**Bill Nye – Heat Half Notes**

Heat is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

The three ways that heat moves are: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

All molecules have \_\_\_\_\_\_\_\_. The only difference is that the molecules in cold matter have less \_\_\_\_\_\_\_\_\_\_ which means that they move \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ because they have less energy.

Even though the match is hotter than the ice sculpture, the ice sculpture has more heat energy because it has more \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Convection happens by having “currents” where \_\_\_\_\_ water rises and \_\_\_\_\_\_ water sinks. The water near the flame gets \_\_\_\_\_\_\_\_\_\_ so it floats to the top and cold water needs to fall to takes its place.

Natural convection occurs because the air \_\_\_\_\_\_\_\_\_\_\_\_ the Earth warms up. The molecules move faster because they have more heat energy and \_\_\_\_\_\_\_\_ air comes in and pushes the warm air up. Having the warm air pushed up allows for gliders to fly.

An \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ camera is sensitive to heat radiation. It allows us to see what our eyes can’t see. Even cold materials radiate some \_\_\_\_\_\_\_\_\_\_.

In a thermos, there exists a vacuum where no \_\_\_\_\_\_\_\_\_\_\_\_\_ exist. This allows for the heat energy to be kept inside because there is no way for the heat to be \_\_\_\_\_\_\_\_\_\_\_\_\_\_. Radiation does however pass through a vacuum so some heat escapes.

A fire produces \_\_\_\_\_\_\_\_\_\_\_\_ meaning that waves of \_\_\_\_\_\_\_\_\_ are passing through the air. These “heat waves” can also be called \_\_\_\_\_\_\_\_\_\_\_\_ waves. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is responsible for pushing the cold air towards the chimney making Bill’s back cold.

The brownies in the metal pan get cooked by the oven heating up the \_\_\_\_\_\_\_\_\_\_\_ which in turn heats up the batter. This is called \_\_\_\_\_\_\_\_\_\_\_\_.

The brownies in the glass pan get heated up by invisible waves of heat which is also called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The metal pan cannot be heated by the infrared heat because it \_\_\_\_\_\_\_\_\_\_\_\_\_\_ the infrared heat.

Winter clothing keeps the cold air out by keeping your \_\_\_\_\_\_\_\_\_ heat in. Winter clothing uses air because the molecules in air are far apart and therefore don’t allow for heat \_\_\_\_\_\_\_\_\_\_\_\_ to occur.