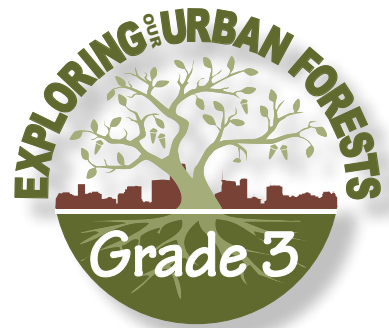


Grade: 3

How Trees Work

A tree is composed of structures that function together with the environment in which they live.



Teacher Background Reading

Trees have roots, a trunk, branches, and leaves. Trees have a life cycle, just like people. Some trees live for more than a thousand years. Others live only twenty to thirty years. When a tree dies, it is recycled back into the earth to become soil. This soil helps other trees and plants grow. The life cycle of a tree starts with a seed. Next comes a sprout and then a sapling. Then it becomes an adult tree and makes seeds. It will get old and die. Finally, a rotting log turns back into soil.

Climate is the word scientists use to describe weather patterns in a place over hundreds of years. The climate of southern California is called “Mediterranean.” It is like the climate around the Mediterranean Sea, between Europe and Africa. Other places that have this climate are central Chile in South America, southwest Australia, and South Africa.

Mediterranean climates have wet winters and dry summers. Most of the yearly rain falls in the winter, leaving the rest of the year very dry. The average rainfall along the coast is between 10 and 15 inches. Dry “Santa Ana” winds blow from the desert to the sea in the fall, causing wildfires to spread quickly when they are high-velocity winds.

Plants living in these native habitats have adapted to live in hot, dry conditions, growing in the winter when the rain falls. They have adapted to need little water in the summer and to survive hot Santa Ana winds. Deep roots help plants gather as much water as possible from far away. Some plants have roots that are three or four times as large as the plant above the ground.

Many plants can be grown in southern California, if they are watered during the dry summers. Most yards, gardens, and parks have irrigation systems that water the plants. Most of these trees and plants do not have adaptations for drought conditions.

Leaves are typically flat and thin, thereby maximizing the surface area exposed to light and promoting photosynthetic function. Externally they commonly are arranged on the plant in such ways as to expose their surfaces to light as efficiently as possible without shading each other, but there are many exceptions. The leaves are the part of the tree which take in carbon dioxide, release oxygen, and produce the sugars and other food compounds for the tree. ■

Vocabulary

Broad-leaf: a tree with wide leaves, generally deciduous

Conifer: a tree that bears its seed in cones, with needle-shaped leaves that are evergreen

Deciduous: a plant that periodically loses all its leaves, usually over the winter

Decompose: the process of breaking down dead animals and plants

Evergreen: a plant that keeps its leaves year-round

Life cycle: the stages of an organism from birth to death

Sapling: a young, small tree

Seed: grows into a new plant, often with special structures to help it start growing far from the parent plant

Sprout: a plant just starting to break out of the seed, before growing roots



Find a spot in nature you can use for the lessons - either in the schoolyard or in a park nearby with trees or bushes. Check for any hazards. Describe the boundaries of the outdoor area that you will be using for the lessons and explain acceptable and unacceptable behaviors outdoors. Much of the class discussion, etc. can also be done outside.

Note: Worksheets are available for all lessons, though please save paper when possible by having students use journals, notebooks or scratch paper.

Grade 3/Lesson 1:

My Tree - Part 1

Students will understand relationships between trees and other organisms

Learning Outcomes

Students will describe a particular tree using personal observation and investigation, organize information about the tree and investigate the relationships between the tree and other organisms.

MATERIALS

- “My Tree Booklet” – 1 per student
- Pencils
- Colored pencils or crayons
- Copies of Student Reading “All About Trees”

Getting Ready

Review the Teacher and Student Background readings.

Identify a tree or trees on school campus or nearby that students can study.

Make copies of “My Tree Booklet”.

Make copies of student reading “All About Trees” and add to last page of “My Tree Booklet” or print one copy and use document camera to read as a class.

Write the vocabulary words from the teacher background on the board and go over the definitions of each word with the class.

Revisit them as they come up in the lessons.

ENGAGE:

Either pass out the Student Reading “All About Trees” or use the document camera to read as a class.

On the board, draw a rough map of the schoolyard with the outside fence and buildings. Ask students to draw circles at the locations where there are trees.

Ask them to describe the environment near the tree, such as sun in the morning, shade in the afternoon, next to the building, along the back fence, next to two other trees. The goal is for students to see that the leaves, bark and everything about the tree is different depending on the environment in which it lives. Trees survive in certain environments because they have adapted to live there and can survive in that environment.

EXPLORE:

Take students out to an area of trees. Have students get to know the area using their sense of touch, hearing and sight. Ask students to look for signs of animals and closely look at the trees for special characteristics that might identify them (scratches from animals or birds, nests, leaves or flowers). When they have taken some time to do that, ask them to choose a particular tree as their own, selected tree. There will probably be more than one student at each tree, but try to spread the students out so that there is only a small group at each tree. As a group at their tree, students will discuss what characteristics their tree has that will help them identify it later.

EXPLAIN:

Give students about 5 minutes with their tree. Then gather them and ask them to share what they noticed about their tree. Ask them what they would like to find out about their tree. Either bring chart paper outside and make a KWL chart (Know, Want to Know, Learn) for the entire class to add their observations, or take the students back into the classroom and draw the chart on the board.

ELABORATE:

In their “My Tree Booklet”, have students do some research on their tree:

- Draw it in detail (page 2).
- Make a map of the schoolyard (or park) showing the location of the tree (pg 3).

- Look in, under, and around the tree. Observe animals or animal signs (page 4).
- Look under the canopy of the tree, which is the circle directly under the leaves of the trees (page 4). There may be grass, other plants, bare dirt, mulch, rocks, asphalt, etc.

EVALUATE:

Have students share out as a class a couple of things they learned about their tree. Record this information on the KWL chart that you started at the beginning of the lesson and discuss the similarities and differences between the trees they studied. If there are still questions that the students have not answered about their tree that they would like to know, find some time to help them answer those questions if possible.

Ask students what they think might happen if the school decided to take away all the trees and plants and put in more buildings. (There would be less animals and nature in the area.) Ask students what might happen if the school decided to put in a lake? (Plants would grow in abundance and bring in more animals.) As the environment changes the plants and animals living in the area will change with it. Which would they most like to see?

REFERENCES:

American Forest Foundation (2012). Adopt a tree. In *Project learning tree: Pre K-8 environmental education activity guide* (6th ed., pp. 97-101). Washington, DC: Author.

Grade 3/Lesson 2:

My Tree - Part 2

Students will understand how water affects leaves and tree growth.

Learning Outcomes

Students will describe the characteristics of leaves and how they are affected by water availability, and how environmental conditions affect tree growth.

MATERIALS

- Trees for students to study (the same trees studied in Lesson 1)
- Copies of “My Tree Booklet” – 1 per pair
- Copies of “Tree Growth” Worksheet – 1 per student
- Yarn or string measured in 3-meter lengths for measuring the circumference of their tree
- Meter stick or ruler to measure tree circumference in classroom
- Or metric measuring tape (instead of yarn and meter stick)

Getting Ready

Review the teacher and background readings.

This is a continuation of Lesson 1. Return “My Tree Booklet” to students.

Prepare to return to the same tree that students observed in Lesson 1.

ENGAGE:

Prepare a table on the board to make three lists. Ask the students what kind of trees live in their schoolyard and write these in the first column and label it schoolyard. Ask students to think of another location where the trees are different ie. desert, and ask them to list the types of trees/plant that live there. (Cactus, scrubs and other drought tolerant plants) Do this again for the third column. Another example could be a forest that has trees and bushes with lots of big green leaves, ferns, and flowering plants.

For each column, ask the students why those types of trees/plants can survive there. (Their shape allows them to reach sunlight, their leaves are big because they have access to large amounts of water and they can capture more energy from the sun, or they have thick leaves that store water because they have access to small amounts of water.)

Ask students why you wouldn't find a tree with lots of big green leaves in the desert. (It needs more water than is available there and it would be burned by the extreme temperature and sun) Why don't you find a cactus in the forest? (It would get too much water and not enough sun being blocked by the taller trees.)

Ask students what kind of environment their school is in. Does it get a lot of rain? Wind? Sun? Is there a big change in temperature from day to night? Would it be similar to a forest or desert or other kind of environment? Based on this, what kinds of tree or plants would they expect to find in their schoolyard?

Show students leaves of different shapes and sizes and give each group a twig or branch from their selected tree. Place the students into groups based on the tree they adopted in Lesson 1, and ask them to brainstorm the features they would use to identify the leaves from their tree. Be specific. Share out the ideas and list them on the board. Example: pointy tips, shape of overall leaf, vein patterns, and color.

EXPLORE:

Take a walk around the schoolyard with the students. Ask the groundskeeper or the principal to take the walk with you. Look at the irrigation systems, and notice which plants and trees have extra water. Ask how often the water is turned on, and what automated system is used. Learn whether there is irrigation provided to each of the trees observed in Lesson 1.

EXPLAIN:

Re-read paragraphs on the climate and leaves in student reading, "A Few Facts About Trees." Draw leaves in detail (including details seen with a magnifying glass). Complete page 5 in "My Tree Booklet."

Measure the trunk of the tree. Students can use a metric measuring tape, held at about four feet above the ground. This is called "diameter at breast height." If there is no measuring tape, students take a piece of string and a marker, wrap the string around the tree, and mark the length of the trunk around the circumference. Then in the classroom, measure the marked length with a metric ruler or measuring tape. Record this on page 6 in "My Tree Booklet."

ELABORATE:

Set out the leaves from all the trees. Look at the leaves to see whether they have leaves that are adapted to prevent the plant from losing water (from student reading). Most will not have those adaptations because they were chosen to grow in a place that would be watered.

If we were to cut into a tree, we would see growth rings. Each ring represents a year of growth. Ask students to remind you what things a tree needs in order to grow (water, sunshine, soil/nutrients, space to grow). Ask students why one ring might be thicker than another (more nutrients, water, or sunshine one year). Ask why a ring might be thinner one year (drought, poor conditions for growing).

Pass out the “Tree Growth” worksheet (1 per student). Have students choose two colors of crayons or colored pencils. On their worksheet use one color for the “big growth year” and color in the box next to it. Use the other color to show a “small growth year.”

Then have the students color in the growth rings on the two tree “cookies”. Explain that the thick rings will be “big growth years” and then thin rings will be “small growth years.”

Then have the students write in the blanks at the bottom, filling in the things a tree needs to grow.

EVALUATE:

Set out the leaves from all the trees. Reread the student reading, “A Few Facts About Trees.” Look at the leaves to see whether they have leaves that are adapted to prevent the plant from losing water. Most will not have those adaptations because they were chosen to grow in a place that would be watered.

REFERENCES:

American Forest Foundation (2012). To Be a Tree. In *Project learning tree: Pre K-8 environmental education activity guide* (6th ed., pp. 265-268). Washington, DC: Author.

American Forest Foundation (2012). Tree Lifecycle. In *Project learning tree: Pre K-8 environmental education activity guide* (6th ed., pp. 341-344). Washington, DC: Author.

American Forest Foundation (2012). Every Tree for Itself. In *Project learning tree: Pre K-8 environmental education activity guide* (6th ed., pp. 117-119). Washington, DC: Author.

Grade 3/Lesson 3:

Taking a Closer Look at Leaves

Students will take a closer look at leaves and find out more about leaf characteristics and how leaves can be used to identify plants.

Learning Outcomes

Students will understand how leaf shape, size, and other characteristics vary from plant to plant.

MATERIALS

- Copies of the Student Reading “Telling Trees Apart” - 1 per student or 1 for class to read together on document camera
- Clipboards or folders to write on – 1 per group
- Crayons or colored pencils
- Magnifying glasses – 1 per group
- Rulers – 1 per group
- Index cards or paper cut into squares– 1 per student
- Paper or plastic bags for collecting samples – 1 per group
- A variety of leaves, collected by the teacher from trees in the schoolyard (collect more leaves from other areas if needed for variety)
- Pruners - have them available in case there are no branches that are easily collected from the ground

Getting Ready

Review the Student Reading “Telling Trees Apart”.

Collect enough twigs or small branches from two to four different trees for each group of 4 students to have one of each. The twigs should be long enough to show several leaves, if possible. Use twigs that have already fallen on the ground or have been pruned, if possible. Try to collect twigs from both needle and broad-leaf trees.

Note for teacher: if there is not enough diversity in the leaves that students will collect from schoolyard trees (for students to see leaf characteristics in “Telling Trees Apart,” bring needles and leaves from trees in a nearby park or your neighborhood.

ENGAGE:

Show students leaves of different shapes and sizes and give each group a twig or branch from their selected tree. Place the students into groups based on the tree they selected in Lesson 1, and ask them to brainstorm the features they would use to identify the leaves from their tree. Be specific. Share out the ideas and list them on the board. Example: pointy tips, shape of overall leaf, vein patterns, and color.

EXPLORE:

Have the students read the Student Reading “Telling Trees Apart” to discuss ways people identify trees. Be sure to go over leaf characteristics such as bases and tips, leaf margins (edges), simple and compound leaves, and alternate and opposite branching patterns. Point out the pictures in the Student Reading to the students to use as a guide.

Place students into the same groups as before, based on their trees. Determine the number of groups in the class and give each group a bag to collect leaves. Tell the each group the number of leaves they will be collecting, and to collect enough leaves from their selected tree, so that each group in the class can have a leaf from their tree. Establish clear rules for behavior including respect for all living things (e.g., picking up leaves from the ground if available, not tearing live branches).

Once all the leaves are collected, determine one student from each group to give one of their tree’s leaves to the other groups. Each group should now have one leaf from each of the selected trees.

Ask the students to brainstorm the features they would use to identify the leaves. What makes their leaf different from the other groups’ leaf? Have them share their ideas and list them on the board (examples: pointy tips, shape of overall leaf, vein patterns, color).

EXPLAIN:

Discuss as a class or have the groups discuss the following and share out to the class.

- Do the shape and characteristics of leaves have anything to do with their function for the tree? (Bigger leaves might be better at collecting energy from the sun for the tree to make food, thinner leaves might be better at withstanding wind and other kinds of weather, pointy leaves might deter predators from eating them)
- If no one collected needles, pass out some that you collected earlier or show them a picture of needles. Have students compare the needles to the other leaves. How are they different? Do you think their function/job for the tree is

different?

Write the following questions on the board. In their groups, have the students compare their leaves with the other groups leaves again and answer the questions. Pass out the magnifying glasses to allow them to look at the details in the leaves. Have them share their answers with the class.

- What are some differences between the leaves?
- What do the leaves have in common?
- Do any of the leaves have teeth?
- Do any have hairs? Where?
- What do the leaves feel like?
- Who has the biggest leaf? The narrowest leaf? The smallest leaf?
- Have any leaves been eaten by insects? Fungus? How can they tell?

ELABORATE: A group of students select 4 leaves out of their collection to compare. Students will use one index card for each leaf, and create 1 leaf clue for each of the 4 leaves. Each student in the group will be responsible for writing the clue for one leaf. Each of the 4 leaves should have a clue to identify it. Clues should lead someone to choose that leaf after reading it.

Write the following examples on the board.

Some clues could be: "I have hairs underneath." "I feel very smooth." "I have 5 pointed tips." "This is a compound leaf." "This is a needle leaf." Make sure they put their name on the back of the index cards. Walk around and make sure the cards have the clue on the front and their name on the back. With a pen or sharpie label the back of each clue with a number that matches the leaf if necessary. If possible try to refrain from doing this, unless the students are unable to distinguish which leaf they wrote the clue for.

EVALUATE: Mixes the clues and leaves in a pile. Have the groups trade places and give each team about 5 minutes to identify match the clues and leaves. You can have the groups switch however many times as time allows. If time permits,

have students return to their own table and see if they can match the clues to their leaves.

How well did the clues work? Discuss as a class what kinds of clues were helpful and which needed more details.

As a class, discuss the following questions:

Was this difficult?

Could you use the clues and leaf to find the tree? Why or why not?

REFERENCES:

American Forest Foundation (2012). Looking at Leaves. *In Project learning tree: Pre K-8 environmental education activity guide (6th ed., pp. 273)*. Washington, DC: Author.

Grade 3/Lesson 1

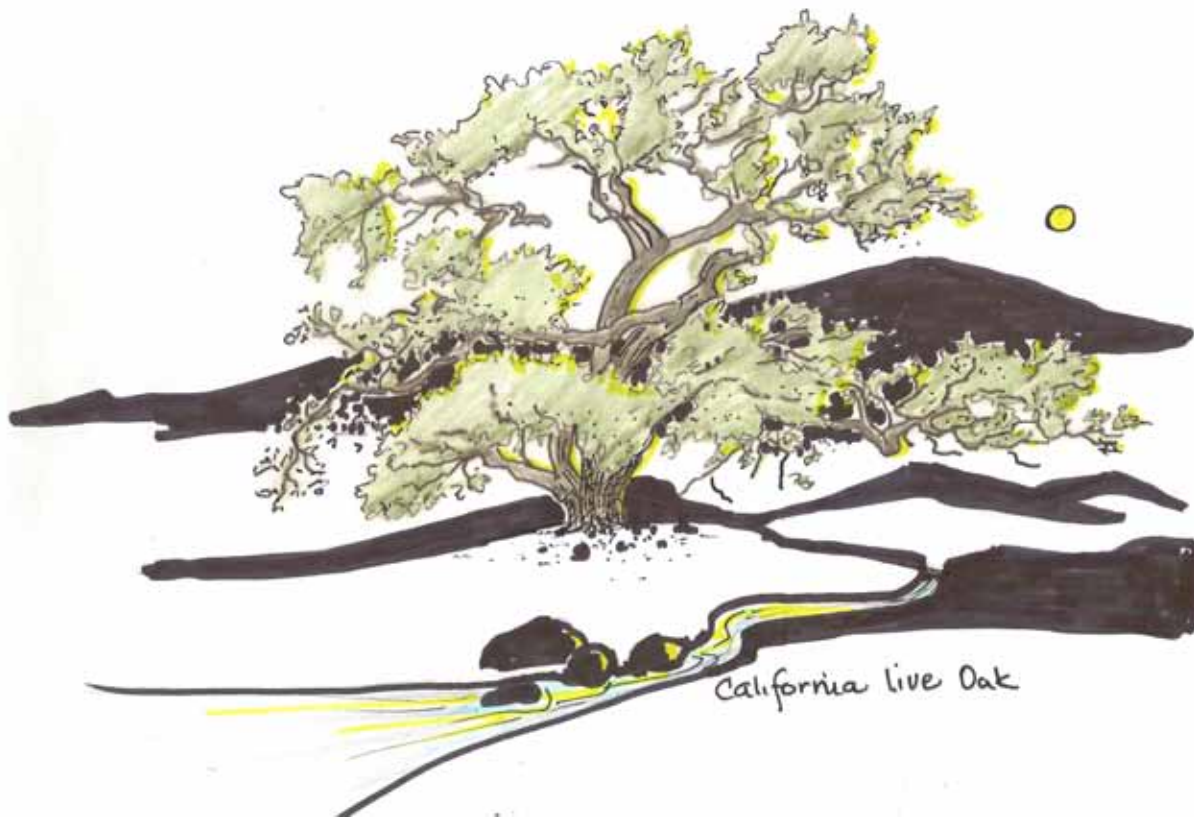
My Tree Booklet

Scientist name: _____

Date: _____

Tree's Common Name: _____

My name for the Tree: _____



Grade 3/Lesson 1 - My Tree Booklet

MY TREE DRAWING:

Grade 3/Lesson 1 - My Tree Booklet

WHERE IS MY TREE?

Make a map showing where your tree is.

Grade 3/Lesson 1 - My Tree Booklet

ANYONE HOME?

My tree is home to _____.

I see the following signs of animals in or near my tree.

1. _____

2. _____

3. _____

4. _____

5. _____

IN MY SHADOW:

Under my tree, other plants grow! Draw a circle that represents the outer edge of the leaves in the tree. Draw the plants growing under this tree canopy.

Grade 3/Lesson 1 - My Tree Booklet

LEAF DRAWING:

LEAF DESCRIPTION:

Write at least 10 words that describe the shape, texture, and other things you notice about the leaf.

Grade 3/Lesson 1 - My Tree Booklet

BARK RUBBING:

Bark helps my tree by _____

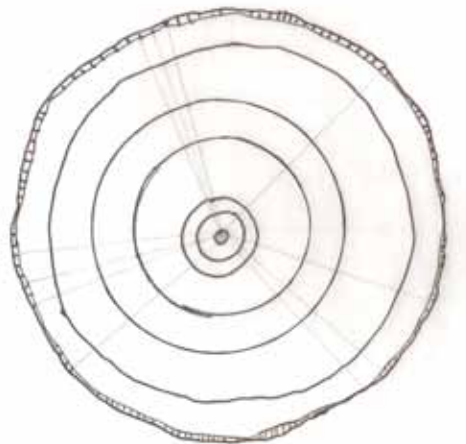
MY TREE'S TRUNK

Measure the circumference by holding the string tightly around the trunk, at the level of your chest.

Then measure the length of the string with a meter stick or ruler.

This is the circumference of the tree, in centimeters (cm).

Divide the circumference by 3.17 (pi) to determine the diameter.



The diameter of my tree's trunk is _____ cm.

Grade 3: Student Reading

A Few Facts About Trees

All trees have roots, a trunk, branches, and leaves. There are more than 10,000 species of trees in the world. They look very different because they grow in many different environments. The redwood trees on the northern California coast may grow to 360 feet or 110 meters tall. Scrub oaks in southern California may only grow to 15 feet or 3 meters tall.

Southern California has a very special climate. It is called “Mediterranean” because it is like the climate around the Mediterranean Sea, between Europe and Africa. Mediterranean climates have wet winters and dry summers. Most of the yearly rain falls in the winter, and the rest of the year is very dry. Native plants grow in the winter when the rain falls. They have adapted to survive the dry summers. These include coast live oak trees.

Some trees grow in the rivers and creeks in southern California. Their roots grow in the soil that has water during the entire year. Three common trees are cottonwood, sycamore, and willows. These trees are sometimes planted in schoolyards, because irrigation provides the water for the trees.

The leaves of plants have adapted to the climates they grow in. Native plants in dry climates have adapted ways to prevent the plant from losing water. Some have waxy or leathery coating on their leaves and stems that keep water in. Some plants have leaves that are curled or folded, so the leaves get less direct sunlight. Some plants drop half of their leaves during droughts, when rainfall is especially low. A plant’s color can help it stay cool, too. Dark colors absorb sunlight. Light colors reflect it. ■

Grade 3/Lesson 2: Student Worksheet

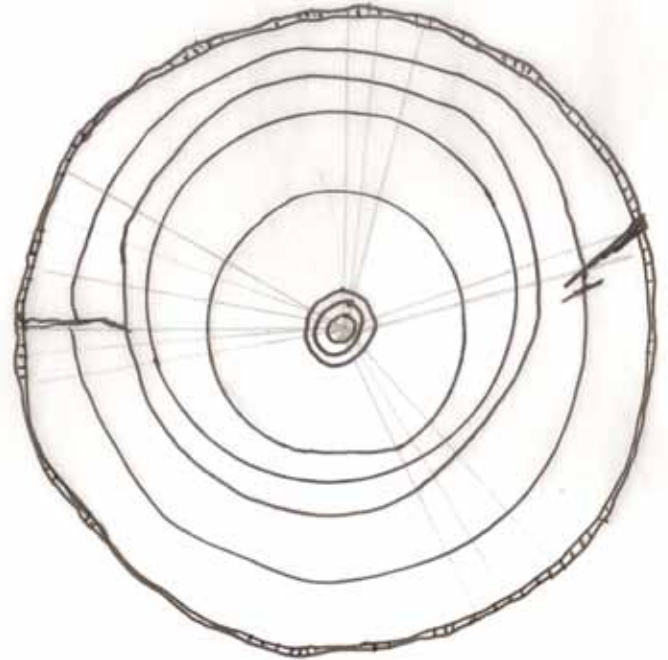
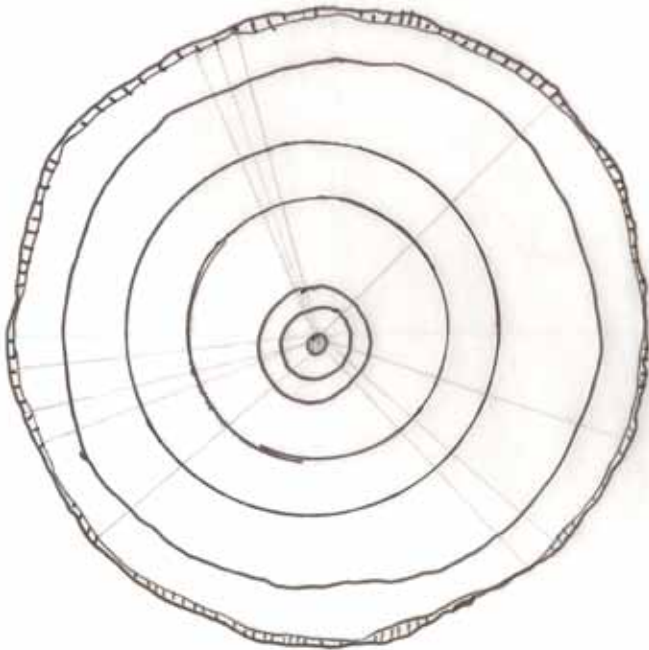
Tree Growth

Each tree ring is one year of growth for a tree.

Use colored pencils or crayons to color

big growth years

small growth years



What resources does a tree need to have a big growth year?

1. _____

3. _____

2. _____

4. _____

Grades 3 & 4/Lesson 1: Student Reading

Telling Trees Apart

In the simplest sense, there are two kinds of trees in the world: conifers, or coniferous trees, and broad-leaf or deciduous trees.



Needles or Broad Leaves

Conifers have seeds that develop inside the cone. Pines, junipers, cedars, and cypress are all examples of conifers in our region. For the most part, conifers also have needle-shaped scaly leaves and they're evergreen. That means they don't lose all their leaves each year but instead stay green year-round.

Deciduous trees such as the California Sycamore, Crape Myrtle, Cottonwood, and Liquid Amber have broad, flat leaves. They lose all of their leaves each year, usually in the fall.

Some trees, however, aren't typical conifers or deciduous trees. For example, Dawn Redwoods have cones and needles, but lose their leaves every year and therefore are deciduous. Fern Pine trees have needle-shaped leaves and are evergreen but have berries and not cones, and a Coast Live Oak is a broad-leaf tree that's evergreen.



The Shape of Leaves

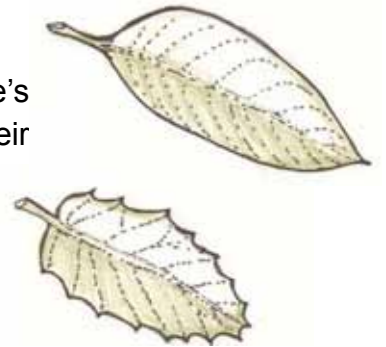
The overall shape of a leaf gives clues to the tree's identity. For example, Eucalyptus have long, slender leaves; Coast Live Oaks have oval-shaped leaves; Cottonwoods have triangular-shaped leaves. The shape of the leaves differ in many ways. For example, the tips of the leaves may be notched, pointed, rounded or tapered. And the bases of the leaves may be squared, rounded or heart-shaped.



Telling Trees Apart, Page 2

Margins

The edges or margins of leaves can also provide clues to the tree's identity. For example, some leaves have teeth (serrated) along their margins and some leaf margins are smooth. Some leaves are lobed, with several points.



Textures

Some leaves are completely hairy, others have hair on only one side, and others are completely smooth. Leaves may also be thick or thin, rough or waxy.

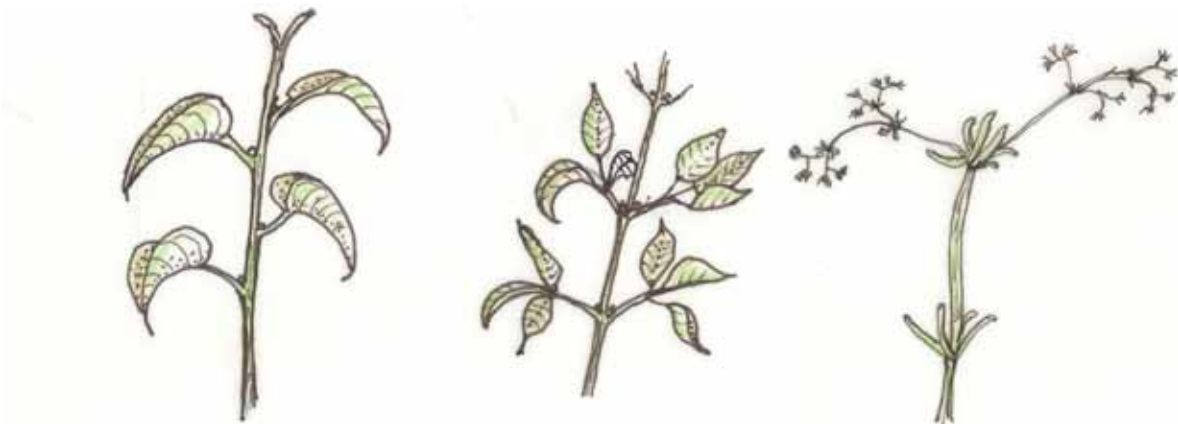


Simple and Compound

When most people think of leaves, they think of simple leaves. Simple leaves connect directly to the branch. Oak, Sycamore, Cottonwood and many other trees have simple leaves. Compound leaves, on the other hand, are made up of several leaflets. Jacaranda, California Pepper, and Chinese Flame trees all have compound leaves.

Leaf Arrangements

Another characteristic to identify a tree is the way its leaves are arranged on the twigs. Many trees have alternate leaves that are staggered along the twig. Other trees have opposite leaves that grow in pairs along the twig. Some leaves grow in whorls, or are whorled. The leaves on pines, and other needle-leaved trees also grow in patterns. For example, leaves on pines may grow in clusters of two, three, or more.



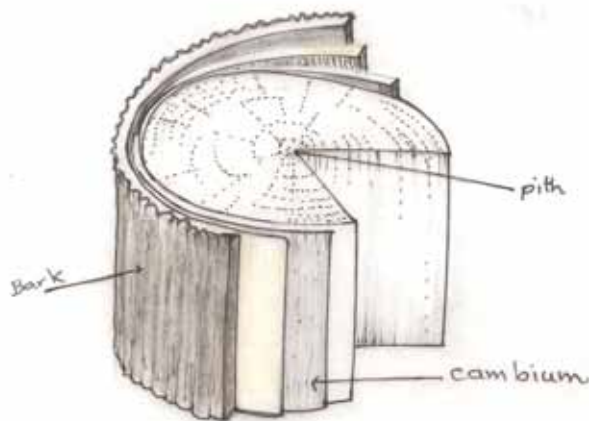
Twiggy Clues

If you know what to look for, even leafless twigs on a tree can tell you the tree's identity. This is especially helpful when identifying deciduous trees in the winter. The locations of the leaf scars or buds are on the twig, indicate whether the leaves grow in an alternate, opposite, or whorled pattern. (Leaf scars are the places on the twigs where leaves used to be attached.) The size, color, and shape of buds can be used to identify trees. Spines and thorns on twigs can also help identify a tree.



Flowers and Fruit

Trees produce flowers that have distinctive shapes and colors. Many trees have only female or male flowers. Different trees produce different kinds of fruit, such as berries, winged seeds, nuts, or pods. Different conifers produce different kinds of cones. The shape, color, texture, size, and other characteristics of the flowers, fruit, and cones can be used to identify trees.



Bark Basics

Many people can identify trees just by looking at the color and texture of tree bark. For instance, bark may be shaggy, smooth, or rough. Bark may have deep furrows or markings. Sycamore is an example of a tree easily identified by its smooth peeling bark that has a "camouflage" pattern. However, when using bark to identify a tree, it's best to look at bark growing on the trunk rather than on branches and twigs (because the bark on branches is thinner and newer, it may look quite different from the trunk). Bark also looks different as a tree gets older.

Shaping Up

Many trees have characteristic shapes that can be used to identify them. In fact, just by glancing at the shape of a distant tree and the color of its leaves, some people can tell what kind of tree it is. ■

Standards Grade 3:

Next Generation Science Standards

3-LS3-2. Use evidence to support the explanation that traits can be influenced by the environment.

3-LS1-1. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.

3-LS4-4. Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.

3-LS4-3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

California Science Standards

3. Adaptations in physical structure or behavior may improve an organism's chance for survival. As a basis for understanding this concept:

a. Students know plants and animals have structures that serve different functions in growth, survival, and reproduction.

b. Students know examples of diverse life forms in different environments, such as oceans, deserts, tundra, forests, grasslands, and wetlands.

c. Students know living things cause changes in the environment in which they live: some of these changes are detrimental to the organism or other organisms, and some are beneficial.

Common Core Standards

Literacy: Speaking and Listening

SL.3.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 3 topics and texts, building on others' ideas and expressing their own clearly.

SL.3.2 Determine the main ideas and supporting details of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.

SL.3.3 Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.

Literacy: Language

L.3.4a Use sentence-level context as a clue to the meaning of a word or phrase.

Literacy: Reading

RI.3.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.

RI.3.2 Determine the main idea of a text; recount the key details and explain how they support the main idea.

RI.3.3 Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.

RI.3.7 Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).

Literacy: Writing

W.3.4 With guidance and support from adults, produce writing in which the development and organization are appropriate to task and purpose. (Grade-specific expectations for writing types are defined in standards 1–3.)

Collaboration of



Funding provided by Proposition 84
Through the California Department of
Forestry and Fire Protection
Urban and Community Forestry
Program



SAN DIEGO STATE
UNIVERSITY

Leadership Starts Here



Additional resources for educators available at
www.sdchildrenandnature.org

Grade 3 / How Trees Work / October 2013