So Hot It's Cold?

Think you know the difference between hot and cold?

WHAT TO DO

One of these two blocks feels much colder than the other, so it should melt an ice cube faster right? Try it and see what happens.

WHAT'S HAPPENING?

These blocks demonstrate the difference between temperature and heat, which confuses most people. Heat is a form of energy that always flows from hotter (or higher temperature) objects to colder objects. Temperature is the average energy per molecule. As long as a block is hotter than an ice cube heat flows and the ice cube melts, and since both blocks are hotter than the ice cubes, both will melt them. But to melt the ice faster you must move heat into it faster, and while a higher temperature will cause heat to move faster, it's not the only factor controlling the speed of heat flow, and in this case it's not the most important. Some materials are just much better at moving heat than others. We call these materials good conductors of heat, and the block which feels colder is made of aluminum, a very good conductor. The other block is made of wood, a poor conductor (we call this an insulator). The aluminum conducts heat- and thus melts the ice- much faster, even if its temperature is actually colder than that of the wood. This is also why we keep our ice in a plastic or Styrofoam container- it slows the flow of heat and makes it last longer. By the way, the aluminum block is such a good conductor that it feels colder even when it isn't because it sucks heat out of your hand so much faster!