**The Amazing Ice Melting Blocks of Science!**

*This station contains two blocks of nearly the same appearance, but they are made of different materials. One of these blocks seems somewhat cold to the touch, while the other seems slightly warm. How much longer would it take an ice cube to melt on the cold block as compared to one put on the warm block?*

**Directions:**

1. Have each group member feel both blocks. Answer question #1 on your paper.
2. Once all group members have answered question 1, place one ice cube on each block at the same time. Make sure the rubber circles are not hanging of the blocks.
3. After the ice has melted read the text below and then answer questions 2 and 3.
4. Take your tray to the sink to dispose of the water, use paper towels to dry off the blocks. Leave this station as neat or neater than you found it!

So is this what you expected? Probably not. The “cold” block (A) and “warm” block (B) are actually both the same temperature (room temperature). And the ice cube on the "cold" block (A) melts very rapidly - probably melting completely in less than two minutes. In the same period of time, the ice cube on the "warm" block (B) has not melted an amount that can even be noticed.

There are two misleading events here: 1. The blocks are at the same temperature but feel as though they are at different temperatures. 2. The ice on the two blocks melts at extremely different rates, in a way that is completely unexpected.

Both of these events have the same explanation: The two materials have very different heat conductivities. **Conduct**ivity is a measure of an object’s capacity for **conduction**.

The "cold" block (A) is aluminum (a metal), and is a very good conductor of heat. **It feels cold because heat from your hand, which is much warmer than room temperature, is quickly conducted (or transferred) into the aluminum**. This cools your hand much more than you would expect upon touching a room temperature object, and your brain tells you the block is cold, but your brain is lying to you.

The "warm" block (B) is a hard plastic foam. Plastic is a poor conductor of heat, and the air or gas bubbles in it make it especially so. **Heat is conducted more slowly from your hand than experience would lead you to expect, and your brain tells you the block is warmer than room temperature.** Plastic is an insulator and is great at keeping things cold, this is why many coolers are made out of plastic foam

An ice cube on the verge of melting is at 0°C. Moving heat to the ice cube is necessary to melt it. Both of the blocks are at room temperature, much warmer than 0°C, and are able to conduct/move heat to the ice. However, **the high heat conductivity of the aluminum block (A) allows it to conduct/move heat more quickly to the ice**. This causes the ice to melt faster on the aluminum block. The low conductivity of the plastic makes the ice melt very slow on block B.