

# Pizza Portions

## Objective

Students will read about pizza in groups and answer comprehension questions. Students will use math skills to find what percentage of daily caloric intake is consumed when eating pizza.

## Background

Pizza is a world-popular dish of Italian origin, made with an oven-baked, flat, generally round bread that is often covered with tomatoes or a tomato-based sauce and mozzarella cheese. Other toppings are added according to region, culture, or personal preference.

Flatbreads are common in many Mediterranean cultures, but the innovation that gave us pizza was the use of tomato as a topping. The tomato was taken to Europe from the Americas in the 16th century. By the late 18th century it was common for poor people in the area around Naples to add tomato to their flat bread, and so the pizza was born. The dish gained in popularity, and soon pizza became a tourist attraction there.

Pizza first made its appearance in the US with the arrival of Italian immigrants in the late 19th century. Pizza was sold on the streets of Italian neighborhoods in cities like San Francisco, Chicago, New York City and Philadelphia. Gennaro Lombardi opened the first licensed American pizzeria in New York City in 1905.

Up until the 1940s, pizza was mostly eaten just in Italian neighborhoods. Its popularity spread after World War II, when soldiers returned home from the war. They had discovered pizza while serving in Italy and brought their appreciation for the dish back home.

Pizza dough is made from wheat, one of Oklahoma's top agricultural commodities. Tomatoes grow well in Oklahoma's long, hot summers and are a popular item in backyard gardens and farmer's markets. Pepperoni, a popular topping on pizza, is made from pork or a mixture of pork and chicken. Cheese is made from the milk of dairy cows. Wheat, dairy, pork and chicken are typically among the top five of Oklahoma's most valuable agricultural commodities. Other toppings made from Oklahoma agricultural products include hamburger, from beef cows, another top Oklahoma commodity.

Pizza can be high in salt and saturated fat, but it doesn't have to be. Classic Neapolitan pizza is made with fresh tomatoes, a moderate amount of mozzarella cheese and basil leaves spread on a thin crust. A variety of fruits and vegetables can be added to pizza to make it more nutritious

## English Language Arts

1. Read and discuss background and vocabulary
2. Divide students into groups of four.

## Oklahoma Academic Standards

### GRADE 6

Speaking and Listening: R.1,2,3;  
W.1,2. Critical Reading: R.7  
Algebraic Reasoning: 2.2; 3.1,3;  
4.1

### GRADE 7

Speaking and Listening: R.1,2,3;  
W.1,2  
Algebraic Reasoning: 1.2; 4.1,3

## Vocabulary

**common**—familiar

**culture**—the characteristic features of everyday life shared by people in a particular place or time

**equation**—mathematical statement that includes an equal sign to show that two expressions are equal

**expression**—a mathematical statement that does not include an equal sign (may include variables)

**immigrant**—a person who comes to a country to live there

**innovation**—the introduction of something new

**moderate**—neither very much nor very little

**mozzarella**—a moist white rubbery mild-flavored cheese that is much used in Italian cooking

**origin**—a rising, beginning, or coming from a source

**pizza**—a dish made typically of thinly rolled bread dough spread with a spiced mixture usually including tomatoes and cheese and often other toppings and baked

**pizzeria**—an establishment where pizzas are made or sold

**preference**—favorite

**region**—an area, division, or district of administration

—Provide each student within the group with one of the pizza background cards included with this lesson.

—Each student within the group will take a turn reading the information on his/her card to the group.

3. Cut out the pizza topping shapes included with this lesson and place one set in the center of each group's table, along with a key showing what each shape represents.

—Students will each choose a topping shape and respond to one or more of the questions that go with the topping shape he/she has selected. (See page with shapes for questions.)

## Math

1. Hand out copies of the "Pizza Portions" worksheet.

—Students will work in pairs to complete the problem.

—Students will solve the problem on the worksheet.

—Students will represent each fact with an expression. (Equations may be required for students with a higher skill level).

—Students will draw a representation of the calories of the pizza, slices, and daily intake relation.

—As you listen to discussions, if any student has trouble writing the expression lead them to using fact # 3 on the worksheet (calories in one slice of pepperoni).

—For an extra challenge, students will record an equation for the calories of the whole pizza and solve the equation to make sure it is correct.

— Summarize: Students will share their strategies for solving the problem and as a class discuss agreements or disagreements. If students disagree, they must be able to explain why (even if they are not sure how to correct it).

—Lead students in a discussion to find the constant that the needed variables are based on.

—Students will write a letter to the school nutritionist to report what they found.

## Extra Reading

Macaulay, David, *The Way We Work*, Houghton Mifflin, 2008.

Miller, Edward, *The Monster Health Book: A Guide to Eating Healthy, Being Active and Feeling Great for Monsters & Kids*, Holiday House, 2008.

Powell, Jillian, *Fats for a Healthy Body (Body Needs)*, Heinemann, 2009.

Wagner, Lisa, *Cool Pizza to Make and Bake (Cool Cooking)*, Abdo, 2007.

Worley, Rob M., *The Pizza Mystery (Boxcar Children Graphic Novels)*, Albert Whitman, 2010 (reprint).

# Pizza Cards

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## Pizza Card # 1

Pizza was first made in Italy, but it is popular all around the world. It is made with an oven-baked, flat bread that is usually circular. Then it is covered with tomatoes or a tomato-based sauce and mozzarella cheese. Other toppings are added according to regional, cultural, or personal preference.

Flatbreads are common in many Mediterranean cultures, but the innovation that gave us “pizza” was the use of tomato as a topping. The tomato was taken to Europe from the Americas in the 16th century. By the late 18th century it was common for poor people in the area around Naples to add tomato to their flat bread, and so the pizza was born. The dish gained in popularity, and soon pizza became a tourist attraction.

## Pizza Card # 2

Pizza first made its appearance in the US with the arrival of Italian immigrants in the late 19th century. Pizza was sold on the streets of Italian neighborhoods in cities like San Francisco, Chicago, New York City and Philadelphia. Gennaro Lombardi opened the first licensed American pizzeria in New York City in 1905.

Up until the 1940s, pizza was mostly eaten just in Italian neighborhoods. Its popularity spread after World War II, when soldiers returned home from the war. They had discovered pizza while serving in Italy and brought their appreciation for the dish back home.

# Pizza Cards

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## Pizza Card # 3

Pizza dough is made from wheat, one of Oklahoma's top agricultural commodities. Tomatoes grow well in Oklahoma's long, hot summers and are a popular item in backyard gardens and farmer's markets.

Pepperoni, a popular topping on pizza, is made from pork or a mixture of pork and chicken. Cheese is made from the milk of dairy cows. Wheat, dairy, pork and chicken are typically among the top five of Oklahoma's most valuable agricultural commodities. Other toppings made from Oklahoma agricultural products include hamburger, from beef cows, another top Oklahoma commodity.

## Pizza Card # 4

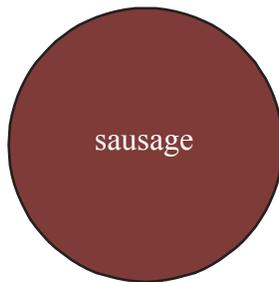
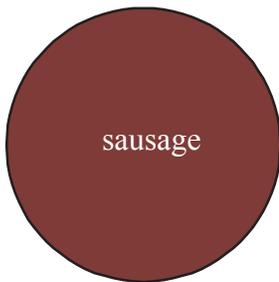
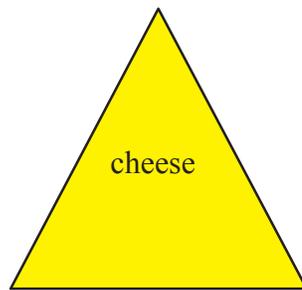
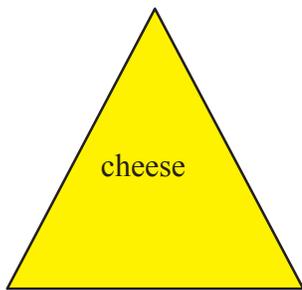
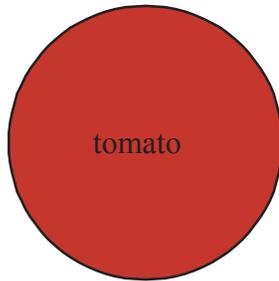
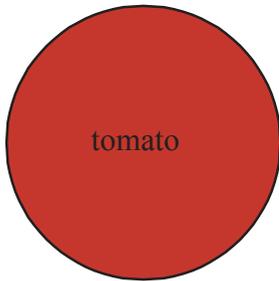
Pizza can be high in salt and saturated fat, but it doesn't have to be. Classic Neapolitan pizza is made with fresh tomatoes, a moderate amount of mozzarella cheese and basil leaves spread on a thin crust. A variety of fruits and vegetables can be added to pizza to make it more nutritious. Here are some other suggestions for making your pizza more nutritious:

1. Order whole wheat crust.
2. Order thin pizza crust.
3. Eat a green salad first to help fill your stomach so you won't eat so much pizza.
4. Ask for light cheese on the pizza.
5. Select healthy toppings like veggies and smaller amounts of meat.
6. Make your own pizza so you have more control over what goes on it.

# Pizza Topping Shapes

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Cut out the pizza topping shapes below. Place one set in the center of each group's table. Students will each choose a topping shape and respond to one or more of the questions that go with the topping shape he/she has selected.



## TOMATO SHAPE QUESTIONS

1. Where was pizza invented?
2. What Oklahoma agricultural commodities are used to make crust?
3. What kind of crust can you order to make pizza more healthy?
4. How are tomatoes introduced in the text? What details about tomatoes are included?

## SAUSAGE SHAPE QUESTIONS

1. What makes pizza different from other kinds of flatbread?
2. Cheese is made from what Oklahoma agricultural commodity?
3. What can you order with your pizza to help fill you up?
4. What is the central idea of the text?

## OLIVE SHAPE QUESTIONS

1. How was pizza first brought to the US?
2. What two Oklahoma agricultural commodities are used to make pepperoni?
3. How can you change the cheese on your pizza order to make your pizza more healthy?
4. What does innovation mean as it is used in this text? Make your best guess based on the context.

## CHEESE SHAPE QUESTIONS

1. What made pizza popular in the US?
2. What Oklahoma-grown vegetable is used to make pizza?
3. What kinds of toppings can you order to make your pizza more healthy?
4. What is the author's purpose? How is it expressed?

# Pizza Portions

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You have been hired by your school nutrition board to investigate the total calories in two slices of a medium pizza. They also would like to know what percentage of the daily caloric intake those two slices would be in a student's diet.

Here are the facts (for a whole medium pizza) you will need to know:

1. Daily recommended caloric intake for a middle school student:  
Boys → 2,220 calories  
Girls → 1,845 calories
2. There are 40 pieces of pepperoni on the pizza.
3. There are 10 calories in one piece of pepperoni.
4. The calories in the cheese are 72 times one piece of pepperoni.
5. The calories in the crust are 124 more than the cheese.
6. The calories in the tomato sauce are one-sixth the calories of the cheese.
7. There are eight slices in the pizza.

Work with a partner to complete the problem. Represent each fact with an expression. Draw a representation of the calories of the pizza, slices and daily intake relation.

## Extra Challenge

- Record an equation for the calories of the whole pizza.
- Solve the equation to make sure it is correct.

# Pizza Portions (answers)

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## Correct Expressions

- Calories in one slice of pepperoni  $\rightarrow p = 10$
- Total pepperoni calories  $\rightarrow 40p$
- Total cheese calories  $\rightarrow 72p$
- Total calories in crust  $\rightarrow 72p + 124$
- Total sauce calories  $\rightarrow 72p/6$

## Equations

- Calories in one piece of pepperoni  $\rightarrow p = 10$
- Total pepperoni calories  $\rightarrow 40p = 400$
- Total cheese calories  $\rightarrow 72p = 720$
- Total calories in crust  $\rightarrow 72p + 124 = 844$
- Total sauce calories  $\rightarrow 72p/6 = 120$

Calories for the whole pizza  $\rightarrow 2084$  calories.

Expression for the whole pizza:

$$40p + 72p + (72p + 124) + (72p/6)$$

Equation for the whole pizza:

$$40p + 72p + (72p + 124) + (72p/6) = 2084$$

Since there are eight slices in the whole pizza, we take  $2084/8$  and get 260.5 calories per slice. Since the nutrition board wanted to know the calorie value of two slices, we take  $260.5 \times 2$  and get 521 calories in two slices.

The percentage of daily caloric intake for a middle school boy and girl are as follows:

BOY  $\rightarrow 521/2220$ —This is 23.4% of a middle school boy's daily caloric intake, just over  $1/5$  of a total days calories.

GIRL  $\rightarrow 521/1845$ —This is 28.2% of a middle school girl's daily caloric intake, over  $1/4$  of a total days calories.