Super S’More
Investigation #5

Description
Have you ever made a “Some More” over a campfire? This recipe uses a microwave. You are in for a treat!

Materials
• Microwave
• Paper plate
• Graham cracker
• Chocolate
• Marshmallows

Procedure
1) Break a graham cracker in half and place the halves on a paper plate.
2) Place a bit of chocolate on one half of the cracker and microwave the plate for 10 seconds.
3) Balance the marshmallow on the partly melted chocolate and cook for another ten seconds.
4) What happens as the marshmallow cooks?
5) Remove the plate from the microwave and place the second cracker half on top of the melting marshmallow. Press the sandwich down.
6) Enjoy!
You may have noticed that the marshmallow quickly expands in the microwave. As the microwave cooks the marshmallow, the ingredients begin to heat up and cause the air in the trapped air pockets to heat up as well. Heated air particles move more quickly and collide with greater energy.

At the same time, the sugars and gelatin soften, so the air collisions easily stretch the bonds of the ingredients. This is an example of Charles’ Law, named after French scientist Jacques Charles in the 1780s. Charles’ Law states that when the temperature of gases increases, the overall volume of the particles increases because of the increase in frequency and energy of the particle collisions. This is also why the marshmallow deflates as it cools.

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