



Everyone can participate in these puzzles, compare notes, and share solutions. Enjoy!

All About Apples

October is National Apple Month! This month's Family Math activity explores some fun statistics and surprising facts about this popular, delicious fruit. Try this activity with your family as you explore the symmetry and patterns created by cutting an apple in a variety of ways, and go on a fact-finding mission.



Apple Statistics

- Worldwide, there are 7,500 apple varieties that have been identified. Apples vary in color (red, green, yellow), size (as small as a cherry or as large as a grapefruit), and taste (sweet to tart).
 - If you tasted a different apple variety each day, how many years will it take for you to taste them all?
- One-third of the worldwide apple varieties are grown in the United States.
 - How many U.S. apple varieties are there?
- Although apples are now grown in all 50 states, only three dozen states have commercial apple growers who take over 100 different varieties to market.
 - How many states have commercial apple growers?
- A nine-inch pie uses about 2 pounds of apples.
 - If, on the average, three apples weigh a pound, how many apples does it take to make a pie?
- A gallon of apple cider uses about 36 apples.
 - If, on average, three apples weigh a pound, about how many pounds of apples are needed to make a gallon of apple cider?
- A bushel of apples weighs about 42 pounds.
 - If, on average, three apples weigh a pound, about how many apples are in a bushel?
- A bushel of apples will make a little more than 20 quarts of applesauce.
 - How many pounds of apples does it take to make one quart of applesauce?

Apple Surprises

Now it's time for some research and exploration.

- Many people cut an apple vertically down the center through the stem to slice it into pieces. Describe what you see when you slice an apple this way. If both sides are the same, you are seeing **symmetry**, a property frequently studied in geometry.
 - Explore another way to cut an apple. Try cutting an apple in half horizontally through the center. Describe the patterns you see on the inside of the apple.
- A different way to cut an apple vertically is to cut it like a tic-tac-toe grid, with three rows and columns. This way, the core with the seeds is in the center; you can enjoy eating the apple without having to avoid the seeds.
 - Which part of the apple contains most of the nutrients?
- An apple has an average of 5–12 seeds. When an apple is lopsided (larger on one side than the other), the larger side will have more seeds.
 - If you can, slice a lopsided apple to explore this fact and count the seeds.
- Apples belong to the rose family along with pears and plums.
 - What is the science of apple-growing called?
- Johnny Appleseed was a real person.
 - When and where did he live? How did he get his nickname?
- Though there are thousands of apple varieties grown in the United States today, only one variety is native to North America.
 - What is the only apple native to North America?



All About Apples Answers

Apple Statistics

- Worldwide, there are 7,500 apple varieties that have been identified. Apples vary in color (red, green, yellow), size (as small as a cherry or as large as a grapefruit), and taste (sweet to tart).
 - If you tasted a different apple variety each day, how many years will it take for you to taste them all?
 - **Answer:** It will take about 20 and a half years to taste all the apple varieties.
- One-third of the worldwide apple varieties are grown in the United States.
 - How many U.S. apple varieties are there?
 - **Answer:** There are 2,500 U.S. apple varieties. It would take a little less than 7 years to try them all.
- Although apples are now grown in all 50 states, only three dozen states have commercial apple growers who take over 100 different varieties to market.
 - How many states have commercial apple growers?
 - **Answer:** Thirty-six (36) states grow apples commercially. The top five are: Washington, New York, Michigan, Pennsylvania, and California.
- A nine-inch pie uses about 2 pounds of apples.
 - If, on the average, three apples weigh a pound, how many apples does it take to make a pie?
 - **Answer:** It takes about six (6) apples to make a nine-inch pie.
- A gallon of apple cider uses about 36 apples.
 - If, on average, three apples weigh a pound, about how many pounds of apples are needed to make a gallon of apple cider?
 - **Answer:** Twelve (12) pounds of apples are needed for a gallon of cider.
- A bushel of apples weighs about 42 pounds.
 - If, on average, three apples weigh a pound, about how many apples are in a bushel?
 - **Answer:** A bushel of apples has, on average, 126 apples.
- A bushel of apples will make a little more than 20 quarts of applesauce.
 - How many pounds of apples does it take to make one quart of applesauce?
 - **Answer:** It takes a little more than two (2) pounds of apples to make a quart of applesauce.

Apple Surprises

Now it's time for some research and exploration.

- Many people cut an apple vertically down the center through the stem to slice it into pieces. Describe what you see when you slice an apple this way. If both sides are the same, you are seeing **symmetry**, a property frequently studied in geometry.
 - Explore another way to cut an apple. Try cutting an apple in half horizontally through the center. Describe the patterns you see on the inside of the apple.
 - **Answer:** The seed chambers form a five-pointed star, and there are ten dots in a circle around the star.
- A different way to cut an apple vertically is to cut it like a tic-tac-toe grid, with three rows and columns. This way, the core with the seeds is in the center; you can enjoy eating the apple without having to avoid the seeds.
 - Which part of the apple contains most of the nutrients?
 - **Answer:** The peel of an apple contains the majority of its nutrients.
- An apple has an average of 5–12 seeds. When an apple is lopsided (larger on one side than the other), the larger side will have more seeds.
 - If you can, slice a lopsided apple to explore this fact and count the seeds.
- Apples belong to the rose family along with pears and plums.
 - What is the science of apple-growing called?
 - **Answer:** The science of apple-growing is known as pomology.
- Johnny Appleseed was a real person.
 - When and where did he live? How did he get his nickname?
 - **Answer:** John Chapman, of Massachusetts, became known as Johnny Appleseed. He lived from 1774–1845. He was an apple tree nurseryman by training and traveled through the area that is now Pennsylvania, Ohio, and Indiana helping farmers plant and care for their orchards. He is credited with planting over 1,000 apple trees.
- Though there are thousands of apple varieties grown in the United States today, only one variety is native to North America.
 - What is the only apple native to North America?
 - **Answer:** The crabapple is the only native North American apple.

