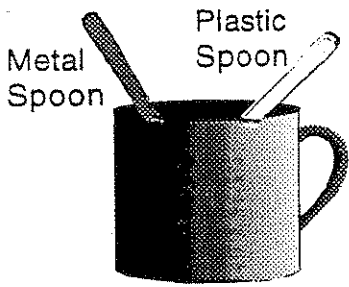


Heat can travel from one place to another in three ways.
Heat flows by convection, conduction and radiation.

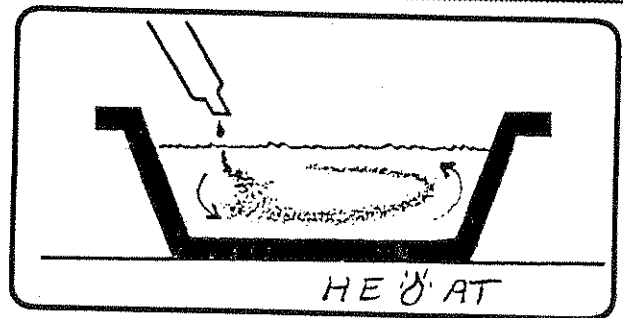
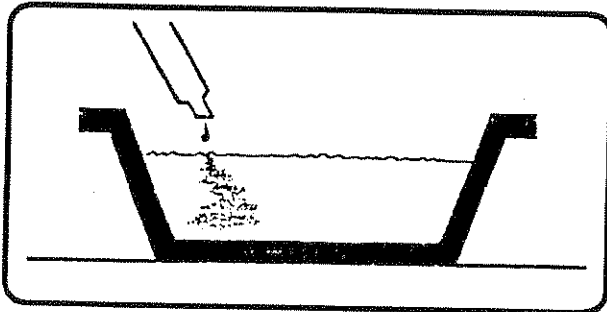


Hot Cup of Coffee

Heat moves through most solids by **conduction**. The hotter a molecule is, the more it vibrates. Hotter molecules pass along their energy to cooler neighbors that vibrate less, by collisions of molecules. Heat always flows from something that is hot (a heat source) to something that is cold (a heat sink).

Heat flow by conduction requires the molecules to be in contact. In this diagram heat is traveling up through the metal spoon as hot molecules vibrate nearby cooler molecules.

This form of heat flow is called _____

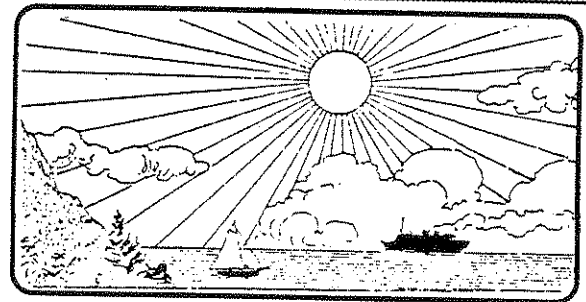


Convection is caused by differences in density within a fluid (usually a liquid or a gas). In the left diagram above the heat is evenly distributed and the dye remains in the same place. But when heat is added (on the right), the heated fluid above the flame becomes less dense and rises. As the liquid travels across the top, it cools, becomes more dense and it sinks on the other side. This pattern of circulation of a heated fluid is called a convection cell.

Heat flow by density differences within a fluid is known as _____

Light and heat can travel through empty space by **radiation**. Radiation is the only form of heat flow that requires no medium (substance) through which to pass. Radiation can also carry heat energy through transparent solids and liquids. Radiation travels at 3×10^8 meters per second, so it is extremely fast!

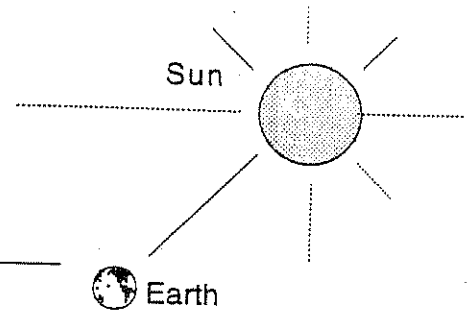
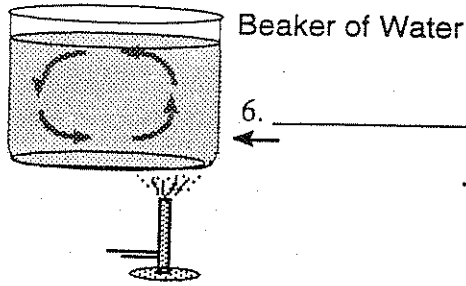
Heat travels through space by _____



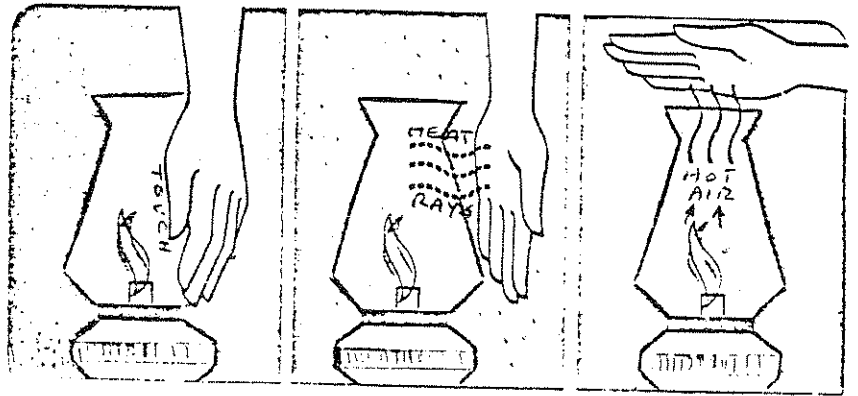
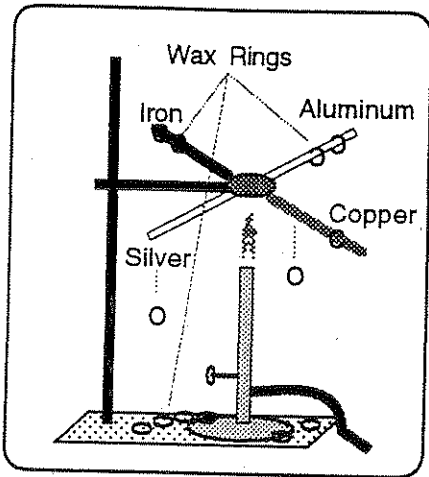
Label the following, **Conduction**, **Convection**, or **Radiation**.

1. Heat flow by density currents in fluids:
2. Heat flow through empty space or transparent substances:
3. Energy transfer through opaque solids (especially metals):
4. The fastest method of heat flow:
5. Molecules bumping against adjacent, cooler molecules:

Label each of the following by the form of heat flow being shown.



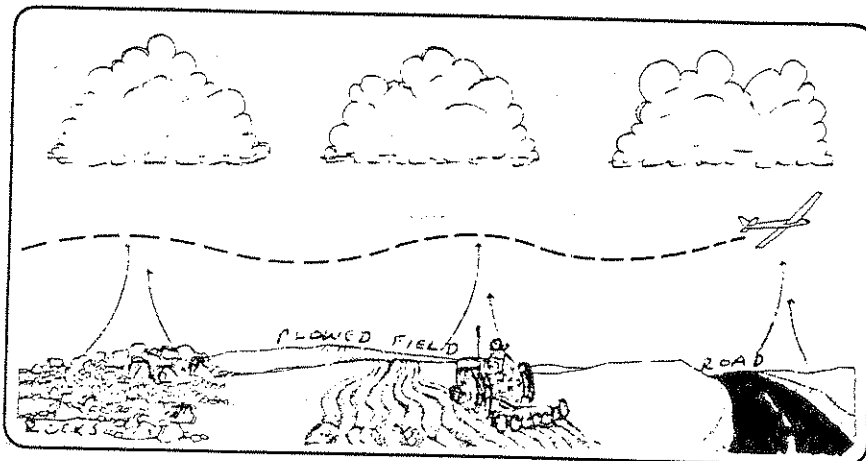
↓ 8. _____



9. ↑

11. ↑

10. ↑



12. This glider is able to soar great distances because it is lifted by...

13. Which form of heat flow requires no medium?
