

# Seed Swapping

## Objective

Students will learn about different kinds of seeds, conduct experiments with seeds and use seeds in a place value activity.

## Background

A seed is a miniature plant. Most seeds have a built-in food supply that is rich in carbohydrates, fats and proteins. For that reason seeds are a rich source of food for people and animals. Seeds are important to Oklahoma agriculture. Many of the crops grown on Oklahoma farms are harvested for their seeds. Pecans are seeds. Soybeans and corn are seeds from which we get salad oil. The candy bars you eat probably are made with soybean or corn oil. Soy ink is made from soybeans also. Cottonseed oil is used as a base for paints.

Seeds come in an amazing number of shapes and sizes. In the fall you can find many different kinds of seeds lying on the ground. Sometimes you see them flying in the air. If you have maple or elm trees in your yard you have seen seeds with wings. That is one of the ways seeds travel. Dandelion and thistle seeds are very light so they can travel on the wind, sometimes as far as 1,000 miles away. Some kinds of seeds grab onto the fur of animals or on your clothes to travel from place to place. Stickers are seeds that try to hitch rides on the bottoms of your shoes. The pods of some plants explode and shoot out their seeds. Pecans often grow along creeks, so their heavy seeds travel by water. Birds eat the berries of honeysuckle, hackberry, mulberry and other plants, then deposit them, sometimes hundreds of miles away. Acorns are the seeds of oak trees. Squirrels gather them and carry them away to hiding places. Some seeds even travel by coasting on the snow or ice.

The scientist Charles Darwin conducted many experiments with seeds. He wondered if plants from the mainland could colonize a newly formed island? If so, how would they get there? Could they survive in the ocean? To find out, he immersed seeds in salt water for weeks, then planted them to see how many could sprout. He reported, for example, that “an asparagus plant with ripe berries floated for 23 days, when dried it floated for 85 days, and the seeds afterwards germinated.” The Atlantic current moved at 33 nautical miles a day; he figured that would take a seed more than 1,300 miles in 42 days. He concluded that yes, seeds could travel by sea.

## Science

1. Read and discuss background and vocabulary.
2. A coconut is the largest seed. It travels from one place to another by floating in water.
  - Bring a coconut to class.
  - Break the coconut open:
    - a) Use an ice pick to puncture the softest eye of the coconut.

## Oklahoma Academic Standards

### GRADE 1

Life Science: 1-1,2  
Number & Operations: 1.2,3,4

### GRADE 2

Life Science: 2-2; 4-1  
Number & Operations: 1.1,3

### GRADE 3

Life Science: 1-1; 4-3

## Materials

number cubes

unpopped popcorn, sunflower seeds, and pumpkin seeds

coconut

ice pick

dish pan

assorted other seeds, like pecans, etc.

## Vocabulary

**acorn**—the roundish one-seeded thin-shelled nut of an oak tree usually having a woody cap

**carbohydrate**—any of various compounds of carbon, hydrogen, and oxygen (as sugars, starches, or celluloses) most of which are formed by plants and are a major animal food

**corn**—the seeds of a cereal plant, especially Indian corn

**fat**—any of numerous compounds of carbon, hydrogen, and oxygen that make up most of plant and animal fat, are a major class of energy-rich food, and can be dissolved by ether but not by water

**pecan**—an oblong edible nut that usually has a thin shell and is the fruit of a tall tree of the central and southern U.S.

**pod**—a fruit that is dry when ripe and then splits open to free its seeds

**protein**—any of numerous substances that consist of chains of amino acids, contain the elements carbon, hydrogen, nitrogen, oxygen, and often sulfur, include many compounds (as enzymes and hormones) essential for life, and are supplied by various foods (as meat, milk, eggs, nuts, and beans)

**soybean**—a hairy annual Asian plant of the legume family widely grown for its edible seeds rich in oil and proteins, as food for livestock, and for soil improvement

b) Strain the liquid into a glass through a lightweight cloth or cheesecloth.

—Place the coconut in a dishpan of water.

—Students will hypothesize whether or not the coconut will float.

—Students will observe the coconut to see if it will float.

—To get to the coconut meat for students to eat:

a) Hit the shell with a hammer.

b) Pry the meat away from the shell with a screwdriver or some type of blunt-ended tool.

c) The brown skin covering the meat may be eaten, or a vegetable peeler may be used to remove it.

3. Students will experiment with assorted other kinds of seeds to see if they will float. Bring an electric fan to see which ones are likely dispersed by wind.

## Math

1. Bring four number cubes and a variety of seeds (unpopped popcorn, sunflower seeds, pumpkin seeds) to class.

—Divide students into four groups, and hand out a student game sheet to each member of the group.

—Provide each group with one number cube and three different kinds of seeds.

—Groups will assign place values to each kind of seed, for example, if a corn kernel represents the ones place, 10 corn kernels would be equal to one sunflower seed, and 10 sunflower seeds would be equal to one pumpkin seed.

—The first player will roll the number cube and place the indicated number of corn kernels in the right “ones” column on his or her game sheet. Each student will take a turn rolling the number cube.

—For the second round, the student will place additional kernels on the game sheet, according to the number that appears on the number cube.

—When the total number of seeds in the right “ones” column reaches 10 or more, the player will trade 10 of those for one of the seeds chosen to represent tens.

—The game will continue until one player has accumulated 100 points, which he or she will trade for the winning seed (the seed chosen to represent hundreds).

2. After several games, allow each group to use two number cubes for a faster game, or raise the winning number of points to 1,000, and reward the winners with bags of peanuts or sunflower seeds.

## Extra Reading

Barry, Frances, *Big Yellow Sunflower*, Candlewick, 2009.

Heller, Ruth, *The Reason for a Flower*, Putnam, 1992.

Richards, Jean, *A Fruit is a Suitcase for Seeds*, Millbrook, 2003.

Name \_\_\_\_\_

# Seed Swapping

Write the name of the seed that will be used at the top of each column. Glue an example of the seed in the box beside the name. Follow these directions to complete the seed swapping place value activity:

*The first player will roll the number die and place the indicated number of seeds in the “ones” column. Each student will take a turn rolling the die. Continue placing additional seeds on the game sheet, according to the number that appears on the die. When the total number of seeds in the “ones” column reaches 10 or more, the player will trade 10 of those for one of the seeds chosen to represent tens. The game will continue until one player has accumulated 100 seeds, which he or she will trade for the winning seed.*

For Example:

*PUMPKIN SEED=100  
1 Pumpkin Seed Wins*

*SUNFLOWER SEED=10  
Trade 10 Sunflower seeds for 1 Pumpkin*

*CORN=1  
Trade 10 Corn for 1 Sunflower*

<b>HUNDREDS</b> _____ Seed Name	<b>TENS</b> _____ Seed Name	<b>ONES</b> _____ Seed Name
<div data-bbox="370 846 560 940" style="border: 1px solid black; width: 117px; height: 45px;"></div>	<div data-bbox="865 846 1055 940" style="border: 1px solid black; width: 117px; height: 45px;"></div>	<div data-bbox="1360 846 1550 940" style="border: 1px solid black; width: 117px; height: 45px;"></div>