

Asparagus: The Mighty Spear

Objective

Students will understand the nutritional value of asparagus and how it is grown in Oklahoma. Students will use asparagus as a manipulative to solve math problems. Students will paint with asparagus.

Background

Asparagus became widely available in America during Colonial times, and was a particular favorite of Thomas Jefferson. Asparagus is a vegetable plant that can be grown in a garden but also grows wild in some places in Oklahoma. When harvested, the edible part of the plant is known as an asparagus “spear.” It is a green stalk, about 5-6 inches in length, with a softer tip. Asparagus is also a perennial, which means it does not have to be replanted every year. It will come back up on its own in the spring. Asparagus spears are usually some of the first vegetables to break through the ground in the spring.

Planting asparagus from crowns is easier than planting from seeds. Asparagus crowns are basically the base and root of a one-year old asparagus plant. Asparagus can be planted from seed, but it will take much longer to produce usable vegetables.

Crowns are planted in a garden in trenches about 12 inches deep. The crowns are placed in the bottom of the trench and covered with about two inches of soil. As the plant grows, the trench is gradually filled in. This gives the asparagus plants an adequate root system. If planted correctly and maintained, asparagus plants can last up to 20 years.

Asparagus is packed with vitamins A, C, E and K. It is also high in fiber and protein. It is known to help the body move sugar through the bloodstream as well as prevent heart disease. In addition, asparagus helps naturally remove toxins from the body.

Uses for asparagus can be traced back to ancient times. Ancient Egyptians used the vegetable as a religious offering. A recipe for cooking asparagus is found in the oldest surviving book of recipes known as *Apicius*, a Roman recipe book thought to have been written in the late 4th century AD.

English Language Arts

1. Read and discuss background and vocabulary.
2. Provide samples of fresh asparagus (in a variety of colors, if available) for students to feel the texture and see the colors.
 - As a class students will describe what they see and feel. Offer prompts such as: “Is it smooth or rough?” “Is it long or short?” “What colors do you see?”
 - Student will write or draw their descriptions.

Oklahoma Academic Standards

PREKINDERGARTEN

Speaking and Listening:
R.1,2,3,4; W.1,2. Phonological Awareness: 3,4. Reading and Writing Process: W. Critical Reading and Writing: W
Number & Operations: 1.1; 2.2,4; 3.1. Algebraic Reasoning:
1.1. Measurement: 2.1,2
Economics: 2,3

KINDERGARTEN

Speaking and Listening:
R.1,2,3,4; W.1,2. Phonological Awareness: 3,5. Reading and Writing Process: W.1. Critical Reading and Writing: W
Number & Operations: 1.6,8; 2.1. Algebraic Reasoning: 1.1.
Geometry & Measurement:
1.2.4; 2.1,2,3
Economics: 2,3

GRADE 1

Speaking and Listening:
R.1,2,3,4; W.1,2. Phonological Awareness: 3. Critical Reading and Writing: W.3. Number & Operations: 2.1,3. Measurement:
2.1
Economics: 1,2
Visual Art: 3.1,2

Materials

asparagus spears

paint

small objects, such as beads,
small blocks or crumpled paper

Vocabulary

asparagus—a spring vegetable and flowering plant

edible—fit to be eaten as food

harvested—gathered a crop of any kind

offering—giving funds or goods as a gift

perennial—a plant lasting for three seasons or more

produce—to put forth

religious—concerned with sacred matters as with a church

recipe—a set of directions for preparing food

toxin—a poisonous product

vegetable—edible seeds or roots or stems or leaves or bulbs or tubers or non-sweet fruits from many plants

vitamins—any of a group of substances needed in small quantities for normal metabolism

- Students will compare and contrast their observations with those of other students in a small group setting or with the class as a whole.
- 3. Students will separate the word “asparagus” into syllables.
 - Show the separations on the board.
 - Students will clap or act out the syllables.
- 4. Students will recognize that asparagus is a food that starts with letter “a.”
 - Students will create a list of other foods that start with “a.”
 - Students will create a list of foods that start with other letters in the word “asparagus.”

Math

1. Individually or in groups, give students at least 10 asparagus spears. Students will use the spears as manipulatives in the following math activities:
 - Use the asparagus spears to respond to a variety of “how many” questions.
 - Place the spears into two groups and identify them as “greater than” or “less than.” Reconfigure the groups and identify them several times.
 - Use the spears to represent mathematical equations, e.g., one group of two plus one group of three, or take away two from one group of six.
 - Use the spears to organize groups that equal the same number, e.g., one group of two and one group of three equals five, and one group of one and one group of four also equals five.
 - Place the spears in a group that is a given number and decide what number of spears added to that group would make 10.
 - Arrange the spears by length, from longest to shortest.
 - Describe the shapes of the spears.
 - Create shapes from the spears (squares, triangles, rectangles, octagons, hexagons) and reconfigure the shapes several times to create different size triangles, squares, etc.
 - Measure objects using the asparagus spears as “units,” for example, a student’s desk might be 10 asparagus units tall.
2. Hand out copies of the Asparagus Measuring Page.
 - Students will use nonstandard units to measure the length of the asparagus spears pictured on the page or real asparagus, as available, and record the measurements in the spaces provided.
 - Provide rulers or the picture of a ruler provided for students to cut out.
 - Students will use their rulers to measure the lengths of the asparagus spears and record the measurements in the spaces provided.

Social Studies

1. Explain that while many people who grow asparagus do so for their own use, some people also grow asparagus to sell in places such as farmers markets. Explain that farmers markets are a way for growers to earn money for the work they have done in growing their produce.

- Take students a local farmers market. Students will prepare questions beforehand to ask producers. (“How long have you been a producer?” “Do you start your plants as seeds or small plants?”).
- Invite an asparagus producer to class to answer questions about asparagus.

Visual Art

1. Students will create paintings using asparagus spears as their paintbrushes.
 - Provide an assortment of paints and encourage students to be creative with painting subjects and color mixing.
 - When pieces are complete, students make observations concerning other students’ pieces. They should comment on color quality, meaning, brush stroke, etc.

Fine Motor Skills

1. Provide different types and sizes of objects, such as beads, small blocks, crumpled paper, etc.
2. —Using two asparagus spears as “tongs,” students will transfer objects from one area or bin to another.
3. —Students will take turns transferring objects.
4. —When all students have had a turn, discuss as a class the ease or difficulty of the task. Students will decide which objects were easier or more difficult to move with the “tongs” and why.

Extra Reading

Radunsky, Vladimir, *The Mighty Asparagus*, Harcourt Children’s, 2004.

Ruehling, Jan, *The Adventures of Asparagus: Gus Discovers His Roots*, Strategic, 2012

Ag Career: Vegetable Farmer

JOB DESCRIPTION: Vegetable farmers grow cash crops. They use their knowledge of soils and plants to determine fertilizer and irrigation needs, obtain seeds for planting, prepare the soil for planting, combat plant diseases and insect pests, harvest crops and sell them. A vegetable farmer must plan carefully to have a crop through all of Oklahoma’s growing seasons—spring, summer and fall. Some even grow vegetables through the winter and sell them at winter farmers markets. Keeping accurate records of supplies, purchases, sales, planting, breeding and production is another part of the farmer’s job.

SKILLS: A vegetable farmer should like working outdoors with plants. He or she should have good business sense and be able to make good management decisions. The work requires knowledge of soil chemistry, plant physiology, genetics, nutrition, entomology, farm management and economics.

PREPARATION: High school courses in agriculture and a college degree in some field of agriculture, along with work experience on a farm.

Asparagus Measuring Page

Measure the asparagus spears below using nonstandard units. Record the measurements on the next page. Then use a ruler (or cut out the ruler provided) to measure the standard lengths.



Spear 1



Spear 2



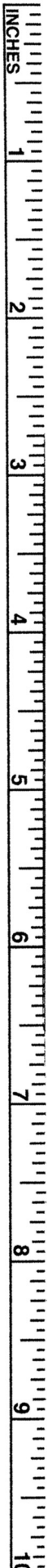
Spear 3



Spear 4



Spear 5



Name _____

Asparagus Measuring Page

Measure the length of the asparagus spears on the previous page using nonstandard measurements. Then cut out the ruler at left and use it to measure the length of the asparagus spears.

NONSTANDARD MEASUREMENT

What did you use as a unit of measurement?

Spear 1 _____

Spear 2 _____

Spear 3 _____

Spear 4 _____

Spear 5 _____

STANDARD MEASUREMENT

Spear 1 _____ inches, _____ centimeters

Spear 2 _____ inches, _____ centimeters

Spear 3 _____ inches, _____ centimeters

Spear 4 _____ inches, _____ centimeters

Spear 5 _____ inches, _____ centimeters