

Motion & Design

Heat Transfer

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| **Heat Transfer** | **Definition** | **Examples** |
| **Conduction** | Heat transferred by the direct contact of molecules | * A pot sitting on a hot burner rises in temperature * A metal spoon that is sitting in a pot of boiling water gets hot * A heated blanket to gets a person warm * A cup of hot coffee burns a person. * Ice is held in a person’s hand and begins to melt. |
| **Convection** | Heat transferred through a liquid or gas by means of up-and-down (heat rises, cools, then falls) | * An old-fashioned radiator emits warm air at the top vent in a room and draws in cool air at the bottom. * A hot air balloon rises a torch pushes hot air into the balloon and cool air falls out of the bottom. * The surface of the ocean is much warmer than the depths of it. The more shallow the water, the warmer; the deeper the water, the cooler. |
| **Radiation** | Heat transferred through an empty space by invisible infrared rays | * A person’s hands get warm next to a campfire * A person lays on the beach to get a tan/take a nap in the warm sun * A lightbulb is warm-to-touch. |

The Heat Beat

(Convection, Radiation, Conduction Rap)

**Convection**, **convection**

This is my confession

The *cool air moves down and warm, the up direction*

I like the **radiation** of the sun’s sensation

It’s all about the *waves*,

That move in every nation

I’ll tell you ‘bout **conduction**

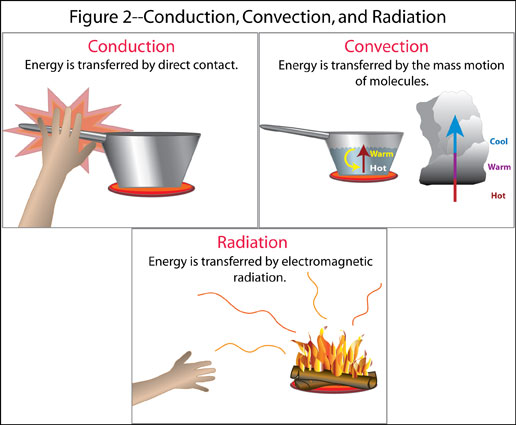
This is how it functions:

*Heat travels through a solid*

Now you ought-a know, son!

CON.. VEC… TION

And radiation

CON… DUC… TION

In every nation!