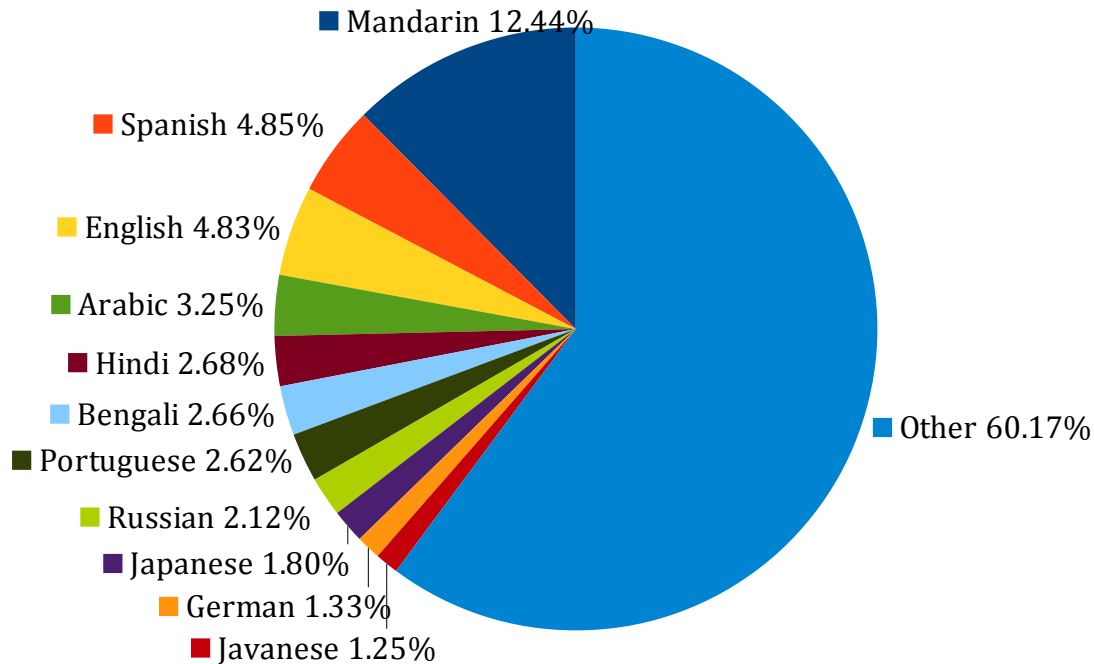# Interpreting Circle Graphs (A)

Answer the questions about the circle graph.

Languages of the World (2009 Estimate)

Percentage of people who speak each language as their first language.

- Mandarin 12.44%
- Spanish 4.85%
- English 4.83%
- Arabic 3.25%
- Hindi 2.68%
- Bengali 2.66%
- Portuguese 2.62%
- Russian 2.12%
- Japanese 1.80%
- German 1.33%
- Javanese 1.25%
- Other 60.17%

Source of data: https://www.cia.gov/library/publications/the-world-factbook/geos/xx.html

Which language is spoken by the most people?

What percentage of people speak one of the top 10 languages?

What percentage of people speak one of the top 5 languages?

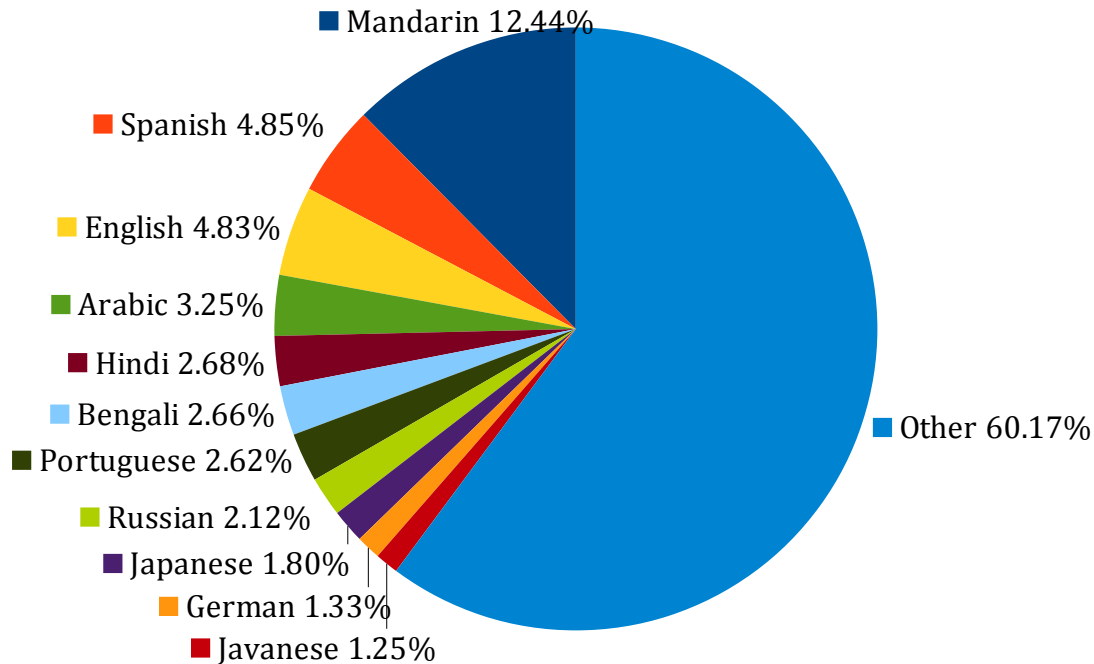If the world population was 6.8 billion in 2009, how many of those people spoke Portuguese?

There are an estimated 7,100 languages spoken in the world. Do you think this number will increase or decrease? Explain your answer.

Math-Drills.Com

Interpreting Circle Graphs (A) Answers

Answer the questions about the circle graph.

Languages of the World (2009 Estimate)
Percentage of people who speak each language as their first language.

Mandarin 12.44%
Spanish 4.85%
English 4.83%
Arabic 3.25%
Hindi 2.68%
Bengali 2.66%
Portuguese 2.62%
Russian 2.12%
Japanese 1.80%
German 1.33%
Javanese 1.25%
Other 60.17%

Source of data: https://www.cia.gov/library/publications/the-world-factbook/geos/xx.html

Which language is spoken by the most people?

Mandarin

What percentage of people speak one of the top 10 languages?

39.83%

What percentage of people speak one of the top 5 languages?

28.05%

If the world population was 6.8 billion in 2009, how many of those people spoke Portuguese?

6,800,000,000 x 0.0262 = 178,160,000 (about 180 million)

There are an estimated 7,100 languages spoken in the world. Do you think this number will increase or decrease? Explain your answer.
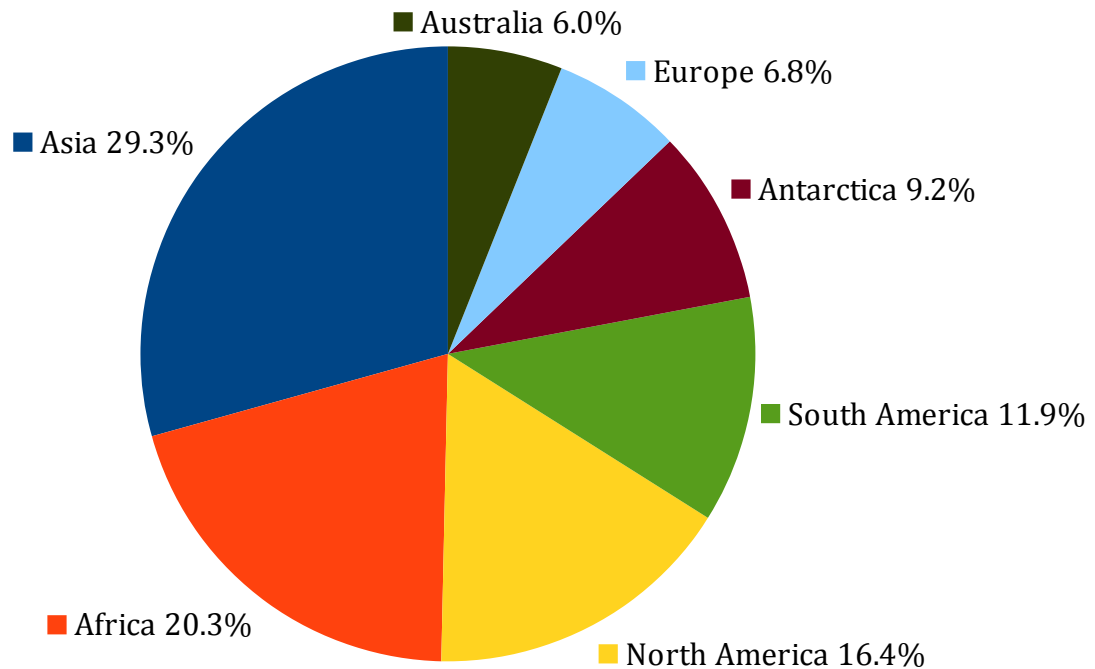
Decrease most likely due to globalization.

Math-Drills.Com

Interpreting Circle Graphs (B)

Answer the questions about the circle graph.

Land Area of Continents

As a percentage of the total land area of the Earth.

What are the largest and smallest continents?

What percentage of the world's land area is made up of the Americas?

What is larger: Africa or Australia, Europe and Antarctica put together?

If the land area of Africa is about 30 million square kilometers, what is the approximate land area of the Earth?
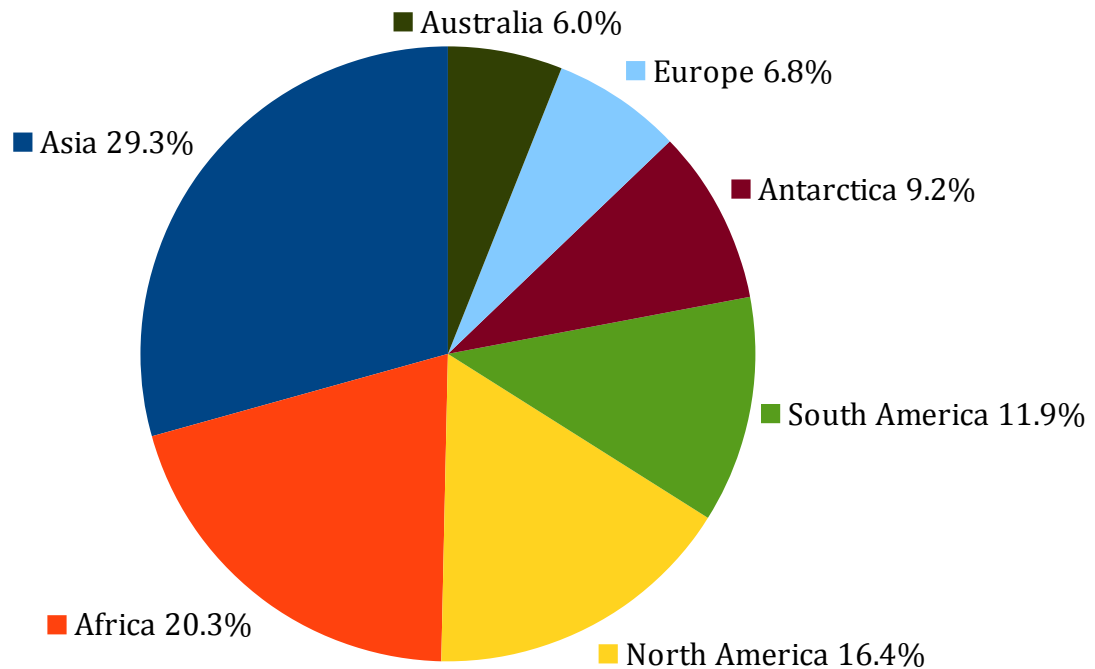
Is the size of the continent related to the number of people who live on that continent? Explain your answer.

Interpreting Circle Graphs (B) Answers

Answer the questions about the circle graph.

Land Area of Continents

As a percentage of the total land area of the Earth.

Source of data: http://en.wikipedia.org/wiki/Continents

What are the largest and smallest continents?

Largest is Asia and the smallest is Australia

What percentage of the world's land area is made up of the Americas?

28.30%

What is larger: Africa or Australia, Europe and Antarctica put together?

Australia, Europe and Antarctica together (22.0%) is larger than Africa (20.3%)

If the land area of Africa is about 30 million square kilometers, what is the approximate land area of the Earth?

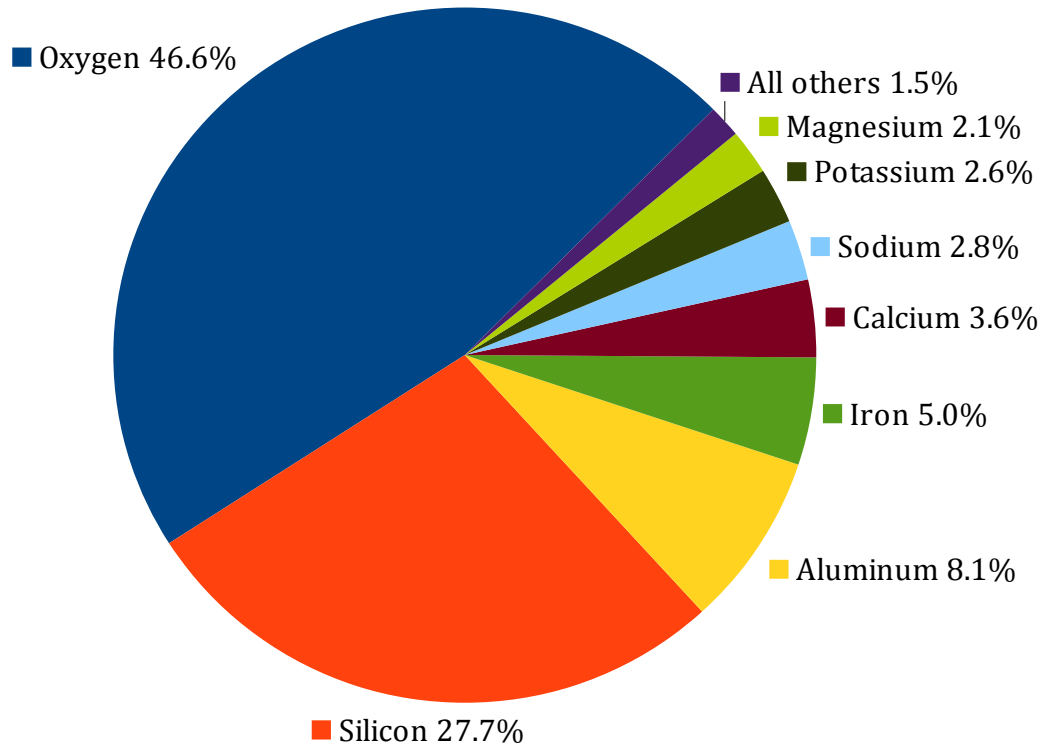Africa is about 1/5 of the land area, so multiply 30 million by 5 to get 150 million sq. km.

Is the size of the continent related to the number of people who live on that continent? Explain your answer.

No. Asia and Africa fit this model, but the other continents don't.

Interpreting Circle Graphs (C)

Answer the questions about the circle graph.

Abundance of Elements in Earth's Crust

- Oxygen 46.6%
- All others 1.5%
- Magnesium 2.1%
- Potassium 2.6%
- Sodium 2.8%
- Calcium 3.6%
- Iron 5.0%
- Aluminum 8.1%
- Silicon 27.7%

Source of data: http://hyperphysics.phy-astr.gsu.edu/hbase/tables/elabund.html

What element is the most abundant in the Earth's Crust? second most?

If you had 1000 lbs of the Earth's Crust, about how many pounds of iron would you have?
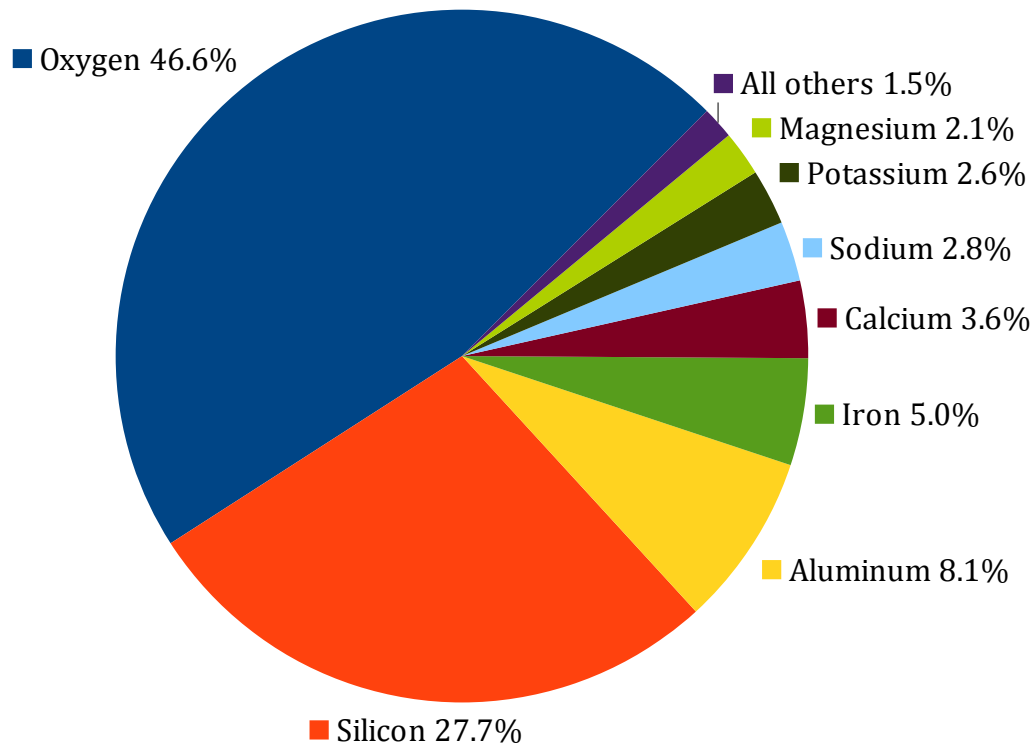
Is there more potassium or sodium in the Earth's Crust?

Most of the elements in the graph make up the rock in Earth's Crust. For example, 60.6% of the Earth's Crust is Quartz (SiO_2) made up of Silicon and Oxygen. What other rock can you find in the Earth's Crust?

Interpreting Circle Graphs (C) Answers

Answer the questions about the circle graph.

Abundance of Elements in Earth's Crust

- Oxygen 46.6%
- All others 1.5%
- Magnesium 2.1%
- Potassium 2.6%
- Sodium 2.8%
- Calcium 3.6%
- Iron 5.0%
- Aluminum 8.1%
- Silicon 27.7%

Source of data: http://hyperphysics.phy-astr.gsu.edu/hbase/tables/elabund.html

What element is the most abundant in the Earth's Crust? second most?

Oxygen and Silicon

If you had 1000 lbs of the Earth's Crust, about how many pounds of iron would you have?

1000 x 0.050 = 50 pounds

Is there more potassium or sodium in the Earth's Crust?
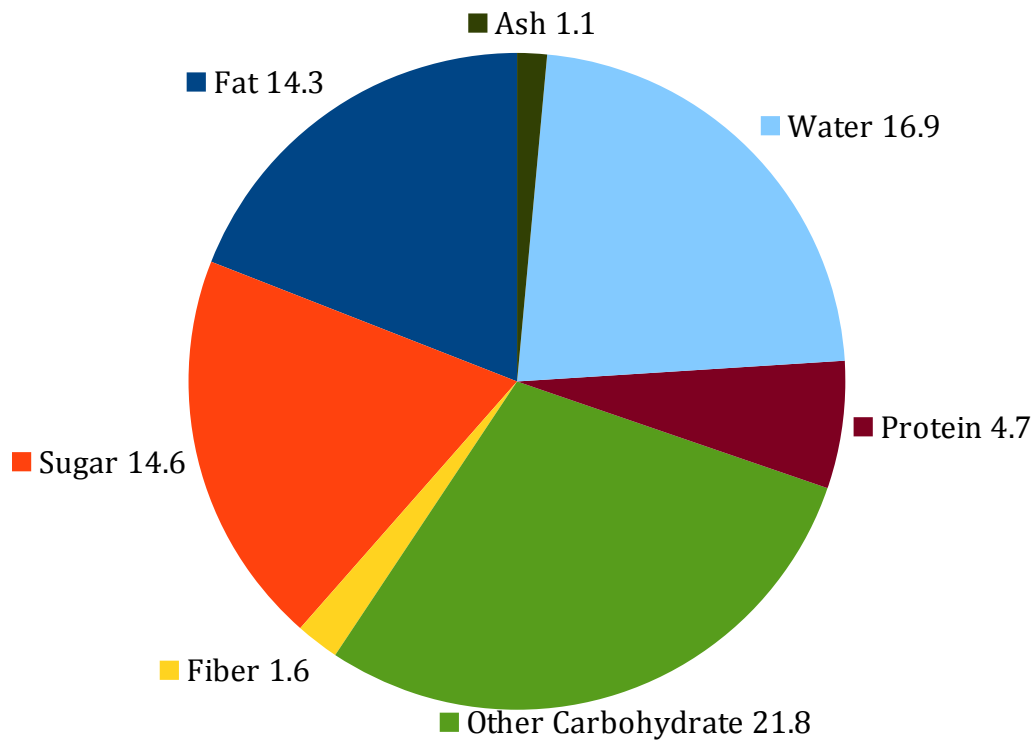
More sodium

Most of the elements in the graph make up the rock in Earth's Crust. For example, 60.6% of the Earth's Crust is Quartz (SiO_2) made up of Silicon and Oxygen. What other rock can you find in the Earth's Crust?

Various answers. Some students may know igneous, sedimentary, metamorphic or more specific types of rocks.

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Interpreting Circle Graphs (D)

Answer the questions about the circle graph.

Nutritional Components of a 75 g Doughnut (grams)

What are the largest and smallest components of a doughnut?

How many grams of fat would you find in a 75 g doughnut?

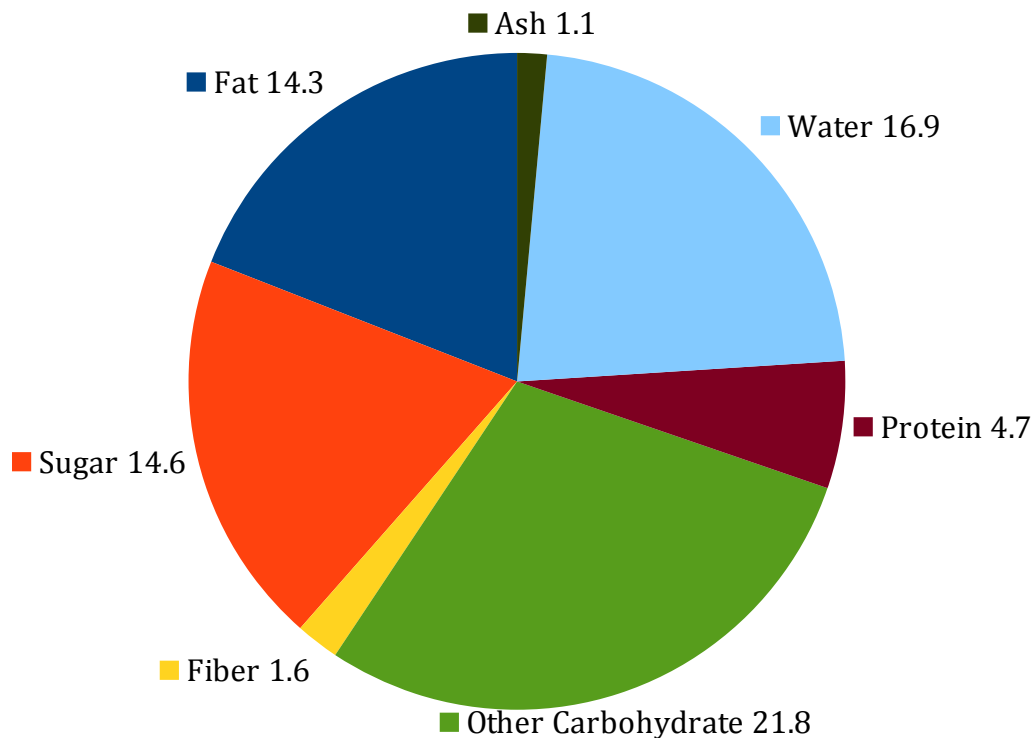What percent of a doughnut is protein?

Based on this circle graph and your prior knowledge, is a doughnut a healthy food? Explain your answer.

Sketch a graph of what you think the nutritional components of an apple might look like.

Interpreting Circle Graphs (D) Answers

Answer the questions about the circle graph.

Nutritional Components of a 75 g Doughnut (grams)

What are the largest and smallest components of a doughnut?

Largest: other carbohydrate; Smallest: Ash

How many grams of fat would you find in a 75 g doughnut?

14.3 g (this graph shows grams rather than percent)

What percent of a doughnut is protein?

4.7/75 * 100 = 6.3%

Based on this circle graph and your prior knowledge, is a doughnut a healthy food? Explain your answer.

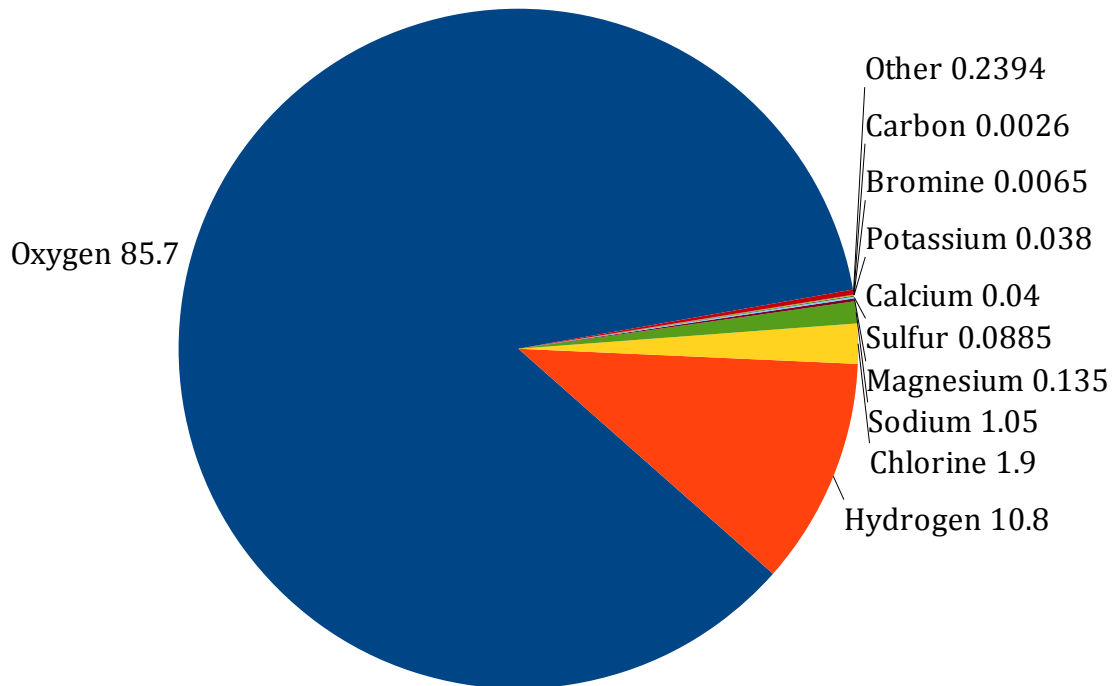Various answers. Students will probably say no due to the high content of fat and sugar.

Sketch a graph of what you think the nutritional components of an apple might look like.

For an apple, please see http://nutritiondata.self.com/facts/fruits-and-fruit-juices/1809/2

Interpreting Circle Graphs (E)

Answer the questions about the circle graph.

Percent Composition of Sea Water

Other 0.2394
Carbon 0.0026
Bromine 0.0065
Potassium 0.038
Calcium 0.04
Sulfur 0.0885
Magnesium 0.135
Sodium 1.05
Chlorine 1.9
Hydrogen 10.8
Oxygen 85.7

Source of data: http://www.usc.edu/org/seagrant/Education/IELessons/Unit1/Lesson5/teachertable.html

What makes this circle graph hard to read?

How would you show the data instead?

What percent of sea water is carbon?

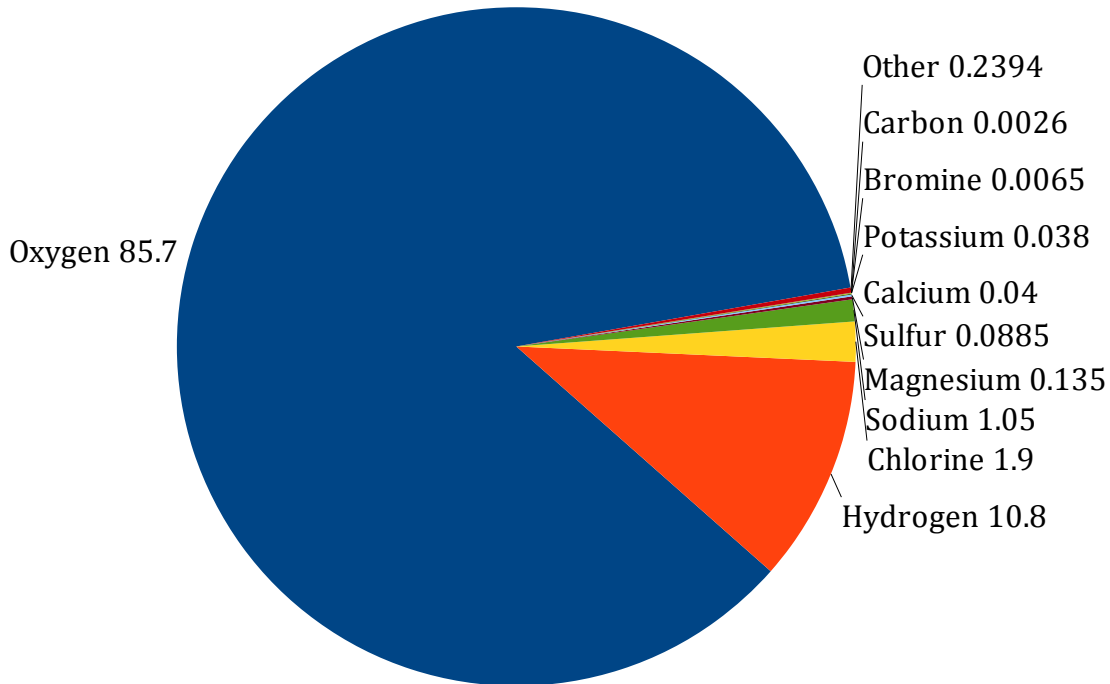Is there more potassium or calcium in sea water?

Hydrogen is mostly used in what molecule?

In 500 kg of sea water, how many kilograms of sodium would you have?

Interpreting Circle Graphs (E) Answers

Answer the questions about the circle graph.

Percent Composition of Sea Water

Other 0.2394
Carbon 0.0026
Bromine 0.0065
Potassium 0.038
Oxygen 85.7
Calcium 0.04
Sulfur 0.0885
Magnesium 0.135
Sodium 1.05
Chlorine 1.9
Hydrogen 10.8

Source of data: http://www.usc.edu/org/seagrant/Education/IELessons/Unit1/Lesson5/teachertable.html

What makes this circle graph hard to read?

There are several components that are small quantities and not easily seen on the graph.

How would you show the data instead?

In a table to show the actual numbers.

What percent of sea water is carbon?

0.00%

Is there more potassium or calcium in sea water?

More calcium (students may think 0.038 is larger than 0.04; in this case show as 0.040)

Hydrogen is mostly used in what molecule?

Water or H_2O

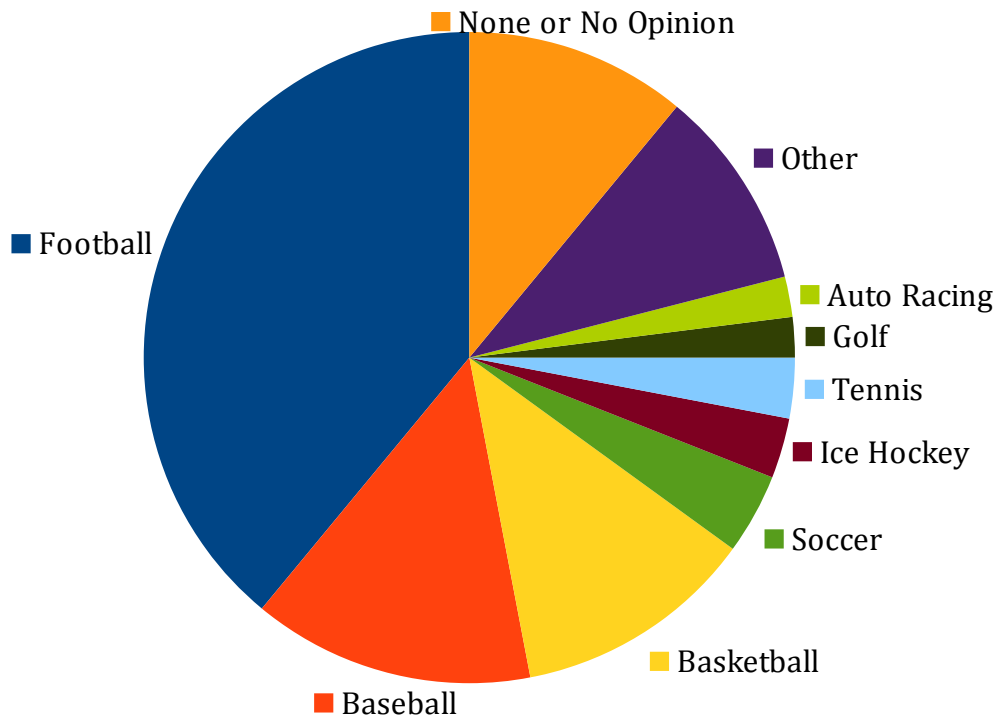In 500 kg of sea water, how many kilograms of sodium would you have?

500 x 0.0105 =5.25 kg or about 5 kg

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Interpreting Circle Graphs (F)

Answer the questions about the circle graph.

Favorite Sports in the U.S. 2013

Gallup Poll: What is your favorite sport to watch?

None or No Opinion

Other

Auto Racing

Golf

Tennis

Football

Ice Hockey

Soccer

Basketball

Baseball

What is the favorite sport to watch in the United States?

Which pairs of sports are the favorites of the same number of people?

Out of 100 people, about how many would favor basketball or baseball?

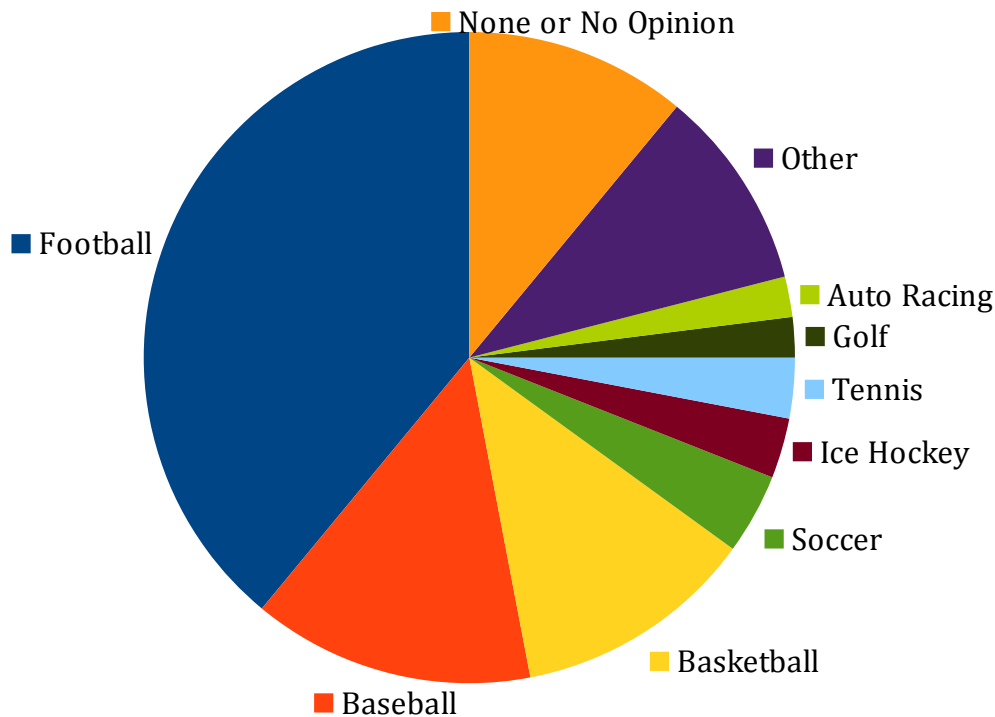How do you think this graph would change if the question was, "List all of the sports that you watch."?

Ask your friends the same question and compare your results to this graph.

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Interpreting Circle Graphs (F) Answers

Answer the questions about the circle graph.

Favorite Sports in the U.S. 2013

Gallup Poll: What is your favorite sport to watch?

What is the favorite sport to watch in the United States?

Football

Which pairs of sports are the favorites of the same number of people?

Ice Hockey and Tennis; Golf and Auto Racing

Out of 100 people, about how many would favor basketball or baseball?

Baseball and Basketball make up about 25% of the graph (26% actual) so about 25/100

How do you think this graph would change if the question was, "List all of the sports that you watch."?

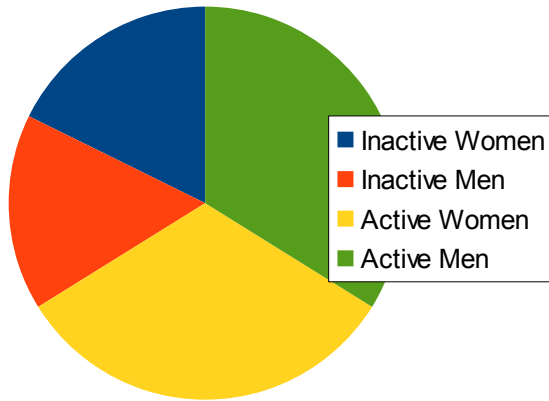This would allow respondents to say more than one sport. Answers will vary.

Ask your friends the same question and compare your results to this graph.
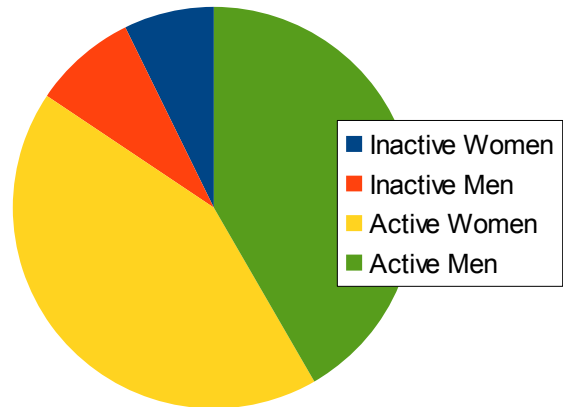
Answers will vary.

Interpreting Circle Graphs (G)

Answer the questions about the circle graph.

Canadian Exercise Rates 2012

- Inactive Women
- Inactive Men
- Active Women
- Active Men

Greek Exercise Rates 2012

- Inactive Women
- Inactive Men
- Active Women
- Active Men

Source of data: http://www.theguardian.com/news/datablog/2012/jul/18/physical-inactivity-country-laziest

Which country has a greater percent of people who exercise?

About what percent of the Canadian population is inactive?

About what percent of the Greek population is active?

In which country are the men more inactive than the women?

Why do you think Greeks are more active than Canadians?

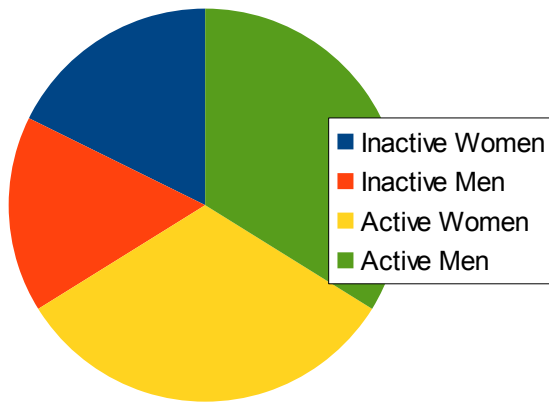There are about 11 million people in Greece. About how many Greeks are active?

There are about 35 million people in Canada. About how many Canadian men are inactive?

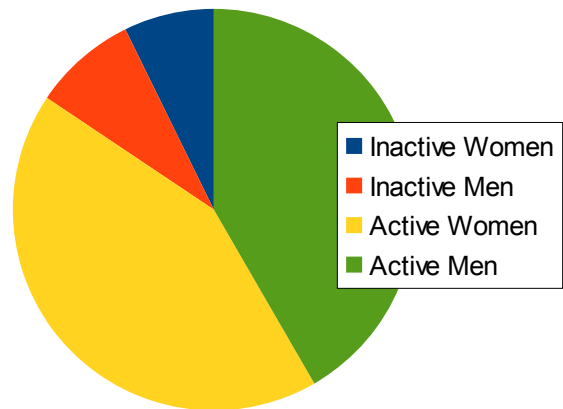How would the graph for your school look?

Interpreting Circle Graphs (G) Answers

Answer the questions about the circle graph.

Canadian Exercise Rates 2012

- ■ Inactive Women
- ■ Inactive Men
- ■ Active Women
- ■ Active Men

Greek Exercise Rates 2012

- ■ Inactive Women
- ■ Inactive Men
- ■ Active Women
- ■ Active Men

Source of data: http://www.theguardian.com/news/datablog/2012/jul/18/physical-inactivity-country-laziest

Which country has a greater percent of people who exercise?

Greece

About what percent of the Canadian population is inactive?

Actual 34%

About what percent of the Greek population is active?

Actual 84%

In which country are the men more inactive than the women?

Greece.

Why do you think Greeks are more active than Canadians?

Many answers possible.

There are about 11 million people in Greece. About how many Greeks are active?

11 * 0.84 = 9.24 million. 84% can be derived from a previous question.

There are about 35 million people in Canada. About how many Canadian men are inactive?

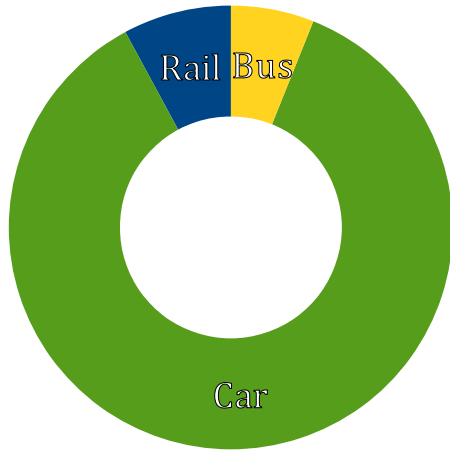Inactive men: about 16%, so 35 * 0.16 = 5.6 million men are inactive.

How would the graph for your school look?

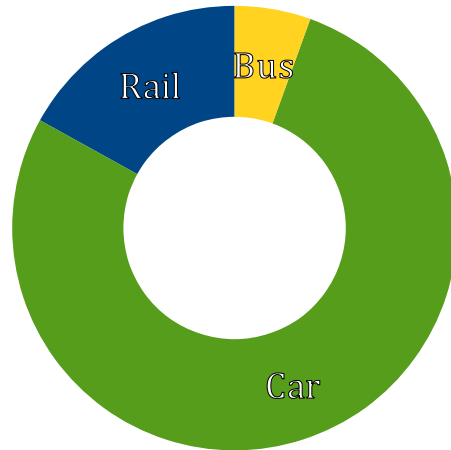Various answers possible. Hopefully, more active than both these graphs :-)

Math-Drills.Com

Interpreting Circle Graphs (H)
Answer the questions about the circle graph.

Inland Passenger Transport
Germany 2009

Rail Bus

Car

Inland Passenger Transport
Switzerland 2009

Rail Bus

Car

What is the most popular transport vehicle in each country?

Which transport vehicle is used about the same in both countries?

In which country would you be more likely to be a passenger on a train?

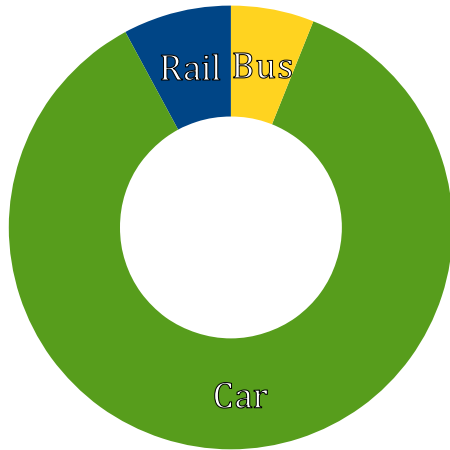Sketch a graph that you think would show inland passenger transport for your country.

Why do you think there is more rail usage in Switzerland than in Germany?

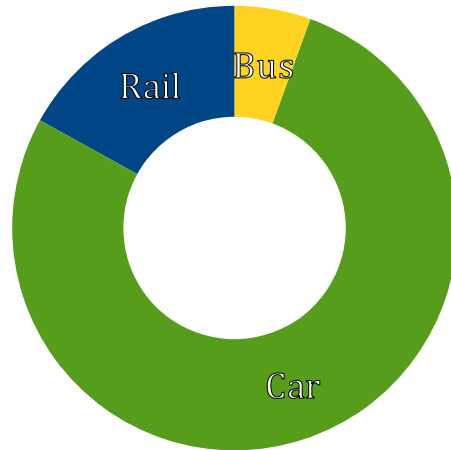Why is there empty space in the middle of both graphs?

Interpreting Circle Graphs (H) Answers

Answer the questions about the circle graph.

Inland Passenger Transport
Germany 2009

Rail Bus

Car

Inland Passenger Transport
Switzerland 2009

Rail Bus

Car

What is the most popular transport vehicle in each country?

Car is the most popular in both.

Which transport vehicle is used about the same in both countries?

Bus

In which country would you be more likely to be a passenger on a train?

Switzerland

Sketch a graph that you think would show inland passenger transport for your country.

Various answers.

Why do you think there is more rail usage in Switzerland than in Germany?

Various answers. Cheaper rates, better system, fewer roads.

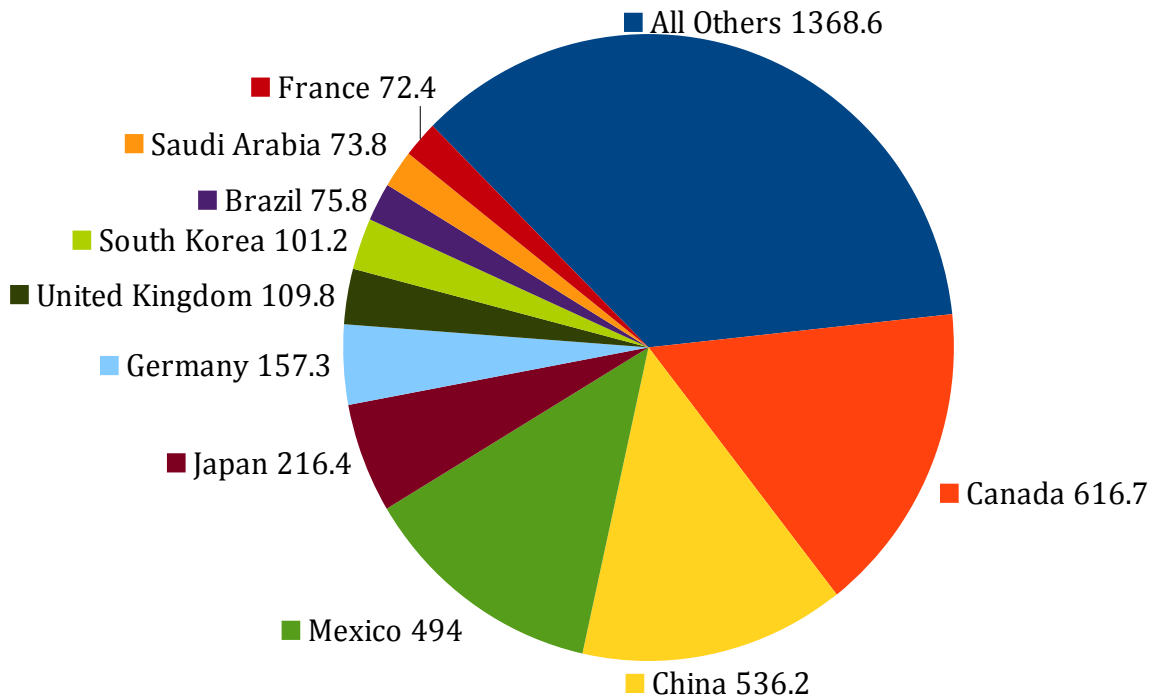Why is there empty space in the middle of both graphs?

This is not a traditional circle graph. Some call it a donut graph. It still shows parts of a whole like a normal circle graph would.

Interpreting Circle Graphs (I)

Answer the questions about the circle graph.

Top U.S. Trading Partners (Total Exports and Imports 2012)
Goods Only in Billions of U.S. Dollars

■ All Others 1368.6
■ France 72.4
■ Saudi Arabia 73.8
■ Brazil 75.8
■ South Korea 101.2
■ United Kingdom 109.8
■ Germany 157.3
■ Japan 216.4
■ Mexico 494
■ China 536.2
■ Canada 616.7

Source of data: http://www.census.gov/foreign-trade/statistics/highlights/top/top1212yr.html

What was the value of trade between the U.S. and Brazil in 2012?

What country is the United State's fourth largest trading partner?

At least how many countries make up the "All Others" category if each country in that section has a lower trading value than France?
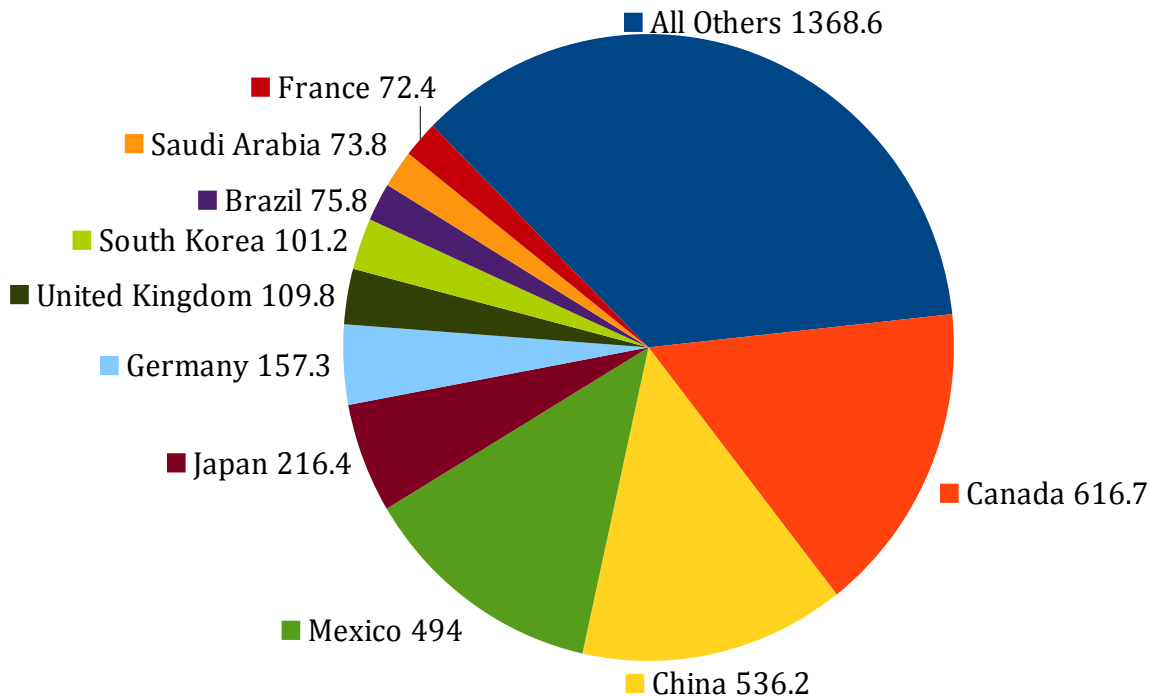
What do you think is the main mode of transportation of goods between the U.S. and Canada? between the U.S. and Germany?

About what percent of U.S. trade is done with Mexico?

Interpreting Circle Graphs (I) Answers

Answer the questions about the circle graph.

Top U.S. Trading Partners (Total Exports and Imports 2012)
Goods Only in Billions of U.S. Dollars

- All Others 1368.6
- France 72.4
- Saudi Arabia 73.8
- Brazil 75.8
- South Korea 101.2
- United Kingdom 109.8
- Germany 157.3
- Japan 216.4
- Mexico 494
- China 536.2
- Canada 616.7

Source of data: http://www.census.gov/foreign-trade/statistics/highlights/top/top1212yr.html

What was the value of trade between the U.S. and Brazil in 2012?

$75.8 Billion

What country is the United State's fourth largest trading partner?

Japan

At least how many countries make up the "All Others" category if each country in that section has a lower trading value than France?

1368.6/72.3 = 19 countries at least, but actually many more.

What do you think is the main mode of transportation of goods between the U.S. and Canada? between the U.S. and Germany?

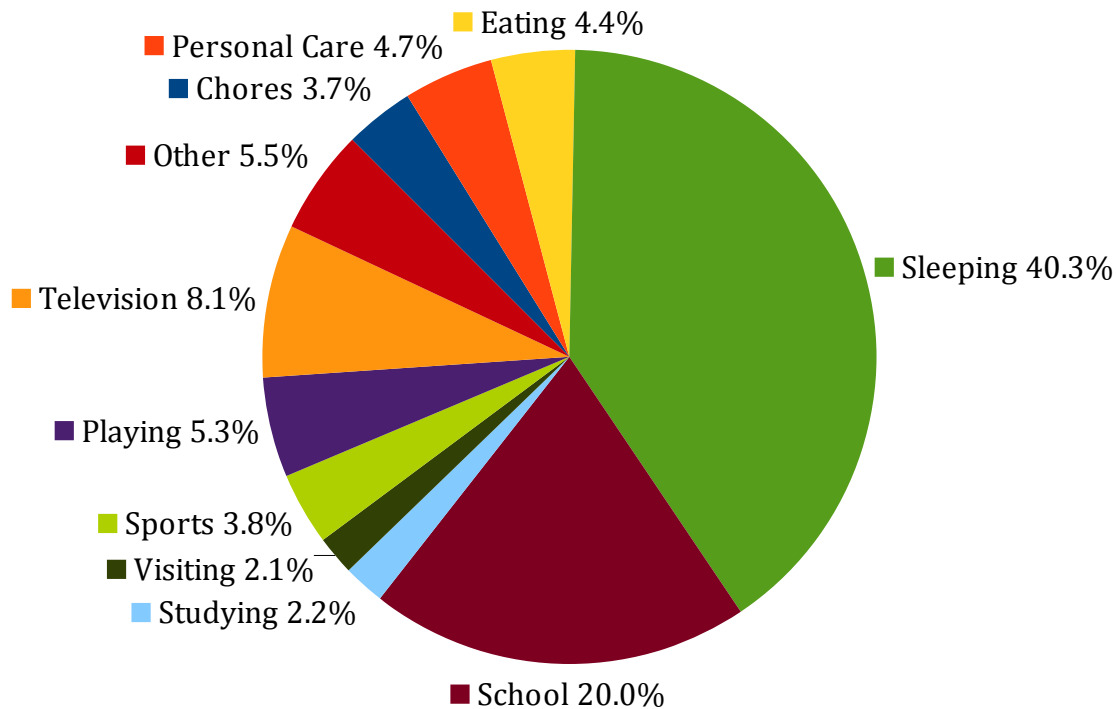Canada: rail or truck as they are connected by land. Ship (some by airplane) for Germany.

About what percent of U.S. trade is done with Mexico?

About 13%. Use a protractor or add all to get a sum and calculate the percent.

Math-Drills.Com

Interpreting Circle Graphs (J)

Answer the questions about the circle graph.

Typical Weekly Activities of 9 to 12 Year Olds in 1997
Percentage of Time Spent by 883 Children Surveyed

Personal Care 4.7%
Eating 4.4%
Chores 3.7%
Other 5.5%
Sleeping 40.3%
Television 8.1%
Playing 5.3%
Sports 3.8%
Visiting 2.1%
Studying 2.2%
School 20.0%

Other than sleeping and school, on what do 9 to 12 year olds spend most of their time?

If this survey was done again today, how would this graph change?

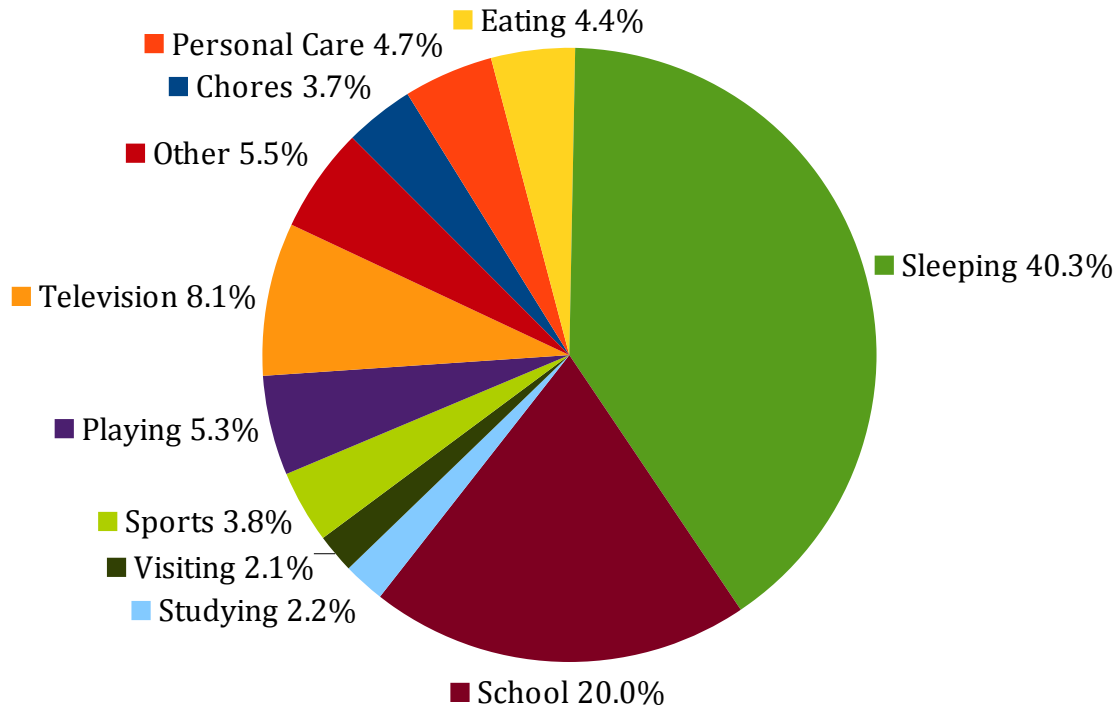There are 168 hours in a week. How much time is spent sleeping?

What percent of time did these children spend on sports and playing?

Make a graph to show how you spend a week (168 hours) and compare it to this graph? What are three major differences?

Interpreting Circle Graphs (J) Answers

Answer the questions about the circle graph.

Typical Weekly Activities of 9 to 12 Year Olds in 1997
Percentage of Time Spent by 883 Children Surveyed

- Eating 4.4%
- Personal Care 4.7%
- Chores 3.7%
- Other 5.5%
- Television 8.1%
- Playing 5.3%
- Sports 3.8%
- Visiting 2.1%
- Studying 2.2%
- School 20.0%
- Sleeping 40.3%

Other than sleeping and school, on what do 9 to 12 year olds spend most of their time?

Television

If this survey was done again today, how would this graph change?

Computer use would be on the graph.

There are 168 hours in a week. How much time is spent sleeping?

168 x 0.403 = 67 7/10 hours or 67 hours 42 minutes

What percent of time did these children spend on sports and playing?

5.3 + 3.8 = 9.1%

Make a graph to show how you spend a week (168 hours) and compare it to this graph? What are three major differences?

Various answers.

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