend to feel cold? Believe it or not, they are not colder! They only feel colder because they conduct heat away from your hand. You perceive the heat that is leaving your hand as cold.

Radiation: Electromagnetic waves that directly transport ENERGY through space. Sunlight is a form of radiation that is radiated through space to our planet without the aid of fluids or solids. The energy travels through nothingness! Just think of it! The sun transfers heat through 93 million miles of space. Because there are no solids (like a huge spoon) touching the sun and our planet, conduction is not responsible for bringing heat to Earth. Since there are no fluids (like air and water) in space, convection is not responsible for transferring the heat. Thus, radiation brings heat to our planet.

Heat Transfer Worksheet

1. In the table below, fill in your definition and a real-life example.

	Your Definition	Real-Life Example
Convection		
Conduction		
Radiation		