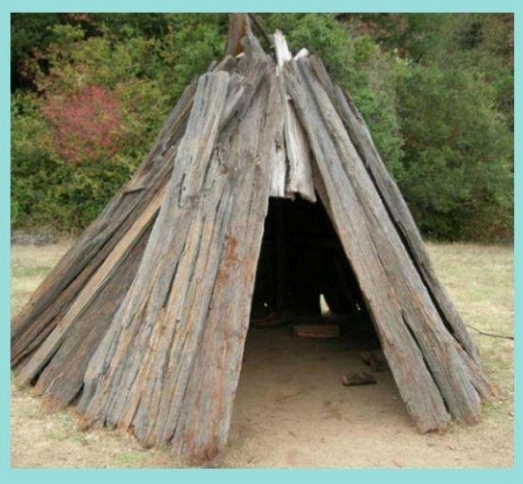
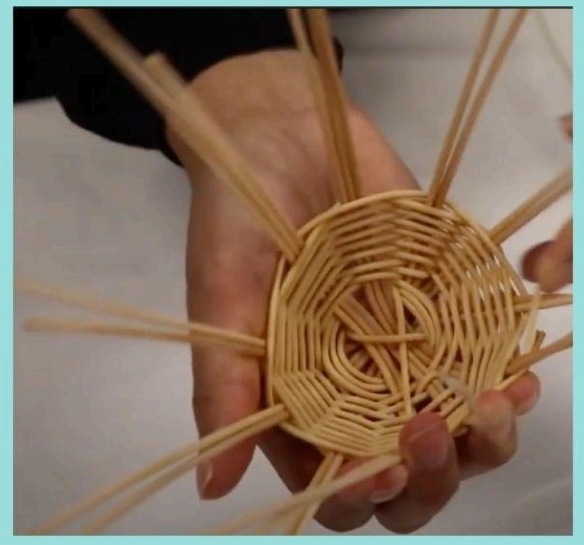
CALIFORNIA

Native American Studies

MODEL CURRICULUM

STEM BASKET WEAVING





Native Maker STEM Unit
Lesson 1: Redwood Bark House
Grade Level: Grades 6-8
Subject: Science, Math, and Art
Duration: 90 minutes

Lesson Overview: Students will learn about the diversity of housing among California tribes and the traditional and ecological knowledge tribes have and are using in designing these structures. Students will use geometric and ecological lessons to create a model of a redwood bark house. This activity supports learning geometry and environmentalism concerning California tribal structures.

Unit Authors and Researchers

This unit was researched, authored, and edited by the California Indian Museum and Cultural Center, California Indian Education for All, and the San Diego County Office of Education. Key writers and researchers of this unit are Nicole Lim, Jayden Lim, and Dr. Staci Block. The unit resources were designed and created from funding through the California Department of Education's Native American Studies Model Curriculum grant and contract.

California Native American Studies Model Curriculum

The California Native American Studies Model Curriculum (NASMC) will support the design and development of open-source lesson plans, primary source documents, planning resources, teaching strategies, and professional development activities to assist California K-12 educators in teaching about California Native American Studies. Per AB 167, the NASMC is defined as lesson plans, primary source documents, planning resources, teaching strategies, and professional development activities to assist educators in teaching about Native American Studies.

Acknowledgment: Resources from this unit and lesson plans come from California Indian Museum and Cultural Center.

Learning Objectives

- Understand the ecological importance and properties of redwood trees.
- Develop engineering and problem-solving skills by designing and building a small model of a redwood bark house.
- Apply teamwork and creativity in constructing a sustainable structure using a maker kit.

Materials:

- Samples of bark or bark-like materials
- Student worksheets
- Popsicle sticks
- Cardboard sheets (as bases)
- Glue and/or tape
- Twine
- Natural decorations: moss, pebbles, small sticks
- Water spray bottles
- Small thermometers

Curriculum Themes: (check all that apply)

- ☑ History
- ☑ Cultural Strengths
- ☐ Law/Government
- ☐ Relationship to Place
- ☑ Cross Curricular Integration

Instructional Standards:

Next Generation Science Standards (NGSS) – Grades 6–8

- **MS-ESS3-3:** Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
- **MS-ETS1-1 to 3:** Define criteria and constraints of a design problem; evaluate competing design solutions; analyze data from tests to improve a design.
- **MS-LS2-1:** Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations.

Common Core Math Standards – Grades 6–8

- **6.G.A.1 / 7.G.B.6 / 8.G.C.9:** Solve real-world and mathematical problems involving area, surface area, and volume of geometric figures.
- **MP.4:** Model with mathematics (applied through the engineering and insulation model challenge).

Visual and Performing Arts

- **2.0 Creative Expression:** Create original art based on personal experience and heritage.

Lesson Plan

Engage

Show pictures or videos of redwood forests, emphasizing their towering size, age, and ecological significance.
Discussion Questions:

- Why do you think redwood trees are important to the environment?
- How do you think redwood bark can be used to build a house or shelter?

Hands-On Exploration: Pass around small samples of redwood bark (or similar materials) and encourage students to observe texture, weight, and durability.

Explore

Read and take notes on the Redwood Handout explaining the history of traditional California Indian housing structures. Share and review the cultural information of Redwood Bark House in the handout.

View the picture of Redwood Bark House in the handout.

Mini Experiment:

- Objective: Test the insulating and water-resistant properties of bark-like materials.
- Materials: Bark samples, water spray bottles, small thermometers.

- Activity: Have students test how well the material repels water and insulates by spraying water on one side and measuring temperature differences.

Explain

Review and complete the mathematics activities on the handout:

- Find the circumference
- Find the area and surface area
- Find the volume

Brief Lecture/Demonstration:

- Discuss the unique properties of redwood bark (fire resistance, water resistance, durability).
- Explain how Indigenous communities and early settlers utilized natural materials for shelters.

Maker Kit Overview:

- Kit Components: Miniature bark pieces, popsicle sticks, cardboard bases, glue, twine, and optional natural decorations (e.g., moss, pebbles).
- Demonstrate a simple example of assembling the base of the house.

Elaborate

Engineering Challenge Overview:

- Distribute materials to make a Redwood Bark House
- Explain that students will create a model house using a redwood bark house maker kit.
- Describe the process by doing a demonstration or showing this video demonstration: https://www.youtube.com/watch?v=5f3SknS9ujY

Building Activity:
Divide students into small groups or pairs. Provide each group with a maker kit and challenge them to design and build a small model of a house using the materials provided.Encourage creative additions like doors, windows, or a roof structure.

Guiding Questions During Construction:

- How can you make your house stable?
- How will your design protect the inside from water or heat?
- Can you use the materials efficiently without waste?

Evaluate

Presentations: Each group shares their completed structure, explaining their design choices and challenges faced.

- Testing the Models:
  Spray water on the models to test water resistance.
- Assess stability by gently blowing air or shaking the table.

Reflection and Discussion:

- What worked well in your design?
- How would you improve your structure if you had more time or materials?

- How do redwood trees inspire sustainable building practices?

Extension

- Art Integration: Decorate the model houses to reflect cultural designs inspired by Indigenous communities.
- Environmental Science: Discuss how redwood trees contribute to ecosystems and how sustainable materials can reduce carbon footprints.

Redwood Bark House Maker Kit Worksheet

Name: _____
Date: _____

Part 1: Engage

1. **Observation Activity**

    - Look at the redwood tree pictures or videos. Write three things you notice about redwood trees:
        1. _____
        2. _____
        3. _____

2. **Discussion Questions**

    - Why do you think redwood trees are important to the environment?

      _____

    - How could redwood bark be useful for building a house?

      _____

Part 2: Explore
Mini Experiment

1. Test the properties of the bark sample.
    - Does the material repel water?
        - Yes / No
    - Does the material feel warm when you hold it in your hand?
        - Yes / No
    - How would these properties help a house made of this material?

      _____

Part 3: Explain

1. What makes redwood bark special?

    - Fire Resistance: _____
    - Water Resistance: _____
    - Durability: _____

2. How were natural materials like redwood bark used in the past?

   _____

Part 4: Elaborate
Maker Kit Challenge

1. Sketch your house design:
   (Use the box below to draw a simple sketch of your house before building it.)

   [Draw your sketch here]

2. Design Plan

- What materials from your kit will you use for:
    - **Walls**: _____
    - **Roof**: _____
    - **Decorations**: _____
- How will you make your house stable?

Part 5: Evaluate

1. **Presentation Reflection**
    - What was the best part of your design?

    - What was the hardest part of building your house?

    - If you could improve your design, what would you change?

      ---
2. **Testing Results**
    - Did your house repel water?
        - Yes / No
    - Did your house stay stable during the shake test?
        - Yes / No

Extension (Optional)

- How do redwood trees inspire sustainable building practices?

- What other natural materials could be used to build a sustainable house?

- 8 to 15 feet in diameter
- 60 degrees or more

Redwood Bark House

Redwood bark houses, also known as kotchas, are made by the Coastal Miwok and used by the Yurok in various ways. California Indians traditionally orient, or position, their traditional houses in relation to the sun. California Indians also understand the sun's movement through a day and a year — its cyclical, seasonal passages across the sky. They traditionally make its constancy and energy work in their traditional homes. Houses are traditionally placed to admit the welcome warmth of the low winter sun as well as to block chill winds. In summer, orientation was reversed, limiting exposure to hot afternoon sun and admitting fresh air. The Sierra Miwok have traditionally sited bark slab houses on sunlit leeward slopes, above cold ravines but below windswept ridges. In the mountains, the eastern side of the cone for both the Maidu and the Miwok houses is angled sharply to prevent snow accumulation. The placement of buildings in relation to the sun, wind, and landscape affects daily and seasonal heat gain and loss. A house that is properly oriented and insulated can be heated or cooled by natural, sustainable means. Orientation is common sense. It's a lesson as old as the sun and coyote, but as new and as certain as tomorrow's sunrise. Conical bark slab houses have been built by California's coastal and mountain tribes. In cold, damp or foggy areas, large slabs of redwood and cedar (or other conifers) have been traditionally arranged on end in a conical shape. The thick, bark slabs were either freestanding or supported by a cone-shaped sapling frame. Earth was banked against the base. The Miwok refer to their conical bark houses as kotea, "a place where real people live." **Adapted from Universal House**

Cultural Information

In the northern redwood region, some of the Native American Peoples and cultures are very similar to the people of Alaska's southern coastal areas, living mainly along salmon streams and obtaining much of their food by fishing. Evidence of this derivation is found in their languages, culture, boat building techniques, and plank houses. Other groups apparently came to the north coast from the south and from the central valley. In the southern redwood region, the Native Americans obtained more food by hunting and gathering than by fishing. At least 15 different tribal groups inhabited the redwood region when the Europeans arrived in the 1700s. Native Americans in each area adapted to their local environments, utilizing the natural resources, including the redwoods, in a variety of ways.

The major groups in the northern part of the redwood region were the Tolowa, the Wiyot, and the Yurok. The Tolowa lived in northern Del Norte County in the Smith River area, while the Yurok inhabited an area from Wilson Creek in Del Norte County to Little River south of Trinidad Head in Humboldt County. They lived in over 70 villages ranging in size from one family to fifty people. The Wiyot lived along the coast from Little River south to the False Cape/Bear River Ridge just north of Bear River. Tolowa and Yurok houses and other buildings such as sweathouses and assembly halls were made mostly of redwood planks. While somewhat different in design, Tolowa and Yurok buildings had much in common. The planks were typically made from trees that had fallen in the forest and from driftwood. The trees were split into planks using wedges made from elk antlers that were pounded with stone mauls, and shaped with mussel shell adzes. The boards might be several inches thick and 1 to 4 feet wide. These rectangular buildings might be up to 50 feet on a side, but were generally smaller. To conserve heat, and to protect against animal or human intruders, access was through a round opening, barely large enough for a person to crawl through, cut into a plank. Redwood's resistance to decay helped these buildings last more than a hundred years. While most of the redwood used by the Native Americans came from fallen trees, they apparently did occasionally use fire to cut trees down. Hot stones and fire were used to char and burn a "cut" in one side of the tree. The charred wood was scraped away and the process repeated. When one side was partly burned through, another "cut" was made higher up on the opposite side. Fortunately for early users, much of the old-growth wood was knot-free, which made it easier to split. This facilitated the making of planks from the abundant old-growth trees and logs.

The territory of the Northern Pomo extended from just north of Fort Bragg to near the mouth of the Navarro River, while the Central Pomo territory began there and extended south to the mouth of the Gualala River in southern Mendocino County. The territory of the Kashaya (another group of Pomo speakers) stretched from the mouth of the Gualala River to Duncans Landing. Members of these groups sometimes built cone-shaped houses of bark by leaning large slabs of redwood bark against a central support pole. Layers of bark were laid on top of each other, shingle-like, until the only openings were a smoke hole at the top and a small "door." They also used redwood planks to build structures similar to those of the Yurok and Tolowa, sometimes adding bark to the planks as additional weather proofing and insulation. Like most other Native American groups of the redwood region, the Pomo generally didn't live in the redwood forest itself. Rather, they lived along the coasts, rivers, and mixed oak/grassland. The Pomo did enter the redwood forests in search of plants such as ferns, establishing seasonal camps that they might use for a few weeks each year.

The Coast Miwok inhabited the area that is now Marin County, around Tomales Bay and Point Reyes, but also ranged north to Duncan's Point. Groups of Miwok speaking various dialects, lived in the central valley and the Sierra, including Yosemite. From the Golden Gate south to the Sur River in Monterey County, the Ohlone (or Costanoans) were the predominant group, and they, like the northern groups,
sometimes built winter shelters with slabs of redwood bark. In the milder areas such as Monterey County, the Costanoans slept in the open much of the year, using shelters of sticks and brush in the winter. Tule reeds were used for building shelters and making canoes.

Even as the gold fields played out, demand for redwood continued to increase. Examiners provided a labor force that turned to harvesting, milling, and shipping redwood throughout California and around the world. Most of the redwood forests were soon owned by private individuals and timber companies.

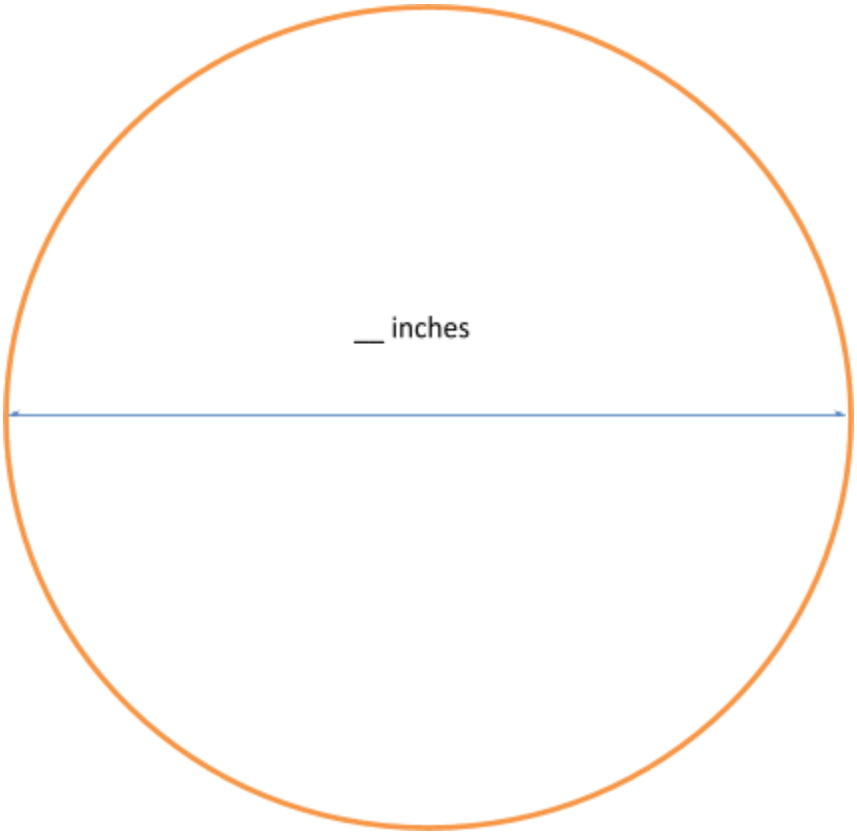
Redwood became a major building material throughout California. Continued development of logging and milling technologies made it easier and more profitable to produce redwood products ranging from siding and framing timber, to decks and water towers, to shingles and grape stakes. Since the gold rush brought in a population explosion in the San Francisco Bay area, the logging of the coast redwoods first became a major industry in the central region from Sonoma County to Monterey County. The first sawmills were built around the San Francisco Bay. The town of Redwood City developed as a shipping center for redwood in the 1850s, and Woodside and other towns in San Mateo County were founded by the logging industry.

When the redwood logging industry developed in the 1850s, north coast Native Americans often used boards that were discarded by sawmills and boards that washed ashore from shipwrecked lumber schooners. Some very large trees were cut in Sonoma County, especially along the Russian River.

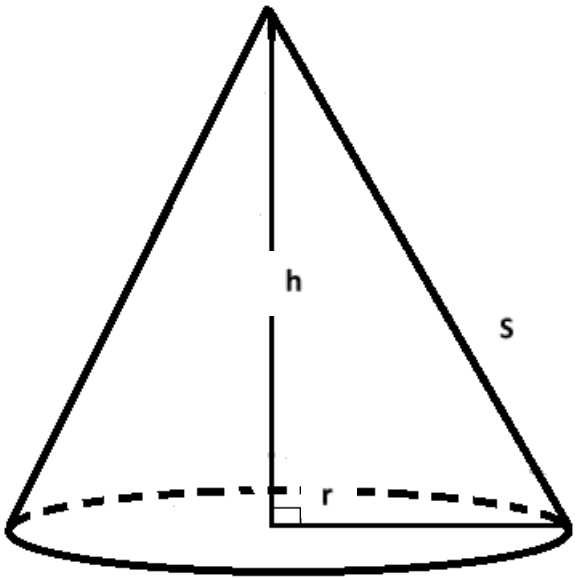
Trees that grow slowly produce closely spaced rings. Most of the redwood used in the historical buildings was from "old-growth" forests, which were very shady, resulting in closely spaced rings. Old-growth trees growing in an opening, however, may have produced widely spaced rings. Trees may also grow slowly for a while, then more rapidly if the forest canopy opens, then slow down again when the canopy closes up again. Most redwood harvested today is from young growth forests, which are generally more open, resulting in more rapid growth and more widely-spaced rings.

Mathematics Activity 1 – Circumference

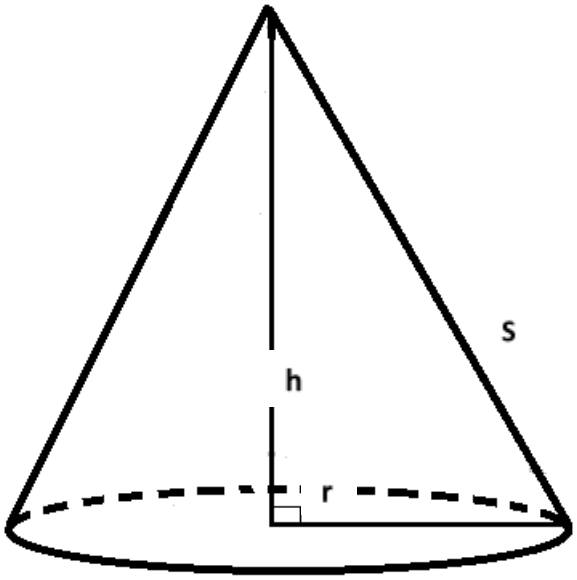
The circumference of a circle (C) = π x diameter (d)
C = πd



Mathematics Activity 2 – Area
Area of the cone πrs
Area of the base πr^2



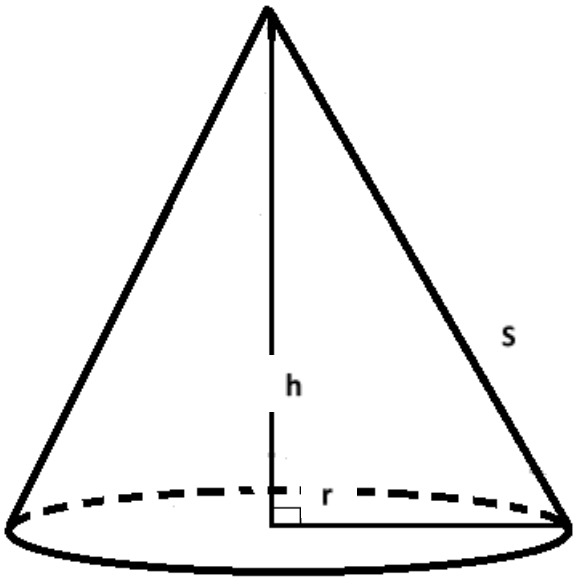
Mathematics Activity 3 – Surface Area
Surface Area
SA = πrs +π r^2



Mathematics Activity 4 Volume

Volume

$$V = \frac{1}{3}\pi r^2 h$$



Lesson Resources:

Exploring a Prehistoric Pit House: https://www.youtube.com/watch?v=MkdQ3g8df18

How to Build a Wigwam: https://www.youtube.com/watch?v=NXICbL2l33I

Kara English: https://www.youtube.com/watch?v=jnP_y8q4zws

Redwood Ed Guide: https://www.parks.ca.gov/pages/735/files/03seciihumanhistorych1to3.pdf

Native Maker STEM Unit
Lesson 2: Acorns- The Importance of Native Diets
Grade Level: Grades 6-8
Subject: Science, Math, English Language Arts, Social Science
Duration: 90 minutes

Lesson Overview: Students will learn about how acorns are an important part of the diet of California Indian Tribes. Students will learn about the importance of Native diets to familiarize oneself with the traditional and contemporary way of acorn process.

Unit Authors and Researchers

This unit was researched, authored, and edited by the California Indian Museum and Cultural Center, California Indian Education for All, and the San Diego County Office of Education. Key writers and researchers of this unit are Nicole Lim, Jayden Lim, and Dr. Staci Block. The unit resources were designed and created from funding through the California Department of Education's Native American Studies Model Curriculum grant and contract.

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Acknowledgment: Resources from this unit and lesson plans come from California Indian Museum and Cultural Center.

Learning Objectives

- Understand the ecological importance and properties of acorns.

Materials:

- Acorns
- Student worksheets

Curriculum Themes: (check all that apply)

- ☑ History
- ☑ Cultural Strengths
- ☐ Law/Government
- ☐ Relationship to Place
- ☑ Cross Curricular Integration

Instructional Standards:

NGSS – Grades 6–8

- **MS-LS1-7:** Develop a model to describe how food is rearranged through chemical reactions in organisms to form new molecules.
- **MS-LS2-3:** Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.

History-Social Science Framework – Grade 6–8

- **Grade 6:** Early peoples and their environment – importance of natural food systems (parallels to traditional foodways).
- **Grade 7–8:** Colonization and cultural change – examine food system shifts post-contact and impact on Native diets.

Common Core Math Standards – Grades 6–8

- **6.RP.A.3:** Use ratio and rate reasoning to solve real-world problems.
- **7.NS.A.3:** Solve problems involving rational numbers in real-world contexts (nutrition chart analysis).
- **6.SP.B.5:** Summarize and describe distributions of data (applied in nutrition comparisons).

Common Core ELA Standards – Grades 6–8

- **RI.6.1–8.1:** Cite textual evidence to support analysis of texts.
- **SL.6.1–8.1:** Engage effectively in collaborative discussions.

Lesson Plan

Engage and Explore

Introduce a brief history of acorns. Read and take notes on the Acorns Handout explaining the history of acorns and cultural information of acorns.

Acorn

There are in the United States more than 50 species of oaks, of which 30 occur in the Eastern States and about 15 in the single State of California. Acorn flour makes a rich glutinous food and contains a surprisingly large quantity (18 to 25 percent) of nut oil of obvious nutritive value. (Merriam, H. C., (1918) *The Acorn, A Possibly Neglected Source of Food.*)

Acorns are also highly nutritious, and flours made from them, like other nut flours, are gluten free. A pound of shelled acorns yields 1,265 calories, and the nuts are high in carbohydrates, fat, vitamin B6, magnesium, potassium and calcium. (Edible Monterey Bay, (2015) *Roadside Diaries: Acorns.*)

Diet has changed dramatically for American Indians. Colonized diet is known to be a contributing risk factor to diabetes, obesity and CVD. Current foods eaten by American Indians contain more fat, sugar, preservatives, and artificial ingredients than the traditional foods. Eating a regular diet of native and natural foods will help American Indians prevent and control many of today's chronic diseases. (Kennedy, S., (2005) *California Food Guide: Health and Dietary Issues Affecting American Indians.*)

Cultural Information

For thousands of years, acorns were life for the majority of California Indian peoples. As a staple food source, acorns figured prominently in the diets and daily lives of individuals for countless generations.

A few hundred years later, despite catastrophic demographic collapse, removal from ancestral lands, and vast environmental change, California Indian peoples continue to consider acorn use important in sustaining their cultural identities.

In pre-contact times, acorns were eminently suitable as a food resource because of their availability, productivity, storability, and nutritional content. Anthropologist Alfred Kroeber estimated that more than 75 percent of native

Californians relied on acorns for food on a daily basis. In all, 18 species of oak, including shrubs and trees, are distributed throughout the state of California. Indian people probably had little trouble accessing oaks except in some areas of the Central Valley as oaks grow principally in riparian zones, alpine environments, and desert areas. With the exception of the Tanbark Oak (Lithocarpus densiflora), all of the oaks belong to the genus Quercus, meaning "fine tree" in Latin.

The nutritional value of acorns is high, and depending on the species, acorns can contain up to 18 percent fat, 6 percent protein, and 68 percent carbohydrate, with the remainder being water, minerals, and fiber. Modern varieties of corn and wheat, in comparison, have about 2 percent fat, 10 percent protein, and 75 percent carbohydrate. Acorns are also good sources of vitamins A and C and many essential amino acids.

The changes in native peoples' use of acorn and of their cultures in general must be viewed in the context of Euroamerican contact, and colonization.

The initial version, Senate Bill 54, was authored by John Bidwell, who was a member of the first group of emigrants to arrive in California over land in 1841. Bidwell's bill permitted Indians to continue their traditional practices or "usual avocations" of "hunting, fishing, gathering seeds and acorns for the maintenance [sic] themselves and families." It also stated that "in no case shall [I]ndians be forced to abandon their village sites where they have lived from time immemorial." The protection of California Indians' traditional practice of gathering acorns, and explicit recognition of their ancestral lands were never included in the final version of the law passed by the Legislature on April 22, 1850.α

A year later, in April 1851, three commissioners sent to California by President Millard Fillmore commenced negotiating 18 treaties with California Indian nations and tribes. The Indians who signed the second treaty, the Treaty of Camp Barbour (dated April 29, 1851), successfully negotiated recognition of their right to continue to hunt and gather acorns.

Although the acorn is no longer the focus of daily life, Indian people still prepare and eat acorn foods at special gatherings, Big Times, and other celebrations. Many autumn festivals are centered around the first acorn harvest, to this day, and many acorn foods are prepared and celebrated.

Explain and Elaborate

Have students work in small groups to complete The Importance of Native Diets reading and mathematics activities. Students will work in their small group to read text together and take notes.

Nutritionists believe that a man needs about 3,600 or more calories per day to maintain his weight and his health. 4, 000 calories if he is doing hard physical work. Women and children need somewhat fewer calories per day than men, but women who are pregnant or nursing a child need more.

The missionaries did not allow neophytes to eat their traditional foods in the missions such as the grasses and other plants they cultivated, acorn, and game although this type of food is highly nutritional and was at first still readily available (before overgrazing by mission herds had taken toll). Instead the neophytes were restricted to a diet based on foods raised at the missions, such as wheat and corn. Researchers have determined that the diets in the missions contained only about 2,600 calories day or less, yet Indians were forced to labor hard, burning up calories even quicker. What do you think happened to the people who had to live on this kind of diet?

Some of these are:

- It can cause people to be more susceptible to disease

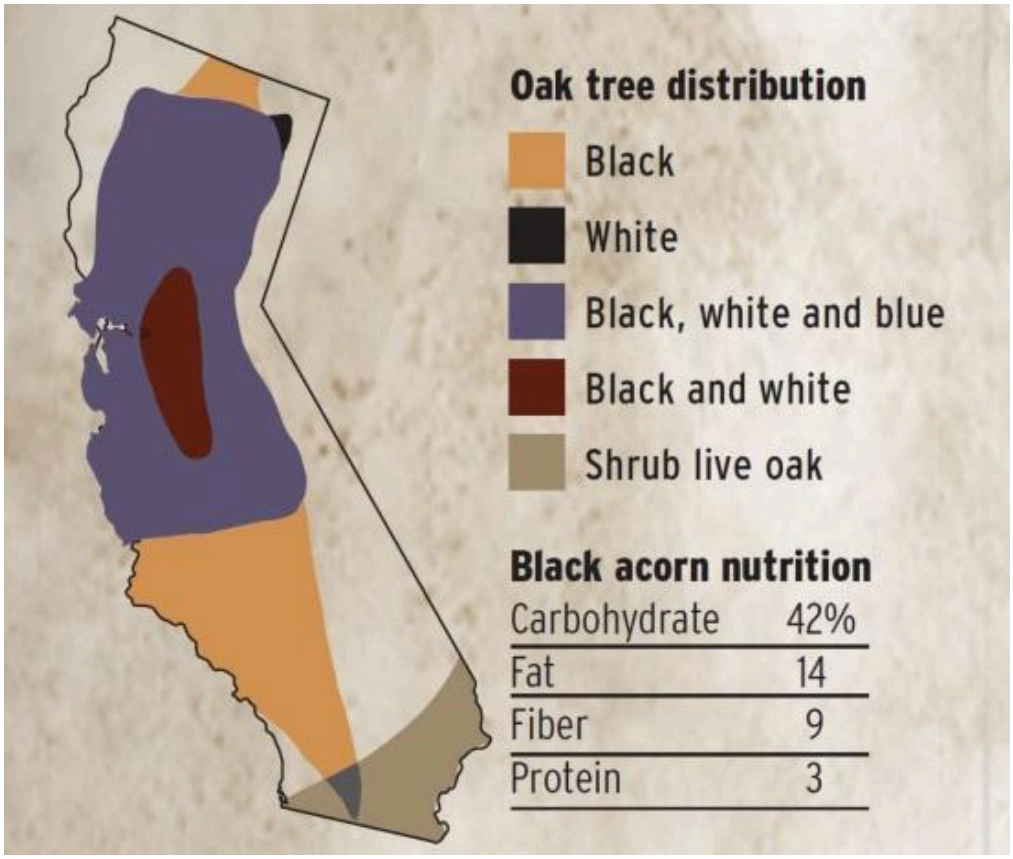
- It can cause disease itself due to vitamin deficiencies
- It can kill through starvation
- It can cause birth defects in unborn babies

The group will work together to solve each of the mathematics questions.

Extension Resources:

Instructional Videos
Little Acorn: https://www.youtube.com/watch?v=Eq7drk3wHuc
Bread from Acorn: https://www.youtube.com/watch?v=Rj7mgJUsQNA
Acorns: https://www.youtube.com/watch?v=OFwNomKqAbc

Additional Information on Acorns
http://californiaoaks.org/wp-content/uploads/2016/04/investigating_the_oak_community.pdf



Coronilla, S., (2013) *California Indians Food*. Orange County Register.

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The Importance of Native Diets

Nutritionists believe that a man needs about 3,600 or more calories per day to maintain his weight and his health. 4, 000 calories if he is doing hard physical work. Women and children need somewhat fewer calories per day than men, but women who are pregnant or nursing a child need more.

The missionaries did not allow neophytes to eat their traditional foods in the missions such as the grasses and other plants they cultivated, acorn, and game although this type of food is highly nutritional and was at first still readily available (before overgrazing by mission herds had taken toll). Instead the neophytes were restricted to a diet based on foods raised at the missions, such as wheat and corn. Researchers have determined that the diets in the missions contained only about 2,600 calories day or less, yet Indians were forced to labor hard, burning up calories even quicker. What do you think happened to the people who had to live on this kind of diet?

Some of these are:

- It can cause people to be more susceptible to disease
- It can cause disease itself due to vitamin deficiencies
- It can kill through starvation
- It can cause birth defects in unborn babies

Comparisons of Acorns to Mission Foods and Contemporary Foods

(1 ounce = 28.3495 grams)

	Protein	Fat	Fiber	Carbohydrates
Acorns (leached) (1 oz)	1.3 g.	5.6 g.	.60g	21.1 g
Corn Meal (1 oz)	2.6 g.	0.5 g.	.30 g	21.1 g
Wheat Flour (1 oz)	3.2 g.	0.3 g.	.06 g	21.4 g
Beans (cooked) (1/4 cup)	3.7 g.	0.2 g.	5.00 g	9.9 g
Cheese Pizza (1/8 slice of 14 inch pie)	7.0 g.	12.0 g.	1.00 g	31.0 g
Macaroni & Cheese (1/4 cup)	4.3 g.	6.0 g.	0.24g	10.3 g
Peanut Butter (smooth) (2 Tbs.	8.0 g.	16.2 g.	2.50 g	2.6 g

Source: Indians of Northwest California

Group Activity Questions

1, Compare the nutritional value of acorns, a traditional staple food of California Indian people and the typical mission foods of wheat and corn. Are acorns comparable to the mission foods?

2. Compare the nutritional value of acorns to foods that we often eat today. Are there differences?

3. One ounce of acorns contains 21.1 grams of carbohydrates. How many more carbohydrates does one ounce of wheat flour contain?

4. We know that fiber is important for a healthy body. Which food on the chart contains the most fiber? Which contains the least amount of fiber?

5. How many more grams of fiber do acorns contain than cornmeal?

6. What is the difference in grams of protein between acorns and corn meal?

7. Add up all the grams of fat for all foods listed. What is the total amount of fat?

8. Fats give us energy and help to keep us healthy, although we know that too much fat is not good for us. List three foods on the chart that have the most fat.

9. List three foods on the chart that have the least amount of fat.

10. Find the four foods that have the highest amount of carbohydrates. Add them together and give your total.

11. What is the difference in grams between the food with the most carbohydrates and the food with the least carbohydrates?

12. If you ate a meal of one cup of beans and two ounces of corn meal (in a slice of cornbread) how many total carbohydrates would you consume? Show your work.

Extension Resources:

Instructional Videos
Little Acorn: https://www.youtube.com/watch?v=Eq7drk3wHuc
Bread from Acorn: https://www.youtube.com/watch?v=Rj7mgJUsQNA
Acorns: https://www.youtube.com/watch?v=OFwNomKqAbc

Additional Information on Acorns
http://californiaoaks.org/wp-content/uploads/2016/04/investigating_the_oak_community.pdf

Native Maker STEM Unit
Lesson 3: Pomo Baskets
Grade Level: Grades 4-8
Subject: Social Studies, Arts, English Language Arts
Duration: 120 minutes

Unit Authors and Researchers

This unit was researched, authored, and edited by the California Indian Museum and Cultural Center, California Indian Education for All, and the San Diego County Office of Education. Key writers and researchers of this unit are Nicole Lim, Jayden Lim, and Dr. Staci Block. The unit resources were designed and created from funding through the California Department of Education's Native American Studies Model Curriculum grant and contract.

California Native American Studies Model Curriculum

The California Native American Studies Model Curriculum (NASMC) will support the design and development of open-source lesson plans, primary source documents, planning resources, teaching strategies, and professional development activities to assist California K-12 educators in teaching about California Native American Studies. Per AB 167, the NASMC is defined as lesson plans, primary source documents, planning resources, teaching strategies, and professional development activities to assist educators in teaching about Native American Studies.

Acknowledgment: Resources from this unit and lesson plans come from California Indian Museum and Cultural Center.

Learning Objectives

- Basketry in California is a cultural tradition passed from generation to generation.
- Students will learn the cultural significance and use of baskets, and techniques to create a basket.

Materials:

- 1 coil of 5/64" round reed, cut into 16" pieces (warp, spokes)
- 2 coils of 1/16" round reed, cut into 36" pieces (weft, weavers)
- 2 five-gallon buckets of warm water
- Student worksheets

Curriculum Themes: (check all that apply)

- ☑ History
- ☑ Cultural Strengths
- ☐ Law/Government
- ☐ Relationship to Place
- ☑ Cross Curricular Integration

Instructional Standards:

History-Social Science Standards

- **Grade 6–7:** Indigenous cultures before and after contact; cultural practices and resilience.
- **Grade 8:** U.S. History – continuity of cultural practices in the face of colonization.

Visual and Performing Arts

- **2.0 Creative Expression:** Use fibers or other materials to create a simple weaving.
- **3.0 Historical and Cultural Context:** Identify and discuss content of works of art focusing on diverse cultural heritage.

Common Core ELA Standards – Grades 6–8

- **SL.6.1–8.1:** Participate in discussions about cultural practices.
- **W.6.2–8.2:** Write informative/explanatory texts to examine a topic and convey ideas clearly.

Lesson Plan

Engage

Preparation:

- Soak round reed in buckets of water to soften.
- Have a sample basket and weaving materials ready.
- Prepare the "What Is This Basket Used For?" worksheet.

Discussion Questions:

Begin with a discussion to spark curiosity and prior knowledge:

- Do you use baskets in your daily life? If yes, for what?
- What do we use today instead of baskets?
- Have you ever woven anything before?
- Did you know most clothing is woven? Look at your shirt under a magnifying glass—notice how threads cross over and under each other.

Introduction to Weaving:

Explain weaving as creating patterns by going over one string and under the next, repeating until complete.

Explore

Discuss Native Californian Basketry:

Pose the following questions:

- How do you think Native Californians used baskets?
- What materials did they use?
- Where did they source their materials?
- How long might it take to make one basket?
- Why would baskets be made in different shapes and sizes?
- Could baskets hold water? How might that work?

Introduce Basket Functions:

Explain how baskets served various purposes, such as:

- Sifting with shallow trays.
- Storing objects in small, wide baskets.
- Gathering and cooking food with large, deep baskets.
- Giving gifts with small, round baskets.

Explain

Review and explain the following to the students.

Pomo basketweavers have continually stressed that an essential part of learning the art of basketry is learning the art of root collection. Root digging is often a family affair, with men, women, children, and old people participating. Many times'

they'd make a big trip of it, camp a week at a good spot,' with everyone collecting and the men doing the 'heavy work.' In the early days, a fire-hardened, singlepointed, hardwood digging stick was used to loosen the soil and expose the roots.

Five interrelated qualities are recognized by basketmakers in assessing sedge roots: length, color, straightness, strength, and pliability. The importance of these qualities varies according to the intended use of the basket, which in turn determines the basketry technique required. (Peri, David and Scott Patterson (1976) *The Basket is In the Roots, That's Where it Begins.*)

Pomo people have been making baskets for at least 1000 years. They are considered to be one of the most artistic basket makers in the world, and their baskets can be found in many museums. Pomo baskets are made for the purpose of storing, preparing and serving food, and to carry out daily tasks. However, the Pomo also created more artistic baskets for ceremonies or as gifts, such as when a Pomo bride gives baskets to the husband's family as part of a marriage agreement. These wedding and ceremonial baskets are typically beautifully decorated with feathers, shells and beads. The Pomo used a variety of plant materials for making baskets, such as willow, sedge (Carex), the bark of redbud (Cercis), the root of bulrush (Scirpus), and the root of the digger pine, but mostly sedge was used. Before the harvest, ritual prayers and offerings are made, as the natural material is considered alive and has to be treated with respect. Pomo baskets come in all sizes and shapes and exhibit a variety of patterns which are mostly asymmetrical and discontinuous. The Pomo are one of the few groups where men and women weave baskets; however, it is the women who make the fine baskets, and the men who weave fish traps, baby carriers, burden and storage baskets. (Fassbender, Johanna, (2006) Pardee Home.)

Worksheet Activity:

Pass out the "What Is This Basket Used For?" worksheet. Students will match baskets to their functions.

- Review answers together (1 = C, 2 = A, 3 = D, 4 = B).

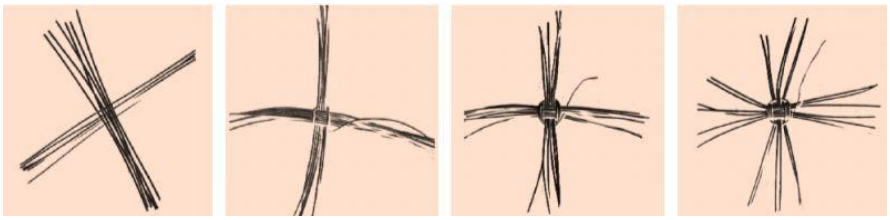
Discuss why each basket was suited to its purpose:

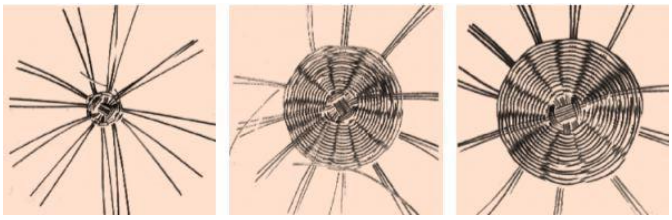
- **Basket 1:** A hat used for sun protection or to cushion the strap of a burden basket.
- **Basket 2:** A cooking basket with a wide opening for easy access and use with hot rocks.
- **Basket 3:** A gift basket designed to prevent small items from falling out, often decorated with feathers.
- **Basket 4:** A burden basket used for collecting food, carried hands-free with a tumpline.

Explore

Provide a demonstration or show this video demonstration on creating a basket.
https://www.youtube.com/watch?v=q5ax1oUZpL8&t=2s

- Describe the process by doing a demonstration of creating a basket
- Begin weaving practice with softened reeds.
- Demonstrate the over-and-under technique.
- Allow students to start their own small weaving projects
- Have students create a basket
- Discuss shapes and designs used in each basket.





Elaborate

Interactive Map:

Display a California Indian Tribal Groups map and discuss:

- What do the names represent?
- Where is the Desert region?

Evaluate

Class Discussion:

- Ask students to reflect on what they learned about the cultural significance and utility of baskets.
- How does weaving compare to other art forms they've studied?

Assessment:

- Review students' completed worksheets.
- Observe and evaluate their weaving progress and effort.

Extensions:

- Research and share about a specific California Indian tribe and their basketry techniques.
- Compare traditional baskets to modern equivalents in form and function.

Extension and Demonstration Resources:

Pomo & Miwok Round Reed Basket Kit: https://www.youtube.com/watch?v=4jPE47S0NaM
Julia and Lucy Parker in Yosemite National Park California: https://www.youtube.com/watch?v=vWYDNapbxXw
Alice Elliot: https://www.youtube.com/watch?v=jFMPIaMNfb4
Make a Round Reed Basket: https://theautry.org/sites/default/files/documents/education/california_indian_basketry.pdf
Indian tribes of California: www.mip.berkeley.edu/cilc/bibs/toc.html
Indian tribes of California map: www4.hmc.edu:8001/humanities/indian/ca/intro.htm
The View from Native California – Tad Beckman: www.cr.nps.gov/history/online_books/5views/5views1.htm
A History of American Indians in California Basketry:
www4.hmc.edu:8001/humanities/indian/basketry/hmcbasketry.html
www.ciba.org