



# LESSON 5: Pumpkin Seed Estimation & Pumpkin Science

## Photograph Book

Can you guess how many seeds are inside a pumpkin? Have students use their math skills to estimate and count with this Pumpkin Seed Estimation activity. Then, put it all together in a Pumpkin Science Photograph Book, using the photographs you've snapped along the way!

### SUBJECT MATTER

Science/Math

### GRADE LEVEL

Grades K—3

### OBJECTIVE

Students will learn about the history of pumpkins, and will dissect one as a class. Students will work on math skills such as estimating, counting, grouping, and graphing.

### MATERIALS

Computer  
1 pumpkin  
Knife for dissecting  
Sink  
Paper towels for drying seeds  
Digital Camera

### SET UP AND PREPARE

About 5 minutes to set up pumpkin materials, paper towels, etc.  
Time required: One 40-minute class

### DIRECTIONS

Before you begin the lesson with your students, teach them a bit about pumpkins. Explain that the name pumpkin originated from the Greek word "pepon" for "large melon." Can they see why? Explain also that pumpkins are believed to have first grown in Central America. Seeds have been found that date back to 5,500 B.C. That's over 7,000 years ago!

Explain to students that Native American Indians used pumpkins as a staple in their diets. When the Pilgrims arrived, they saw the pumpkins grown by the Native Americans. As the Native Americans began to share their ideas and food with the Pilgrims, pumpkins became a staple in their diets as well. When the Pilgrims returned to Europe, they brought seeds back with them. Pumpkins weren't used mainly on Halloween like they are today; the Pilgrims would dry out the rind (or skin) of the pumpkins and weave them into mats. They also cooked many delicious foods with pumpkins, like soups, pies, and breads.

Next, review with your students the math portion of this lesson: estimation. To estimate is to calculate approximately the amount, position, or value of something. Some people call an estimation a "rough guess" or an "educated guess." Explain to students that today you'll be estimating how many seeds are inside a pumpkin. As a class, you'll also be making a science book on the computer. It can include pictures and artwork, so make sure to take pictures with your digital camera of each step along the way!

1. Take a "before" picture of the pumpkin for your Pumpkin Seed Estimation Scrapbook.
2. Cut the top of the pumpkin off with a knife. Lift the stem off the pumpkin and let students peer inside. Take a picture of the inside of the pumpkin.
3. Pull out one pumpkin seed and clean it off. Measure with a tape measure the length and width of the pumpkin seed. The length should be about a  $\frac{1}{2}$  inch; the width, a  $\frac{1}{4}$  inch. Ask students to think about how many seeds this size could fit inside the pumpkin in front of them. Take a picture of the pumpkin seed being measured, for a record of how long and wide it is.
4. In Microsoft Excel, enter everyone's name and their estimation into a graph. Plot their estimations and discuss the differences between students' guesses.
5. Pull out all of the seeds and wash them thoroughly in the sink. Spread paper towels out on your students' desks and lay out the seeds to dry. Try to distribute the seeds as evenly as possible, so everyone has about the same amount on their desk.
6. Have your students count the seeds that are on their desk and write the number down on a piece of paper. Encourage your students to put the seeds into groups of 5 or 10 to practice grouping. Take pictures of your students counting the seeds, and the groups they make on their desks.
7. Once all the seeds have been counted, enter your students' final numbers into the graph and plot the total. Save the seeds and place them on the windowsill to fully dry. Students can take them home as a memento.



**8.** Compare and contrast students' estimations with the actual total. Ask the student who had the closest estimation to explain why he/she picked the number they did!

**9.** Have students work together on the computer to make a Pumpkin Science Photograph Book of the Pumpkin Seed Estimation activity. Make a PowerPoint presentation or collage. Use the pictures you took of each step, have students draw pictures of pumpkins and other fall images on the computer, and include the graph of their estimations and final seed total. Create slides that explain the math skills your students learned as well, such as counting, grouping, estimating, and graphing.

**10.** If you have a classroom website, post the book on the Web to show everyone how much you've learned!