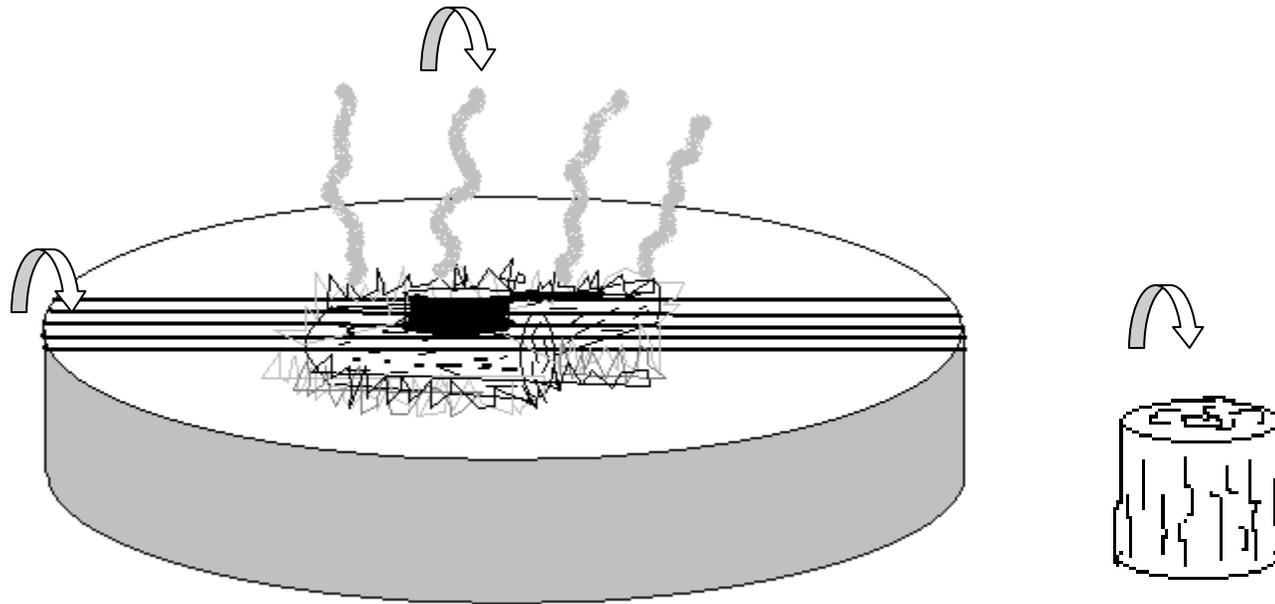
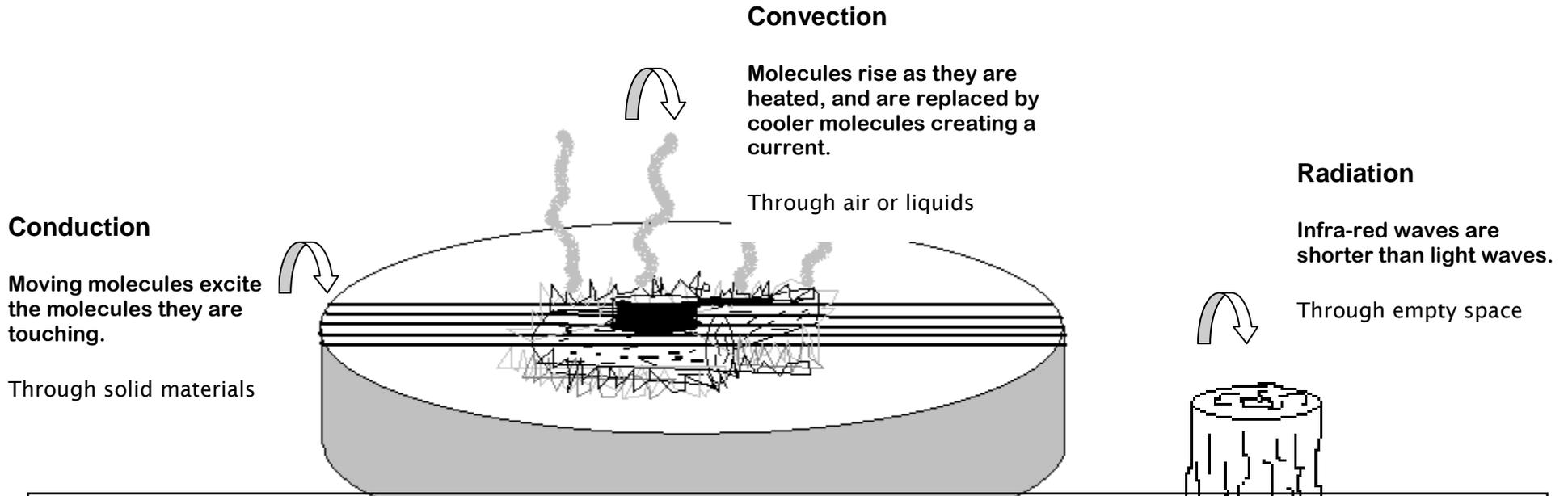


Describe three types of heat transfer: convection, conduction, radiation.



If someone is sitting on the log near the fire ring, they may experience the transfer of three types of heat. They will feel heat from sitting near the fire. They may feel heat if they put their hands on the heat waves rising from the fire (which might burn them!) They may also feel heat if they touch the metal grill or the metal pan.

Describe three types of heat transfer: convection, conduction, radiation.



Using the stove top, observe the conduction of heat through a metal spoon touching a pan, the convection of heat as water boils and causes warm air currents above the pan, and the radiation of heat which can be felt from the side of the pan. Supervision is needed with young children and stoves.

**Conduction:** Put different kitchen utensils in hot water. Which conduct heat?

**Convection:** Dye water green and freeze it to make ice cubes. When ready, get a small clear jar like a baby food jar or measuring cup. Put hot, water in it and add food red food coloring. Cover the top of the jar with foil. Place the jar in a large clear bowl, cookie jar, or sink; and fill the larger container with water. Poke a hole in the foil and observe what happens. Place the green ice cubes in the water and observe what happens.

**Radiation:** Place your hand to the side (not over) a toaster or other hot object. Close your eyes, and slowly move your hand away. How far away does the heat radiate?

## Information Pieces

<b>Radiation</b> LE-7
<b>Infra-red waves are shorter than light waves.</b> LE-7
Through empty space LE-7
<b>Convection</b> LE-7
<b>Molecules rise as they are heated, and are replaced by cooler molecules creating a current.</b> LE-7
Through air or liquids LE-7
<b>Conduction</b> LE-7
<b>Moving molecules excite the molecules they are touching.</b> LE-7
Through solid materials LE-7

*To Make Your MatchCard more durable:*

- 1. Put the student MatchCard and instructor MatchCard back to back in a clear plastic page protector.*
- 2. Laminate the information pieces. Or you can make them sturdier by covering the paper with transparent tape prior to cutting the pieces out.*
- 3. For more ideas on how to use the MatchCards, and for keeping a notebook for review, see the Instructor's Guide.*