



**Grade Level:** 2

**Time:** 30-45 minutes

**NGSS:** 2-PS1-4, 2-LS2-2

**Materials:**

Apples  
Plastic knives  
Lemon Juice  
Water  
Tablespoon  
Cup

# Lesson to Grow

## Apple Faces

**Description:**

Apples rot and turn brown because they take in oxygen and give off carbon dioxide. If apples are stored in cool temperatures, they will rot slower than they would in room temperature. Other conditions such as humidity, and the storage atmosphere also effect how quickly apples rot.

Try this activity to discover how lemon juice changes and helps preserve apples!

**Directions:**

1. Peel and core apples.
2. Carve faces into apples with a plastic knife.
3. Add 2 tablespoons lemon juice to two cups water.
4. Soak the apple faces in the mixture for 10 minutes.
5. Hang the apples to dry, running a string through the opening where the core was removed.
6. **Observe!** Over the next 10 days the apples heads will shrink by a third its original size. Have your students make a *hypothesis* about what will happen to the apple heads. Have them make daily observations of the apple heads. Ask questions like, besides shrinking, what else will happen to the heads? Does mold and fungus grow? Why or why not? (Think lemon juice.)



**What Are Apples Made Of?**

Apples are 84% water and are *climacteric*, meaning they produce an increased amount of carbon dioxide as they ripen. During ripening, apples can change color, soften, and become sweeter and less astringent.

**Preserving Apples**

During the long, cold winters, settlers could not grow fresh fruits and vegetables. So, they found ways to preserve them. Apples were an easy fruit for the settlers to preserve. The apples were peeled and cored and then hung out to dry on a big net or string. The warm air would evaporate the water inside the apples, and they would be dried in two or three days. Settlers also used apples to make apple juice, apple cider, dried apples, apple butter and vinegar. The apples were even food for their livestock - pigs, cows, and horses.

**No Brown Apples Please**

You can use fruit juice high in Vitamin C (citrus fruits - limes, lemons, oranges) as an anti-browning treatment when preserving apples. To treat apples, place slices in a bowl, add enough juice to cover the cut fruit, and soak for 10 minutes (no longer or they will absorb too much water.)