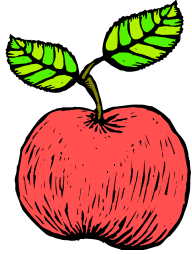


## Apples

### Where Did Apples Come From?



The apple was brought to the United States by the Pilgrims in 1620. While the Native Americans taught the early settlers to grow corn, the settlers taught the Native Americans how to grow apples from apple tree seeds and seedlings. The settlers used apples to make apple juice, apple cider, dried apples, apple butter and vinegar. The apples were even used as food for the pigs, cows, and horses.

During the long, cold winters, the settlers could not grow fresh fruits and vegetables. So instead, they found ways to preserve the apples. The apples were peeled, cored and hung out to dry on a big net or hung to dry on strings tied to trees or posts. The warm air evaporated the water inside the apples and dried them in a few days. These dried apples would provide food for the family all winter long.

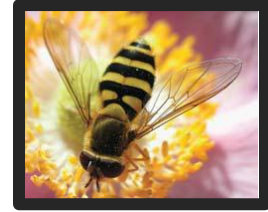
### Apple Production

Today as many as thirty-six states grow apples to sell. Most of these apple orchards are in our northern states such as Washington, Michigan and New York. Washington State has the best climate in the world to grow apples because of its warm days and cool nights. Of all the apples grown in the United States, about half are sold fresh and half are made into apple sauce, apple juice, or dehydrated apple products.

### Growing Apple Trees

Apple trees are difficult to grow from seeds. It takes about 15 years for a tree grown from a seed to produce an apple. Most apple trees are grown by *grafting* or *budding* onto existing trees which have a healthy root system. Growers take the best parts from different trees and stick them together with glue and tape. This is called *grafting*. Sometimes growers use *budding* instead of grafting. In budding, one bud is taken from a tree and attached under the bark of another tree with tape or glue. Growers are always trying to make new and perfect apples. They continue to combine the genetic material contained in the branches, buds or roots to adjust the taste, color, texture, shape, and growing season of the apple.

Apple blossoms are white or pale pink and appear on apple trees in the spring. Unknowingly, bees take pollen from one apple blossom to another apple blossom as they fly in the orchard. This process is known as *pollination*. When an apple blossom is pollinated, it develops into an apple. Bees are so important for pollination that some apple growers place beehives in their orchard.



### How Do We Get Apples in the Winter?



Apples are harvested in late summer and early fall; however, we can buy fresh apples from the store all year. This is due to *Controlled Atmosphere Storage*. Controlled Atmosphere Storage regulates the temperature, oxygen, carbon dioxide and humidity in the storage room. Each variety of apple requires different conditions so computers help keep the specified conditions constant. As an apple ripens, the starches change to sugar and the apple takes in oxygen and gives off carbon dioxide. This is the respiration process of an apple. In Controlled Atmosphere Storage, the respiration process is slowed down so the apples do not ripen quickly. Most varieties of apples can be stored for 12 months or longer. Due to Controlled Atmosphere Storage, we are able to enjoy apples all year round.

### Healthy Snacks

"An apple a day, keeps the doctor away" is an old English saying. Research today supports this idea because of the benefits provided by eating an apple each day. Apples are low in calories. A regular, medium size apple contains approximately 80 calories. Apples are therefore a great substitute for snacks such as candy and chocolate. Apples prevent tooth decay. The juice from an apple has properties that can kill up to 80% of bacteria in your mouth. Eating raw apples also gives the gums a healthy massage and cleans the teeth. Perhaps an apple a day may also keep the dentist away! Apples contain lots of fiber which aids in the digestive process. Apples also contain lots of vitamins and minerals our bodies need. Hungry? Grab an apple for a snack!

Adapted from Illinois Ag in the Classroom AG Mag on Apples



Name: \_\_\_\_\_

Date: \_\_\_\_\_

### Apples - Reading Passage

Directions: Read each question and fill in the best answer

1. Since the settlers could not grow fresh fruits and vegetables during the long, cold winters, they found ways to **preserve** apples. *Preserve* means

- A. Protect apples from frost
- B. Put apples in Controlled Atmosphere Storage
- C. Share the apples with Native Americans
- D. Dry them for use in the winter

2. The Native Americans taught the settlers how to grow apples from apple seeds and seedlings.

- A. True
- B. False

3. Most apples grow best in states with

- A. cool days and cool nights.
- B. warm days and cool nights.
- C. warm days and warm nights.
- D. hot days and cold nights.

4. Which is NOT a good way to grow an apple tree?

- A. Grafting
- B. Pruning
- C. Budding
- D. Planting apple seeds

5. Bees are important to apple production because they

- A. turn an apple's starch into sugar
- B. help preserve the apple
- C. pollinate apple blossoms
- D. help create different varieties of apples

6. Apples are a healthy snack because they

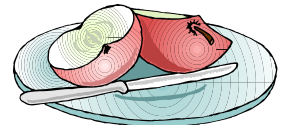
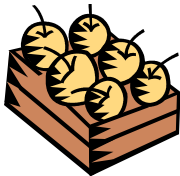
- A. are low in calories.
- B. contain fiber.
- C. travel well and can be eaten anywhere.
- D. all of the above.

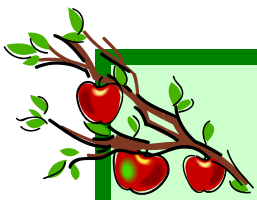
6. This article is an example of which genre?

- A. Fiction
- B. Nonfiction
- C. Science fiction
- D. Mystery

### Extended Response:

Think about the trip an apple takes from the farmer's orchard to you home. Make a list of the human, natural and capital resources that are used during the apple's travel. Using your list, write a description of the process and materials used to get apples from the farm to your home.





## Apple Trivia

- Apples come in all shades of reds, greens and yellows.
- 100 varieties of apples are grown commercially in the United States.
- Most apples are still picked by hand in the fall.
- 25 percent of an apple's volume is air. That is why they float.
- Most apple blossoms are pink when they open but gradually fade to white.
- It takes the energy from 50 leaves to produce one apple.
- One of George Washington's hobbies was pruning his apple trees.
- Apples ripen six to ten times faster at room temperature than if they were refrigerated.
- Don't peel your apple. Two-thirds of the fiber and lots of antioxidants are found in the peel. Antioxidants help to reduce damage to cells which can trigger some diseases.
- The five most popular apples in the United States are Red Delicious, Golden Delicious, Gala, Fuji and Granny Smith.



### A Fun Science Activity for You to TRY...

Did you ever cut up an apple and not eat it right away? Did you notice that it may have turned brown? In this experiment you will attempt to prevent an apple from browning.

1. Cut the apple into 4 pieces. (Don't use a sharp knife without an adult's help!)
2. Leave one of the pieces on the kitchen table or counter. Place another apple piece in the refrigerator.
3. Sprinkle lemon juice on the other two apple pieces.
4. Place one of these pieces on the table and the other in the refrigerator.
5. Check each of the apple pieces every 5 minutes.

#### Questions for you to answer:

1. Which piece turned brown first?
2. Which piece turned brown last?
3. Why do you think this happened?

#### Why did this happen?

When an apple is cut open it releases an enzyme that combines with oxygen and turns the apple brown. Lemon juice stops the enzyme in the apple from working so it does not turn brown as fast. The enzyme that turns the apple brown works more slowly at cold temperatures than at room temperature.



#### One More Fun Thing to Try...

Be sure to try this with an adult's help. Carefully peel the skin off of an apple making the peel as long as you possibly can. Measure your peel. How long was it? Have an adult try this? How long was that one?

Were you able to beat this record?

*The world's largest apple peel was created by Kathy Wafler Madison on October 16, 1976, in Rochester, NY. It was 172 feet, 4 inches long. (She was 16 years old at the time and grew up to be a sales manager for an apple tree nursery.)*



## Check Out These Books...



### **The Life and the Times of the Apple** by Charles Micucci

This book does an outstanding job of describing the apple's life cycle and its culture in detail, sharing information about apple uses, the many varieties of apples, as well as telling about history and lore of apples.

### **The Amazing Apple Book** by Paulette Bourgeois

An amazing collection of the history of apples, uses for apples in pioneer times, the science of growing and producing apples, apple varieties, and much more. This book even has some apple games.

### **Make an Apple Pie and See the World** by Marjorie Priceman

From the jungles of Sri Lanka to the apple orchards of Vermont, the energetic little baker searches far and wide to find the finest ingredients for her apple pie. The silly adventure comes with a recipe for apple pie.

### **Apples** by Jacqueline Farmer

The apple is the most popular fruit in the United States and this book shares an "orchardful" of facts about apples. Beautifully illustrated.

### **Johnny Appleseed** by Steven Kellogg

No apple unit would be complete without the legend of Johnny Appleseed. The magnificent pictures and prose of this book share the lively story of a true American hero.