

# ICE CREAM IN A BAG

## Lesson Plans

### LESSON GOAL

Students will connect the process of making ice cream to agriculture through understanding dairy products, pasteurization, homogenization, and food safety.

### POSSIBLE TOPICS

- Dairy Products
- Pasteurization
- Homogenization
- Cow to Ice cream
- Milk & Food Safety

### STANDARDS

Standards may be adjusted to fit other grade levels.

Science: 2nd Grade Physical Science 2-PS1.1 Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.

Math: 3rd Grade Measurement and Data CCSS.Math.Content.3.MD.A.2 Measure and estimate liquid volumes and masses of objects using standard units.

### DISCUSSION TOPICS

#### Discussion

- Where does milk come from?
- How does milk get from the cow to our ice cream bowl?
- What are some other dairy products?
  - Milk, cheese, yogurt, etc.
  - Have students discuss where milk comes from and list different dairy products.

#### Process of milk to ice cream

1. Farmers grow the grain that is fed to the cows
2. Farmers take excellent care of the cows
3. Cows make the milk
4. Cold, Clean milk is pumped through sanitized pipes and is rapidly cooled before reaching the insulated tanker truck
5. Milk is tested for safety and quality before it leaves the tanker trucks
6. Three-Step Process- first, milk is pasteurized, standardized and homogenized.
  - a. Pasteurization heats milk up to 162°F for 16 seconds to ensure safety and quality, then cooled immediately back to 38°F.
  - b. Homogenization is the process in which the butterfat, or the cream, is broken up and blended in with the rest of the milk, so it does not separate.
7. Milk is ready to be bottled or turned into another dairy product!

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### ACTIVITY OVERVIEW

For Ice Cream in a Bag, students will measure ingredients, combine, and shake until they get ice cream. Students will make observations throughout the activity.

#### TIME

45 minutes

#### DIRECTIONS

Encourage Discussion & observation

1. Measure milk, vanilla, and sugar into a quart sized plastic bag.
2. Put that bag inside of a second quart sized bag.
3. Fill big freezer bag with ice.
4. Put the small bag into the big freezer bag and then sprinkle the salt on top of the ice.
5. Mix and shake the bag for approximately 5 minutes or until the consistency you want. (Use hand towel or gloves)

#### MATERIALS NEEDED

- 1/2 cup milk
- 1/2 teaspoon vanilla
- 1 tablespoon sugar
- 2 quart sized bags
- 1 gallon sized freezer bag
- 4 cups crushed ice
- 4 tablespoons salt
- Hand towel or gloves
- Plastic spoons
- Measuring Cups
- Bowls

#### ADDITIONAL RESOURCES

View Google Drive folder for videos, other lesson plans and a supplemental book.



#### POST-ACTIVITY EXPLORATION

- Describe physical properties of matter.
- Which types of matter in this experiment were solid, and which were liquid?
- Make a recipe modification. For example, change the amount of milk or amount of sugar. Keep track of the changes you made to the recipe.