





# Chapter 5

## Milk and Cheese

Milk, cheese, yogurt and ice cream are all part of the milk group. Drinking milk helps you build strong bones! Kids, ages 2 to 8, need to eat or drink 2 cups from the milk group a day. Older kids need 3 cups from the milk group every day. Sadly, most Americans do not drink or eat enough foods from the milk group. In this chapter, you will taste test milks, learn how to read food labels and make cheese.

Enjoy exploring magnificent milk!

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# Many Milks

## Did you know there are many different kinds of milk?

Around the world people drink many different kinds of milk including cow milk, goat milk, buffalo milk and camel milk. In the United States, “milk” usually means cow milk. You can easily find different types of cow milk at the grocery store. For example, you can buy whole milk, 2% milk, 1% milk and skim milk.

No other single food can match the nutrition of milk! Milk is full of calcium, which helps build strong bones. It is also packed with other nutrients your body needs. These include protein, carbohydrates, phosphorus, riboflavin, vitamin A and vitamin D.

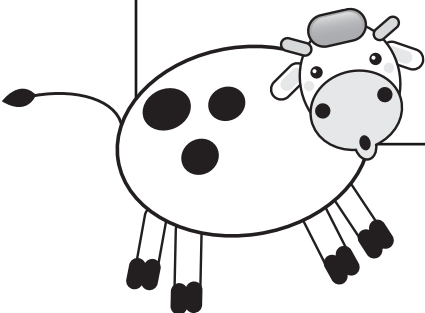
Sadly, some people cannot drink regular milk without getting sick. They may be able to drink soy milk, rice milk or lactose-free milk. Soy milk and rice milk don't come from cows or any other animals. Instead, they are made from plants. Calcium is usually added to these milks. Lactose-free milk is made from cow milk but has an added ingredient that makes it easier to digest. Enjoy tasting many milks.

## DOODLE BUGS

In the reading, circle the nutrient that helps build strong bones.

Draw a box around two milks that do not come from animals.

What kinds of milk have you tasted?





SCIENTIFIC INQUIRY:  
**Comparing Milk (continued)**

Use the Nutrition Facts on the milk food labels to fill in the table below.

**Milk Nutrition Facts**

<b>Type of Milk</b>	<b>Calories</b> How many calories per serving?	<b>Fat</b> How many grams of fat per serving?	<b>Calcium</b> What is the Percent Daily Value for calcium?
<b>Whole milk</b>			
<b>2% milk</b>			
<b>Skim milk</b>			
<b>Soy milk</b>			

**Draw a star beside the milk that has the least amount of fat.**

**List the kinds of milk in order from least fat to most fat.**

**Did any kind of milk have less than 30% of the Daily Value of calcium?**  
 If so, which one?

**If you drink whole, 2% or 1% milk, do you think you can switch to skim milk?**

TRY THIS AT HOME:  
**Bananas and Milk**



**You will need:**

1 large ripe banana  
1 cup skim milk  
1/2 cup strawberries  
(frozen or fresh)

**PREP TIME: 5 minutes**

1 1/2 teaspoons sugar  
1/2 teaspoon vanilla extract  
Help from an adult

**You'll go bananas for this delicious milk!**

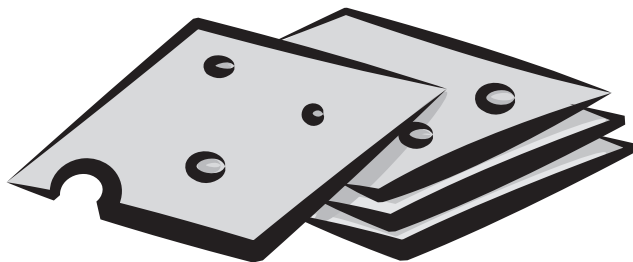
1. Cut the banana into four chunks and place in the blender.
2. If using fresh strawberries, wash them and remove the stem.
2. Add the strawberries, milk, sugar and vanilla.
3. Place the lid on your blender.
4. Blend for about 20 seconds or until smooth.
5. Pour into 2 cups and enjoy!

SERVING SIZE: 3/4 cup

**Fun Fact**

You'll get less fat and calories by using skim milk instead of whole or 2% milk in this recipe. Even though skim milk has most or all the fat removed, it still has the same amount of nutrients as whole milk. If you want a thicker feeling skim milk, then you can try drinking skim milk "plus." You can buy Skim Plus (or Super Skim) at the grocery store or make your own. Adding a little nonfat dry milk powder to skim milk can make skim milk taste and feel thicker.

# Making Cheese



## Did you know cheese is made from milk?

There are hundreds of different kinds of cheese. There are **hard cheeses** like cheddar cheese and colby cheese and **soft cheeses** like cottage cheese and cream cheese. There are even **moldy cheeses** like blue cheese. All cheeses are made from milk in four to six basic steps.

The first step is to **pasteurize** the milk. Milk is pasteurized by heating it to a temperature that kills harmful bacteria. This makes the milk safer to drink/eat. Milk you buy from the grocery store is already pasteurized.

The second step is to form **curds**. Milk is heated and an acid or enzyme is added. Acids are used to make soft cheeses like cottage cheese. Enzymes are used to make harder cheeses like cheddar cheese. Both acids and enzymes help curdle the milk. As milk curdles, the milk proteins separate forming clumps called curds and a liquid called **whey**.

Step three is to drain the whey. The curds are pressed into a strainer and the liquid whey is drained off. The crumbly curds will become cheese.

Step four is to salt the curds. Salt adds extra flavor to the cheese. Some cheeses like cottage cheese are now ready to eat.

The fifth step is to press the curds into chunks of cheese. Step six is to age the cheese. Cheese is stored for days or even years to allow stronger flavors to develop. After aging, the cheese is ready to eat!

## DOODLE BUGS

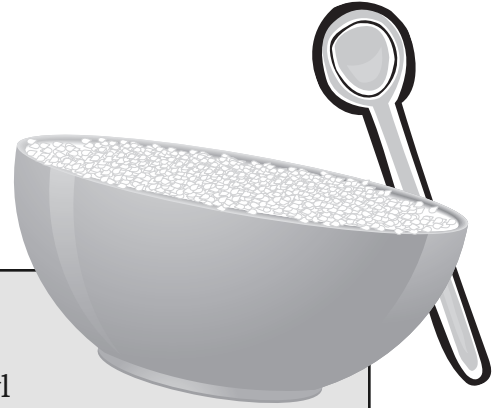
In the reading, circle the word that means to heat milk to kill harmful bacteria.

Draw a box around the cheese that is salted but not pressed or aged.

Write the number of each step beside the description.

\_\_\_ To age                      \_\_\_ To form curds                      \_\_\_ To drain the whey  
\_\_\_ To pasteurize                      \_\_\_ To press into chunks                      \_\_\_ To salt

## SCIENTIFIC INQUIRY: **Curds and Whey**



### **Your class will need:**

Large pot	Medium bowl
Hot plate	1 set measuring spoons
Thermometer	Table knife
Liquid measuring cup	1 gallon 2% milk
Strainer	1 teaspoon salt
Cheese cloth (optional)	1/2 cup vinegar
Clear glass or jar	Crackers
Large spoon	

### **Cottage Cheese Recipe**

#### **Directions:**

1. Pour the milk into the large pot. Place the large pot on the single burner hot plate. Slowly heat the milk over medium-high heat.
2. Carefully, use a thermometer to test the temperature of the milk. Turn the heat off when the milk temperature reaches 180 degrees Fahrenheit.
3. Then add the vinegar. Watch as the curds and whey separate.
4. Let cool for 30 minutes. Line the strainer with a cheese cloth (optional).
5. When cool, pour the mixture into the strainer to drain off the whey. Pour some whey into a clear glass or jar so everyone can see it. (You may dispose of remaining whey.) Using a large spoon, press or squeeze the curds to drain off more whey.
6. Next, pour the curds into a bowl. Sprinkle the curds with the salt and mix well. A cheese press uses a lot more pressure to shape cheese than people can. Today, you'll eat un-pressed cheese!
7. Spread a small amount of cheese on a cracker. Enjoy eating your homemade cheese.

## SCIENTIFIC INQUIRY: **Curds and Whey (continued)**

**Remember the nursery rhyme:** “Little Miss Muffet sat on a tuffet, eating her curds and whey. Along came a big spider, who sat down beside her, and frightened Miss Muffet away!”

Now you know what curds and whey are!

After tasting your cheese, use describing words to fill in the table.

### **Homemade Cottage Cheese Facts**

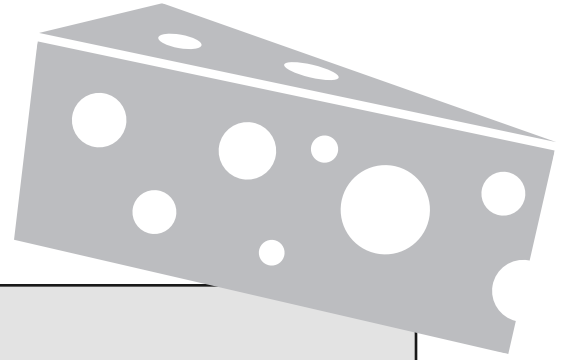
Appearance (draw it!)	Taste	Texture (feel)

**What kind of cheese did you make?** (Circle one.)

Hard cheese      Soft cheese

**What two extra steps are used to make other cheeses (like a block of cheddar cheese)?**

## WHILE YOU WAIT: Tasty Cheese



### You will need:

1 plate or napkin  
1 slice cheese A

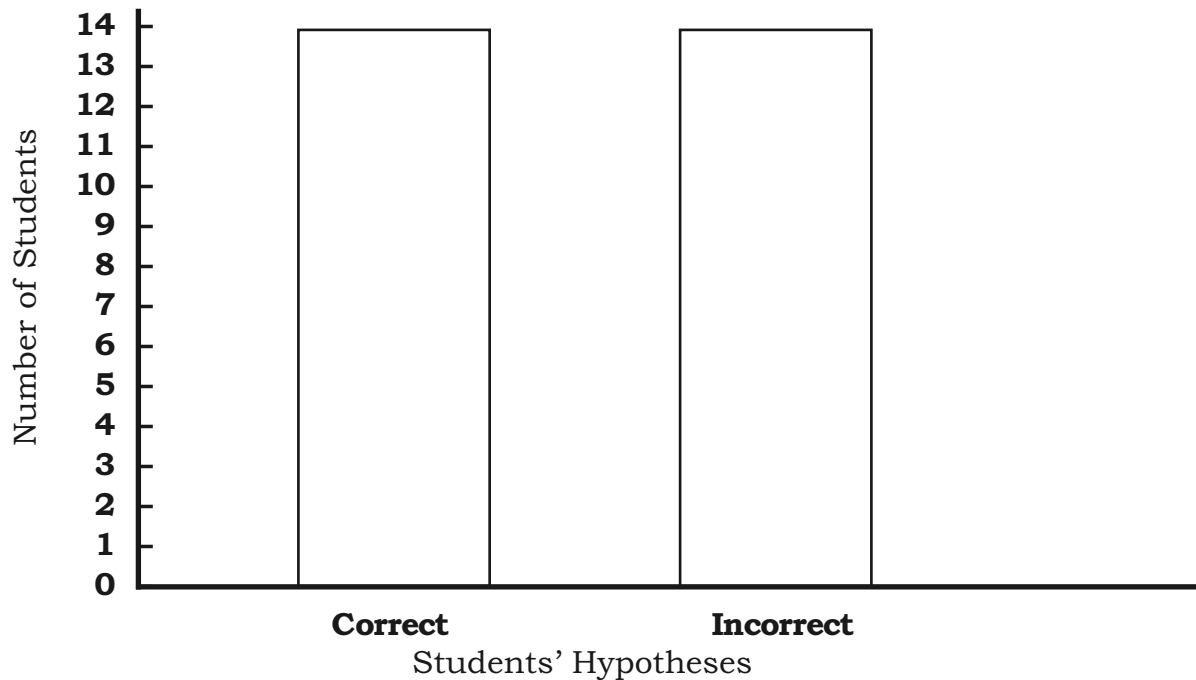
1 slice cheese B

### Tasting Time:

Taste a piece of cheese A. Next, taste a piece of cheese B. Compare the look, taste and feel. Then circle your answers below.

- 1. Which cheese looks better?**      Cheese A    Cheese B    Same
- 2. Which cheese tastes better?**      Cheese A    Cheese B    Same
- 3. My hypothesis (my guess):** I think cheese \_\_\_\_\_ (A or B) is the low-fat cheese. (Fill in the blank.)
- 4. Count how many students hypothesized (guessed) the low-fat cheese correctly. Then complete the bar graph.**

### Students' Correct/Incorrect Hypotheses for Low-fat Cheese



TRY THIS AT HOME:

## Cottage Cheese and Lime Gelatin Salad

**You will need:**

**PREP TIME: 25 minutes**

- 1 package sugar-free gelatin (lime or other flavor)
- 16-ounce can pineapple (crushed or chunked)
- 1 cup cottage cheese
- 1/2 cup chopped nuts (optional)

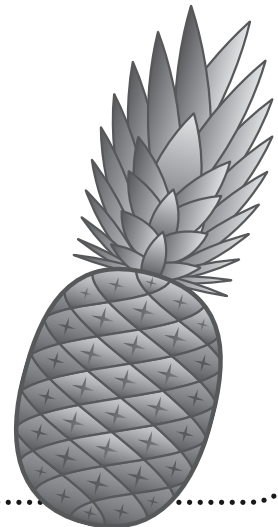
### Delicious dessert idea!

1. Prepare gelatin according to the package directions.
2. Drain pineapple in a strainer.
3. When gelatin begins to set, stir in the pineapple, cottage cheese and nuts.
4. Pour into your favorite mold(s) and chill in the refrigerator for 4 hours to set. Serve and enjoy!

SERVING SIZE: 1/2 cup

### Fun Fact

This yummy dessert/snack will help you on your way to your goal of 3 cups from the milk group a day and 1 1/2 cups from the fruit group a day. Even though cottage cheese has less calcium than milk and other cheeses it is still a good source of protein.



# Proficiency Questions

**Circle the best answer:**

**1. Which nutrient(s) are found in milk?**

- a. protein
- b. calcium
- c. vitamin D
- d. all of the above

**2. Which kind of milk has the least amount of fat?**

- a. skim milk
- b. whole milk
- c. 2% milk
- d. 1% milk

**3. What does pasteurize mean?**

- a. to heat milk to kill harmful bacteria
- b. to heat milk to grow good bacteria
- c. to separate curds and whey
- d. to separate calcium and protein

**4. When milk curdles, it separates into a solid and a liquid. What is the liquid called?**

- a. curds
- b. salt
- c. whey
- d. acid