

Week 8: Two Scoops of Science



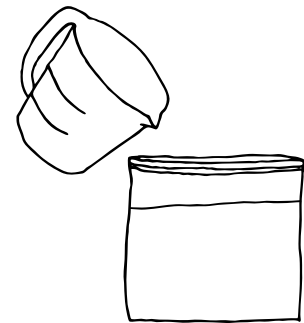
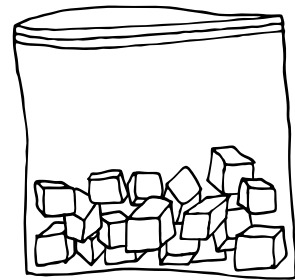
A warm summer afternoon is perfect for a picnic and ... food science? You bet! Food encompasses many different fields of science, from the botany of growing food to the chemistry of cooking to the biology of eating and digesting. Create a little food chemistry this week by making your own ice cream.

experiment

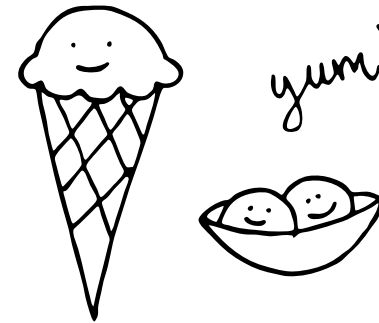
MAKE YOUR OWN ICE CREAM

Materials

- Ice
- Salt
- Sugar
- Vanilla
- Milk (you can also use cream or half and half)
- Flavors like chocolate syrup or fruit juices (optional)
- Zippered plastic bags in gallon and pint sizes
- Measuring cups and spoons
- Towel
- Thermometer



Fill a gallon-sized plastic bag halfway with ice, add 6 tablespoons of salt and shake gently. In a measuring cup, combine 1/4 cup milk, 1 tablespoon sugar and 1/4 teaspoon vanilla and stir. Add additional flavors like syrup, fruit juice or candy if you'd like. Pour the milk mixture into a pint-sized bag, seal it (getting as much air out as possible), put it inside the bag of ice and seal it. Shake the bag for at least five minutes, wrapping it in a towel when it gets too cold, until it's frozen.



To understand what's happening, use a thermometer to record temperatures. Check the temperature of the bag of ice before you add the salt and again after you add salt and the ice begins to melt. Check the temperature of the milk mixture bag before you add it to the bag of ice and again after it freezes into ice cream.

What's happening?

Water freezes and ice melts at a temperature of 32 degrees Fahrenheit; this is called the freezing point. Salt can lower the freezing point of water to -22 F, meaning it needs to be colder than 32 degrees for water to freeze. That's why we put salt on icy sidewalks and roads in the winter—salt encourages the melting process. When you added salt to the bag of ice, it lowered the freezing point and the ice started to melt. When you added the milk mixture bag to the bag of ice, heat left the milk bag and the temperature of the milk got lower. Eventually the milk mixture froze into ice cream!

Game on!

Play a game of "cold" potato—each person in a circle shakes the bag 10 times and passes it to the next person. Whoever notices when the milk turns to ice cream gets the first taste!

More ways to play with your food

Extract DNA from strawberries at msichicago.org/dna and analyze the colors in candy at msichicago.org/candy

Learn what's REALLY in your favorite foods—play MSI's new online game, "Would You Eat That?," at msichicago.org/wyet

Find more kitchen chemistry activities at <http://pbskids.org/zoom/games/kitchenchemistry/>

My yummiest ice cream recipes

Make up your own ice cream recipes.
