

Pecan Fingerprints

Objective

Students will explore pecans with their five senses. Students will compare and contrast their own fingerprints with those of their classmates to find similarities and differences. Students will compare and contrast their fingerprints with the patterns found on pecan shells.

Background

The pecan is a kind of hickory nut native to the US. It originated in the Mississippi River Valley and was a valuable food to early settlers there. Pecans are high in polyunsaturated fat, the kind of fat that is not bad for you. They are also a good source of vitamins, calcium, phosphorus and iron.

Pecan trees like to grow together in clusters, or groves. They can grow from 70 to 100 feet tall, and their branches will spread from 50 to 100 feet wide. Their roots grow deep. Their leaves are dark green, with a lighter underside. They have very little color in the fall.

Pecan trees have two kinds of flowers. One of the flowers produces pollen, and the other one produces the nut. The nuts grow inside a thin, four-part husk. They ripen between October and December. The nuts fall to the ground when they are ripe. Pecan growers harvest their pecans by picking them up off the ground. Sometimes they knock the nuts down with long poles or shake the pecans off the trees with large machines.

There are many different kinds of pecan trees. Some trees have very small nuts. These nuts are hard to crack but very tasty. Other trees have large nuts with thin shells that are easy to crack. These are called “paper shell” pecans. Their shells aren’t quite as thin as paper, but they are much easier to crack than the smaller pecans. No two pecans have the same markings on their shells. Each one is as unique as a fingerprint.

Materials

- a handful of pecans and other nuts for comparison
- inkpad or pencils and tape

Science

1. Read and discuss background and vocabulary.
2. Provide pecans for students to examine.
 - Students will use their five senses to explore the pecans. What do they look like? How do they taste? What do the pecans smell like?
 - Students will observe how the pecans move. Do they roll?
 - Students will compare the pecans to other nuts. Which ones are heavy/light, sink/float, rough/smooth.
 - Students will compare the patterns on the shells of different pecans.
 - Students will discuss patterns in nature and why pecans have patterns (Camouflage so the seeds have a greater chance of surviving to make new trees.

Oklahoma Academic Standards

KINDERGARTEN

Speaking and Listening:
R.1,2,3,4; W.2. Print
Concepts: 1. Fluency: 1.
Vocabulary: R.1; W.1,2

GRADE 1

Speaking and Listening:
R.1,2,3,4; W.2.
Vocabulary: R.1; W.1,2
Visual Art: 3.2

GRADE 2

Speaking and Listening:
R.1,2,3,4; W.2.
Vocabulary: R.1; W.1,2
Life Science: 4-1
Visual Art—3.2

Vocabulary

branch— a natural division of a plant stem

calcium— a silver-white soft metallic element that is found only in combination with other elements (as in limestone) and is one of the necessary elements making up the bodies of most plants and animals

cluster— a number of similar things growing, collected, or grouped together

grove— a small wood, especially a group of trees without underbrush

harvest— the gathering of a crop

husk— a usually thin dry outer covering of various seeds or fruits

iron— a heavy magnetic silver-white metallic element that quickly rusts in moist air, occurs in meteorites and rocks, and is widely used

native— grown, produced, or having its beginning in a particular region

originated—came into existence

phosphorus— a nonmetallic element that occurs widely especially as phosphates

pollen— a mass of tiny particles in the anthers of a flower that fertilize the seeds and usually appear as fine yellow dust

ripe— fully grown and developed

root— the leafless usually underground part of a plant that absorbs water and minerals, stores food, and holds the plant in place

settlers—people who make their home in a new region

unique— being the only one of its kind

valuable— of great use or service

vitamins— any of various substances that are necessary in very small amounts to the nutrition of most animals and some plants, that are important to the control of growth and development by activating and assisting in the function of enzymes, and that are present naturally in many foods or in some cases are produced within the body

—Students will design their own patterns to mimic the camouflage qualities of pecan shells.

3. Students will compare their own thumbs with those of their classmates.

—Discuss the different ways fingerprints are used (to identify missing persons, in crime investigations, etc.)

—Hand out the worksheets.

—Students' fingers should be free of cuts.

—Students will make prints by rolling their thumbs over an ink pad, then rolling them onto the space provided on the worksheet. They may also cover their thumbs with graphite from the lead of a pencil, press the prints onto cellophane tape, carefully peel the tape from their thumbs and stick the prints onto the worksheets.

4. Each student will grasp a clean glass with one hand. Make sure the print doesn't get smudged. Sprinkle the print area with iron shavings. Place wide, transparent packing tape over the iron shavings. Lift carefully and stick the tape to a clean sheet of paper.
5. Students will use a magnifying glass to examine the fingerprints.

English Language Arts

1. Students will make fingerprint cards.

—Students will write their full names, dates of birth and the date the card is made.

—Students will print all fingers of both hands on the cards, if possible.

2. Pecans grow in clusters. Divide students into groups.

—Students will stand together in "clusters."

—Each group will develop a group definition of the word "cluster" ("a number of similar things growing together").

Visual Art

1. Students will create fingerprint animals, using different colored ink pads and markers.

Extra Reading

Aardema, Verna, and Joe Cepeda, *Koi and the Kola Nuts: A Tale from Liberia*, Aladdin, 2003.

D'Amico, Joan, and Karen E. Drummond, *The US History Cookbook: Delicious Recipes and Exciting Events from the Past*, Jossey-Bass, 2003.

Emberley, Ed, *Ed Emberley's Fingerprint Drawing Book*, LB Kids, 2005.

Goodman, Barbara, *The Missing Pecan*, AuthorHouse, 2004.

Pfeffer, Wendy, and Robin Brickman, *A Log's Life*, Aladdin, 2007.

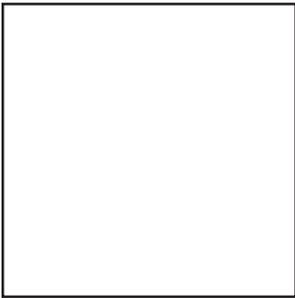
Stewart, Edna, *The Call of the Christmas Pecan Tree*, Dorrance, 2008.

Name _____

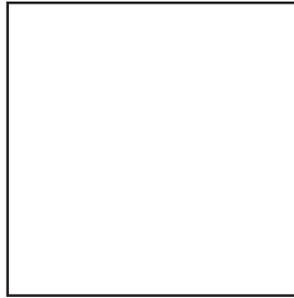
Pecan Fingerprints

unique—one of a kind, matchless. A person’s fingerprints are unique to that individual. The pattern on a pecan shell is also unique.

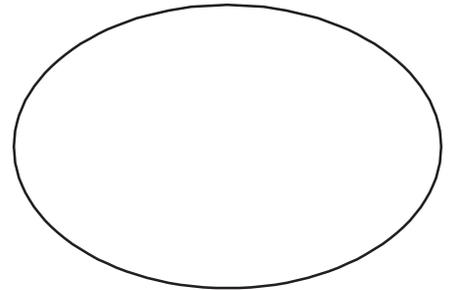
Make prints of both your thumbs on tape, and stick them here. Then try to draw the pattern on the pecan shell.



left thumb



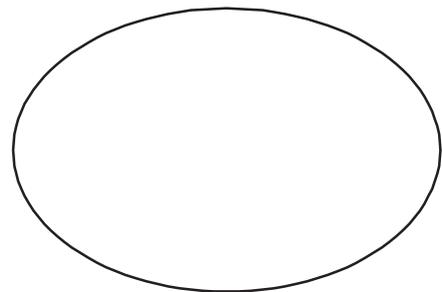
right thumb



pecan shell pattern

Investigate. Write “yes” or “no” to answer these questions.

1. Can you see a pattern in the lines of your thumb print? _____
2. Are the two prints alike? _____
3. Can you redraw the pecan pattern and make it a perfect match? _____



Can you draw a perfect match to the pecan pattern?