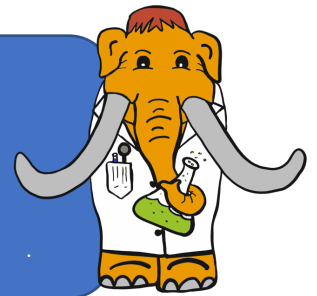


# Science Saturday @ Home

## A Look at Thermal Energy



### Gathering Supplies:

- 3 Clear Glass Bottles or Jars
- Water
- Food Coloring
- 2 Mugs
- Hot Cocoa Mix
- Tablespoon
- 2 Spoons

With these activities about thermal energy, let's take a look at how heat gets water molecules on the move!

### How To Steps:

**1<sup>st</sup> Activity: Can we see different amounts of thermal energy in water?**

1. Take three jars and fill to the same level with water. Place one in the refrigerator and one on the counter for an hour. You are making one jar of water cold and the other room temperature. For the third jar wait until you are ready for the experiment, then have an adult help you put the jar into the microwave for 1 to 2 minutes to make hot water. **BE VERY CAREFULL WHEN HANDLING HOT WATER!**
2. Place the three jars in a row and quickly add a drop or two of food coloring to each. What happens to the food coloring in each jar? Which temperature of water mixes the fastest with the food coloring? We can't see thermal energy but we can see food coloring and how it mixes with the water. The faster the color mixes into the water the higher the thermal energy of the water.

**2<sup>nd</sup> Activity: Cocoa Mix Experiment**

1. Take two mugs and fill half way with water. Have an adult help you put one mug into the microwave for 1 to 2 minutes to make hot water.
2. Put 1 tablespoon of Cocoa mix into each mug and stir. Which cocoa mix dissolves first, the hot water mug or the room temperature mug? Why do you think the two cocoa mixes act differently?

# Exploring Water Temperature with Max



## Did You Know?

Thermal energy, also called heat energy, is produced when molecules move around faster and faster. The higher amount of thermal energy something has the higher its temperature.

As molecules absorb energy they become more active and bump in to each other. When this happens the molecules spread out more. As the water molecules in the mug and jar absorb energy from the microwave they move faster and faster. Their temperature is increasing. Since the molecules are moving around more, they are able to spread the food coloring through the water quickly. The quickly moving water molecules are also able to dissolve the cocoa powder to make a yummy cup of hot chocolate. The colder, slower moving, water molecules have a lower amount of thermal energy and are slow to interact with the food coloring or the cocoa powder.

Other examples of thermal energy include baking in the oven, or the warmth you feel from the sun. Can you think of other forms for thermal energy?