Farm to Fridge

^Milk Comes From A Cow?

A lesson based on the book, Milk Comes From A Cow? by Dan Yunk.

America's food supply is safe, affordable and abundant but misunderstood by the public. Kansas Farm Bureau seeks to improve consumer knowledge of the importance of farming and ranching through the Kailey's Ag Adventure Series, of which this book is a part.

BACKGROUND INFORMATION:

Ask the students, "Where does milk come from?" Anticipated responses: the refrigerator, the grocery store, a cow, etc. Read Milk Comes From A Cow? aloud to the class to find out.

You followed Kailey in Milk Comes From a Cow? as she traveled to a dairy farm to learn that milk does come from a cow and is sold at the grocery store. But, how does milk get from the farm to our cereal bowl?

The Milk Process:

- Begin by reminding students that dairy cows produce milk for people to drink. Dairy cows live on a dairy farm where farmers milk them morning and night. Milk you get from the dairy farm is called raw milk.
- Tell the students that today they will learn how milk gets from the farm to the store for us to drink and enjoy. Explain that milk is stored at 38°F in a cooling tank on the farm. Milk is then pumped from the cooling tank to the milk truck to be taken to the milk plant. Before the truck leaves the dairy farm, all milk is tested for safety and regulation purposes.
- The milk is then taken to the dairy processing plant. When the milk arrives, it moves through a series of pipes to special machines. As the milk moves through the plant, it undergoes several changes before it is put into bottles or cartons for us to drink.

Level: Grade K-2

Subjects/Standards:
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.

Standards may be adjusted to fit other grade levels.

Student Learning Outcomes:
The students will:
- Explain the journey of milk from the dairy farm to the consumer.
- Know correct terms used in the dairy processing plant and transportation.
- Be able to identify dairy products and beverages.

Activity Description:
The students will make butter and complete a worksheet. They will also do a worksheet on the story of milk.

Estimating Teaching Time:
60 minutes.

The Milk Process (cont.):

- These changes are called **pasteurization** and **homogenization.**

- Pasteurization is where milk is heated to kill any germs that would make it unsafe or cause it to spoil. After the milk is heated, it is then cooled very quickly. When this process is finished, it is called pasteurized milk.

- Ask the students if they have heard of the word homogenization. You can show them the word on the milk label. After showing them the label, tell them how milk undergoes homogenization.

- The process of homogenization is where the butterfat or cream in the milk is mixed in to give it a smooth taste. If milk were not homogenized, the cream would rise to the top and we would have to either shake or stir the milk before drinking it.

- Explain how butterfat or cream is sometimes removed from milk to make it a low-fat milk. It is then called 1% milk. You may then ask the students what their favorite kinds of milk are. Accept all answers.

- After milk undergoes these changes, machines are used to package the milk. These special machines put milk into bottles or cartons, seal the containers and load them into milk crates.

- Milk is stored in a large refrigerated room until it leaves the dairy processing plant. Then trucks deliver the milk to stores and schools.

- Ask the students if they know anyone that works at a dairy processing plant. Explain to them there are several people who help process milk. Some of the main jobs are:

  Dairy plant manager- controls machines that process milk.
  Lab Technician- tests milk samples.
  Dairy Plant Worker- keeps machines running. The machines process milk and put it into containers.
  Dairy Truck Driver- delivers the milk to stores and schools.

Additional Facts:
- Humans never touch the milk with their hands.
- Milk is one of the safest foods you can consume.
- Milk is tested to make sure it is fresh and clean.

Additional Resources & Literature:

Milk Comes from a Cow
By Dan Yunk
ISBN 978-0-09797653-0-8

Dairy Spot
www.dairyspot.com
Mid-Atlantic spot for dairy

Virginia Cooperative Extension
www.sites.ext.vt.edu/virtualfarm/main.html
Visit a virtual dairy farm

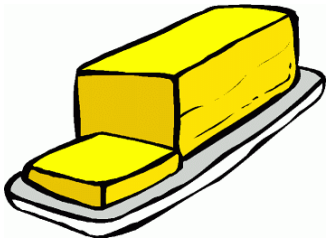
Moo Milk
www.moomilk.com
Virtual tour–
The story of milk

New Vocabulary:

- Pasteurization
- Homogenization
- Dairy plant manager
- Lab technician
- Dairy plant worker
- Dairy truck driver

What Dairy products are made from milk?

- Cheese
- Yogurt
- Cottage Cheese
- Ice Cream
- Sour Cream
- Butter



Activity: Let's Make Butter!

- Ask students how they use butter. They will respond with a variety of answers. Explain to them how butter comes from a dairy cow. Hand out the "Let's Make Butter" worksheet.

- Split your classroom into groups of three. Have one student line up cafeteria style to get the materials. Have a different person in the same group get their ingredients. Once the group has everything they need, begin the butter making process.

- Have the students pour whipping cream into a clean plastic jar until the jar is half-full. Screw the lid on tight. Have students take turns shaking the jar.

- When the whipping cream thickens into whipped cream, stop and let the students see how it has changed.

- Spoon out a scoop of the whipping cream and demonstrate to the students how thick it has become. Have students describe any changes that have occurred.

- Replace the lid and have students continue to shake it for about 10 minutes. Yellow clumps will form as the butter fat particles begin to stick together.

- Have students record on the "Lets Make Butter" handout what the pale yellow clump is and what the remaining liquid is.

- Pour off the milk and wash the butter by adding cold water. Pour off the water and use the wooden spoon to remove any excess milk. Continue to work the butter until milk is gone.

- Add salt (optional) then serve the butter on whole wheat crackers for all the students to try. Explain to the students throughout this activity that you can see how the butterfat is removed from the cream to make butter.

EQUIPMENT:

- "Let's Make Butter" handout
- Milk label

Each group needs a:

- Plastic jar with tight fitting lid
- Bowl
- Wooden spoon
- Cup
- Plastic knife

INGREDIENTS:

- 1 pint whipping cream (18-20 students)
- 1 cup cold water
- 1/4 teaspoon salt (optional)
- Whole wheat crackers

Prepare Ahead:

- Make copies of the "Let's Make Butter" and "Story of Milk" handouts.

- Gather enough jars, bowls and spoons so the everyone can participate.

- Set ingredients and materials on a table for students to get at the instructed time.

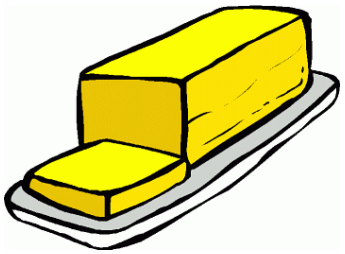
Let's Make Butter

^Milk Comes From A Cow?

Name_____

How to make butter!

8 oz whipping cream	wooden spoon
1 cup cold water	jar with lid
1/4 teaspoon salt	cup
whole wheat crackers	bowl



Pour the cream into the jar. Put the lid on the jar and make sure it is on tightly. Start shaking the jar. Watch the cream change from cream to butter and milk. Pour the milk off into the measuring cup and add the butter to the bowl. Add 1 cup cold water and gently mix the butter with the water. Use the wooden spoon to press the butter to remove any remaining milk and water. Add the salt and mix with the butter. Spread the butter on whole wheat crackers and enjoy the taste of butter.

1. Describe any changes that have occurred in the jar.

_____

_____

2. What is the pale yellow clump?

_____

3. What is the remaining liquid?

_____

4. Did you like the taste of the butter you made?

_____

Let's Make Butter

^Milk Comes From A Cow?

Name Answer Key

How to make butter!

8 oz whipping cream	wooden spoon
1 cup cold water	jar with lid
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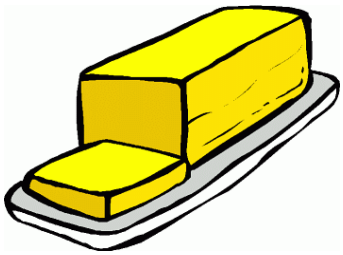

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1. Describe any changes that have occurred in the jar.

The cream starts to get thick. Yellow clumps will start to form. Butter fat particles start to stick together.

2. What is the pale yellow clump?

Butter

3. What is the remaining liquid?

Fat-free milk

4. Did you like the taste of the butter you made?

Your own opinion

Farm to Fridge

Name _____

Cut out the pictures and glue above the correct sentence.

1. Dairy cows on the farm are milked every day.

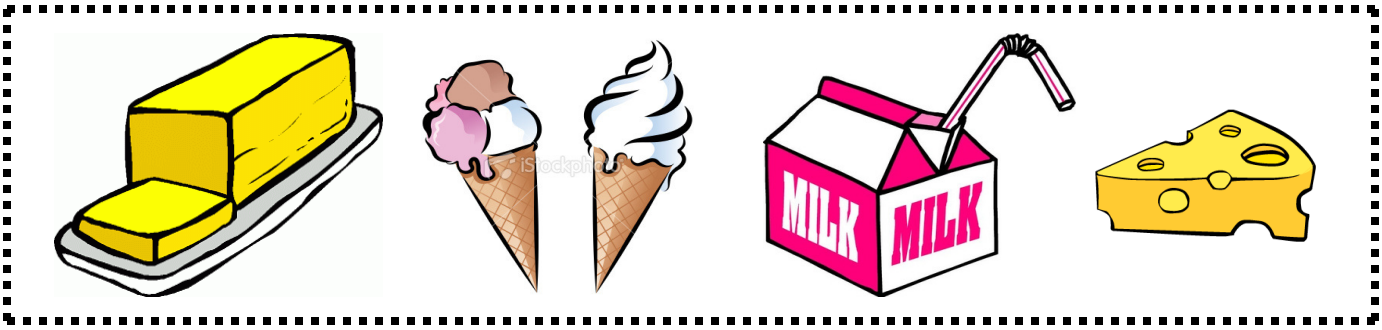
2. Milk is stored in a cooling tank on the farm.

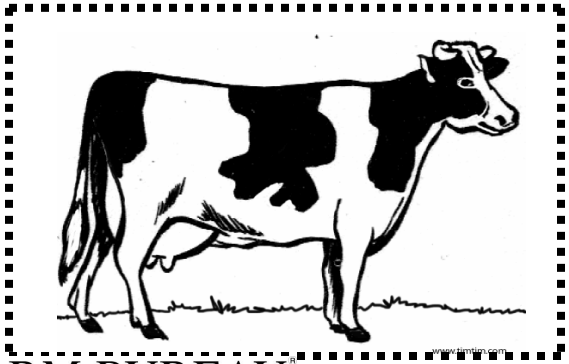
3. Milk is pumped from the cooling tank to the truck to be taken to the milk plant.

4. The dairy plant is where milk is processed so it is safe for us to eat and drink.

5. The milk truck delivers the products to stores and schools.

6. Many good things to eat and drink are made from milk.





Farm to Fridge

Name **KEY**

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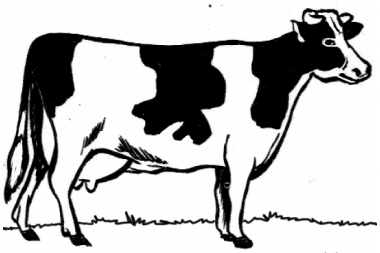

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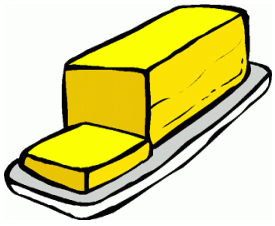

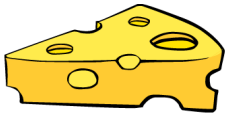

6. Many good things to eat and drink are made from milk.