

## Activity Preparation Guide for

# So Cool It's Hot!

Is "cold" really "colder?"


## Advance Preparation Materials & Procedures

1. Acquire the materials, listed below, for the station.

## Activity Supplies

- Station Card (1)
- Tray with a block of wood, metal object, small glass jar, and a mitten (1)
- Wooden, metal, and plastic serving-size spoons (2 each)
- Dish towel or absorbent mat (2, to place spoons on)
- Liquid crystal thermometer strips (2)
- Ice cubes
- Insulated bucket or bag (1, to hold ice)



## Activity Steps



**So Cool it's Hot!**

Is "cold" really "colder?"

1. Order the objects on the tray from which one feels coldest to warmest.
2. Predict: Which spoon will work best to melt an ice cube?
3. Place an ice cube on each of the spoons. What happens?
4. Take the temperature of the objects on the tray (not the spoons).
  - What do you find out?
  - How does this relate to the ice melting experiment?
5. Dry the spoons off for the next group.

 Turn over to find out more! 

Two things should be apparent after completing this activity. First, in this activity all of the objects on the tray are at the same temperature. All objects are sitting out in the same environment and should all be at or close to room temperature. What is confusing is that when these objects are touched, some seem "colder" or "warmer" than others. Why is this? Some materials conduct heat better than others. An object like a metal spoon is a better conductor than objects made of plastic or wood. Since metal is a better conductor, when you touch a metal object it will conduct heat from your hand faster and as a result the metal *feels* cooler to you than other materials.

So intuitively you might think that an object that feels "warmer" (e.g. the plastic or wooden spoon) would melt the ice cube faster when in fact just the opposite is true. The ice cube will melt faster on the metal spoon because it is a better conductor of heat. The metal spoon transfers heat from the surroundings to the ice faster, making it melt faster.

Please turn card back over when finished

## Variations and Extensions

- Invite families to find materials around their house that feel colder than others (e.g. a tile floor compared to a carpeted floor).