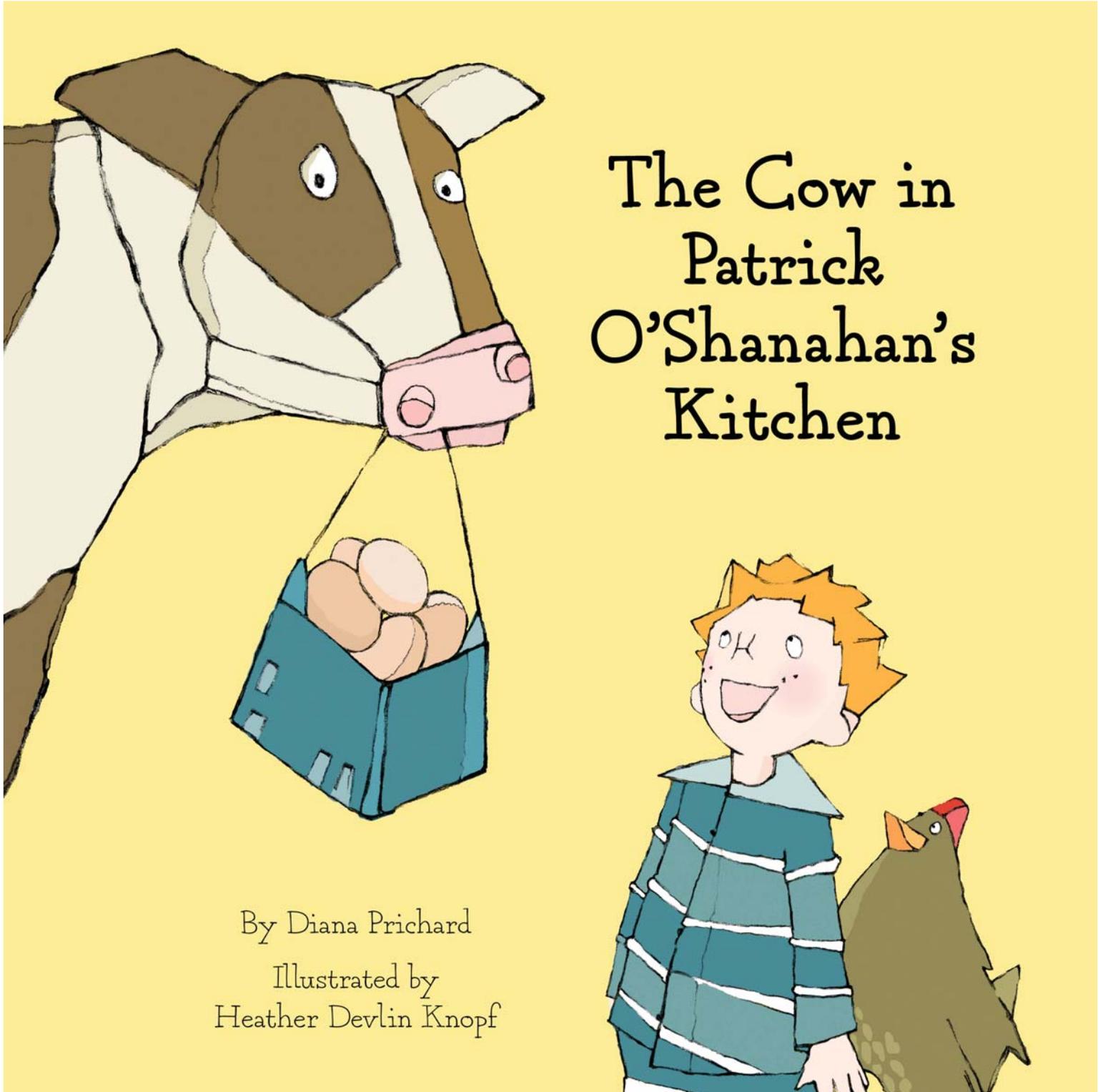


# SUPPLEMENTARY LESSONS



## The Cow in Patrick O'Shanahan's Kitchen

By Diana Prichard  
Illustrated by  
Heather Devlin Knopf

---

# Table of Contents

<u>Activity</u>	<u>Pages</u>
Book Overview.....	3
Breakfast History.....	4-5
Eggs .....	6
French Toast.....	7-8
Syrup.....	9-12
Milk.....	13-14
Chocolate Milk.....	15-16
Think Your Drink.....	17-18
Orange Juice.....	19-21
Orange Density.....	22
Bacon.....	23
Additional Resources.....	24

# The Cow in Patrick O'Shanahan's Kitchen

## Objective:

### *Students will*

1. Learn about the origins of breakfast
2. Identify and draw healthy breakfast foods in each food group
3. Learn about the laying industry in Michigan
4. Learn nutritional facts about eggs
5. Learn where maple syrup comes from and the steps for making sap into syrup
6. Perform real industry calculations using given conversions of maple syrup
7. Learn about the dairy industry and processes that milk must go through before we drink it.
8. Understand the steps for producing chocolate and cocoa
9. Learn about the production of orange juice
10. Compare the density of oranges in different settings
11. Learn about the history of pork and Michigan's pork industry

**Full Lesson Time:**  
2 Class Periods

**Grade Level:** 2-4

## Summary

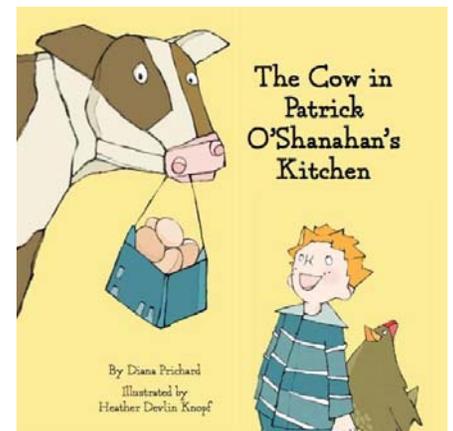
Patrick slowly gets out of bed, heads down to the kitchen ready for another boring breakfast. But, what he encounters is not boring at all! He gets joined by some unusual guests, providing a humorous lesson of where our meals come from.

He comes face to face with a big old cow standing there looking right at him. Stunned, Patrick turns and watches as his dad comes into the kitchen, evaluates the scene, and is indifferent to it all. He whips up his "World Famous French Toast" for Patrick. Patrick helps his dad out by getting fresh milk, straight from the cow. He finds eggs to add to the batter from chickens who hide in the fridge. And to top it all off, he gathers syrup. It miraculously appears dripping out of spigots that are tapped into maple trees.

The next morning, Patrick hops out of bed and tears down to the kitchen to see what is on the menu for today. He gets a huge surprise, which you will have to find out for yourself. A fun read aloud that most will enjoy!

## The Cow in Patrick O'Shanahan's Kitchen

by Diana Prichard  
ISBN-13: 978-1939775016





# Breakfast History

## Objective

### Students will

1. Learn about the origins of breakfast
2. Identify and draw healthy breakfast foods in each food group

**Time:** 1/2 Class Period

**Grade Level:** 2-3

## Curriculum Standards

### Common Core:

- CCSS.ELA-Literacy.RI.2.1; W.2.1; W.2.2

## Other Resources

- [www.choosemyplate.gov/](http://www.choosemyplate.gov/)
- Michigan Farm Bureau MyPlate: [www.michfb.com/MI/Ag\\_Trivia\\_and\\_Facts/](http://www.michfb.com/MI/Ag_Trivia_and_Facts/)

### Materials Needed:

- A copy of page 5 of the lesson for each student

### Background:

The term breakfast is a compound word meaning two or more words put together to form a new word. So, breakfast means you are breaking the fast between dinner the night before and the first meal of the day. That makes breakfast the first meal eaten after waking from a night's sleep.

Breakfast is considered the most important meal of the day. A good breakfast provides us with energy and nutrients that people need to start their day off right. The meal gets your metabolism working for the day. Metabolism is the process that converts the food we eat to energy. Studies even show that children who eat a good breakfast do better in school than children who do not.

Eating a nutritious breakfast develops good eating habits that will last a lifetime. It is also an excellent occasion to eat together with the family!

### Directions:

1. Discuss the history and importance of breakfast.
  - Q: Who can tell me what the most important meal of the day is?  
A: Breakfast
  - Q: What are the different food groups? A: Grains, Dairy, Fruits, Vegetables and Protein.
2. Pass out a copy of pg. 5 to each student and have them draw a healthy breakfast on the plate. Make sure they label each item on the plate.
3. Have a few students share their breakfast drawings in front of the class.

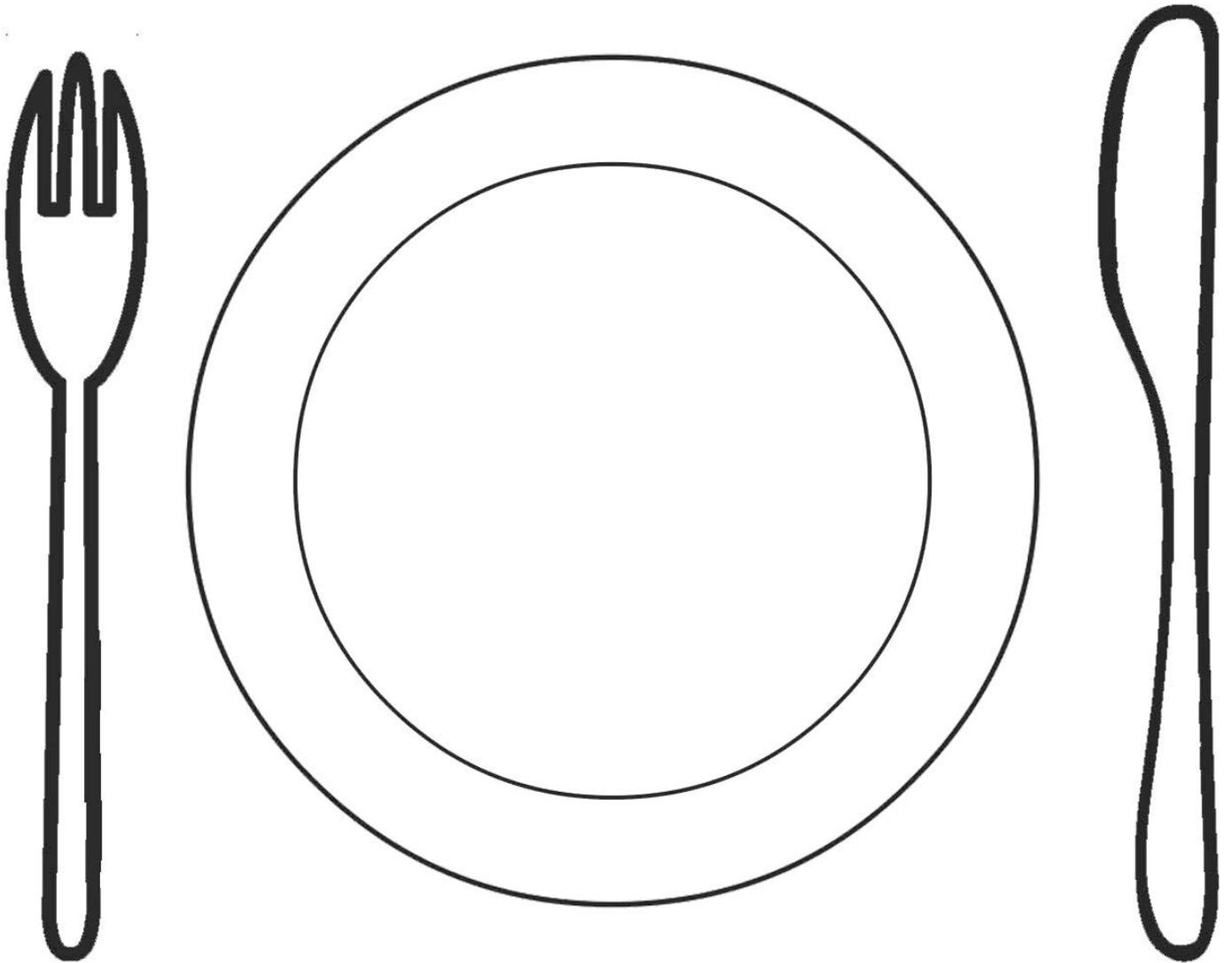
### Lesson Extender:

- Have students use the backside of their plate worksheets to write a paragraph describing their breakfast and which food groups they included.
- Have them also explain what they usually eat for breakfast, why they like it and which nutritional requirements it satisfies.

# Breakfast History

**Directions:**

Draw a healthy breakfast in the picture below and label each item. Be sure to incorporate the different food groups! Look at the picture to the right for help.





# Eggs

## Objective

*Students will:*

1. Learn about the laying industry in Michigan
2. Learn nutritional facts about eggs
3. Brainstorm with other students about their knowledge of chickens and eggs, then write down their answers

**Time:** 1/2 Class Period

**Grade Level:** 2-3

*Curriculum Standards:*

Common Core:

- CCSS.ELA-Literacy.RI.3.1; RI.3.2; W.3.4

## Materials Needed:

- One piece of poster paper per group
- Colored markers

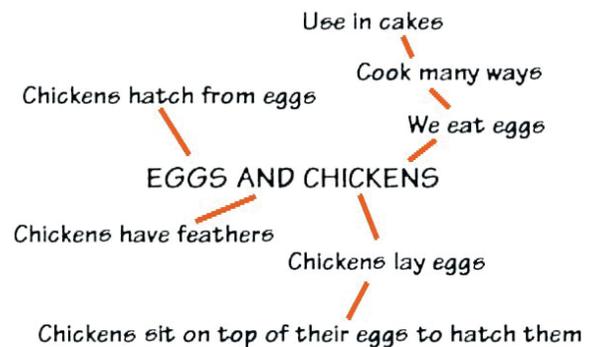
## Background:

Eggs are an important sector of Michigan's agriculture industry. There are 10.5 million laying hens in Michigan and these hens produce 227 million dozen eggs each year! Michigan egg farmers supply eggs to all McDonald's restaurants east of the Mississippi River.

Eggs are packed with nutrients including protein, iron, phosphorus, zinc and essential vitamins A, D, E, and B. They are relatively low in saturated fat, and are low in calories with only 78 per medium egg.

## Directions:

1. Give the students some background information about eggs.
  - A female chicken is a hen. A male chicken is a rooster. Their offspring are called chicks.
  - When a female chicken is six months old, it begins producing eggs. Once a chicken begins to lay eggs, it is called a hen or a layer.
  - It takes a hen about a day to produce one egg and every egg begins as a yolk.
  - Q: What are eggs used for? A: Eggs are used to thicken sauces, custards, and fillings. The proteins in the egg coagulate, or thicken, as the egg is heated. Beaten egg whites, yolks, or whole eggs are used in cakes and other baking. But, more than 1/3 of all eggs produced are consumed at breakfast!
2. Divide students into groups, giving each one poster paper and markers.
3. Have each group make a web of their knowledge of chickens and eggs.
  - See the sample web below.
  - The webs may be done as a group project, a class project, or as individual exercises. Save the webs for use at the end of the unit. (Display the webs in the classroom)





# French Toast

## Objective

*Students will:*

1. Learn the history of French toast
2. Determine and arrange the correct order of steps for cooking French toast

**Time:** 1/2 Class Period

**Grade Level:** 2-3

*Curriculum Standards:*

Common Core:

- CCSS.ELA-Literacy.RI.3.8; W.3.2; W.3.4

## Materials Needed:

- One piece of construction paper per student
- A set of cut-out strips from page 8 for each student
- Glue sticks

## Background:

French toast is a popular breakfast food, but contrary to popular opinion this meal was not invented in France. The exact origins are unknown, but recipes can be traced back to Ancient Roman times. One of the original names for the dish meant "Roman bread." Many theories that explain the name "French toast" say that the dish became popular in America by French immigrants.

To make French toast, you first dip slices of bread in a mixture of beaten eggs, milk, cinnamon and vanilla. Then you fry the egg-coated bread in a pan until browned.

You can eat your French toast with powdered sugar, cinnamon, maple syrup, jelly, or fruit on top.

## Recipe:

- 1 egg, slightly beaten
- 1/4 cup milk
- 2 slices of bread
- Cinnamon
- 1 tablespoon butter
- Maple syrup
- Fresh fruit
- Vanilla

## Directions:

1. Explain the background history of French toast.
2. Discuss the steps to make French toast.
3. Review the steps in order (see next page).
4. Cut out the strips and give each student a set (paper clipped together).
5. Have the students put the steps in the correct order & glue to a piece of construction paper.

## Lesson Extender:

Have the students think about where their food comes from. In order to make bread we must grow wheat, which is ground into flour and then used as an ingredient to bake bread. Wheat in Michigan is planted in September/October and harvested in July! Create a timeline with the three ingredients below to better understand where these ingredients come from and how we get them. Write a story that explains where each ingredient came from:

- Milk: From Cow to Carton it take less than 3 days
- Winter Wheat: From plant to bread it takes about 9 months
- Eggs: From when it is laid to the store it takes less than 3 days
- Syrup: From tree sap to syrup it takes less than 3 days

**Wash your hands and all cooking supplies**

**In a dish, beat together the egg, milk & cinnamon with a fork**

**Dip the bread slices in the egg mixture**

**In a medium skillet, melt the margarine over medium heat**

**Cook the bread slices in the skillet until golden brown**

**Serve with syrup and top with fresh fruit**

**Wash your hands and all cooking supplies**

**In a dish, beat together the egg, milk & cinnamon with a fork**

**Dip the bread slices in the egg mixture**

**In a medium skillet, melt the margarine over medium heat**

**Cook the bread slices in the skillet until golden brown**

**Serve with syrup and top with fresh fruit**

**Wash your hands and all cooking supplies**

**In a dish, beat together the egg, milk & cinnamon with a fork**

**Dip the bread slices in the egg mixture**

**In a medium skillet, melt the margarine over medium heat**

**Cook the bread slices in the skillet until golden brown**

**Serve with syrup and top with fresh fruit**



# Maple Syrup

## Objectives

*Students will*

1. Learn where maple syrup comes from and the steps for making sap into syrup
2. Perform calculations using given conversions to answer questions from page 11.

**Time:** 1/2 Class Period

**Grade Level:** 3-4

*Curriculum Standards:*

Common Core:

- CCSS.ELA-Literacy.RI.3.3; RI.3.8;
- Mathematics.3.NBT.A.2; 3.NBT.A.3; 3.MD.A.2

*Other Resources*

- Michigan Maple Syrup Association:  
[www.mi-maplesyrup.com](http://www.mi-maplesyrup.com)

## Materials Needed:

- One copy of pg. 11 & 12 for every student
- Calculators

## Background:

People have been making maple syrup for hundreds of years. Native Americans first discovered how to make it and taught the art to early colonists that arrived to North America creating settlements in the 1600's.

## Directions:

1. Discuss the basics of Maple Syrup

- Q: Where does Maple syrup come from? A: Maple syrup is made from the sap of maple trees. Sap is a watery, sweet liquid found inside a tree. Sap moves throughout the tree, and carries water and food to the tree's different parts through tiny tubes inside the tree. Most crops are harvested in the fall, but maple sugar is harvested in late winter or early spring.
- Q: How do we get the sap out of the tree? A: At harvest or "sugaring" time, a taphole is drilled into a maple tree. The taphole is not deep, so it doesn't hurt the tree. A spile, or spout, is pushed into the hole and a bucket or bag is hung from the spout. The sap from the tree drips through the spout and into the bucket.
- Q: What has to happen for the sap to become syrup? A: It has to be boiled. This removes water from the sap. While it boils, the sap must be skimmed and watched carefully so that it doesn't burn. As the water evaporates, the sap turns into a dark brown, thick syrup.
- Q: Does anyone know what we call the area of a woods with maple trees? A: It is called a surgarbush. This is the area where farmers grow maple trees so they can collect sap. Some farms even have their own maple sugar processing locations called sugarhouses, or sugarshacks. Visitors can watch maple syrup being made.
- Q: We obviously eat the maple syrup that farmers make, but usually not on its own. What are some foods that we eat maple syrup with? A: We often eat it with pancakes, waffles, French toast, and oatmeal. It is also used in baking as a sweetener.

2. Pass out the pg. 11 Math Activity and have students work together to solve the answers. The answers are as follows;

- Q #1: 16 gallons of maple syrup x 40 gallons of tree sap per gallon of syrup = 640 gallons of tree sap total

# Maple Syrup

## *Continued*

- Q #2:  $16-2= 14$  gallons sold x \$30 per gallon = \$420.00
  - Q #3: 10 gallons per tap x 12 taps = 120 gallons of sap
  - Q #4: 4,800 gallons of sap/ 40 gallons of sap per gallon of syrup = 120 gallons of maple syrup
3. Next, pass out the pg. 12 writing activity. Have students answer each of the questions, who, what, why, when, where and how about what is going on in the picture on the page. Also on pg. 12, have the students write a descriptive paragraph about what they see going on in the picture.
  4. Go over some of the answers that some of the students formed. Then discuss what is actually going on in the photo; Individuals are gathering the liquid tree sap.

### **Lesson Extender:**

1. Have the students guess what the next step in the maple syrup process would be.
2. Have the students draw a picture showing their idea.
  - Q: What is the next step in the maple syrup process? A: The next step is pouring the sap into the container that they will boil it in. Judging by the picture's time setting, they will boil the sap in a pot over an open fire.
3. Have students write a paragraph to describe image they drew
4. Have students write a poem about the original picture.
5. Take a field trip to a sugarbush! Find a sugarbush near you at [www.mi-maplesyrup.com](http://www.mi-maplesyrup.com)

# Maple Syrup

## *Math Activity*

---

**Directions:**

Use the story problem below to answer the math questions that follow. Be sure to show your work.

**Story Problem:**

Suppose it takes 40 gallons of maple tree sap to produce 1 gallon of maple syrup. The other 39 gallons are water that is boiled off. Boiling sap takes time, energy, and work, so the final product of maple syrup costs \$30.00 per gallon.

**Questions:**

1. Nelson's farm just produced 16 gallons of maple syrup. How many gallons of sap did the farmer collect?
  
  
  
  
  
  
  
  
  
  
2. Suppose this farmer sold all but 2 gallons. How much money did he make from the sale?
  
  
  
  
  
  
  
  
  
  
3. Suppose one tap in a mature tree produces 10 gallons of sap. This year Nelson's farm put in 12 taps. How many gallons of sap will they collect?
  
  
  
  
  
  
  
  
  
  
4. How many gallons of maple syrup will 4,800 gallons of maple sap make?





# Michigan Milk



## Objectives

*Students will*

1. Learn about the dairy industry and processes that milk must go through before we drink it.

**Time:** 1 Class Period

**Grade Level:** 3-4

*Curriculum Standards:*

**Common Core:**

- CCSS.ELA-Literacy.RI.4.1; RI.4.7; SL.4.4

**Next Generation Science Standards:**

- NGSS.Structures and Processes. 3-LS1-1;
- Inheritance and Variation of Traits. 3-LS3

*Other Resources*

- United Dairy Industry of Michigan [www.milkmeansmore.org](http://www.milkmeansmore.org)
- [www.midwestdairy.com/](http://www.midwestdairy.com/)

*Vocabulary*

**Standardization:** The adjustment of milk or cream fat content to a specific value.

**Homogenization:** Breaking down the fat globules in milk so they stay integrated, rather than separating.

**Pasteurization:** A process that kills harmful bacteria by heating the milk to a specific temperature.

## Materials Needed:

- One copy of pg. 14 for each student

## Background:

Milk is a delicious and nutritious drink that is an important sector in the Michigan agriculture industry. Dairy contributes \$14.7 billion to the state's economy annually. Michigan is ranked 7th in the nation for milk production with approximately 380,000 dairy cows in 1,900 different herds.

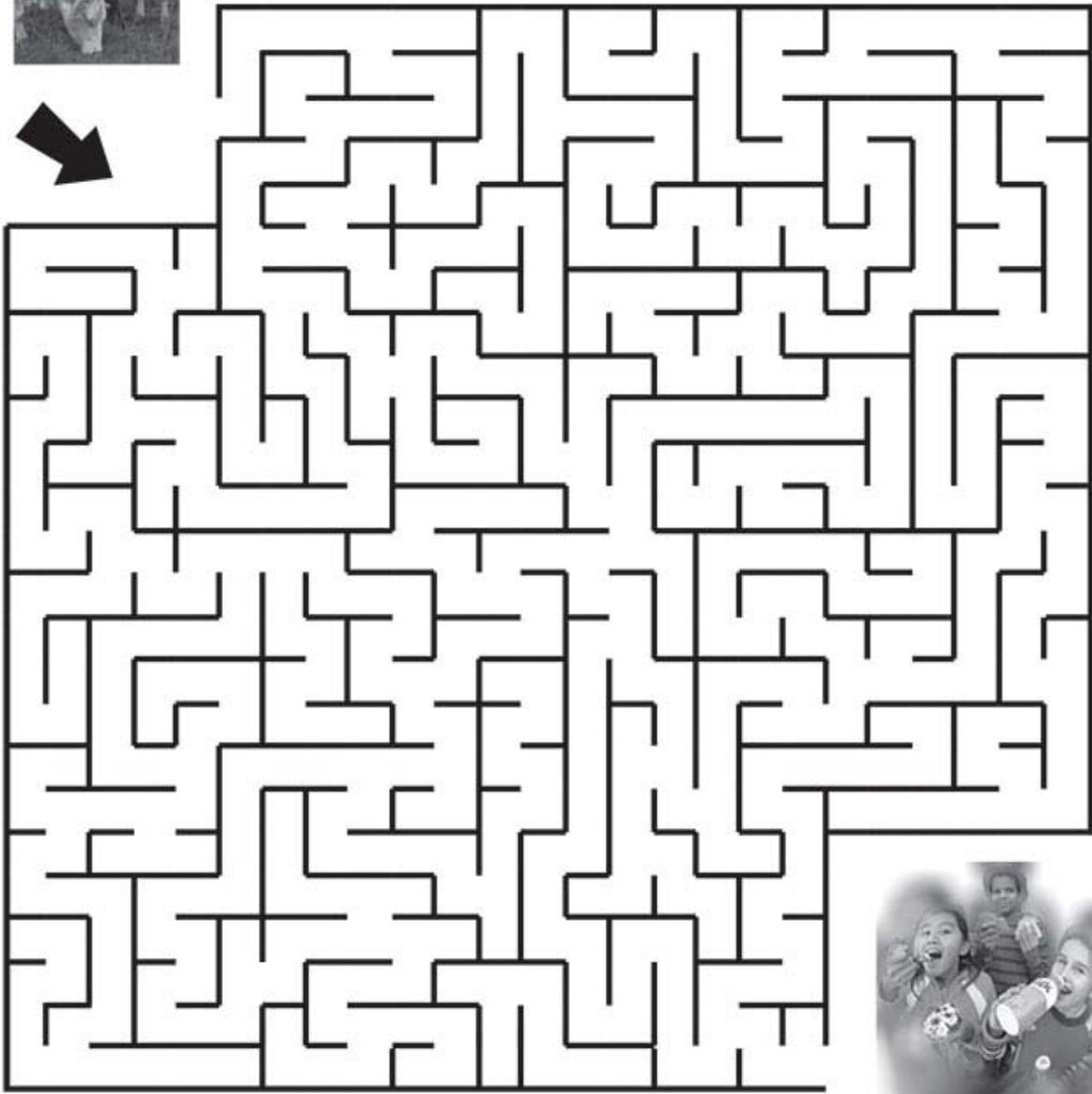
## Directions:

1. Discuss with students about the basics about dairy cattle.
  - Heifers are female dairy cattle. After two years, they give birth to their own calves. Once a heifer gives birth, she is then called a cow. All female dairy cows must have a calf in order to produce milk.
  - Q: What colors can a dairy cow be? A: Dairy cows come in many colors. It mainly depends on the cow's breed. For example the black and white cows are called Holsteins. Some breeds produce a lot of milk while others may produce milk with more butterfat. Farmers consider this when choosing a breed of dairy cows.
2. Explain the milk process.
  - Q: How many times a day is a cow milked? A: Cows are milked 2 or 3 times a day with special milking machines. The udder is cleaned before rubber-lined cups are attached to the teats. A pump sucks the milk through the cups and into a pipe. The pipe then takes the milk from the machine to a refrigeration tank that stores the milk at 40 degrees Fahrenheit.
  - The milk is then delivered in bulk to a plant to be tested, standardized, homogenized, pasteurized and packaged, before it is delivered to the grocery store.
  - Q: How long do you think it takes for the milk to go from the farm to the grocery store? A: About 48 hours (2 days).
3. Discuss with students the different breeds of dairy cattle.
  - Q: How many breeds of dairy cattle are there? A: There are 7 major breeds: Jersey, Brown Swiss, Guernsey, Ayrshire, Milking Shorthorn, Red and White, and Holstein. Check out [www.midwestdairy.com/](http://www.midwestdairy.com/) to see the different breeds and learn more about each. These breeds have different traits that distinguish them from other breeds of dairy cattle.
4. Pass out a copy of pg. 14 to each student and have them complete the dairy maze.

# Michigan Milk Maze



Help the dairy farmers move their milk from farm to table.



[www.udim.org](http://www.udim.org)



# Chocolate Milk



## Objectives

*Students will*

1. Understand the steps for producing chocolate and cocoa

**Time:** 1/2 Class Period

**Grade Level:** 3-4

*Curriculum Standards:*

Common Core:

- CCSS.ELA-Literacy.RI.3.1; RI.3.3; RI.3.8; SL.3.1; SL.3.2

## Materials Needed:

- One piece of construction paper per student
- A set of cut-out strips and pictures from pg. 16 for each student
- Glue sticks

## Background:

All milk, including flavored milk, contains a unique combination of nutrients important for growth and development in kids.

Flavored milk has all the major nutrients found in unflavored milk—calcium, phosphorus, magnesium, potassium, protein, riboflavin, niacin and vitamins A, B12 and D—and contributes only 3% of added sugars in the diets of children age 2 - 18 years.

## Directions:

1. Explain chocolate and cocoa as ingredients.
  - Q: Can anyone name a food item that has chocolate in it? A: Candy, chocolate milk, Hot cocoa, cookies, etc.
2. Discuss the production of chocolate and cocoa.
  - Chocolate and cocoa are common ingredients in many products we use every day. However, the production and processing involved in making these products are more complex than most of us realize. The steps for production are as follows:
  - Both cocoa and chocolate grow in pods off of the trunks of cacao tree.
  - The cocoa beans are seeds that grow inside very hard pods on the tree.
  - When the pods are ripe, they are picked and cut open. There are 20–50 beans inside surrounded by a milky white pulp.
  - The beans are then cleaned, roasted, and crushed. Crushing the center of the bean makes a thick liquid. This liquid is called chocolate liquor.
  - Sugar and vanilla are added to the liquor.
  - As the liquor cools, it makes sweet chocolate.
  - When milk is added, you get chocolate milk.
3. Cut out the strips and pictures on pg. 16 and give each student a set of 8 strips and 8 pictures. Have the students glue them to a sheet of construction in the proper order of cocoa and chocolate production.
4. Have students share their answers.

**Both cocoa and chocolate come from the Cacao tree.**

**A Cacao tree produces fruit pods that grow off of the trunk and branches.**

**Cocoa beans are seeds that grow inside of the hard fruit pods on the tree.**

**When the pods are ripe, they are picked and cut open. There are 20–50 beans inside surrounded by a milky white pulp.**

**The beans are cleaned, roasted, and crushed. Crushing the center of the bean makes a thick liquid called chocolate liquor.**

**Sugar and vanilla are added to the liquor.**

**As the liquor cools, it makes sweet chocolate.**

**When milk is added, you get chocolate milk.**

**Both cocoa and chocolate come from the Cacao tree.**

**A Cacao tree produces fruit pods that grow off of the trunk and branches.**

**Cocoa beans are seeds that grow inside of the hard fruit pods on the tree.**

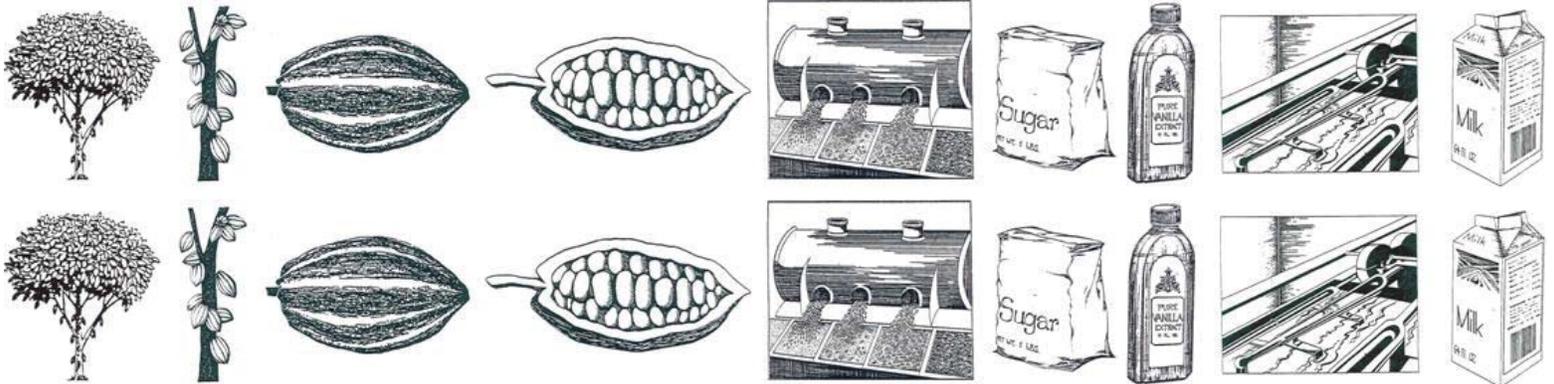
**When the pods are ripe, they are picked and cut open. There are 20–50 beans inside surrounded by a milky white pulp.**

**The beans are cleaned, roasted, and crushed. Crushing the center of the bean makes a thick liquid called chocolate liquor.**

**Sugar and vanilla are added to the liquor.**

**As the liquor cools, it makes sweet chocolate.**

**When milk is added, you get chocolate milk.**





# Think Your Drink

## Objectives

*Students will*

1. Compare the nutritious benefits of four different beverages

**Time:** 1/2 Class Period

**Grade Level:** 3-4

*Curriculum Standards:*

Common Core:

- CCSS.ELA-Literacy.RI.4.1; RI.4.5

## Materials Needed:

- One copy of pg. 18 for each student
- A carton of fat free white milk
- A carton of low fat 2% chocolate milk
- One can of Coca-cola
- A fruit punch juice box or pouch
- 3 sandwich ziplock bags
- 1 cup of sugar
- A teaspoon measurer

## Background:

This activity gives students a direct look at the nutrition facts of four different products that we often drink.

## Directions:

1. Discuss the different types of beverages that students consume.
  - Q: What types of beverages do you enjoy to drink?
  - Q: What drinks do you usually consume with breakfast?
  - Q: Which drink do you think is the healthiest one? A: Well in this next activity we are going to find out!
2. Pass out a copy of pg. 18 to each student and explain the activity.
  - Have students work in small groups to answer the questions.
3. When everyone is finished answering the questions, visually show them how much sugar is in each serving of the drinks.
  - Fill up a ziplock bag with the amount of sugar that is in one serving of the drink; Fat Free White Milk has no sugar, Low Fat Chocolate Milk has 3.6 tsp of sugar, Cola has 8 tsp of sugar, & Fruit Punch has 3.2 tsp of sugar.
4. Then have students volunteer their answers.
  - Q: Does this now make you think about what you are drinking? And does it answer the original question of what is the healthiest drink out of these four options? A: Yes! Sugar is not the only component to consider when choosing drinks. White Milk may have been the healthiest choice but Chocolate Milk is not far behind because of the protein and vitamins that are available.

## Lesson Extender:

1. Nutrition Label Detective.
  - Hand out random nutrition labels with numbers on them.
  - Then give the students a list of products to choose from.
  - Students will work in teams to use the information found on the nutrition label to determine the product associated with it.
  - Each team will need to identify what clue led them to their answer.

# Think Your Drink

## Directions:

Think about some beverages you drink with meals. Use the chart below to compare the options you have when you choose something to drink. Then answer the questions that follow.



<b>1% Lowfat Milk</b>	
Nutrition Facts	
Serving Size 8oz.	
Servings per container	1 serving
Calories 100	% Daily Value
Total Fat 2.5g	0%
Total Carbohydrate 13g	4%
Protein 8g	17%
Sugars 13g	
Vitamin A	10%
Vitamin C	4%
Vitamin D	25%
Calcium	30%

<b>Low Fat Chocolate Milk</b>	
Nutrition Facts	
Serving Size 8oz.	
Servings per container	1 serving
Calories 140	% Daily Value
Total Fat 2.5g	4%
Total Carbohydrate 20g	7%
Protein 8g	16%
Sugars 18g	
Vitamin A	10%
Vitamin C	2%
Vitamin D	25%
Calcium	25%



<b>Cola</b>	
Nutrition Facts	
Serving Size 12oz.	
Servings per container	1 serving
Calories 145	% Daily Value
Total Fat 0g	0%
Total Carbohydrate 39g	13%
Protein 0g	0%
Sugars 39g	
Vitamin A	10%
Vitamin C	0%
Vitamin D	0%
Calcium	0%

<b>Fruit Punch</b>	
Nutrition Facts	
Serving Size 6oz.	
Servings per container	1 serving
Calories 60	% Daily Value
Total Fat 0g	0%
Total Carbohydrate 17g	6%
Protein 0g	0%
Sugars 16g	
Vitamin A	0%
Vitamin C	0%
Vitamin D	0%
Calcium	0%



From highest to lowest, rank the drinks according to their added sugar levels.

---



---



---

What is the relationship between the added sugar and carbohydrate levels?

---



---



---

What drink(s) provide you with the highest percentage of calcium? About how many servings of this drink do you need to reach 100% of your daily requirements?

---



---



---

What other products could you consume to help reach your daily requirements of calcium?

---



---



---

Which drink do you think is the healthiest choice? Why?

---



---



---



# Orange Juice

## Objectives

*Students will*

1. Identify the origin of oranges
2. Learn about the production process of orange juice

**Time:** 1/2 Class Period

**Grade Level:** 2-3

*Curriculum Standards:*

Common Core:

- CCSS.ELA-Literacy.RI.3.1; RI.3.7

## Materials Needed:

- 1 Orange plate for each student (or a piece of orange construction paper)
- A brad for each student
- Pencils and green colored pencils
- Scissors
- A copy of page 21 for each student (suggested to print on cardstock)

## Background:

We do not grow oranges in Michigan, but we still enjoy drinking orange juice for breakfast. This activity will give us insight as to how oranges are made into orange juice and made available in our local grocery stores.

Most of the oranges in the United States are grown in Florida. About 96% of Florida's oranges are squeezed for juice. In one day, a processing plant can squeeze millions of pounds of oranges!

## Directions:

1. Discuss the production of oranges.
  - Q: Raise your hand if you drink orange juice or have before?
  - Q: Can anyone tell me if oranges are grown in Michigan? A: No.
  - Q: Since we know that oranges are not grown in Michigan, in what state are oranges grown? A: Florida, California, Texas and Arizona.
2. Discuss how orange juice is made.
  - You may not realize it, but orange juice comes in multiple forms: As a liquid right from the bottle, carton or can, but most is actually concentrated until it's very thick, then frozen.
  - Concentrate is made by evaporating the water under a vacuum and heat source. After the water is removed, concentrated juice remains and is frozen. When a consumer purchases the frozen concentrate at the store, they just add the water back in to get orange juice.
3. Give a copy of pg. 20 to each student and have them cut out the orange shape. Let them color the stem and leaves, then cut that out as well.
4. Make the citrus facts visible to all the students and have them write one fact in each slice of the cut out pg. 21 orange (facts on pg. 20).
5. Take the cut out orange shape and trace the circle onto the orange construction paper. Cut out the traced circle on the orange construction paper along with the size of one slice from the orange circle. Or you can use the orange paper plate.
6. Lay the white circle on the table with the written facts facing upwards and place the orange construction paper circle or orange paper plate on top. In the center attach the two with a brad.
7. Glue the green stem to the top of the white circle so that it sticks out.

# Orange Juice

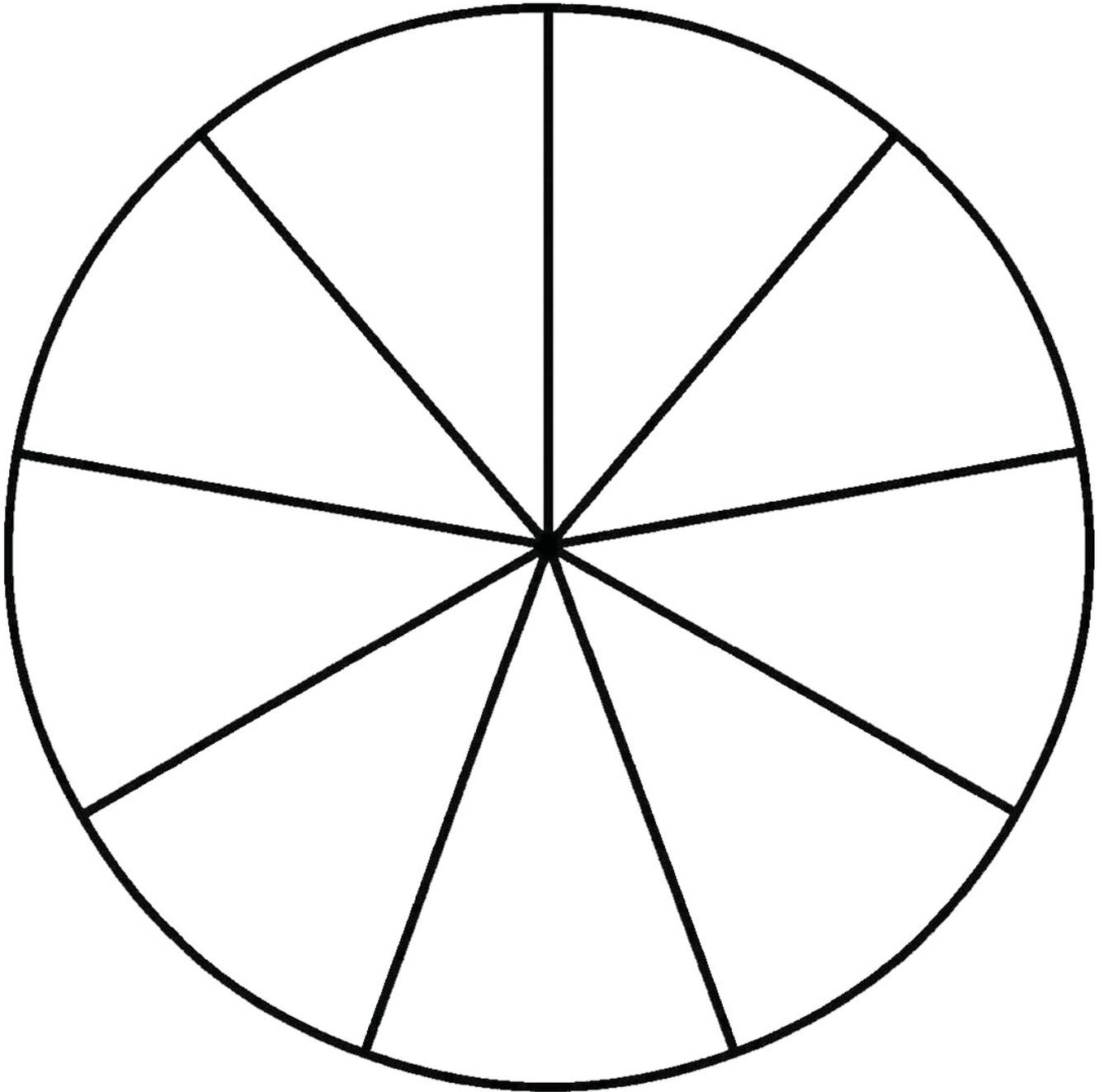
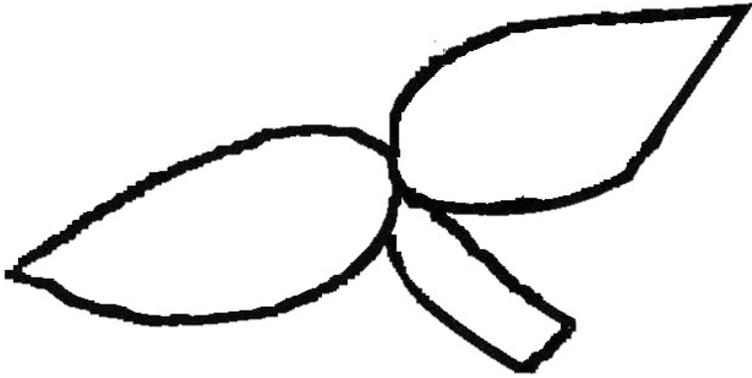
*Continued*

## **Lesson Extender:**

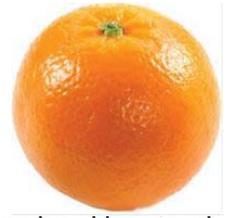
1. Have students complete their own activity using different facts they find.
2. Use the facts to quiz the students to recall memory.
3. Instead of using facts, use each ninth to describe a step of the orange juice making process, starting with growing the oranges and ending with drinking a glass of orange juice.

## **Orange facts:**

1. The ancient Greeks and Romans referred to oranges as “golden apples.”
2. It is believed Christopher Columbus was the first to bring orange seeds to America during his second voyage to the region in 1493.
3. Florida’s oranges are used to produce nearly all of the orange juice in America.
4. Navel oranges get their name because the bottoms looks like a belly button or navel.
5. In 2012, there were over 540,000 acres of citrus trees in Florida, equaling 11.7 million tons of citrus produced.
6. Orange juice is purchased by nearly 70 percent of American households.
7. After chocolate and vanilla, orange is the world’s favorite flavor.
8. Oranges are low in calories.
9. There are over 600 varieties of oranges.



# Orange Density



## Objectives

*Students will*

1. Make an educated guess as to if oranges float or sink
2. Learn that removing the peel changes the density of an orange

**Time:** 1/2 Class Period

**Grade Level:** 3-4

*Curriculum Standards:*

Common Core:

- CCSS.ELA-Literacy.RI.3.3; W.4.1; W.4.2; W.4.7

Next Generation Science Standards:

- NGSS.Matter and Its Interactions. 2-PS1

## Materials Needed:

- Several oranges (have students bring them in)
- A large bowl filled with water (suggested to use a glass bowl for visual purposes)

## Background:

After learning about orange production and facts in the previous lesson, we are going to dive into a science experiment that will determine the density of oranges with and without their peels.

## Directions:

1. Tell the students that they will be measuring the density of oranges, by immersing it in water to see if it sinks or floats.
  - Q: Who thinks the orange will float? Why or why not?
  - Have the students use their estimates to begin filling out a KWL (Know- Want to know- Learned) chart like the one pictured below.
2. Fill the large bowl with water.
3. Let each student try to immerse the orange in the water.
  - Q: What happened to the orange? A: The orange floats.
4. Have the students take the orange out of the water & peel off the skin.
5. Immerse the peeled orange into the water.
  - Q: What happened to the peeled orange? A: It sinks.
  - Have students try to explain why they think the peeled orange sinks.
  - Explanation: The rind (or peel) of the orange is full of tiny air pockets. This gives the orange a lower density than water, causing it to float to the surface. Removing the rind (and the air pockets) from the orange increases its density higher than that of water, causing it to sink.
6. Complete the KWL chart after the experiment.

KWL		
What I <u>K</u> now	What I <u>W</u> ant To Know	What I <u>L</u> earned

## Lesson Extender:

1. Try doing this experiment with other fruits such as: watermelons, bananas, kiwis etc.
  - Write a paragraph comparing and contrasting the other fruits results.

## Objectives

*Students will*

1. Learn about the history of pork and Michigan's pork industry
2. Analyze two poems and determine the concepts conveyed by the authors

**Time:** 1/2 Class Period

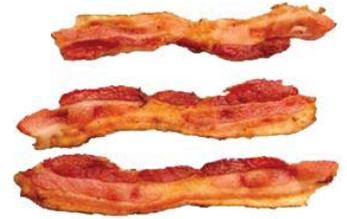
**Grade Level:** 3-4

*Curriculum Standards:*

Common Core:

- CCSS.ELA-Literacy.W.3.1; W.3.2;

# Bacon!



## Materials Needed:

- Paper for students to write their answers on
- Pencils

## Background:

Bacon comes from pigs. Hopefully that is common knowledge, but you may not have known that bacon has been around since 1500 BC! It's no wonder why this food is so delicious...it's had a long time to be perfected.

Bacon strips come from pig bellies. Once the pork is cut from the pig, it's "cured" using salt and dry-packing. Bacon may be eaten smoked, boiled, fried, baked, or grilled, or used as a minor ingredient to flavor dishes.

In Michigan, pig farmers raise more than 2 million market hogs each year. Michigan's pork industry contributes more than \$500 million to the state's economy. There are more than 2,000 pig farms ranging from small to very large that raise thousands of pigs.

## Directions:

1. Discuss the Michigan Pork industry and bacon.
  - Raise your hand if you like bacon! Q: When do you normally eat bacon and what do you eat it with? A: At breakfast. It can accompany eggs, pancakes, waffles, or it can go with non-breakfast foods like baked potatoes.
2. Make the poems below available for all the students to read. Have the students read the poems below and determine what is clearly defined in each.
  - Q: What inferences can you draw from the text?
  - Q: What concepts did the author convey in each poem?
3. Have the students write down their answers on a piece of paper.
4. When finished, let the students share their thoughts.

## Lesson Extender:

1. Have each student write their own poem about bacon and share it with the class.
  - Include a drawn picture to capture visual elements of what they are writing about.

# Bacon!

*Continued*

## **POEM 1**

Bacon, bacon, always on my mind.  
What are some things we come to find?  
Bacon is better, can it be true?  
Sure is! Pork is good for you!  
Eat in moderation and it won't harm.  
Don't forget to thank those that farm!

## **POEM 2**

Early dawn on the farm, the sun rises.  
A school day will be filled with surprises.  
I want to stay in bed, but mom won't take.  
I guess I've got a fever to fake.  
The aroma hits and now I've awoken.  
I rush downstairs to the smell of bacon!

# Additional Resources

## Eggs & Chickens:

- *Big Chickens* by Henry Cole | ISBN-13: 978-0142410578
- *Chicks & Chickens* by Gail Gibbons | ISBN-13: 978-0823419395
- *Eggs (Feeding the World)* by Kim Etingoff | ISBN-13: 978-1422227442
- The American Egg Board | [www.aeb.org](http://www.aeb.org)

## Syrup:

- *From Maple Trees to Maple Syrup* by Kristin Thoennes Keller | ISBN-13: 978-0736826341
- *Maple Sugar Festivals: Tapping for Sap* by Lisa Gabbert | ISBN-13: 978-0823953400
- *Sugarbush Spring* by Marsha Wilson Chall | ISBN-13: 978-0688149079
- Michigan Maple Syrup Association | [www.mi-maplesyrup.com](http://www.mi-maplesyrup.com)

## Dairy:

- *Clarabelle* by Cris Peterson | ISBN-13: 978-1620915905
- *From Grass to Milk* by Stacy Taus-Bolstad | ISBN-13: 978-1580139663
- *The Milk Makers* by Gail Gibbons | ISBN-13: 978-0689711169
- The United Dairy Industry of Michigan | [www.milkmeansmore.org](http://www.milkmeansmore.org)

## Oranges:

- *From Oranges to Orange Juice* by Kristin Thoennes Keller | ISBN-13: 978-0736826365
- *An Orange in January* by Dianna Hutts Aston | ISBN-13: 978-0803731462

## Pork:

- *A Hog Ate My Homework* by Gary Metivier | ISBN-13: 978-0981894607
- *Pigs* by Gail Gibbons | ISBN-13: 978-1430117353
- *Pigs an A-to-Z Book* by Susan Anderson | ISBN: 978-1-926781-00-6
- *Pigs & Pork in the Story of Agriculture* by Susan Anderson | ISBN: 978-1-926781-01-3
- The Pork Checkoff Association | [www.pork.org](http://www.pork.org)