

# Pizza Portions

## Finding the percentage of daily caloric intake

Skills: Math, Language Arts

Objective: Students will calculate the percentage of daily caloric intake in two slices of 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.

### Activities

ACTIVITY ONE: READING AND DISCUSSION

P.A.S.S.  
GRADE 6  
**Math Process**—1.6; 3.3;  
5.4

**Math Content**—1.2,3,4  
**Reading**—2.4  
**Writing**—2.8

GRADE 7  
**Math Process**—1.6; 3.3;  
5.4

**Math Content**—1.2  
**Reading**—2.2,5  
**Writing**—2.9

GRADE 8  
**Math Process**—1.6; 3.3;  
5.4

**Reading**—2.2,5  
**Writing**—2.9

### How to make your pizza more nutritious

1. Order whole wheat crust. The nutritional value of whole wheat pizza crust is much higher than that of traditional 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. Cheese is tasty but it filled with calories and fat. Light cheese gives you flavor without loading your pizza with additional items you don't need.
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.

1. Divide students into groups of four.
2. Provide each student within the group with one of the pizza background cards included with this lesson.
3. Each student within the group will take a turn reading the information on his/her card to the group.
4. Cut out the pizza topping shapes included with this lesson and place them in the center of each table along with a key showing what each shape represents.
5. Students will each choose a topping shape.
6. Each student will respond to one or more of the questions below that go with the topping shape he/she has selected:
  - Tomato shape questions: Where was pizza invented? What Oklahoma agricultural commodities are used to make crust? What kind of crust can you order to make pizza more healthy? What is your favorite kind of pizza?
  - Sausage shape questions: What makes pizza different from other flat kinds of flatbread? Cheese is made from what Oklahoma agricultural commodity? What can you order with your pizza to help fill you up? What is the largest amount of pizza you have eaten by yourself?
  - Olive shape questions: How was pizza first brought to the US? What two Oklahoma agricultural commodities are used to make pepperoni? How can you change the cheese on your pizza order to make your pizza more healthy? What is the weirdest pizza you have ever eaten?
  - Cheese shape questions: What made pizza popular in the US? What Oklahoma-grown vegetable is used to make pizza? What kinds of toppings can you order to make your pizza more healthy? How often do you eat pizza?

### ACTIVITY TWO: PIZZA NUTRITION PROBLEM

1. Hand out copies of the student 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 a higher skill level). Students will also 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).
  - If students need to be challenged, have them record an equation for the calories of the whole pizza. Then have them solve the equation to make sure it is correct.

Summarize:

1. 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).
2. Lead students in a discussion to find the constant that the needed vari-

ables are based on. Then share the correct expressions below, even if they have already been stated.

- a. Calories in one slice of pepperoni  $\rightarrow p = 10$
  - b. Total pepperoni calories  $\rightarrow 40p$
  - c. Total cheese calories  $\rightarrow 72p$
  - d. Total calories in crust  $\rightarrow 72p + 124$
  - e. Total sauce calories  $\rightarrow 72p/6$
3. If you directed your students to record the equations they would be as follows:
- a. Calories in one piece of pepperoni  $\rightarrow p = 10$
  - b. Total pepperoni calories  $\rightarrow 40p = 400$
  - c. Total cheese calories  $\rightarrow 72p = 720$
  - d. Total calories in crust  $\rightarrow 72p + 124 = 844$
  - e. Total sauce calories  $\rightarrow 72p/6 = 120$
4. The calories for the whole pizza would be 2084 calories.
- a. Here is an expression for the whole pizza:  
 $40p + 72p + (72p + 124) + (72p/6)$
  - b. Here is an equation for the whole pizza:  
 $40p + 72p + (72p + 124) + (72p/6) = 2084$
5. 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.
6. The percentage of daily caloric intake for a middle school boy and girl are as follows:
- a. 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!
  - b. 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!
7. Students will write a letter to the school nutritionist to report their findings.

### Extra Reading

Rotner, Shelley, and Julia Pemberton Hellums, *Hold the Anchovies! A Book About Pizza*, Orchard, 1996.

VanCleave, Janice, *Food and Nutrition for Every Kid*, Wiley, John and Sons, 1999.

### 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

# 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.

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# 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.

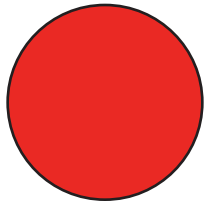
## Pizza Card # 4

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:

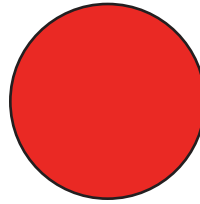
1. Order whole wheat crust.
2. Order thin pizza crust.
3. Eat a green salad first to help fill your stomach so you won't eat so much pizza.
4. Ask for light cheese on the pizza.
5. Select healthy toppings like veggies and smaller amounts of meat.
6. Make your own pizza so you have more control over what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

# Pizza Toppings

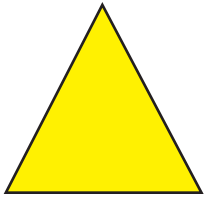
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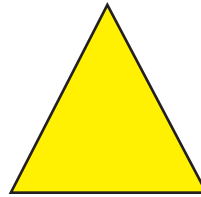
tomato



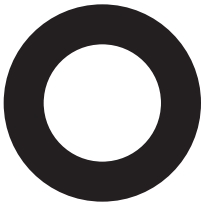
tomato



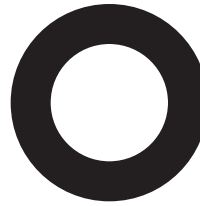
cheese



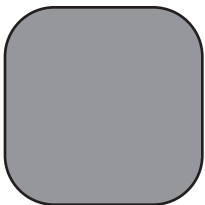
cheese



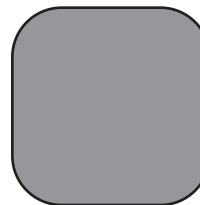
olive



olive



sausage



sausage

# Pizza Portions

## Finding the percentage of daily caloric intake

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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 forty pieces of pepperoni on the pizza.
3. There are ten calories in one piece of pepperoni.
4. The calories in the cheese are seventy-two times one piece of pepperoni.
5. The calories in the crust are one hundred twenty-four 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.