Grade 7 Science – Heat

Thermal Energy Transfer

Name: _____ Class: ____ Date: _____

Heat is energy and energy wants to spread out in the universe (or in any part of the universe). This is known as **ENTROPY**. When something is hot (high thermal energy) or cold (low thermal energy), the tendency is for that particle energy to move from an area of high thermal energy to an area of low thermal energy. This is known as **thermal energy transfer** or heat transfer.

There are different ways that thermal energy moves. It depends of the material that is around the source of heat.

If there is a material that moves heat well (heat conductor) and it is contact with the heat source, it will draw the heat away through the material. This is called **CONDUCTION**.

If the material around the heat source can flow (liquid or gas), the heat will what the fluid and it will rise and draw in more cool fluid and transfer the heat away through a process called **CONVECTION**.

All objects that are above zero Kelvin emit radiation that is in the infrared wavelength – this is known as thermal radiation. The hotter something is, the more radiant energy it emits. You do not need any material to move this energy – it even happens in outer space! This is known as thermal **RADIATION.**

These are the three ways that energy can be transferred. Directly, through a material contact (Conduction), through material flowing past it (Convection) and through indirect transfer (Radiation).

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The three ways thermal energy is transferred are through **Conduction, Convection and Radiation.**

For each of the following, identify the form of heat transfer

An oven mitt gets warmer when holding a hot pan _____	When sitting in front of a fire, your face gets warm _____	A large puddle evaporates when the sun comes out. _____
Hot air in a balloon rises and pulls up the basket _____	A glass full of ice starts to melt when put on a warm table. _____	A metal spoon in a cup of hot chocolate starts to feel warm _____
A pot sitting on a hot stove. _____	A hot bowl of soup cools on a placemat. _____	A hot dog is cooked over a campfire. _____
Your friend gets a sunburn while playing at the beach. _____	A microwave heats food using microwaves (a form of EMR). _____	An infrared heat sensor detects body heat. _____
Blowing on very hot food cools it down quickly, _____	Copper is placed on the bottom of a pot so the pot gets heated evenly _____	Solar panels get their energy from this type of heat transfer. _____