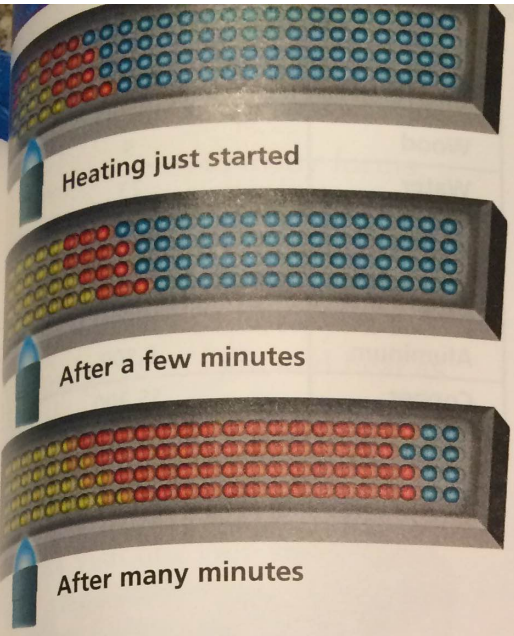

How Does Heat Move?

When heat flows, it can move in three ways—conduction, convection, and radiation. In **conduction** thermal energy flows through objects as their particles vibrate. Conduction, as shown above, is the way your hand is warmed by a mug of hot chocolate. It usually occurs in solids and between objects that are touching.

In **convection** thermal energy is transferred by the movement of matter. Convection occurs in liquids and gases. In convection hot parts of a material rise, while cooler parts sink. There is a flow of material and heat.

A pot of water is heated by convection, for example. As water is heated on a stove, the water near the burner gets hot and rises to the top of the pan. The cooler water near the top then sinks and gets warmed. Thermal energy is transferred by a cycle of rising and sinking matter.

In **radiation** heat is transferred through electromagnetic rays. Matter is not needed at all in this energy transfer. All objects around us give off radiation. Radiation can travel through space. Radiation from the Sun warms Earth, for example.

What are three ways that heat can move?

In convection, cooler materials sink while warmer materials rise in a cycle of motion.