



# Ice cream Shake



Okay, let's shake things up and turn a liquid into a solid. If you succeed, you'll have a tasty treat to enjoy at the end. Yummm!

## What to DO

### 1 get what you need.

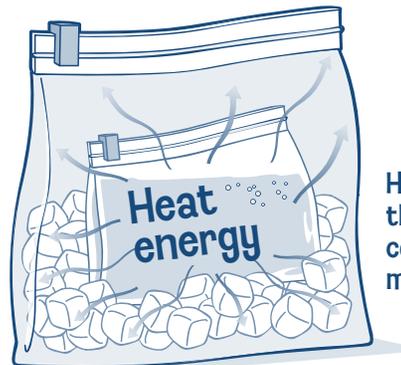
- ½ cup cream
- 1 tablespoon sugar
- 1 teaspoon vanilla
- Quart-size zip-lock bag
- Gallon-size zip-lock bag
- 2 cups ice
- ¼ cup salt
- Paper towels
- Cups/bowls and spoons (for tasting)

**2 Mix the ingredients.** Put the cream, sugar, and vanilla into the small bag. Squeeze out any extra air and zip the bag closed. Check it twice to make sure it's completely sealed.

**3 Add ice.** Put the small bag into the big bag. Add the ice and salt to the big bag. Then seal the big bag tightly.

**4 Shake the mixture.** Gently shake the bags for about 10 minutes or until the cream feels solid. What changes do you notice in the cream as you shake? What is happening to the ice and salt mixture?

**5 Taste the results.** When the cream feels solid, remove the small bag. Dry the outside of it with paper towels so the salty water doesn't get in your ice cream. Cut the corner off your bag. Squeeze the ice cream into cups or bowls. Enjoy!



Heat energy flows from the cream to the ice, cooling the cream and melting the ice.

### Chew on This!

Cold doesn't exist by itself. Cold just means there's less heat energy around. Take a cold room, for example. It's cold because it doesn't contain a lot of heat energy. Some of its heat energy escaped!

To make ice cream, you must remove heat energy from the cream. That's why you use ice. Heat energy moves from places with more heat energy to places with less. So, heat energy flows from the cream to the ice, cooling the cream and melting the ice. Once the cream loses enough heat energy, it freezes and becomes a solid. Once the ice gains enough heat energy, it melts and becomes a liquid.

# Dig Deeper

- \* Find examples of freezing and melting. Look for things like food freezing or thawing or ice forming or melting. Decide in which direction the heat energy is moving.
- \* Put half a cup of the cream mixture into the freezer. Don't shake it. When it's frozen, how does its texture compare to the ice cream you made in the bag?
- \* Fill two cups with ice and water. Take the temperature with a thermometer. Is it the same? Add two tablespoons of salt to one of the cups and mix. After five minutes, measure the temperature in both cups again. Is it the same? If not, which is colder?
- \* Build your own cooler and see how long it keeps an ice cube frozen. Get the Keep-a-Cube challenge from the ZOOM Web site at [pbskids.org/zoom/activities](http://pbskids.org/zoom/activities).



Watch FETCH! on PBS KIDS GO! (check local listings) and visit the FETCH! Web site at [pbskidsgo.org/fetch](http://pbskidsgo.org/fetch).

This is some MIGHTY fine ice cream! I wonder if I can sell this stuff. Make a little cash?



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Fold.

Fetch!

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Hey there! It's me, your favorite canine game show host—Ruff Ruffman! Did you know that I am a whiz in the kitchen? Yes, it's true. I make an awesome smoothie in the blender (oops—forgot the lid there). But enough about me. Today, your challenge is to make ice cream without any help from machines—no blenders, no freezers, just your sheer determination and a whole lotta shaking!

COOO  
FETCH!

