

A Peek Into Pumpkins

Summary: Students examine pumpkin parts, functions, characteristics, and the past and present uses of pumpkins in this hands-on group of activities.

Objectives:

The students will:

- Identify the parts of a pumpkin.
- Describe the functions of the parts of a pumpkin.
- Become familiar with past and present uses of the pumpkin.
- Compare and contrast the characteristics of more than one pumpkin.

Materials:

Activity #1:

- poster board, butcher paper, or dry erase board and markers, or use photocopy of chart from appendix (for KWL Chart)

Activity #2 & #3:

- 2 pumpkins, at least (several if possible, with different shapes, sizes, colors, etc.)
- table covering
- knife
- large spoons
- paper or plastic plates
- scale
- rulers and flexible measuring tapes (or string)
- "Pumpkin Parts" worksheets for each student
- "Pumpkin Data Sheet" worksheets for each student
- pencils

Getting Started:

- Set up the pumpkin observation stations ahead of time so that the students can move through the steps smoothly. You may want to have high school volunteer students or other adults present to help the students make their measurements if you foresee them having difficulty with the steps. Another option is to make the observations together as a group or in two groups, since you will be comparing at least two different pumpkins. Copy both worksheets.

Fun Facts!

The Atlantic Giant pumpkin seed, created in Nova Scotia, can produce pumpkins that weigh up to 400 pounds. The record-breaker weighed more than that—821 pounds! You could make 400 pumpkin pies from just that one pumpkin!



Grade Level: K-6

Topic: Pumpkins, Common agricultural plants

PA Environment & Ecology Standards Addressed:

Agriculture and Society:

4.4.4.B: Identify the role of the sciences in Pennsylvania agriculture.

- Identify common plants found on Pennsylvania farms.

4.4.4.C: Know that food and fiber originate from plants and animals.

- Identify agricultural products that are local and regional.

Teaching Methods:

- Lecture/Discussion
- Observation

Multiple Intelligences Utilized:

- Naturalistic
- Interpersonal
- Intrapersonal
- Logical/Mathematical
- Visual/Spatial
- Bodily/Kinesthetic

Background:

Pumpkins belong to a large family of vined plants that are considered fruits. The definition of a fruit is "the edible fleshy part of a plant that surrounds the seeds; a seed package." Other such plants include cucumbers, squashes, gourds, and melons. The fruits develop from a fertilized flower, which produces the seeds.

Pumpkins are an all-American food and are thought to have been cultivated in both North and South America as far back as 9,000 years. They were a staple of the American Indian diet and later became an important factor in the survival of the early European settlers. The Indians taught the settlers how to plant, grow, and use the pumpkins. They would bake and boil the flesh, toast the seeds, grind the seeds into flour and meal for making bread and gruel, and save seeds for planting new crops. Luckily, pumpkins are rich in flavor, high in nutrient content, have long storage capability, and come in many varieties. Since meat and other foods could be scarce at times, the pumpkin became a central menu item, as summed up in this quote from an early settler:

If fresh meat be wanting to fill up our dish
We have carrots and pumpkins and turnips and fish;
We have pumpkins at morning and pumpkins at noon;
If it was not for pumpkins, we should be undone.

Though the pumpkin is not as important to our diet today as it once was to the settlers and Indians, it still has its place in our society. Some people eat pumpkin-related foods at holidays like Halloween and Thanksgiving. Others enjoy them year-round in the form of pumpkin pie, bread, muffins, cookies, stews, and soups.

The parts of a pumpkin all perform a certain function and have their own unique characteristics. The outer shell protects the flesh (inner fruit) and the flesh protects and nourishes the seeds. If the seeds were not protected or nourished, new plants would not be able to be grown and the species would not survive. Pumpkins have both male and female flowers, which facilitate pollination, and then produce new fruits. Pumpkin stems usually form in the shape of a hexagon or octagon and help the other plant parts deliver necessary elements to the growing plant. Some of the most notable external features of a pumpkin are the grooves and ribs. The grooves are the "valleys" or indentations and the ribs are the "mountains" or raised parts.

Pumpkins prefer to grow in warm soil and air temperatures that remain above freezing. They prefer cooler and drier conditions, do not like damp and rainy conditions, and cannot survive frost. It takes about 120 days to grow a pumpkin to full size, depending on the variety. Generally, three to four seeds are planted together into mounds that are placed six to eight feet apart so that the plants have room to spread out. The vines of some pumpkin plants can grow up to 100 feet in length and each vine usually produces two to three pumpkins. Pumpkins turn orange as they ripen and are usually harvested in the autumn before the first frost sets in (U.S.).

Activity #1: KWL Chart: Pumpkins

- Tell the students that they will be learning about pumpkins.
- Ask them what they already know about pumpkins and list it under the "K" part of the chart.
 1. What is a pumpkin?
 2. What do you know about them?
 3. Where do pumpkins come from?
 4. What do we use them for?
 5. Do all pumpkins look alike?
- Ask the students what they would like to learn about pumpkins. List their suggestions under the "W" section of the chart.
- Proceed with Activities #2 and #3 and finish the KWL Chart upon completion.



Activity #2: Getting To Know You

- After introducing the students to some background information about pumpkins and reviewing the basic parts and their functions (stem, shell, flesh, seeds, grooves, ribs, top, side, vine, flower), pass out the worksheet entitled "Pumpkin Parts" to each student (or use as a transparency or enlarge and do together).
- Let the students examine a pumpkin up close and ask them:
 1. What do they notice about the pumpkin?
 2. What colors do they see on it?
 3. What shape is it?
 4. How can they tell which part sat on the ground?
 5. What parts can they see?
 6. How does the shell feel? Stem? Is the stem six- or eight-sided?
- Complete "Pumpkin Parts" worksheet together. Discuss.

Activity #3: Dueling Pumpkins

This activity will help students compare the "inside" and "outside" characteristics of at least two different pumpkins using observation, measuring, prediction, and counting skills. Which one will have the most grooves or ribs? Which one will have the greatest circumference, diameter and height? Which one has more seeds hidden inside?

Depending on class size, divide the class into small groups. For a small class, two groups (each analyzing one pumpkin) will do. For a larger group, perhaps four to six groups with four to six pumpkins, etc. Extra adults or older students might guide each group through the measurements and observations if need be. Each group can fill out one data sheet or each student can fill out a data sheet. Making predictions on the data sheet is optional.

Outside Characteristics:

- Get the students back into their observation modes by asking them to examine their group's pumpkin for the following features (as outlined on "Pumpkin Data Sheet.") and then record on data sheet:
 - Number of grooves
 - Number of ribs
 - Circumference (inches or centimeters around; at the biggest part)
 - Diameter (inches or centimeters across; place rulers upright on both sides of the pumpkin at the widest points and measure the distance between the two rulers with tape measure)
 - Height (highest point of pumpkin excluding stem)
 - Do you think the pumpkin will float in water? (use trash can partially filled with water or fill sink with water---perhaps larger sinks in cafeteria would work best; it will float)
 - Weight (pounds or kilograms)
 - Compare any other "outside" characteristics (color, etc.)

Inside Characteristics:

- Have an adult cut the top off of each pumpkin horizontally. Let students observe. Ask:
 - What is the thin outer layer called and what is its function?
 - What do you see inside? What does the flesh do? What do the seeds do?
 - How does the inside feel?
 - How many seeds do you think are inside?
- Ask students to remove seeds for counting. Assign roles (have someone scoop them out, someone clean them off and put them onto paper plates, someone sort them into groups of 10, and another student count the groups). Record the number of seeds for each pumpkin.
- Clean up. Get everyone involved!
- Gather and summarize the results of the observations. You could make a simple chart or graph to illustrate the findings and "award" the pumpkins for "winning" different categories.
- Review and complete the KWL Chart by asking the students what they learned about pumpkins. List their responses under the "L" category on the chart. Did they learn anything new?

Extensions/Variations:

- After counting pumpkin seeds, eat them as a nutritious snack. Dry seeds on a paper towel for a day or so after removing them from the pumpkin. Roast or fry them on a baking sheet or in a frying pan. Salt/season to taste.
- To roast:** Put one tablespoon of oil in a bowl, add dried seeds and toss them until coated with oil. Spread them out on cookie sheet. Bake at 350 degrees F. for 30-60 minutes. Stir every 10-15 minutes while baking.

To fry: Put one tablespoon of oil in a frying pan. Add the dried seeds and cook over medium/high heat on top of stove. When they begin to swell and pop a bit, take off heat. Keep the lid of the pan handy while cooking---some seeds might try to jump out of the pan!

- Make a class (or individual) pumpkin book with covers and pages in the shape of a pumpkin. Include vocabulary, descriptive words, "inside" and "outside" characteristics, ask each student to add their own pumpkin-themed pages with pictures and stories, etc.
- Visit a local pumpkin patch. Identify the parts of the pumpkin plant, look at the growing conditions, talk to the grower about how to take care of the crop, etc. If possible, visit at different stages throughout the growing season so that the students can see the plants developing and then the finished product.

Evaluation:

Rubric: A Peek Into Pumpkins

3	2	1	0	The student can list or say at least three words that describe pumpkins.
3	2	1	0	The student can draw a pumpkin and label at least three plant parts.
3	2	1	0	The student can describe each of the pumpkin plant parts' functions.
3	2	1	0	The student can name at least three past and present uses of pumpkins.
12	8	4	0	Total Score: /12

Resources:

Damerow, G. (1997). *The perfect pumpkin*. Storey Communications, Inc.: Pownal, VT.

Gillis, J. S. (1992). *In a pumpkin shell*. Storey Communications, Inc.: Pownal, VT.

Project food, land & people. (1998). *Project Food, Land & People*: Chandler, AZ.

Addie's Pumpkin Potpourri: www.geocities.com/Athens/Aegean/2221/pumpkin.html

The Swan Virtual Jack O' Lantern (Carve Your Own Virtual Pumpkin): www.thepumpkinfarm.com/jack/jackboard.html

Pumpkin Nook: www.pumpkinnook.com