



## 5. The Banana: Natural to Processed

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### Concepts

- Food is one of the four basic needs of consumers, such as animals.
- Humans eat a variety of foods, some natural and some processed.
- Only humans cook and process foods (with a few exceptions).
- A processed food is altered in some way from its state when picked, harvested or prepared for market.
- Materials can exist in different states (solid, liquid, gas, plasma).

### Overview

Each student will prepare a processed food (frozen banana pop) and be able to eat the product.

### Science and Math Skills

- Observing
- Generalizing
- Comparing and contrasting
- Following directions
- Sequencing

### Standards

- Organisms have basic needs.
- All organisms depend on plants, directly or indirectly.
- All organisms cause change in their environments. Some changes are detrimental, others are beneficial.

### Time

Setup: 10 minutes each day  
Class: 20 minutes on first day  
30 minutes on second day

### Materials

Per student group (plus 1 for class demonstration):

- 1 washed and clean banana (unpeeled)
- 2 craft sticks (you may want to write each student's name on one end)
- 2 small plastic sandwich bags
- 2 8-inch clean disposable plates to serve as work surfaces for each of the two sessions
- 1 clean plastic knife
- crayon (if having students write their own names on the craft sticks)
- Science Journal
- *Making a Banana Pop* sequence cards (attached PDF in this document)
- Sentence strips or a strip of paper 30" (75 cm) X 4" (10 cm)

Per class:

- 3-4 bottles of "Chocolate Shell" coating (liquid chocolate covering that quickly hardens when applied to a cold surface; Smuckers' works well) at room temperature
- large insulated cooler

### Setup

Prepare sets of supplies, along with sentence strips or paper strip for sequencing, and copy a set of sequence cards for each team of 2 students. Supplies for each team include: 2 disposable plates, 1 clean banana, cut in half, 2 small plastic bags, and 2 craft sticks (you may want to write each student's name on his/her stick beforehand). Prepare a demonstration set for yourself, using a whole banana. You will need access to a freezer in which to store prepared bananas overnight. For the second day's activity, store frozen

bananas in a cooler when moving them from freezer to classroom. Large strawberries may be substituted for the bananas. Each student should make his or her own frozen banana.

### Safety

1. Follow all district and school laboratory safety procedures.
2. Be aware of any food allergies children may have.
3. Do not allow children to eat unwrapped food if it has been handled by other children.
4. Wash bananas before cutting them with clean knife.
5. It is good laboratory practice to have students wash hands before and after laboratory investigations.

### Background

The USDA Food Guide Pyramid recommends eating 1.5 to 2 cups of fruits per day as part of a balanced diet. People eat some fruit in both natural (unprocessed) and processed states. Depending on the desired outcome, getting a fruit to a processed form may take a sequence of steps. These steps may include steaming, freezing, boiling, baking or drying. Also, additional ingredients can be added to the fruit to create a processed food.

People have processed fresh foods for thousands of years. Some methods of processing, such as cooking, may make food tastier, easier to eat or more digestible. Other forms of processing, such as salting, canning, smoking, freezing and drying, help to prevent food from spoiling for long periods of time. Many modern processed foods have been created to save time and facilitate meal preparation.

Many foods in the market are designated as "organic." In general, organic foods are produced without the aid of chemical fertilizers and pesticides. Organic meats and poultry are raised without antibiotics and other chemical additives. As with other foods, many organic foods are cooked or processed in other ways. For additional activities in this series, see K-5 Teacher Resources at <http://www.bioedonline.org/k%2D5/>.

### Procedure

#### DAY 1

1. Before students begin handling food, make a point of demonstrating how to wash hands with soap and water. Have students wash their hands before proceeding with the activity. (HINT: Tell students to sing the "Happy Birthday" song completely to gauge how long to wash their hands—about 10 seconds.)
2. Gather students in a semicircle and review the differences between natural and processed foods. Explain that today, each student will be given a natural food and will follow steps to process it. Show a whole banana to the group and ask, *What is this?* [banana] *To which food group does it belong?* [fruits] *Do we eat it like this?* [We have to peel it.] *Why? Why does it have a peel?* (The peel is inedible, but it protects the delicate edible part inside.) Demonstrate how to cut a banana in half with a plastic knife and note that each student team will receive a banana, which they will cut in half.
3. Peel a banana, cautioning students to keep their peeled bananas on their disposable plates for sanitary reasons.

4. Show students the craft stick and instruct them to use their crayon to write their names on one end of their sticks (or have names already on sticks). Follow by showing students how to push the unlabeled end of the stick into the center of the cut end of the banana. Instruct them to push the stick as far as possible, but to leave the name end visible.
5. Demonstrate how to place the banana in the plastic bag, leaving the name end of the stick visible. Explain that you will put the prepared bananas in the freezer overnight and that in tomorrow's class, students will continue the steps for processing their bananas into chocolate banana pops.
6. Divide students into teams of two. Give a set of *Making a Banana Pop* sequence cards (see pages 9-12) to each team and ask the students to arrange the cards in the correct sequence. Then discuss the proper sequence and encourage students to correct any mistakes they made. Have students glue the cards on a sequence strip, which will serve as a reference when they make their banana pops.
7. Have one student from each pair collect his/her team's supplies from the supply table.
8. After students have prepared their bananas, ask them to place their bananas in the cooler. Transport the frozen bananas to and from the classroom in an insulated cooler.
9. Put the bananas in a freezer until the next class period (at least overnight).
10. Instruct everyone to clean up his/her work area.

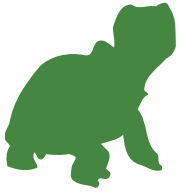
## DAY 2

1. Before students begin handling food, have them wash their hands with soap and water for at least 10 seconds.
2. Distribute each team's *Making a Banana Pop* sequence strip that students made in the previous class session. Have students review before they complete the steps in making their banana pops.
3. Give each student the banana pop he or she prepared the day before. Explain that each student should carefully remove his or her banana from its plastic baggie and place it on a paper plate.
4. Distribute the bananas, reading students' names from the sticks. After students have unwrapped their bananas, ask *Has your banana changed? Discuss*. Then, pour a small pool of Magic Shell onto each student's plate. Have students to roll their frozen bananas in the chocolate to coat bananas fully. Have students wait a few minutes and watch the change in the chocolate coating as it solidifies on the bananas. Then, it's time to eat! Be aware of any food allergies children may have before inviting students to eat their bananas.
5. Have students join you in a circle. Ask, *What differences do you notice in your banana today? Did freezing the banana change it? After the students respond, point out that freezing is a step in food processing. Ask, What happened to the chocolate when you coated it on the frozen banana? [It hardened.] Help students understand that the chocolate was liquid and, when it froze, it became solid. Mention all things are either a solid, liquid or gas, and that the change in the chocolate is a good example of change in*

states of matter. Ask, *Do you think coating the banana with chocolate is a step in processing it?* Make sure the students understand that they have made a processed food, banana pop, from a food in its natural state.

### **Extensions**

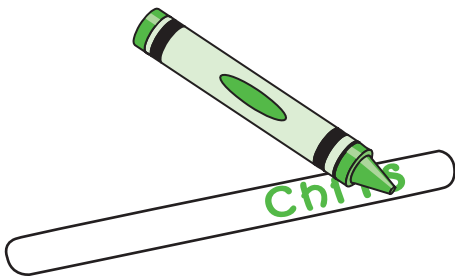
- Use *Making a Banana Pop* sequence cards to make a recipe book.
- Use other fruits, like strawberries, to make fruit pops.
- Experiment with other forms of food processing to make ice cream or pudding.
- Have each student draw the shape of a banana on yellow construction paper and cut it out. Then have students write adjectives to describe their banana pops on the paper banana. Make a banana book.
- Discuss other foods that have natural packaging, like the banana peel.



# Make A Banana Pop

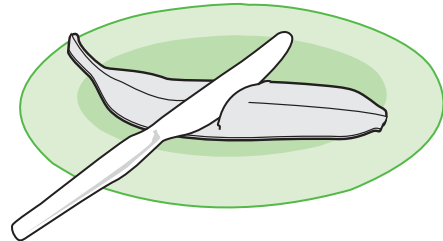
## STEP

Write your name on one end of the craft stick.



## STEP

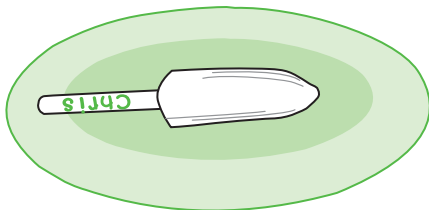
Cut one banana in half.



Peel your half of the banana. Put the peeled banana on the plate.

## STEP

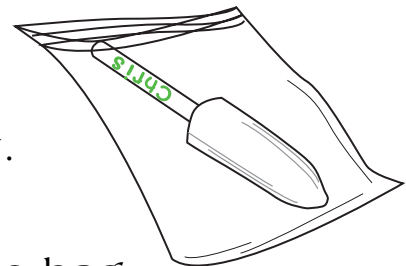
Gently push the “clean” end of your craft stick into the banana.



Your name will show on the craft stick.

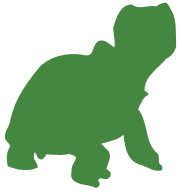
## STEP

Place the banana in the plastic bag. Close the bag and seal it.



Put the bag in the freezer. Leave it there overnight.

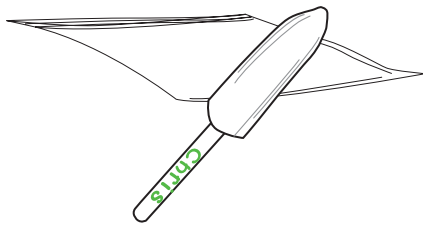




# Make A Banana Pop

## STEP

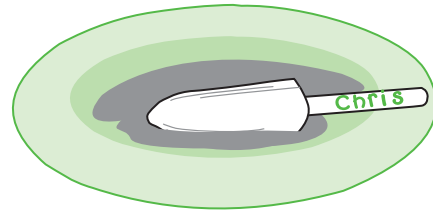
Get your bag with the frozen banana in it.



Remove the banana from the bag.

## STEP

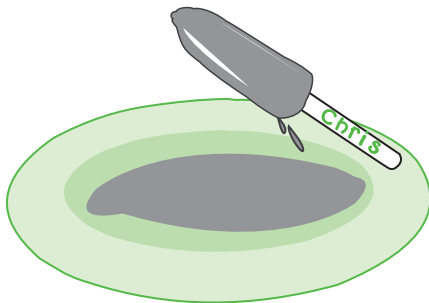
Place the banana in the chocolate sauce on the plate.



Keep the craft stick out of the sauce.

## STEP

Roll the banana in the chocolate sauce.



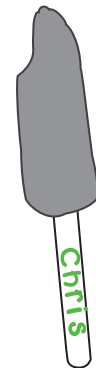
Lift the banana out of the sauce.

## STEP

Observe what happens to the chocolate sauce on the banana.

Eat your treat!

Clean up.



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