

# Lesson 1: Me As a Tree

## NUTSHELL

*In this classroom lesson, students learn how trees and humans are similar. Students use comparisons between humans and trees to understand a tree's functions, life stages, role in the forest community, and that they compete for basic needs.*

### ENDURING UNDERSTANDINGS

- A tree is a perennial plant (lives more than one growing season) with a well-defined woody stem, crown, and roots.
- Trees compete for nutrients, sunlight, space, and water.
- Trees have life stages that include germination, growth, maturity, reproduction, decline, and death.
- As part of the forest community, trees have various roles (e.g., providing habitat, holding soil). The presence of trees alters the surrounding environment.

### ESSENTIAL QUESTIONS

- How are the basic needs of trees and humans similar or different?
- How are the life stages of trees and humans similar or different?

### OBJECTIVES

Upon completion of this lesson, students will be able to:

- Draw and explain the parts of a tree and their functions.
- Compile a list of basic needs of a tree.
- Explain that trees compete for their basic needs.
- Illustrate and explain the life stages of a tree.
- Differentiate functions of a tree in a forest community.

### SUBJECT AREAS

Arts, Science, Social Studies

### LESSON/ACTIVITY TIME

**Total Lesson Time:** 135 minutes

- Introduction.....10 minutes
- Activity 1 .....30 minutes
- Activity 2 .....30 minutes
- Activity 3 .....30 minutes
- Activity 4 .....20 minutes
- Conclusion.....15 minutes

### STANDARDS CONNECTIONS

Standards for this lesson can be viewed online at the LEAF website ([www.leafprogram.org](http://www.leafprogram.org)).

### FIELD ENHANCEMENT CONNECTIONS

This lesson closely ties with *Field Enhancement 3, Competition in a Forest*.

### BACKGROUND INFORMATION

#### Parts of a Tree

A tree is defined as a perennial plant with a well-defined woody stem, crown, and roots. Although trees are members of the plant kingdom, these three features make them distinct from other plants. Each feature performs a different function for the tree.

#### TRUNK

The woody stem, or trunk, sets trees apart from other plants. The trunk provides support for the branches and leaves. It also acts as the food and water connection between the leaves and roots.

Within the trunk are many layers. These layers perform functions for the tree.

- **Heartwood** forms the central core of the tree and is made of dense, dead wood. The heartwood provides strength for the tree.
- **Xylem** carries water and nutrients absorbed from the soil by the roots to the leaves. The word comes from the Greek *xulon* which means “wood.”
- **Cambium** is the growing part of the trunk. This thin layer produces cells that become xylem and phloem.
- Phloem carries sugars and other carbohydrates created during photosynthesis from the leaves to the rest of the tree. The word comes from the Greek *phloos* which means “bark.”
- Bark is the outermost layer that protects the tree from injury.

## CROWN

The crown of a tree is composed of leaves and branches. It is where photosynthesis takes place. Leaves gather energy from sunlight and carbon dioxide from the air and then combine them with water. Photosynthesis is the process trees use to make sugars, the energy for tree growth. The sugars created by the leaves in the crown are stored in the branches, trunk, and roots.

## ROOTS



A tree’s unseen root system may have more mass than the visible top portion of the tree. A tree’s roots usually grow even farther out from the trunk than its branches. They lie just below the surface of the ground in the top 18 inches of the soil. The structure of a root system is complex. Root systems consist of large, woody roots that grow out from the trunk and huge numbers of small roots growing out from the large ones. The large roots serve as anchors to keep the tree standing, provide energy storage for times when the tree isn’t making sugars, and gather nutrients and water for the rest of the tree. The small roots that grow from the large roots are responsible for absorbing water and nutrients from the soil.

## MATERIALS LIST










### For Each Student

- Copy of Student Page  1, *Trees and Humans*
- Copy of Student Page  2, *Inside a Tree*

### For Each Pair of Students

- Copy of Student Page  3, *Life Stages Picture Cards*
- Copy of Student Page  4, *Trees’ Roles* (optional)
- Crayons or colored pencils
- Scissors

### For the Teacher

- Marker board
- The following pages to project
  - Student Page  1, *Trees and Humans*
  - Student Page  2, *Inside a Tree*
  - Teacher Page  3, *Basic Needs of Trees and Humans*
  - Teacher Page  5, *Life Stages of a Human/Life Stages of a Tree*
  - Student Page  4, *Trees’ Roles* (optional)
  - Teacher Key  1, *Trees and Humans Key*
  - Teacher Key  2, *Inside a Tree Key*
  - Teacher Key  4, *Basic Needs of Trees and Humans Key*
  - Teacher Page  6, *Tree Trivia Questions*

“Be like a tree. The tree gives shade even to him who cuts off its boughs.”

★ Sri Chaitanya ★

## VOCABULARY TERMS

**Bark:** The outermost layer on a tree's trunk that protects the tree from injury.

**Cambium:** The growing part of the trunk of a tree. This thin layer between the xylem and phloem produces cells that become new xylem and phloem.

**Competition:** The struggle that exists among plants or trees to acquire resources from a limited pool.

**Decline:** The part of a tree's life when it becomes less healthy and does not recover.

**Germination:** The beginning growth of a seed when roots and a stem sprout.

**Heartwood:** The central core of a tree made of dense, dead wood. The heartwood provides strength for the tree.

**Maturity:** The part of a tree's life when noticeable growth slows and it can begin reproduction.

**Phloem:** The layer in the trunk of a tree that carries sugars (food energy) created during photosynthesis from the leaves to the rest of the tree. Phloem is also called inner bark.

**Reproduction:** The part of a tree's life when it produces seeds.

**Transpiration:** The evaporation of water from plants.

**Xylem:** The layer in the trunk of a tree that carries water and nutrients absorbed from the soil by the roots to the leaves. It is located between the heartwood and the cambium layer.

## Basic Needs of a Tree

Trees and other plants have five things that they need in order to survive: nutrients, sunlight, water, air, and space.

### NUTRIENTS

Trees use nutrients (minerals) from the soil to build the materials that make up the tree. These nutrients help the tree to survive, grow, and reproduce.

### SUNLIGHT

Sunlight is the form of energy that trees use to complete the process of photosynthesis. In order for trees to convert carbon dioxide and water into sugars (and other carbohydrates), they need energy from the sun.

### WATER

Water is key to photosynthesis. Water is also important to the tree for transportation of nutrients. It's water that makes up most of the tree's sap. Sap carries nutrients up the trunk and food back down to the roots.

### AIR

All plants need air to survive. It is from the air that plants get the carbon dioxide for photosynthesis. Without air in the soil, roots would "drown."

### SPACE

Space is the least tangible of the basic needs. It is important for students to know that trees can't grow to their potential when they are crowded. Root systems need room to grow, as do branches, leaves, and stems.

## The Life of a Tree

The life of a tree can be divided into six stages: **germination, growth, maturity, reproduction, decline, and death.**

The first stage of a tree's life begins with a seed. When a seed has the right temperature, moisture, and soil, it will germinate (sprout). Out of the seed comes a young tree called a seedling.

The seedling that emerged during germination will continue its life through growth and then on to maturity. A mature tree is capable of reproduction. Many tree species are capable of living for many generations of human life; their lives are much longer than ours. A tree can be mature and reproductive for many years.

Eventually a tree will move on to a part in its life called decline. Decline can be a result of old age or some other factor like disease, insect damage, or storm damage. Decline in the health of a tree will lead, someday, to the death of that tree.

## Competition

Competition occurs when two or more individuals attempt to use a resource that meets their basic needs. Animals compete for things like food and shelter. Plants create their own food so they don't compete for it, but they do compete for water, space, sunlight, and nutrients. When the resources that supply basic needs for plants or animals are abundant, there is little competition. When those resources are not readily available, both plants and animals compete. For example, there is little competition for sunlight in an open area with a few trees. However, if there are many trees in an area, they will compete with each other to grow tall enough to collect more sunlight. Competition can occur among individuals within a population or between different species.

## Functions in Community and Altering of Environment

Trees have various functions in their community. They absorb carbon dioxide and produce oxygen during photosynthesis. Since many trees live for a long time, they act as "carbon sinks" to store carbon. Another function is **transpiration**.

Trees absorb water from the soil and release water vapor into the atmosphere. Trees also provide habitat for animals and plants in their branches and in hollows in their trunks. The seeds, leaves, and bark of trees are also used as food by animals. The many roots of trees help hold soil and prevent erosion.

It is easy to see how people alter the environment, but trees can alter the environment too. The shade a tree casts will determine what plants are able to live beneath it. If a tree has dense shade, sun-loving plants will not grow under it. In turn, animals that rely on sun-loving plants will be absent as well. That same shade will also change the temperature in the community. Trees impact the moisture content of the soil, which also changes the types of plants able to grow there. Some trees have the ability to give off chemicals that discourage other plants from living near them. Black walnut is an example of a tree in Wisconsin that can control other species with chemicals.






## PROCEDURE

### Introduction - Comparisons

1. Begin by showing students pictures of trees or observing actual trees in the schoolyard. Ask students to make comparisons between different trees. (*One tree has dark brown bark and another has light brown; one tree has leaves and another has needles, etc.*)
2. Next, ask students to compare trees with people and provide examples of what they have in common and why. (*Accept any reasonable responses. People have legs and arms, and trees have branches.*) Ask what makes trees and people different. (*Trees can't move; trees have green leaves, etc., again accepting reasonable answers.*)
3. Explain that, in the next activities, students will be comparing trees and humans.







## Activity 1 - Trees and Humans

1. Tell students that they will be comparing the parts of a tree to the parts of a human and discussing how these parts have similar functions. Display Student Page  **1, Trees and Humans**, and distribute a copy of the page to each student.
2. Explain that all of the choices for the parts are listed at the bottom of the page and students should write them in the blanks. Each numbered part on the tree diagram corresponds with a numbered part on the human diagram with a similar function. The functions are listed on the left side of the page as clues to determining what the parts are.
3. Once students have completed their worksheets, have them help you fill in the blanks on the projected copy. As you fill in each pair of numbers, explain more about the function that corresponds with the number. (See Teacher Key  **1, Trees and Humans Key**.)
4. After completing discussion of Student Page  **1, Trees and Humans**, point out that just as veins and arteries in humans have specialized jobs (veins transport blood containing waste and arteries transport blood containing oxygen), the xylem and phloem in a tree have specialized jobs too.
5. Display Student Page  **2, Inside a Tree**, and hand out a copy of the page to each student. Tell students that the job of xylem, phloem, and other layers of a tree are described on this handout. Have students read the description of the tree layers and write the answers in the blanks.
6. Then, ask volunteers for their answers and write them on the sheet to be projected. (See Teacher Key  **2, Inside a Tree Key**.)

**EXTENSION:** Weave forestry education throughout your curriculum and strengthen language arts skills by having students journal their thoughts. After each activity, assign students to make journal entries that relate to the activity. Prompt them with questions to answer. For example, assign students to write a one-page journal entry of their life as if they were a tree. They should describe the important tree features and what those features do.

## Activity 2 - Basic Needs of Trees and Humans

1. Explain to students that trees and humans both have basic needs. Basic needs are things that an organism must have in order to survive. Display Teacher Page  **3, Basic Needs of Trees and Humans**. Ask students what the basic needs of a human are. Fill in their answers on the projected Teacher Page  **3, Basic Needs of Trees and Humans**, in the triangle titled “Basic Needs of a Human.” (See Teacher Key  **4, Basic Needs of Trees and Humans Key**.) Explain why nutrients and sunlight are not basic needs of humans if those answers are given. (Although people need nutrients, we get those things from food, which is a basic need. Sunlight provides us with vitamin D, but it is not the only source. Nutrients and sunlight become secondary to the basic need for food.)
2. Ask students what the basic needs of a tree are and fill in their answers on the projected page in the triangle titled “Basic Needs of a Tree.” (See Teacher Key  **4, Basic Needs of Trees and Humans Key**.) Explain why things like food and shelter are not basic needs of trees if those answers are given. (Trees create their own food and don't need shelter.)

3. Ask students to make comparisons between the two and write the similarities on the third triangle.
4. Make two headings on the board: "Trees" and "Humans." Tell students they are going to list the basic needs that trees or humans compete for. Define competition if needed. Have students study the triangles that show the basic needs of a human and of a tree. Ask students which of these things humans or trees compete for. Remind students that trees are not mobile like humans. They cannot move to a new area if something is lacking. Write students' ideas on the board. *(The tree list should include nutrients, sunlight, water, and space. All of these can be limiting to a tree's growth because they are not always in abundance. Air is plentiful and does not need to be competed for. The human list may contain food, water, and space. Depending on the type of society a person lives in, these items may not be in abundance.)*

### Activity 3 - Life Stages

1. Tell students that they will now compare the life stages of a tree and a human. Have students work in pairs to list the steps in the life of a human. Give students five to 10 minutes to come up with ideas and write them on a piece of paper. After the time is up, have groups share ideas. Use the top half of Teacher Page **5, Life Stages of a Human/Life Stages of a Tree**, to list ideas and then explain the stages. *(Birth, growth, maturity, reproduction, decline, death.)* **NOTE:** Cover the bottom portion until students brainstorm the life stages of a tree in the next step.
2. Repeat the above steps with a tree using the bottom half of Teacher Page **5, Life Stages of a Human/Life Stages of a Tree**. *(Germination, growth, maturity, reproduction, decline, death.)*
3. Pass out one copy of Student Page **3, Life Stages Picture Cards**, to each pair of students. Have students cut apart the squares and draw and color each life stage of a tree and of a human. Remind students that pictures must be classroom appropriate and easily understood by others. When students are finished, collect the two sets of cards from each group. **NOTE:** This portion of the activity could be given as homework.
4. Next, students will be playing a game called PIT using the *Life Stages Picture Cards* they created.

#### DIRECTIONS FOR PIT:

- a. Make sure that you have a complete set of human and tree life stage cards for each pair of students.
- b. Shuffle all the human and tree life stage cards the class created.
- c. Designate an area in the center of the room to be the PIT.
- d. Pass out any 12 cards to each group.
- e. Explain that when you say "GO," each group is to put the cards in the correct order of the life stages of a tree and human. Each group will try to complete two separate life stage sets, one for the tree and one for the human.
- f. If a group has doubles of a card, they need to go to the PIT area to exchange their duplicate card(s) with someone from another group. They may only trade with a group that has the same number of cards to trade. (If a group has three cards, they can only trade with another group with three cards. If no one at the PIT has the same number, they must wait until someone with three cards comes to the PIT.) They may not look at the card(s) being traded until they return back to their partner.
- g. The first group to create both a human and tree life stage set wins.
5. After you have a winner, give all the groups time to create complete human and tree life stages. Go through the correct answers.

## Activity 4 - Tree's Roles

1. Have students brainstorm their roles in the school community. (Possible answers include: act as a role model to younger students, be a friend to others, be a good student, be a hall monitor, be a member of Student Council, etc.) Also, have students brainstorm a list of the roles others in the school play. (*Janitor, teacher, cook, principal.*)
2. Hand out Student Page **4, Trees' Roles**, or project it. Explain that the picture shows examples of many roles trees have in the forest community. Have students study the picture and determine as many of these roles as possible. Make a list of the trees' roles on the board. (*Provide food, provide habitat, prevent erosion by holding soil, provide shade, produce oxygen.*)
3. Have students think back to the roles they and the other people they listed play in the school community. Ask them what they think might happen if these roles weren't filled. (*If they were not good students, their grades would go down and they wouldn't learn. If they did not fill school responsibilities, someone else would have to do them or no one would do them and the school would run less smoothly, be less safe, etc. If the teachers weren't there, the students wouldn't learn. If the janitor wasn't there, the garbage would pile up and the halls wouldn't be swept.*) Now ask what they think might happen if trees did not fill their roles in the forest community. (*The animals would not have food or shelter. Water sources would become polluted and dirty. There would be less oxygen in the air. There would be less shade.*)

## Conclusion - Tree Trivia

1. Finish the lesson with a game of Tree Trivia. Tell students they will need to draw from all the information they learned while comparing trees and humans to answer the questions.
2. Divide the class into four teams. Let each team choose a tree name (or assign them a name) and write it on the board.
3. Explain the rules.
  - a. The first team will be asked a question. (See Teacher Page **6, Tree Trivia Questions**.)
  - b. They are allowed only one answer. The group should discuss their final answer before giving it to you.
  - c. If they answer correctly, they get five points. If they answer incorrectly, the next team has the opportunity to answer the question for three points.
  - d. After points have been given for the first question, the second team should be asked the second question, and so on.
  - e. Continue asking questions, ensuring each group gets the same number.
  - f. The team with the most points at the end wins.

## NOTES

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## CAREERS

The career profile in this lesson is about Jim Storandt, Tree Nursery Manager, Wisconsin Department of Natural Resources and is found on page 24. Use this profile to enhance the lesson and/or use it with the special careers lesson on page 148.

## SUMMATIVE ASSESSMENT

1. Apply understanding of the functions of a tree by having students compare the functions of a tree to another animal or plant.
2. Invent a tree that could survive with a different set of basic needs than the regular tree. What would those basic needs be? Where would this tree live? How could this tree contribute to its community?

## SOURCES

Cunningham, W. P., & Woodworth Saigo, B. (2001). *Environmental Science: A Global Concern*. Madison: McGraw-Hill Higher Education.

Helms, J. A. (1998). *The Dictionary of Forestry*. Bethesda: The Society of American Foresters.

Solomon, E. P., Berg, L. R., & Martin, D. W. (1999). *Biology: Fifth Edition*. Orlando: Harcourt Brace College Publishers.

*Talk About Trees*. World Wide Web: [www.talkabouttrees.org/lessons.html](http://www.talkabouttrees.org/lessons.html)

**“Learn character from trees,  
values from roots,  
and change from leaves.”**

★ Tasneem Hameed ★

## NOTES

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## Career Profile

### Jim Storandt, Tree Nursery Manager

This is Jim Storandt. Jim manages Griffith State Nursery in Wisconsin Rapids. Jim's job is to decide what should be done and when it should be done in order to grow seven million new trees every year! He also supervises the other people who work at the nursery. The trees that Jim and his staff grow are sold to people who own land in Wisconsin that they want to plant trees on. There are two other state tree nurseries like Jim's in Wisconsin. One is in Boscobel and the other is in Hayward.

To get a job like this, Jim went to college and studied water and soil. He volunteered with the Peace Corps for a while in Paraguay, in South America, and learned about growing trees. When he came back to Wisconsin, he worked as an assistant at the nursery before he got the job as superintendent. Jim is involved in other groups that provide ideas to help him with his job.

Jim says that one of his favorite things about his job is that he gets to do different things in different seasons. He also likes that he is helping improve the forests of Wisconsin.

If you want to work in a tree nursery like Jim, he says you should "take an interest in how plants grow, how the seed develops, and try growing them." He also suggests that you work on your math and writing skills.



*This is Jim (in circle) planting one of the seedlings from his nursery.*



*“Between every  
two pines  
is a doorway to a  
new world.”*

*★ John Muir ★*

*“Trees indeed  
have hearts”*

*★ Henry David Thoreau ★*

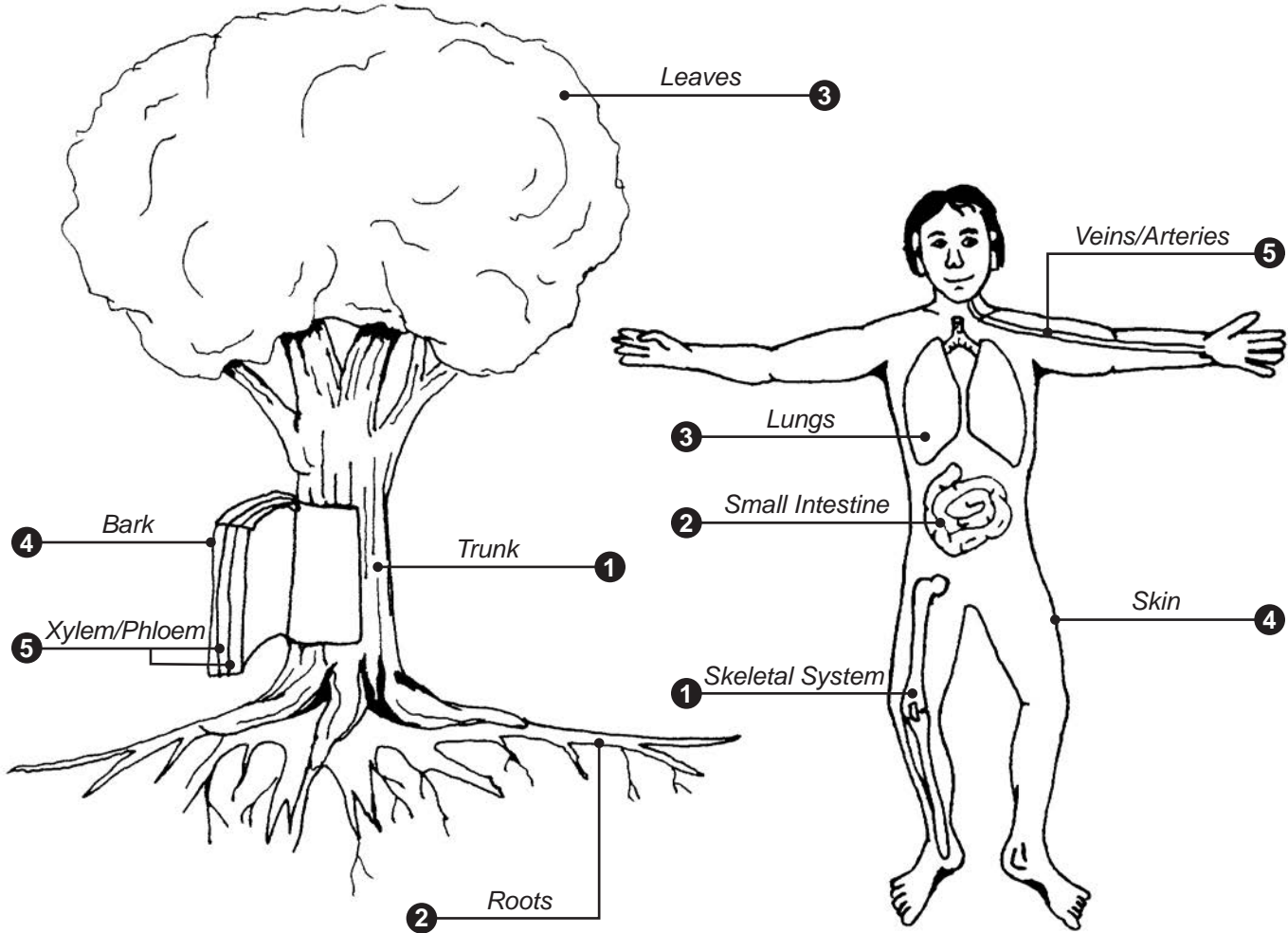


*“You can’t have the fruits  
without the roots.”*

*★ Stephen Covey ★*



## TREES AND HUMANS KEY 🍏🔑



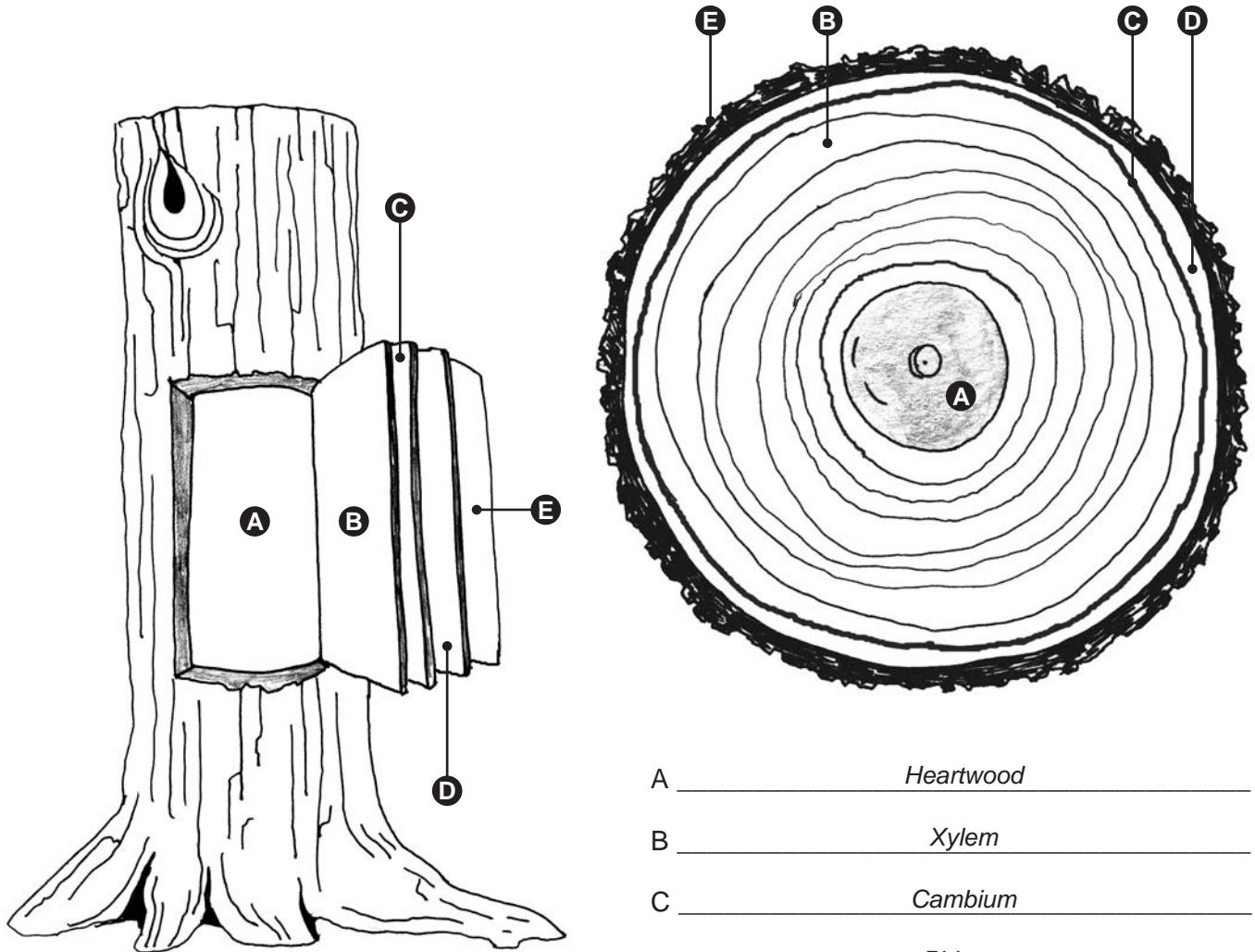
1. The **trunk** of a tree and the **skeletal system** of a human both provide support. Because the trunk of a tree is well-defined and woody, it sets trees apart from other plants. The trunk supports the branches and leaves of a tree and forms a connection between the leaves and the roots.
2. The **roots** of a tree and the **small intestine** of humans both absorb nutrients. Tree roots usually grow farther out than the tree's branches and lie just below the surface of the ground in the top nine inches of soil. Root systems consist of large, woody roots and huge numbers of small roots. The large roots serve as anchors to keep the tree standing, energy storage for times when the tree isn't producing sugars, and paths for nutrients and water to reach the rest of the tree. The small roots absorb water and nutrients from the soil.
3. The **leaves** of a tree and the **lungs** of a human are both places for gas exchange. Humans take in oxygen and release carbon dioxide. Trees take in carbon dioxide and release oxygen. Leaves gather energy from sunlight along with the carbon dioxide and combine them with water. During this process called photosynthesis, sugars that are the food energy for the tree are produced.
4. The **bark** of a tree and the **skin** of a human both provide protection. Bark protects the tree from injury caused by insects, animals, other plants, and fire. Bark characteristics vary from species to species.
5. The **xylem and phloem** of a tree and the **veins and arteries** of a human all transport materials. Water, nutrients, and sugar (food) must all be transported in a tree. The xylem and phloem are made of cells created by the tree each year. Old cells die and remain part of the trunk of the tree.

Teacher Key 🍏🔑 1



## INSIDE A TREE KEY 🌳🔑

The letters on each diagram represent the same layer. Fill in the names of the layers from the choices at the bottom of the page.



- A \_\_\_\_\_ *Heartwood*
- B \_\_\_\_\_ *Xylem*
- C \_\_\_\_\_ *Cambium*
- D \_\_\_\_\_ *Phloem*
- E \_\_\_\_\_ *Bark*

**Phloem:** The phloem carries sugars created during photosynthesis from the leaves to the rest of the tree. Phloem is also called inner bark.

**Heartwood:** The heartwood forms the central core of the tree and is made of dense, dead wood. The heartwood provides strength for the tree.

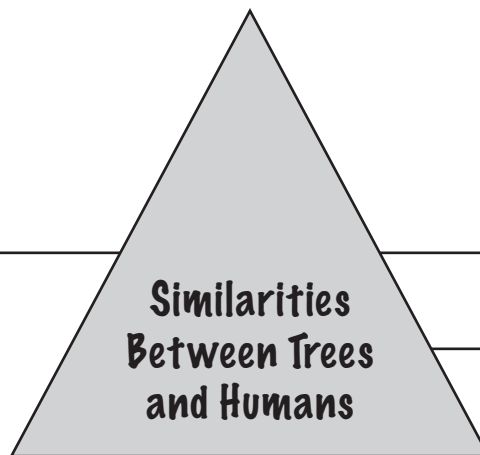
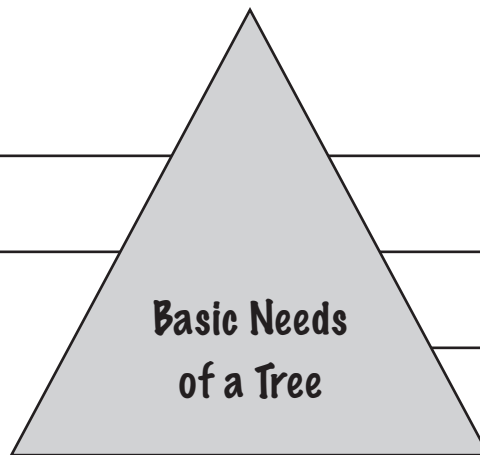
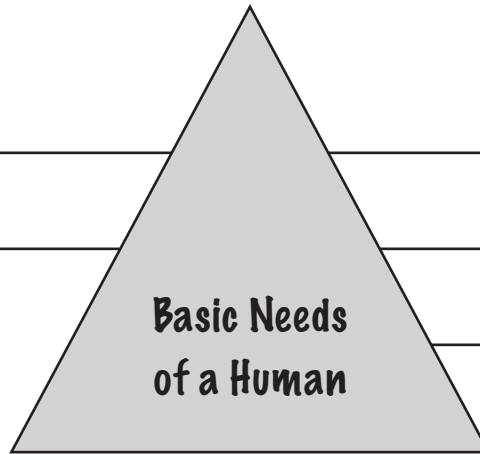
**Bark:** The bark protects the tree from injury. New bark is created from within the tree to replace old bark that is lost.

**Xylem:** The xylem carries water and nutrients absorbed from the soil by the roots to the leaves. It is located between the heartwood and the cambium layer.

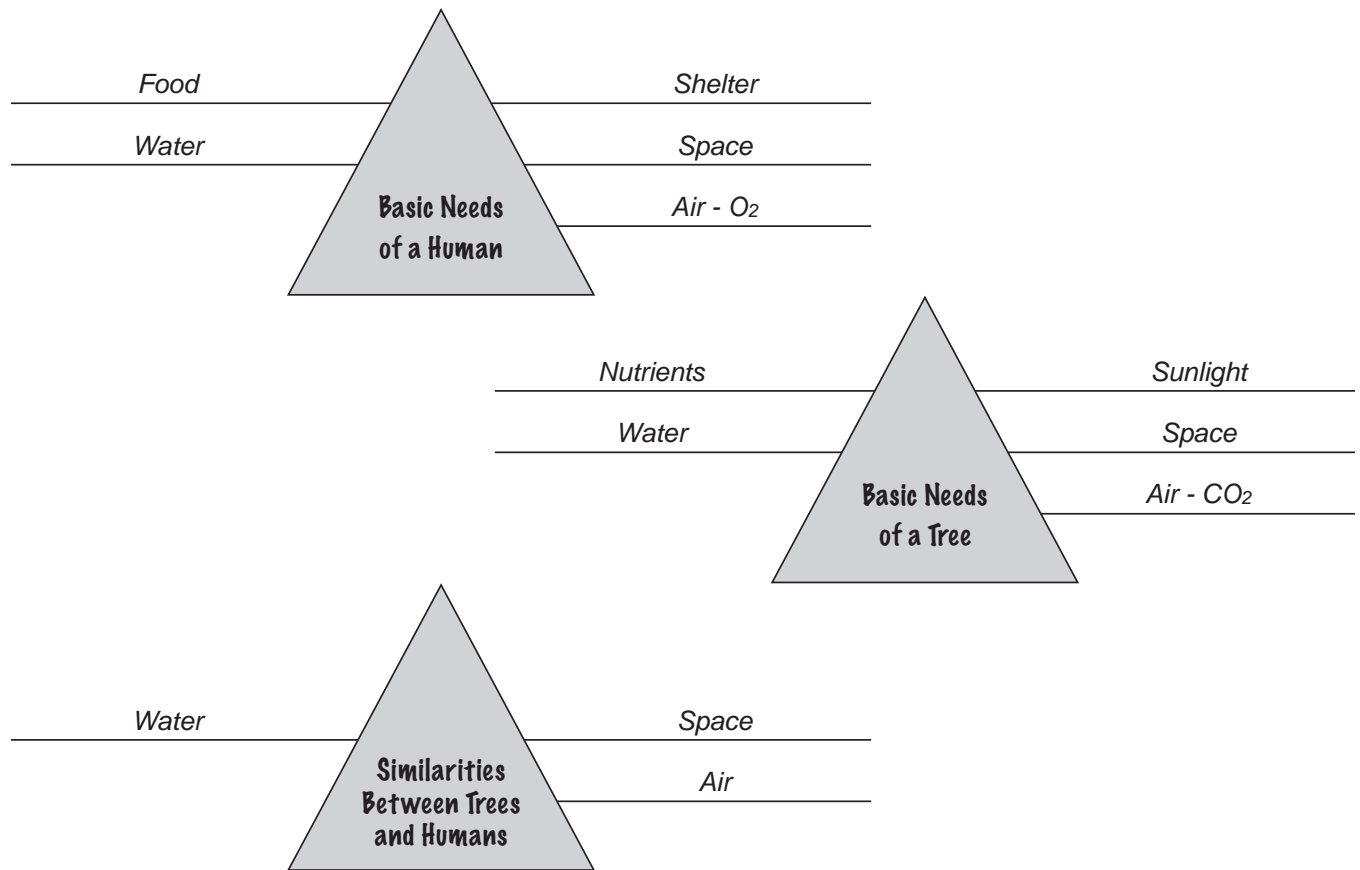
**Cambium:** The cambium is the growing part of the trunk. This thin layer between the xylem and phloem produces cells that become new xylem and phloem.



# BASIC NEEDS OF TREES AND HUMANS



# BASIC NEEDS OF TREES AND HUMANS KEY 🍎🔑



## HUMANS' BASIC NEEDS

**Food:** Humans must find food; they cannot make it like trees can.

**Water:** Absorbed by the small intestine. Humans can live about a month without food but only one week without water.

**Shelter:** Humans need protection from elements such as weather. Different types of shelter are created depending on the environment a person lives in.

**Space:** Space is needed to move and exercise. A creature that does not have enough space is more prone to obesity, boredom, and sickness.

**Air:** Oxygen is necessary for healthy cell functioning. Humans take in oxygen from the air and release carbon dioxide.

## TREES' BASIC NEEDS

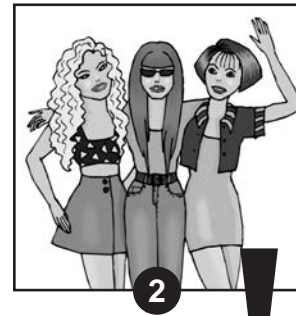
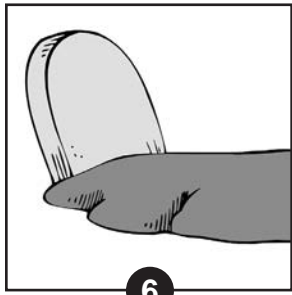
**Nutrients:** Most of the nutrients a tree needs are found in the soil. Roots absorb the nutrients and they are transported throughout the tree by the xylem.

**Sunlight:** Needed in the process of photosynthesis to create sugars used by the tree as food.

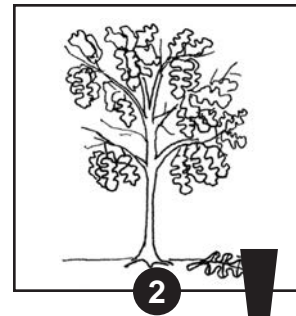
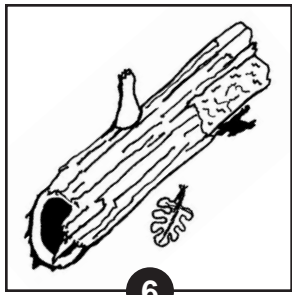
**Water:** Absorbed by the roots. Major component of sap which carries nutrients and food.

**Space:** Necessary for proper growth. A tree needs space for its roots underground, as well as its branches and leaves aboveground. If a tree is crowded and cannot get the nutrients and sunlight it requires, its growth will be stunted.

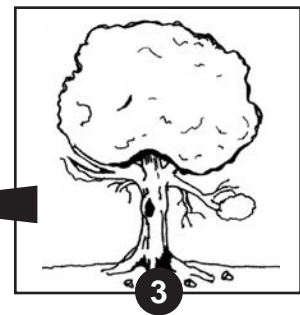
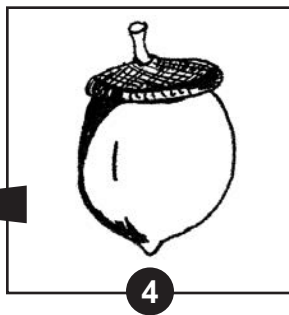
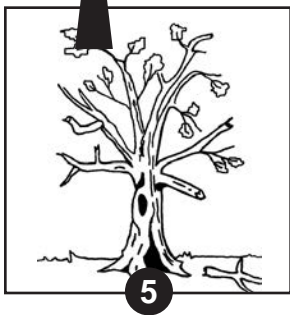
**Air:** Carbon dioxide is necessary for trees to complete photosynthesis. Oxygen is released as a byproduct of the process.



### LIFE STAGES OF A HUMAN



### LIFE STAGES OF A TREE

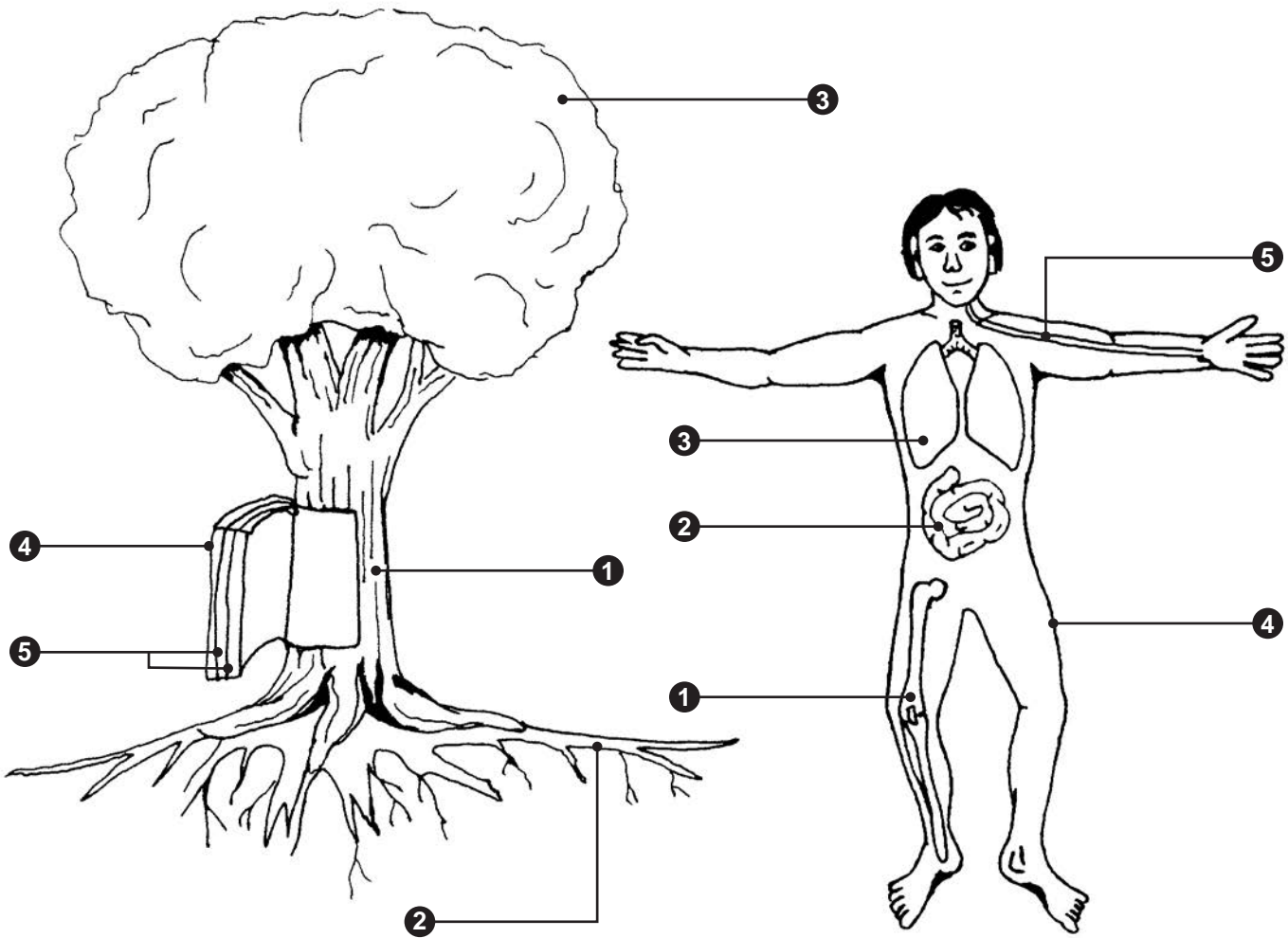


## TREE TRIVIA QUESTIONS

- 1..... **What is the function of the trunk of a tree and the skeletal system of a human?**  
*Answer: Support*
- 2..... **What part of a tree absorbs nutrients?**  
*Answer: Roots*
- 3..... **This part of the tree carries sugars from the leaves to the rest of the tree.**  
*Answer: Phloem*
- 4..... **This forms the central core of a tree's trunk and is made up of dead wood.**  
*Answer: Heartwood*
- 5..... **This carries water and nutrients from the roots to the leaves.**  
*Answer: Xylem*
- 6..... **What part of the trunk grows new cells?**  
*Answer: Cambium*
- 7..... **Name the basic needs of humans.**  
*Answer: Air, space, shelter, food, water*
- 8..... **Name the basic needs of trees.**  
*Answer: Air, space, water, sunlight, nutrients*
- 9..... **Name the three basic needs that trees and humans have in common.**  
*Answer: Space, water, air*
- 10... **What two things do trees and humans both compete for?**  
*Answer: Space, water*
- 11... **The function of skin for humans is protection. What part of trees serves the same function?**  
*Answer: Bark*
- 12... **The xylem and phloem in a tree transport materials, just like what in humans?**  
*Answer: Veins and arteries*
- 13... **Gas exchange takes place where in humans and where in trees?**  
*Answer: Lungs, leaves*
- 14... **The life stage when trees can produce seeds is called what?**  
*Answer: Reproduction*
- 15... **The life stage of a tree that is similar to the birth stage of humans is what?**  
*Answer: Germination*
- 16... **Name two roles a tree has.**  
*Answer: Provides food, shade, habitat, prevents erosion, produces oxygen, etc.*
- 17... **This is the life stage that comes before maturity for people and trees.**  
*Answer: Growth*
- 18... **This is the outermost layer of the trunk.**  
*Answer: Bark*
- 19... **Why does a tree need sunlight?**  
*Answer: To complete photosynthesis and make food*
- 20... **The stage of life when a tree starts to lose leaves and is not as healthy is what?**  
*Answer: Decline*



# TREES AND HUMANS



## Tree/Human Parts

Write the tree/human parts below on the appropriate lines in the pictures above.

Trunk  
Lungs

Xylem/Phloem  
Small Intestine

Skin  
Skeletal System

Bark  
Leaves

Roots  
Veins/Arteries

## Tree/Human Functions

Match numbers 1 through 5 in the pictures above to the functions below.

\_\_\_\_\_ Protection

\_\_\_\_\_ Support

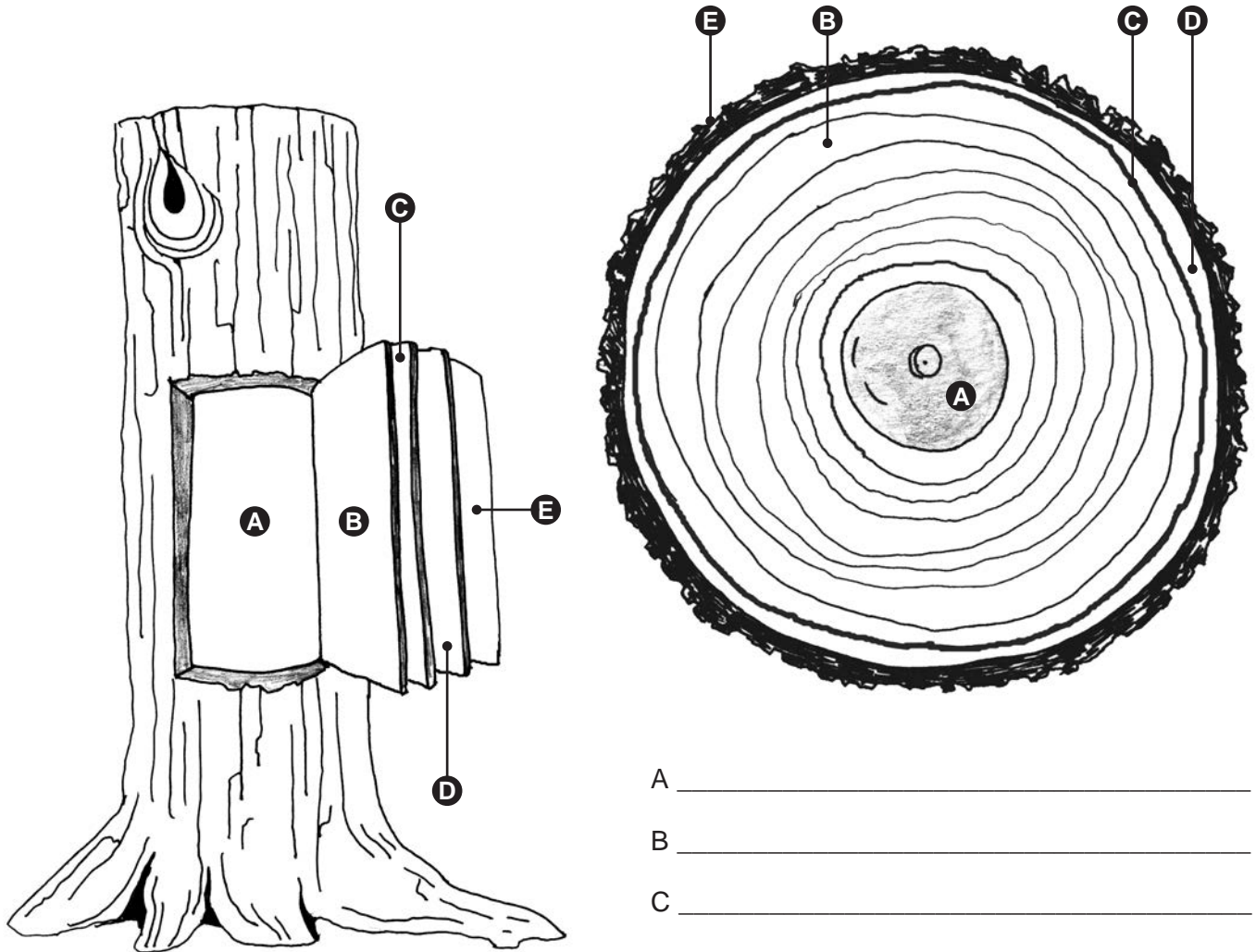
\_\_\_\_\_ Transport

\_\_\_\_\_ Gas Exchange

\_\_\_\_\_ Nutrient Absorption

# INSIDE A TREE

The letters on each diagram represent the same layer. Fill in the names of the layers from the choices at the bottom of the page.



- A \_\_\_\_\_
- B \_\_\_\_\_
- C \_\_\_\_\_
- D \_\_\_\_\_
- E \_\_\_\_\_

**Phloem:** The phloem carries sugars created during photosynthesis from the leaves to the rest of the tree. Phloem is also called inner bark.

**Heartwood:** The heartwood forms the central core of the tree and is made of dense, dead wood. The heartwood provides strength for the tree.

**Bark:** The bark protects the tree from injury. New bark is created from within the tree to replace old bark that is lost.

**Xylem:** The xylem carries water and nutrients absorbed from the soil by the roots to the leaves. It is located between the heartwood and the cambium layer.

**Cambium:** The cambium is the growing part of the trunk. This thin layer between the xylem and phloem produces cells that become new xylem and phloem.

# LIFE STAGES PICTURE CARDS

Birth	Growth	Maturity
Reproduction	Decline	Death
Germination	Growth	Maturity
Reproduction	Decline	Death

# TREES' ROLES

