

Iowa's Dairy Story Ice Cream in a Can Lesson

Objectives:

1. Students will learn how milk can be used dairy products.
2. Students will read and comprehend directions.

Supplies Needed:

Tin coffee cans	Vanilla extract	Spoons
Quart sized freezer bags	Sugar	5 oz. cups
Measuring cups	Rock salt	Plastic tub
Measuring spoons	Ice	Plastic sheets (optional)
Whole milk	Duct tape	Newspaper (optional)

Duration: 30 minutes

Teaching the Lesson:

Set Up Stations

1. Cover all tables, first with plastic sheets and then newspaper.
2. Gather supplies including tin cans, sugar, teaspoons, vanilla, rock salt, duct tape, quart size freezer bags, measuring cups and teaspoons, milk, spoons and 5 oz cups.
 - a. Place $\frac{1}{2}$ cup of sugar on each table
 - b. Place 1 tsp of vanilla (in a 5 oz. cup) on each table
 - c. Place one quart size bag on each table
 - d. Place two cups of whole milk on each table in larger liquid measuring cups
 - e. Pre-cut about 6-8 inch long pieces of duct tape
 - f. Stack the cups in stacks of 4 with 4 spoons inside
 - g. Fill a cooler with ice and set aside
 - h. Set out plastic tub for dispensing ice/salt mixture at the end

Mixing Ingredients

1. To begin the lesson, group students into groups of four. This makes for easier mixing with the ice cream.
2. Step #1 – Bag Holder
 - a. The person with the Ziploc bag in front of them will be the bag holder

- b. They need to open the bag without sticking their hand in or blowing air into due to germs. Ask them to open and hold open with their thumbs and give it a couple good shakes to incorporate air inside.
3. Step #2 – Milk Pourer
 - a. The person to the left of the bag holder will pour in the two cups of whole milk.
 - b. They may stand if it is easier to pour, but bag holder must keep bag over the table.
4. Step #3 – Sugar Pourer
 - a. The person to the left of the milk pourer will add the $\frac{1}{2}$ cup of sugar to contents of bag.
 - b. If sugar spills on table, make sure to wipe up as it will stick to the can when rolling. As long as it's not significant, no more needs to be added to bag of ingredients, as what they have will be plenty.
5. Step #4 – Vanilla Pourer
 - a. The person to the left of the sugar pourer will put in the vanilla. All measuring cups can then be picked up.
6. Step #5 - All ingredients are in the bag. We need to close the bag, but first we need to squeeze out excess air.
 - a. The "milk pourer" will use both hands to clasp above the milk to squeeze out air.
 - b. As they do that, the bag holder will zip it shut.
 - c. Ask the bag holder to then pinch and slide their fingers along the Ziploc to ensure it is closed tightly.
7. Step # 6 – Safety net, use duct tape to secure Ziploc
 - a. Ask for the "sugar pourer" to come grab a piece of duct tape from you, holding it at both ends as they walk back to their table (as it may get stuck to itself)
 - b. Demonstrate with one table how to place duct tape over bag.
 - i. Lengthwise, stick duct tape along Ziploc enclosure, so half of tape is on one side
 - ii. Fold other half over the zip so it is totally covered, if there is excess on ends, fold sticky side in.
 - c. Bag holder holds bag while others gently mix the contents until sugar is dissolved into the milk.
8. Step #7 – Place tin can at each table, it should be $\frac{3}{4}$ filled with ice and about $\frac{1}{2}$ cup of rock salt inside
 - a. Ask that they not touch inside due to rock salt & have them gently place bag into can and secure lid.

Making the Ice Cream

1. Demonstrate at one table how they will mix the ice cream.
 - a. The person across from you is your partner
 - i. Two will start as the "rollers"
 - ii. The other two will be the "bumpers"
2. Instruct them to sit with their bottoms in chair, feet on the floor and scoot up closer to the table.
 - a. The Rollers will use both hands to roll can back and forth, 20 times
 - i. They will need to give a good push to get it all across the table.
 - ii. Can must roll full distance of the table, this is necessary for it to mix thoroughly and turn into ice cream quicker.
 - b. Bumpers must keep arms and hands up on edge of table to protect can from falling.
 - c. We have a Rule: "If the can hit's the floor, there is no more!" and the ice cream will be taken away.
3. After 20 rolls, then the Rollers become Bumpers, and Bumpers become the rollers.
 - a. They keep switching after 20, until ice cream is ready, this takes 7-10 minutes.
4. When the ice cream is done
 - b. Wipe bag with towel so the salt does not get into the ice cream
 - i. Have a student pick up stack of cups and enough spoons for the people in their group.
 - ii. Cut one corner of bag, and evenly distribute ice cream amongst four cups
5. After they are done, ask students to throw away their cup and spoon, BOTH most go in trash

Clean Up

1. Coffee cans that were used to make ice cream MUST be rinsed thoroughly and contents dumped into plastic tub
 - a. Once can is free of salt, it can be washed in sink.
 - b. Be sure to dry it thoroughly, otherwise it can rust overnight.
2. Dump the ice/salt mixture from large plastic tub outside
3. Wash all measuring cups
4. Throw away plastic sheets and newspaper