

2008 Arbor Day National Poster Contest

# Trees are Terrific... inside and out!

**Lesson Plans & Contest Rules**

*Sponsored by Toyota*



- 2008 Arbor Day National Poster Contest Rules (page 21-22)
- Activities correlate with National Education Standards for fifth grade (page 5)
- Hands-on activities to teach your students how trees grow and function (page 5)
- Supplements science units on plants and systems
- Receive a FREE tree identification booklet and poster (page 27)



The National  
Arbor Day Foundation®  
[arborday.org](http://arborday.org)

**TOYOTA**

# Welcome

# TOYOTA



Dear Educator,

You are invited to join over 75,000 fifth grade teachers across America in the 2008 Arbor Day National Poster Contest sponsored by Toyota. This year's contest, "Trees are Terrific...inside and out!" is designed to increase understanding of how trees grow and function.

Trees are everywhere in our daily lives. They exist in parks, schoolyards, and our backyards. While it seems like a simple process for a tree to grow, a tree actually has a very complex relationship with its habitat. Increasing students' awareness of the structural components of a tree and how these components help the tree function are an important step towards appreciation of trees and the environmental benefits they provide us.

The use of part or all of the activities in this guide is encouraged, but not mandatory, for participation in the national contest. You may adapt, alter, or supplement these activities to meet the needs of your class.

Follow the contest rules as they appear on page 22. Make sure every poster is signed and the school winner has a winner report form completed and affixed to the back. **Your state entry due date is specified by your state coordinator (list of coordinators on page 26).**

Poster Contest details are also available on the Internet. Visit our site at [www.arborday.org/postercontest](http://www.arborday.org/postercontest) and view the 2007 national and state winners, find out your state deadline, or even download other great activities.

The National Arbor Day Foundation and Toyota wish you the best of luck and a happy Arbor Day!

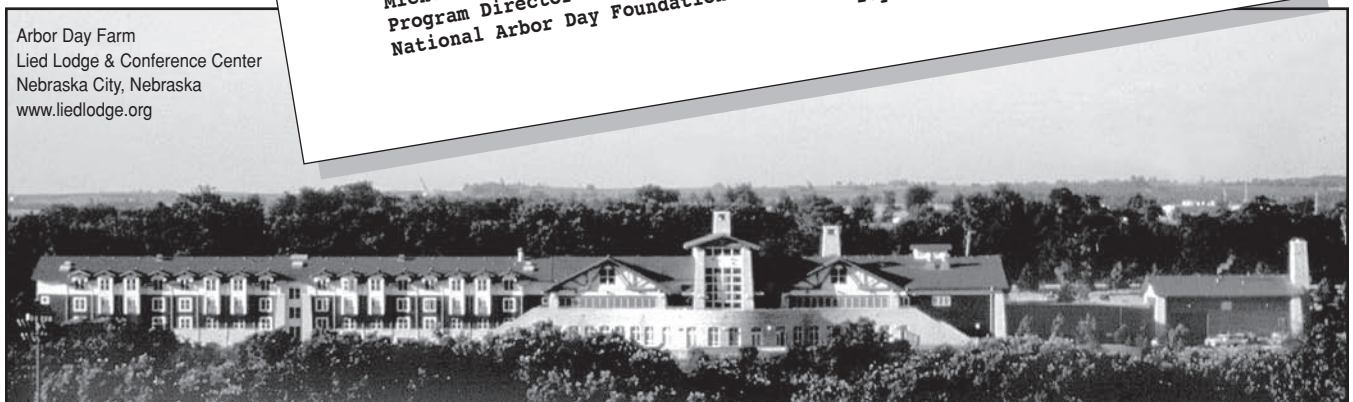
*Michelle Scribner*

Michelle Scribner  
Program Director  
National Arbor Day Foundation

*Jennifer Rochkind*

Jennifer Rochkind  
Assistant Manager  
Corporate Philanthropy  
Toyota Motor North America, Inc.

Arbor Day Farm  
Lied Lodge & Conference Center  
Nebraska City, Nebraska  
[www.liedlodge.org](http://www.liedlodge.org)



**NOTE:** State winners will be announced by the state coordinator. The national winner, his or her parents, and the teacher of the winning student receive an expense-paid trip to the National Awards Weekend ( April 25-27, 2008) at Arbor Day Farm Lied Lodge & Conference Center in Nebraska City, Nebraska. The winner also earns a \$1000 savings bond, a lifetime membership to The National Arbor Day Foundation, and his or her teacher receives a \$200 check. (See page 21 for a complete listing of the national prizes.)

# Table of Contents

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Welcome .....	2
Activities Guide Overview .....	4
<b>Step 1</b>	Discover how trees grow and function .....5-20
	Basic activity ..... 5
	Extension activities ..... 19
<b>Step 2</b>	Create a poster .....21-27
	Instructions and listing of national prizes ..... 21
	Arbor Day National Poster Contest Rules ..... 22
	Arbor Day National Poster Contest School Winner Report Form ..... 23
	Participation Certificate (also online at <a href="http://arborday.org/certificates">arborday.org/certificates</a> )..... 24
	School Winner Certificate (also online at <a href="http://arborday.org/certificates">arborday.org/certificates</a> ) ..... 25
	Poster Contest State Coordinators..... 26
	Poster Contest Survey (to be filled out or submitted online) ..... 27
<b>Step 3</b>	Celebrate Arbor Day .....28

Here is what fifth grade teachers who reviewed the 2008 Poster Contest Lesson Plans had to say:

- *“This a great activity by bringing in the movement and sounds. Students can ‘see’ and be a part of a living system.”*
- *“Great introductory activity, highly motivating.”*
- *“Love this! I’m always looking for lessons that include movement and thought for my students.”*

# As Easy as 1 - 2 - 3!

## Step 1

### Discover how trees grow and function

#### Learning Objective:

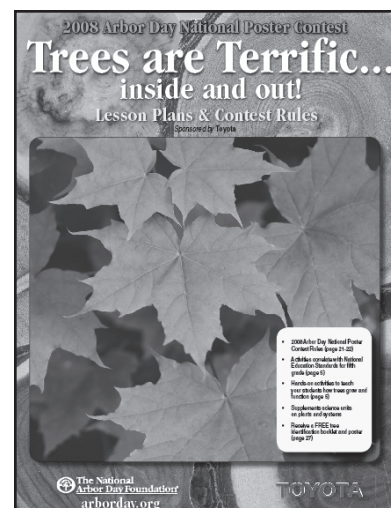
- Students will identify structural components of a tree, be able to explain how these components help a tree grow and function, illustrate the process of photosynthesis, and reflect on the benefits trees provide to the environment.

#### Basic Activity

- Role-play the growth process of a tree

#### Extension Activity

- Searching for Stoma
- Leaf Transpiration



## Step 2

### Create a poster

#### Learning Objective:

- Students will create a poster that reflects their understanding of how trees grow, function and benefit the environment.

## Step 3

### Celebrate Arbor Day

#### Learning Objective:

- Students will plan and participate in an Arbor Day celebration.



# Step 1

Discover how trees grow and function

## BASIC ACTIVITY - Role-play the growth process of a tree

### Classroom Activity:

- Students will role-play the growth process of a young tree to become familiar with the structural components of a tree and learn how these components help the tree function

### Objectives:

Students will be able to:

- name several environmental benefits and products trees provide
- identify structural components of a tree and explain how these components help a tree function
- describe the process and major components involved in the process of photosynthesis

### Time Recommended:

- 60 - 90 minutes

### Materials Needed:

- Photocopied student handouts on pages 11-13
- One or two examples of tree fruits/seeds (i.e. acorn, walnut, apple with seeds)
- Several samples of bark, if available
- Small plant in pot (optional)
- Hand lenses (optional)
- Approximately 6 foot piece of ribbon or yarn
- Pencil and paper
- Tree cross-section or picture of a cross section
- 2 small bottles of water
- 6 small packets of sugar
- Red, blue, green, yellow & brown construction paper
- Tree Labels on pages 18 & 19 photocopied, cut and pasted onto strips of colored construction paper
- Ball of string or twine
- Paper clips (one per label)

### National Science Standards Correlation:

Students will develop an understanding of:

- structure and function in living systems
- populations and ecosystems
- populations, resources and environments

### Instructional Sequence:

#### Concept #1 - Trees benefit people and the environment in many ways

Start the classroom discussion by reading Paragraph #1.

#### Paragraph #1

*Recently I read a story in the newspaper about a community that was experiencing environmental problems. The stream in the city was always brown from soil erosion after a heavy rain. The air was hazy because of the smog. The city's buildings and pavements reflected so much heat that the summer temperature was uncomfortably hot. The people in the city were concerned and were looking for some way to improve conditions in their community. A bright young student told the city leaders she had a solution to their problem. She had an invention that could clean the air, produce fresh oxygen, prevent soil erosion, cool the sidewalks, muffle traffic noise, and could last many years with just a little care. And, she added, it could operate on solar power from the sun.*

Ask students if they think, with modern technology, such an invention is possible. Could there really be something that would clean and cool the air, make fresh oxygen, prevent soil erosion, and muffle noise – all operated on solar energy? If so, what do they think something like this might cost? Allow students to respond without comment.

After students have had an opportunity for input, continue by reading Paragraph #2.

#### Paragraph #2

*The young student went on to describe other features of the unique invention. She said that along with helping the environment, this invention would provide homes and food for birds and other animals, kids could climb on it, and it would make the community more attractive. If many of these things were available some could eventually be made into things people could use...*

# Step 1: Discover how trees grow and function - BASIC ACTIVITY

*like paper, houses, baseball bats, or even medicine. And when it was no longer useful, this invention was biodegradable or could be used for fuel. She said this thing was not new, but something that had been around for years.*

Ask students: *Can you guess what “invention” this young student was referring to?*

By now many students may have guessed that you have been describing a tree. If students are still mystified, continue to give more clues (*i.e. This invention is a living thing, it bears fruits and seeds, it grows, it provides shade, etc.*) If students still do not realize you have been describing a tree, you may need to spend extra time as you introduce and go through each of the following concepts.

With student input, do a quick review of the benefits we get from trees. List the benefits on the board. Encourage students to add additional environmental benefits or tree products to the list.

Write the following questions on the board. Explain they have just discussed the first question, but by the end of the lesson, they should know the answer to all these questions.

1. How do trees benefit the environment?
2. How does a small seed grow into a huge tree?

3. What are the important parts of the tree that work together to help the tree grow and reproduce?
4. How does a tree use sunlight to make its own food?

## **Concept #2: A tree has many interdependent structural components that are essential for the tree to grow and reproduce.**

### **Starting as a Seed**

Hold up an acorn, or any available tree seed. Tell students that a tree starts very small...as small as a tiny seed. This seed could someday grow into a tree taller than a house. A tree produces many seeds, but not all seeds fall where conditions will allow them to grow. Only a few seeds actually survive and grow to a tree. But when a seed lands in a good location...and rain comes at the right time...the little seed softens and begins to grow.

*Ask students what they think happens first when a seed starts to grow.*

### **Roots**

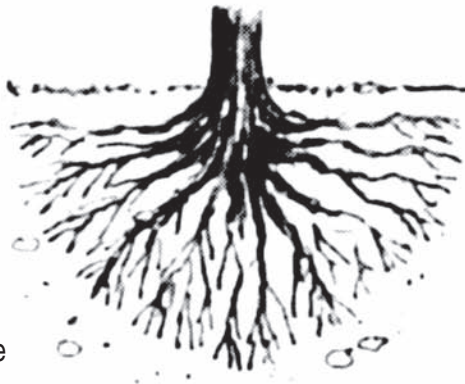
Tell students that when a seed **germinates** (starts to grow), the first thing the seed sends out is a tiny root to hold its position in the soil and start drawing in water.

**Concept #1: Trees benefit people and the environment in many ways.**

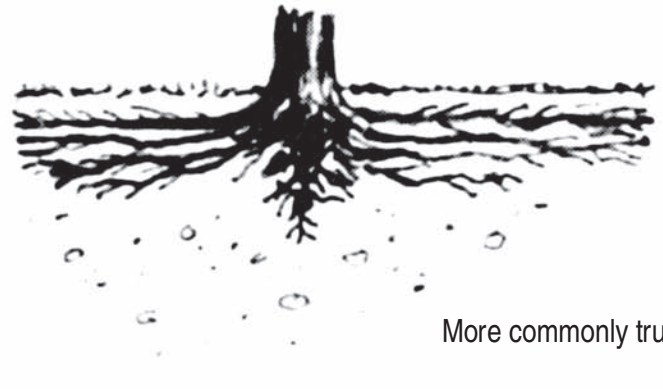
**Concept #2: A tree has many interdependent structural components that are essential for the tree to grow and reproduce.**

**Concept #3: Through a process called photosynthesis leaves take in carbon dioxide and water, and using chlorophyll and sunlight, create oxygen and make a sugar food that feeds the tree.**

## Examples of Root Growth



Rarely true



More commonly true

As a tree grows larger it develops several kinds of roots. A few trees have long **taproots** that go deep down into the soil, but most trees have shallow, **lateral roots** that lie closer to the surface of the ground. About 85% of a tree's roots are within the top 18" of soil! Most trees are likely to have roots extending out about one and a half to two times the branch spread. (See illustration)

Make a similar quick-sketch picture of a tree and its spreading root system on the board to give students a sense of the lateral, rather than downward, spread of the root system.

Have students work as pairs. One student in each pair should extend their arms like branches, standing on tiptoe with feet together, and pretend to be a tree. *Ask what they think would happen if the wind came up?* The other student in each pair should simulate this by supporting their partner with one hand and giving their partner a very gentle push with the other hand. Repeat the demonstration with the student standing with legs slightly spread and feet flat on the floor. *Ask students what they think this activity showed.* Confirm that one function of the roots is to keep the tree anchored in the soil so it doesn't fall over. In some ways, tree roots are like your feet – when they spread out, the tree is more stable.

The taproot and lateral roots are large, hard and woody; they contain cells for the storage of sugar, just like the trunk and branches. But as these larger roots spread out, they branch into smaller and smaller roots called rootlets, fine fibrous roots covered with tiny **root hairs**. These root hairs suck in water and nutrients from the soil that the tree needs to live. These fibrous roots cling firmly to the soil in order to better absorb water and nutrients. By doing so, the roots also hold the soil in place and protect it from erosion. Tree roots are tenacious in their search for moisture and nutrients. Where soft earth is lacking

they will move through clay and gravel, and even into rock.

**Root Activity (optional)** - A first hand observation of a root is important. Even though a smaller plant won't have the same woody root structure as a tree it is worth the time to study its roots.

Remove a small plant from the pot. Point out to students how the soil remains packed around the bottom of the plant. *Ask them to speculate why that is so.* (The roots are holding the soil in place.) *Ask students to think of ways plants could be used to prevent soil erosion.* Shake the soil off the roots. Break off sections of root and allow children to look at them with a hand lens. *Ask students to make observations about the roots they examine.* Can they see the tiny root hairs? How are the plant roots like the tree roots just discussed; how are they different?

*Ask students if they think the plant can survive without its roots.* Put the plant and soil back in the pot or set the plant in container of water and observe it over the next several days to see what happens after roots have been damaged.



# Step 1: Discover how trees grow and function - BASIC ACTIVITY

As an extension activity, if time permits, take students on a walk and notice the above ground tree roots that may be visible, especially in an urban setting. Discuss their similarity to the branches on the same tree. Are the roots causing problems with the cement or ground around them? Observe small trees or plants rooting in cracks in the sidewalks. Have students make observations about the strength of roots.

## Trunk Form and Function

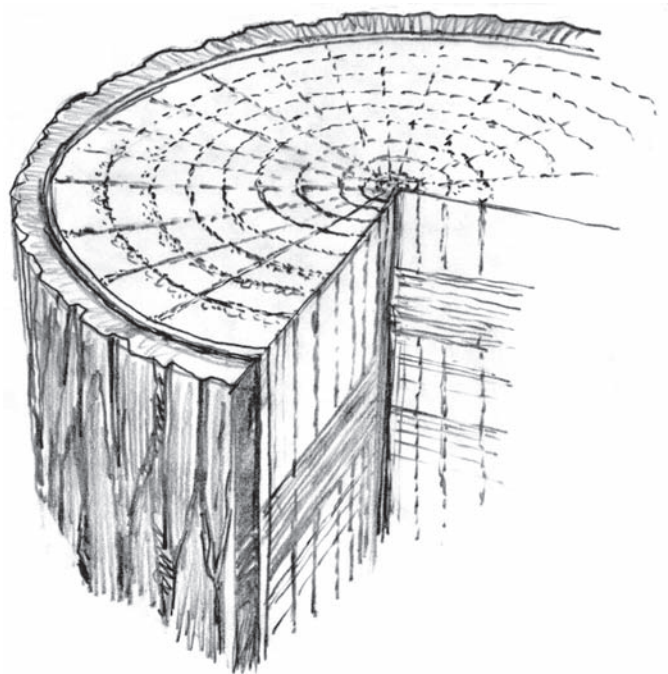
Many of these internal tree parts will be new to your students. Background information is included for all the tree parts to share as you look through the Student Handouts 1 & 2 together (pages 11 & 12). Encourage student questions and observations as you examine the Tree Cross-Section illustration on the handout. Student Handout #3 on page 13 contains a vocabulary list of bolded words and a rubric.

**Background information:** Every tree trunk resembles a cylinder whether long and slender or short and stout. The tall, stately trunk of the eastern white pine and the small, short trunk of the redbud both perform the same function.

A tree trunk is largely composed of a compact mass of tiny tubes made of cells. Great numbers of these hollow tubes serve as pipelines that conduct water and nutrients absorbed by the roots up to the leaves. These are called **xylem cells**, or **sapwood**, and they make up what we commonly refer to as the wood of the tree. Others cells, called **phloem**, or **inner bark**, carry the sugar food made by the leaves back down to the living parts of the tree. Located between these two pipelines is the **cambium**, the growing layer of the tree. Deep in the center of more mature trees are old xylem cells that have become thick and solid, providing strength for the tree. This part of the tree is referred to as the **heartwood**. Surrounding the outside of the trunk and branches are old dead phloem cells commonly called outer **bark** that serve as a protective covering for the tree.

## Cambium

In a layer only one cell thick that completely encloses the entire trunk, limbs, and all the branches, rests the tree's ability to grow and create new cells. This layer is called the vascular **cambium**. Some new cells formed in the cambium move outward to become phloem cells, others move inward to become xylem cells. Essentially this layer creates new wood on one side of itself and new bark on the other. As it increases the tree's internal girth the cambium moves



outward, pushing the bark before it, leaving the wood behind.

**Cambium activity** – Ask one student to come to the front of the room and extend his or her arms perpendicular from their body, pretending to be a tree. Tie a ribbon around the child's waist. Ask the class to predict, if this was actually a tree with a ribbon around it, what might happen to the ribbon. *Will it move higher (further up from the ground) as the tree grows?*

After students have had a chance to guess, explain that the answer is no. Trees grow in diameter from the inside out, but tree height comes from new growth at the very tips of the branches...so the ribbon would remain at the same height, no matter how tall the tree might grow. If the scarf were left in place for a long time however, the cambium would keep adding to the width (thickness) of the tree. That would eventually either break the ribbon or force the bark to actually grow around it. Should that happen it might injure the food-transportation system and eventually kill the tree.

Explain that's why people should never tie anything permanently around the trunk of a tree or nail anything to a tree.



## Xylem

The cell layer interior to the cambium is called xylem or sapwood. Each spring and summer the cambium makes new xylem cells, adding new layers of wood around layers laid down in years past, increasing the width of the tree. The wood formed in the spring grows fast and is lighter-colored because it consists of large cells created when there is plenty of moisture. The wood formed in summer grows more slowly and is darker colored because there is less available moisture so the cells are smaller and more compact. When a tree is cut, the layers appear as alternating rings of light and dark wood. Count the dark rings, and you know the tree's age.

Dendrochronology is the study of a tree through its annual growth rings. Scientists not only use these rings to determine the age of the tree, but they can also get information about the climate, the spacing of trees and the presence of fire around the individual tree. A wide ring often indicates that plenty of moisture was available that year. Rings that are very close together often suggest there was a drought.

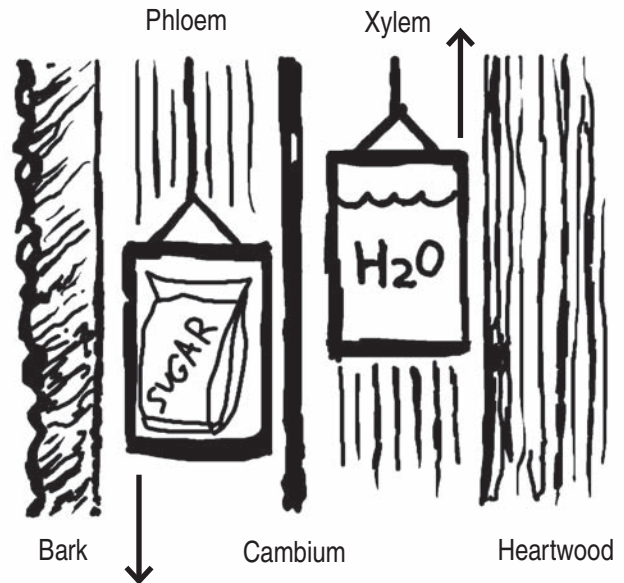
The xylem is the “up” system in the tree. The cells in the xylem layer fuse to form uninterrupted tubes that conduct the moisture and nutrients from the roots up through the trunk to the leaves. Consider a 200' tall tree. Imagine the challenge of raising water that high without a giant pump, but trees have managed to adapt.

Because water molecules have a cohesiveness or a tendency to stick together, there is a constant, continuous “string” of water in each tube of xylem cells. Water continually evaporates or is transpired out of the leaves. This water shortage in the leaves results in a tremendous pull on the water in the xylem tubes causing the water to move up through the xylem into the leaves.

**Xylem Activity** - Have students examine the tree cross-section and figure the age of the tree when it was cut down. If an actual cross-section is not available, a picture of one can be viewed and/or printed at [arborday.org/annualrings](http://arborday.org/annualrings).

## Heartwood

The center, supporting pillar of the tree is called heartwood. Although it is non-living it will remain strong and will not decay as long as the outer layers of the trunk are intact. As a tree grows in diameter the inner, older xylem layers fill with gum and resin and harden



providing support to the tree as it grows taller and wider. The vast majority of a living tree (99%) is nonliving cells that provide structural support rather than active fluid conduction.

## Phloem

The cell layer exterior to the cambium is called phloem, sometimes referred to as inner bark. It is the “down” transport system in the tree. Only a few cells wide, it carries the jelly-like sugar food produced in the leaves throughout the tree. Phloem cells are stacked one on top of the other. Their connecting cell wall is perforated like a strainer. When one cell is full of the jelly-like food the contents ooze slowly into the next. Eventually the food finds its way down from the leaves to the roots. When phloem cells die they become part of the outer protective layer of bark.

## Bark

The outer layer of the trunk is covered with bark. Tree bark can be smooth, rough, or scaly. Although bark may look different from tree to tree it serves the same purpose – to protect the tree from injury and disease, somewhat like your skin. Often bark has bad-tasting chemicals, which discourage hungry insects or gnawing rodents from harming the tree. Some trees have very thick bark, which prevents damage from fire.

Every year the cambium layer produces new phloem cells that are squeezed between last year's phloem cells

# Step 1: Discover how trees grow and function - BASIC ACTIVITY

and the cambium. Outer bark is formed as old phloem cells die and are forced outward. When smooth, tight-fitting young bark is unable to expand or stretch because of the addition of new cells the bark may crack, split, or be shed from the tree. Each tree species has a characteristic way of expanding or breaking its bark forming patterns by which many trees can be identified.

**Bark Activity** – Look at samples of different kinds of tree bark. Notice the thickness of the bark and examine it for evidence of how the bark expanded and grew from the inside out. You may wish to use pencils and paper to do bark rubbings that will reveal the different patterns in tree bark.

**Concept #3: Through a process called photosynthesis leaves take in carbon dioxide and water, and using chlorophyll and sunlight, create oxygen and make a sugar food that feeds the tree.**

## Leaves

### Background information:

Leaves come in many shapes and sizes and provide the easiest means of identification of an individual tree. Some are needle-shaped, some are flat and thin. Some leaves remain on the tree throughout the year (**evergreen**) and some leaves are shed annually (**deciduous**). But regardless of size or shape, all leaves have the same function: they create the sugar food that feeds the tree and, through the web of life, feeds all other living things. The amazing process that makes this possible is called **photosynthesis**. Refer to the illustration on Student Handout #2 as you discuss this process with students.

Photosynthesis is a combination of “photo” meaning “produced by light” and “synthesis” which means “putting together parts or elements to make a whole.” Photosynthesis occurs only in plants that contain a green substance called **chlorophyll**. Chlorophyll is the enabler for the photosynthetic process. During photosynthesis, chlorophyll, carbon dioxide, water and light-energy from the sun are used to make a sugar-like food that becomes the basic source of energy for the plant and other living things. While making this food, the green plant gives off oxygen and water vapor into the air.

**Carbon dioxide** ( $\text{CO}_2$ ) is exhaled by animals, created by microorganisms through the process of decomposition, and released during the combustion of fossil fuels. In the leaf of a green plant, carbon dioxide comes in contact with water ( $\text{H}_2\text{O}$ ) and nutrients that have been drawn up from the soil by the roots of the plant. In the presence of sunshine, chlorophyll within the green leaf combines the  $\text{CO}_2$  and  $\text{H}_2\text{O}$ . This combination results in the creation of a sugar food called glucose ( $\text{C}_6\text{H}_{12}\text{O}_6$ ) that provides energy for the plant and all animals that eat that plant, or eat the animal that ate the plant. Not only are plants the base of food chains upon which all animals depend, plants also produce oxygen a gas that all animals (including humans) need to survive.

Carbon dioxide enters the leaf and oxygen exits the leaf through tiny holes called stoma, usually found on the undersurface of the leaves. At the same time, water is also released in a process called **transpiration**. Most plants in temperate climates transpire about 99% of the water the tree has taken in by their roots. The plant transpiration helps modify the temperature and humidity of the surrounding area. For a leaf transpiration activity, see Extension Activities, page 20.)

## Seeds/Fruits

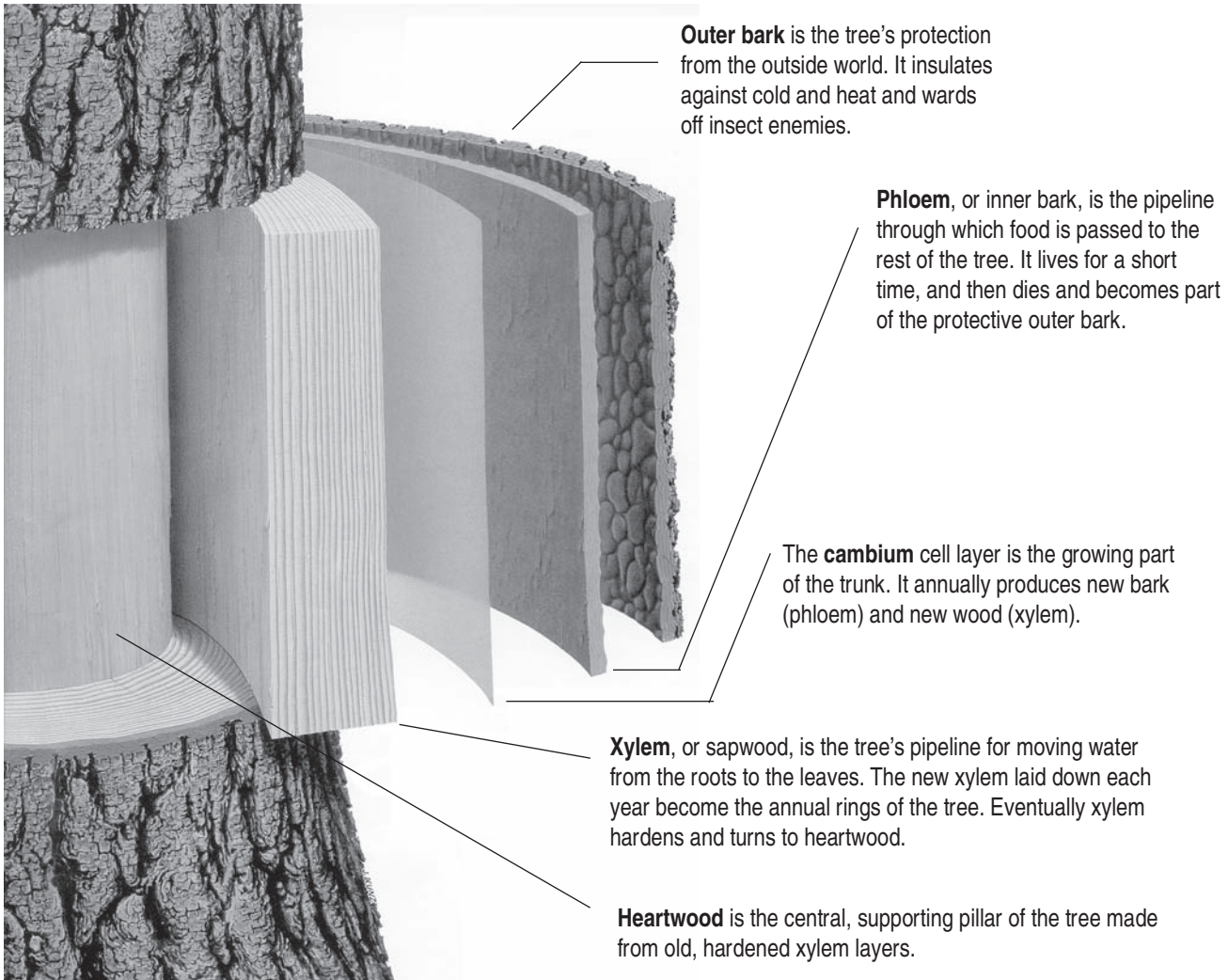
Most trees grow from seed. Many kinds of seeds exist - but the function of seeds is always the same...to produce a new plant. A mature plant produces seeds that have the genetic blueprint for a new plant of the same kind. Fruits or cones serve as outer protection for the seeds inside.

Pass around several examples of seeds for students to observe. Point out to students the hard outer seed coat which protects the tiny plant inside. Explain that a seed is like a baby plant in a box with its lunch. There is enough food stored in the seed to get the baby plant started growing until it can make leaves and start to produce its own food through the process of photosynthesis.

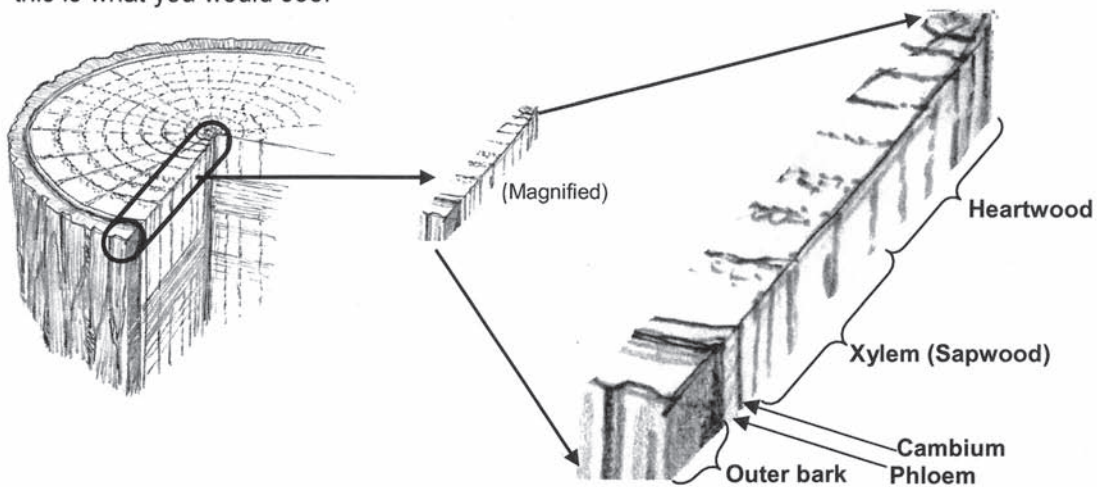
## Additional Suggested Reading

*The Giving Tree* by Shel Silverstein

## Tree Cross-Section

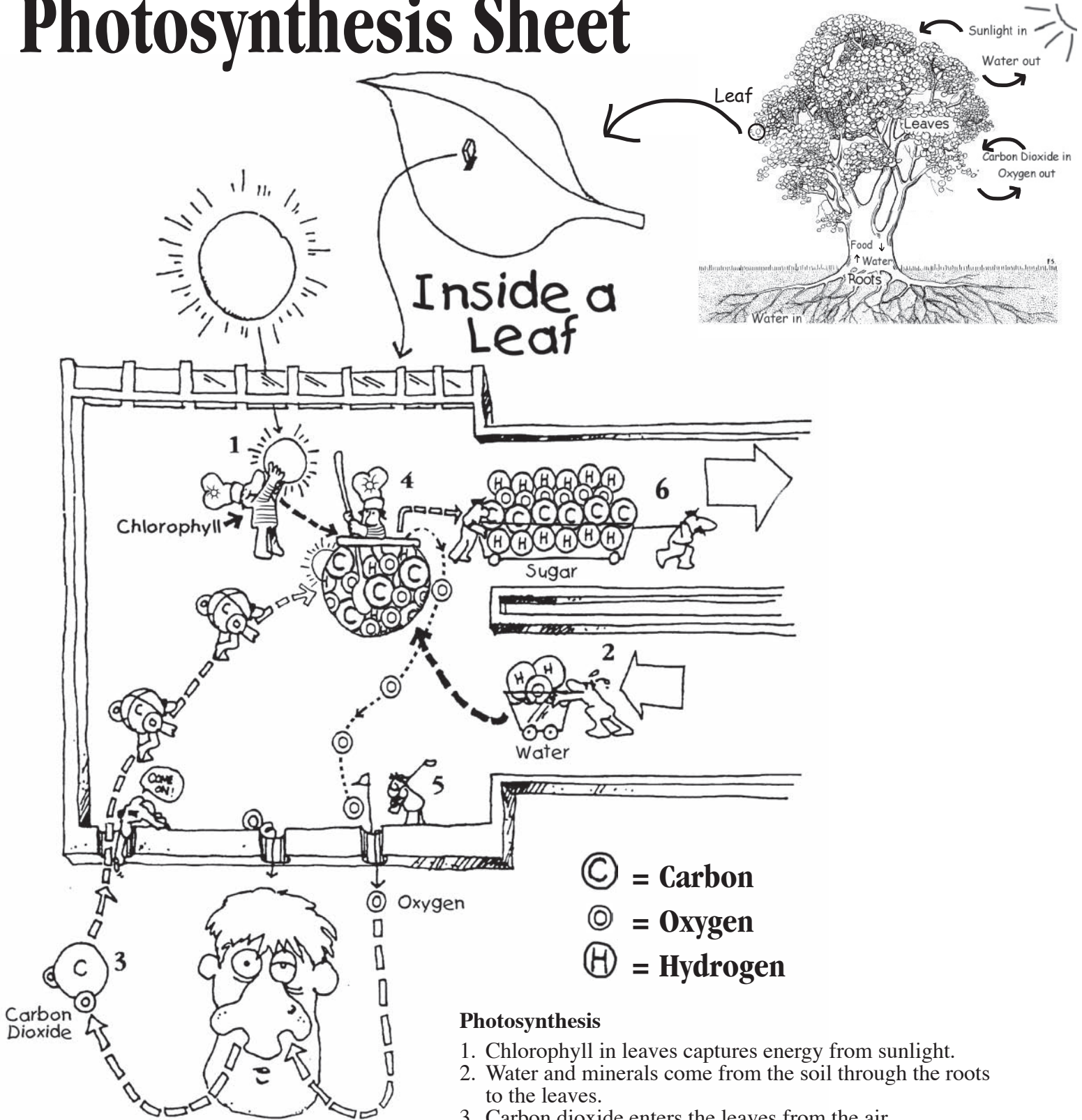


If you could pull a chunk from the trunk of a tree, then cut a radial piece out of that chunk, then magnify it... this is what you would see.



In the activity you'll do, you will pretend to become part of a section of trunk, like this picture at the right, as you discover how a tree grows and functions!

# Photosynthesis Sheet



## Photosynthesis

1. Chlorophyll in leaves captures energy from sunlight.
2. Water and minerals come from the soil through the roots to the leaves.
3. Carbon dioxide enters the leaves from the air.
4. Chlorophyll uses the sun's energy to combine water and carbon dioxide to make special kinds of sugars which are food for the plant.
5. The leaves give off oxygen into the air.
6. The sugar food moves to other parts of the plant for use or storage.

# Student Handout #3

## Vocabulary

**Annual rings** – The fast then slow growth of xylem each year creates a concentric ring pattern in the trunk. Count the rings and you know the age of the tree, as well as past weather conditions.

**Bark** – Outer bark protects the tree from weather extremes and insect pests.

**Cambium** – The thin, growing part of the tree that makes new xylem and phloem.

**Carbon dioxide** – A gas exhaled by animals and released from burning fossil fuels or decomposition. Trees clean the air by taking in carbon dioxide to use in photosynthesis. Often shown as CO<sub>2</sub>.

**Chlorophyll** – The green pigment in leaves that makes photosynthesis possible.

**Deciduous** – Trees that lose their leaves each year.

**Evergreen** – Trees that lose their leaves gradually over time so they appear green year round.

**Germination** – The beginning of seed growth.

**Heartwood** – The central supporting wood of mature trees made up of dead xylem.

**Leaves** – The food producing part of the tree where photosynthesis takes place.

**Oxygen** – Trees produce oxygen, a gas needed by animals to survive. Often shown as O.

**Phloem** – Inner bark of the tree that carries food from the leaves down to the rest of the tree.

**Photosynthesis** – The process by which plants make food.

**Roots** – The wide spreading woody roots of a tree that anchor the tree in the soil. Often called lateral roots.

**Root hairs** – Tiny roots growing off the lateral roots that take in water and nutrients from the soil.




**Seeds** – The part of a plant containing a tiny plant that may someday grow to be a mature plant of the same kind.

**Taproot** – A long, deep root grown by only a few kinds of trees.

**Transpiration** – The passage of water vapor from leaves into the air.

**Xylem** – The tube-like water transportation system in the trunk of the tree that moves water up from the roots to the leaves of the tree. Xylem is the wood of the tree.

## RUBRIC - Determine how your tree knowledge has grown. Are you a 10?

<b>#1</b> 	Trees are amazing; they help people and the environment in so many ways. You should understand and be able to name some of the environmental benefits and products that trees provide.			
	<b>No growth</b> <b>0 points</b> if you can't name any environmental benefits or tree products.	<b>Germination</b> <b>1 point</b> if you can name one environmental benefit trees provide and one tree product.	<b>Vigorous growth</b> <b>2 points</b> if you can name two environmental benefits trees provide and at least one tree product.	<b>Fully grown</b> <b>3 points</b> if you can name three or more environmental benefits trees provide and at least two tree products.
<b>#2</b> 	Knowing the essential parts of a tree and understanding the interdependent role those parts play in helping the tree grow and reproduce are important to ultimately understanding how to plant or care for trees in your community. (Main tree parts include roots/root hairs, outer bark, phloem, cambium, xylem, heartwood, leaves, and seeds.)			
	<b>No growth</b> <b>0 points</b> if you can name fewer than four tree parts and can't describe what the tree parts do for the tree.	<b>Germination</b> <b>1 point</b> if you can name five tree parts and describe what these parts do for the tree.	<b>Vigorous growth</b> <b>2 points</b> if you can name six or seven tree parts and describe what these parts do for the tree.	<b>Fully grown</b> <b>3 points</b> if you can name all eight major tree parts and clearly describe what these parts do for the tree.
<b>#3</b> 	Photosynthesis, the process by which plants make their own food, is one of the most important cycles of nature. All life on earth (through food chains) depends on a plant's ability to make food using energy from the sun. (Main photosynthesis components include sun, water, chlorophyll in the leaf, carbon dioxide, oxygen, and sugar.)			
	<b>No growth</b> <b>0 points</b> if you can name fewer than three components of photosynthesis and can't describe how this cycle works.	<b>Germination</b> <b>1 point</b> if you can name at least 4 components of photosynthesis and generally describe how this cycle works.	<b>Vigorous growth</b> <b>2 points</b> if you can name at least 5 components of photosynthesis and clearly describe how this cycle works.	<b>Fully grown</b> <b>3 points</b> if you can name all six main components of photosynthesis and clearly describe how this cycle works, including the process of transpiration.

Get 1 EXTRA BONUS POINT for actively and cooperatively participating in the Tree Growth Activity.

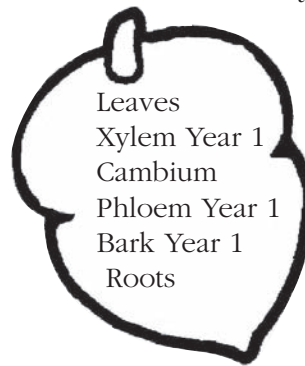
# Step 1: Discover how trees grow and function - BASIC ACTIVITY

## The Activity: Role-play the growth process of a tree to understand its form and function

**Activity description:** The purpose of this activity is to reinforce the understanding of how a tree grows and functions over a number of years. Each student will represent an important part of the tree. The activity starts with a tiny seed as it germinates. It then moves to a young tree in its growth over 5 years.

**In Advance:** Make sure you select a large space for the activity where the tree will have room to “grow.” Gather string, paper clips, 2 small bottles of water and six sugar packets. Photocopy the labels from pages 18 & 19. Cut and paste the labels onto the suggested colored strips of construction paper and attach a paper clip to each so children can create wrist bands. **NOTE: After labels are made, set aside the labels for “Heartwood” and “New Bark” to use later in the activity.** The number of labels in this guide works for a group of 18 students. If you have more students, make more Leaves and Roots labels. With fewer students, use fewer Leaves and Roots labels, keeping at least one of each. A minimum of 14 students is needed to demonstrate the 5 years of growth. (Go to [arborday.org/treelabels](http://arborday.org/treelabels) to see a label list based on class numbers.) Make a dot on a piece of paper and place it on the ground to indicate the central, starting point for the tree.

**Introductory Sequence:** Explain to students that they are going to “build” a tree. Pass a container holding the labels (with exception of Heartwood and New Bark labels) from which students can draw to determine the tree role they will play. Have them use the paperclips to secure their tree part label around their left wrist. Group students by color of wristbands.



Before you start, encourage students to use their bodies to creatively express the growth process of the tree based on what they hear in the narrative. Instruct students with the following wrist labels to come to the open area and line up in the order shown in

the acorn. (Just have one leaf and one root student come forward at this time.) Have the student with the “Xylem Year 1” label sit on the paper with the dot. Have the six students curl up and imagine they are all together inside a seed. Put the string close around the group of six students to represent the outside of the seed, then begin the germination role-play narration. (Read the bolded text aloud.)

### GERMINATION

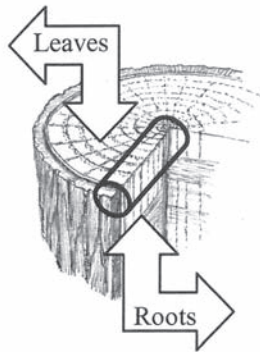
- 1. A small seed falls to the ground. It lands on good soil. Gentle rains come and soften the seed. The little seed germinates. As it starts to grow, it sends out a tiny root to hold its position in the soil and starts drawing in water.** (Have the “Roots” student move just outside the string circle and act like a tiny root searching for water.)
- 2. A baby tree with tiny leaves pushes its way to the sun. The seed has enough food stored inside to help the little tree grow until the leaves can use sunlight to make food.** (Have the “Leaves” student move just outside the string circle. Encourage students to act like the little tree, emerging from the soil.)

Tell students this is now a seedling tree. As the role play continues, they will see how the little tree grows. Remind students to think about the illustration they looked at earlier that showed the cross-section of tree trunk with the small piece shown running from the center of the tree to the outer bark. That is the part most of them will role play in the activity. That section of



# Step 1: Discover how trees grow and function - BASIC ACTIVITY

trunk contains tubes that run from the roots below the tree to the leaves high above.



Students representing leaves should stand with arms raised, their hands representing the leafy canopy. Students representing roots should sit on the floor with feet out in front of them to represent spreading roots. Students inside the tree trunk should stand. It is important for them to stay in a straight line during the activity to get a true sense of the tree's expanding growth. The "Xylem Year 1" student needs to always stay on the dot-marked paper representing the center of the tree.

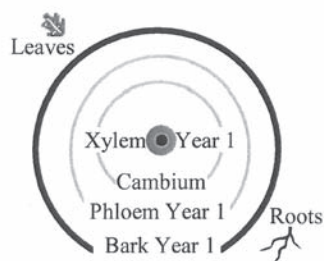
Instruct everyone to look at their tree part information on their wrist so they know what to do and say when the teacher points to them at their turn. Before resuming the activity, hand the "New Bark" labels to the student representing "Bark Year 1" and tell him/her to hold onto those until it's time to pass them to newly formed bark (one each year). Divide sugar packets among the students with "Leaves" labels. Give a water bottle to the student with "Roots" label.

The starting arrangement for the Tree Growth activity should look like Example 1. Continue to expand the string ring each year to reflect the tree's growing circumference.

## EXAMPLE 1

Tree Trunk – Year 1

● denotes center of tree



**The narration for the role-play is printed in bold and should be read by the teacher.**

*Actions for the role-play are printed in italics and are also on the role labels the students will draw.*

**NOTE:** During the first round of the role-play the teacher may need to prompt students when it's their turn. As the role-play progresses, the teacher may be able to simply point to a student(s) when it's their turn to act/speak.

## TREE GROWTH - YEAR ONE

### 1. The little tree adds more roots and leaves.

*Have the remaining students with Roots and Leaves labels join the first "Roots" and "Leaves" just outside the string ring – Roots all on one side, Leaves on the other.*

### 2. Roots suck up water and nutrients from the soil and pass them on to the Xylem.

*Have the student(s) with "Roots" label make a slurping sound while handing one of the water containers to the student with "Xylem Year 1" label.*

### 3. Xylem passes water to leaves.

*Have the student with "Xylem Year 1" label make a swish sound while handing the water to the student(s) with "Leaves" label.*

### 4. Leaves release most of water into the air. Through photosynthesis Leaves make sugar food for the tree.

*Have the student(s) with "Leaves" label hand the water to teacher. Leaves put their hands up and shake them (saying,) "Making food!"*



### The Leaves pass food to the Phloem.

*Have the student(s) with "Leaves" label pass one sugar packet down to the student with "Phloem Year 1" label.*

### 5. Phloem passes food through the tree, down to the Roots.

*Instruct the student with "Phloem Year 1" label to say "yum, yum" while passing the sugar packet down to the student(s) with the "Roots" label.*

**6. With plenty of food and water, the Cambium helps the Xylem and Phloem get fatter.**

*Instruct students representing “Xylem” and “Phloem” in the tree to puff out their cheeks.*

**7. The cycle continues.**

*REPEAT STEPS 2-7 – with actions and narration.*

**8. When winter comes, the cycle slows down and the tree rests.**

**TREE GROWTH - YEARS TWO THROUGH FIVE**

**(TEACHER’S NOTE:** REPEAT steps #1-12 four times to represent years two through five. Any adjusted actions to reflect the tree growth are indicated, year by year, in the text. An \* asterisk denotes several additional narrative statements that are to be used only at YEAR FIVE.)

**1. Spring comes and the tree “wakes up.”**

*Everyone in the “tree” stretches.*

**2. The Cambium makes new Xylem toward the inside of the tree. This makes a new ring in the trunk of the tree.**

*The student representing the Cambium should call, “New Xylem!”*

*YEAR TWO - Have the “Xylem Year 2 ” student come stand between the “Cambium” and “Xylem Year 1 ”.*

*YEAR THREE - “Xylem Year 3 ” comes to stand between the “Cambium” and “Xylem Year 2 ”.*

*YEAR FOUR – “Xylem Year 4 ” comes to stand between the “Cambium” and “Xylem Year 3 ”.*

*YEAR FIVE - “Xylem Year 5 ” comes to stand between the “Cambium” and “Xylem Year 4 ”.*

**3. The Cambium also makes new Phloem toward the outside of the tree.**

*The student representing the Cambium should call, “New Phloem!”*

*YEAR TWO - Have the “Phloem Year 2 ” student come stand between the “Cambium” and “ Phloem Year 1 ”.*

*YEAR THREE - “Phloem Year 3 ” comes to stand between the “Cambium” and “Phloem Year 2 ”.*

*YEAR FOUR – “Phloem Year 4 ” comes to stand between the Cambium and “Phloem Year 3 ”.*

*YEAR FIVE - “Phloem Year 5 ” comes to stand between the “Cambium” and the “Phloem Year 4 ”.*

**4. Last year’s Phloem hardens and turns into Bark, making the outer bark thicker.**

*YEAR TWO - Have “Bark Year 1 ” student say “Help me protect!” while handing a new bark label to the “Phloem Year 1 ” student who should cover his/her Phloem label with the new Bark one.*

*YEAR THREE – Same as Year Two only with New Bark label passed to “Phloem Year 2 ”.*

*YEAR FOUR – Same as Year Two only with New Bark label passed to “Phloem Year 3 ”.*

*YEAR FIVE – Same as Year Two only with New Bark label passed to “Phloem Year 4 ”.*

**\*(READ ONLY AT YEAR FIVE.) After many years, the oldest Outer Bark has worn away or fallen off. It decomposes and adds nutrients to the soil. Student representing “Bark Year 1 ” should kneel or lay on the floor to represent the shed bark.**

**5. Spring rains soak into the soil.**

*Teacher hands the water containers to the “Roots”.*

**6. Roots suck up water and nutrients from the soil and pass them on to the Xylem.**

*YEAR TWO - “Roots” make a slurping sound while handing one of the water containers to the student with “Xylem Year 2 ” label.*

*YEAR THREE – Same as Year 2 but “Roots” pass water to “Xylem Year 3 ”.*

*YEAR FOUR – Same as Year 2 but “Roots” pass water to “Xylem Year 4 ”.*

*YEAR FIVE – Same as Year 2 but “Roots” pass water to “Xylem Year 5 ”.*

**7. Xylem passes water to leaves.**

*“Xylem” students in the tree make a swishing sound while handing the water to the “Leaves”.*

**\*(READ ONLY AT YEAR FIVE.) After many years, the oldest Xylem no longer transports water. It dies and becomes Heartwood, the strong supporting center of the tree.**

*(Teacher hands student representing “Xylem Year 1 ” the Heartwood label. Instruct that student to now say, “Standing Strong!”)*



# Step 1: Discover how trees grow and function - BASIC ACTIVITY

**8. Leaves release most of water into the air. Through photosynthesis the Leaves make sugar food for the tree.** (“Leaves” hand the water to the teacher. “Leaves” put their hands up and shake them saying, “Making food!”)

**The Leaves pass food to the new Phloem.** (“Leaves” pass a sugar packet down to the student currently representing “Phloem”.)

**9. Phloem passes food through the tree, down to the Roots.** (The student currently representing Phloem should say, “Yum, yum” while passing the sugar packet down to the “Roots”.)

**10. With plenty of food and water, the Cambium helps the Xylem and Phloem get fatter.** (Students representing the new “Xylem” and “Phloem” should puff out their cheeks.)

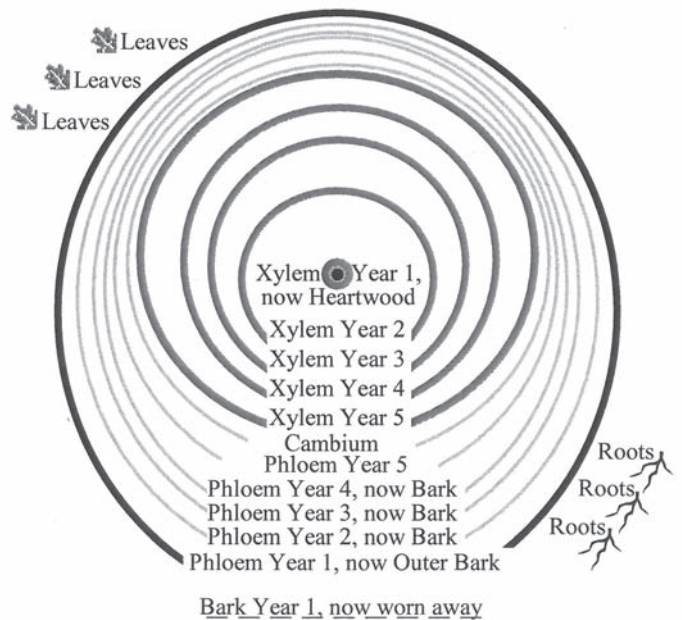
**11. The cycle continues.** (At end of YEAR FIVE, if time permits, have students repeat their actions and words.)

**12. When winter comes, the cycle slows down and the tree rests.**

**\*(READ ONLY AT YEAR FIVE for activity conclusion.)** Next year the tree may produce seeds. These seeds may fall to the earth and grow into new trees! After many, many years, the tree may finally die. It will slowly fall to the earth and decompose, making the soil rich so new trees can grow. (Have students all carefully fall to the earth.)



**EXAMPLE 2**  
Tree Trunk – Year 5  
● denotes center of tree



**Follow up** the role-play with class discussion. Ask: *What parts of the tree got thicker? What parts of the tree ended up where they started? What other observations about tree growth did you make?*

### Assessment:

Refer students back to the questions written on the board at the start of the lesson. Have students record the questions on a piece of paper. Students may answer the questions in a written narrative or create and label a diagram to illustrate the process. See Rubric on page 13.

### Alternative Assessment:

Have students draw a cross-section of tree trunk with the number of annual rings that correspond to their age. Starting with year 1, at the inside of the tree “cookie”, have students write or illustrate some event that happened in their life during each year in the life of the tree.

**Paste each label on a 11" x 3" strip of colored construction paper as indicated.**

**CUT THESE LABELS OUT AND PASTE ON BLUE PAPER**

**XYLEM YEAR 1  
(sapwood)**

YOUR JOB - You transport water from the roots to leaves. You are part of the wood of the tree! At your turn you say, "SWISH, SWISH"

**XYLEM YEAR 5  
(sapwood)**

YOUR JOB - You transport water from the roots to leaves. You are part of the wood of the tree! At your turn you say, "SWISH, SWISH"

**XYLEM YEAR 2  
(sapwood)**

YOUR JOB - You transport water from the roots to leaves. You are part of the wood of the tree! At your turn you say, "SWISH, SWISH"

**ROOTS/ROOT HAIRS**

YOUR JOB - You take in water and some nutrients from the soil which get passed up the tree. You also hold the tree in place. At your turn you say, "SLURP, SLURP"

**XYLEM YEAR 3  
(sapwood)**

YOUR JOB - You transport water from the roots to leaves. You are part of the wood of the tree! At your turn you say, "SWISH, SWISH"

**ROOTS/ROOT HAIRS**

YOUR JOB - You take in water and some nutrients from the soil which get passed up the tree. You also hold the tree in place. At your turn you say, "SLURP, SLURP"

**XYLEM YEAR 4  
(sapwood)**

YOUR JOB - You transport water from the roots to leaves. You are part of the wood of the tree! At your turn you say, "SWISH, SWISH"

**ROOTS/ROOT HAIRS**

YOUR JOB - You take in water and some nutrients from the soil which get passed up the tree. You also hold the tree in place. At your turn you say, "SLURP, SLURP"

**CUT THIS LABEL OUT AND PASTE ON RED PAPER**

**HEARTWOOD**

YOUR JOB - Your xylem cells have hardened and you no longer transport water. You are now the strong heart of the tree. At your turn you say, "STANDING STRONG!"

**CUT THIS LABEL OUT AND PASTE ON YELLOW PAPER**

**CAMBium**

YOUR JOB - You are the growing part of the tree. As thin as a piece of paper, you make new xylem (wood) and new phloem (inner bark). At your turn you say "NEW XYLEM!" and "NEW PHLOEM!"

**CUT THIS LABEL OUT AND PASTE ON BROWN PAPER**

**BARK YEAR 1**

YOUR JOB - you are rough and tough. You are Outer Bark that protects the tree. At your turn you say, "I PROTECT!" When others become bark, hand them a New Bark card and welcome them by saying "HELP PROTECT!"

Paste each label on a 11" x 3" strip of colored construction paper as indicated.

**CUT THESE LABELS OUT AND PASTE ON GREEN PAPER**

**PHLOEM YEAR 1**

(inner bark)

YOUR JOB - You transport food from the leaves through the trunk to the roots.

At your turn you say, "YUM, YUM"

**PHLOEM YEAR 5**

(inner bark)

YOUR JOB - You transport food from the leaves through the trunk to the roots.

At your turn you say, "YUM, YUM"

**PHLOEM YEAR 2**

(inner bark)

YOUR JOB - You transport food from the leaves through the trunk to the roots.

At your turn you say, "YUM, YUM"

**LEAVES**

YOUR JOB - You are the food factory for the tree. Through photosynthesis you make food for the tree. At your turn you say, "MAKING FOOD!"

**PHLOEM YEAR 3**

(inner bark)

YOUR JOB - You transport food from the leaves to through the trunk to the roots.

At your turn you say, "YUM, YUM"

**LEAVES**

YOUR JOB - You are the food factory for the tree. Through photosynthesis you make food for the tree. At your turn you say, "MAKING FOOD!"

**PHLOEM YEAR 4**

(inner bark)

YOUR JOB - You transport food from the leaves to through the trunk to the roots.

At your turn you say, "YUM, YUM"

**LEAVES**

YOUR JOB - You are the food factory for the tree. Through photosynthesis you make food for the tree. At your turn you say, "MAKING FOOD!"

**CUT THESE LABELS OUT AND PASTE ON BROWN PAPER**

**NEW BARK**

(outer bark)

YOUR JOB - You are no longer phloem, you have become outer bark that protects the tree.

At your turn you NOW say, "I PROTECT!"

**NEW BARK**

(outer bark)

YOUR JOB - You are no longer phloem, you have become outer bark that protects the tree.

At your turn you NOW say, "I PROTECT!"

**NEW BARK**

(outer bark)

YOUR JOB - You are no longer phloem, you have become outer bark that protects the tree.

At your turn you NOW say, "I PROTECT!"

**NEW BARK**

(outer bark)

YOUR JOB - You are no longer phloem, you have become outer bark that protects the tree.

At your turn you NOW say, "I PROTECT!"

## EXTENSION ACTIVITIES

The following are activities that further extend learning about the form and function of trees. These activities have the same objectives and National Science Education Standard correlations as the Basic Activity (listed on page 5).

### Searching for Stoma Activity

#### Time Recommended:

- One class period

#### Materials Needed:

- Lettuce leaf
- Iodine
- Microscope
- Slides and cover slip

### Background Information:

The exchange of oxygen and carbon dioxide in the process of photosynthesis and the release of water from the leaf into the air in the process of transpiration take place through tiny openings in the leaf called stoma. The stoma are opened and closed by surrounding guard cells, which contain chloroplasts (structures within a cell containing chlorophyll). Providing students the opportunity to see under the microscope some of the cells that play a major part in the process of photosynthesis helps them better grasp the process.

### Stoma Activity Description:

Place a drop of iodine on the center of a clean slide. Break a lettuce leaf at a vein on the underside of the leaf and tear off the thinnest layer of leaf epidermis possible. Carefully place the layer in the drop of iodine stain on the slide; making sure it is laid out flat, not folded back. Place another drop of iodine on top of the lettuce leaf layer. Wait about 30 seconds and add a cover slip, then let the students start searching for stomas using the microscope. Guard cells that are open are easier to spot than guard cells that are closed. They will resemble two green jellybeans formed around an oval. Have students draw and label what they see under the microscope.

### Leaf Transpiration

#### Time Recommended:

- One class period for the activity with follow up observations over the next week

#### Materials Needed:

- 1 clear plastic bag with a twist tie per student
- 1 or 2 potted plants (5" pot or larger)
- 1 or 2 large, transparent plastic bags with twist ties
- Scale

### Leaf Transpiration Activity Description:

To prove that leaves give off moisture try this experiment. Have each student find a leaf on a broadleaf tree that is in a sunny location. Cover the leaf on the tree with a plastic bag, securing the bag with a twist tie around the leaf stalk or the twig. Check the bag in 24 hours. Water vapor will gather on the inside of the bag due to the transpiration of moisture through the leaves. If broadleaf trees are not leafed out, this experiment can be done with a potted plant. Cover a healthy potted plant tightly with a transparent plastic bag. Do not cover the entire pot, just the plant. Leave the covered plant in the sunshine for a day or two. Note the water formation on the inside of the bag. Ask students to speculate what this might be from.

To prove that this moisture is coming into the leaves from the soil, take a second plant and cover the pot and soil tightly with the transparent wrap (this limits the evaporation of moisture directly from the pot). Do not cover the plant. Weigh the potted plant when you begin the experiment and then set the plant in the sun. Ask students to predict what might happen. Weigh the potted plant everyday. The pot will get lighter as the moisture in the soil is used by the plant and given off into the surrounding air through transpiration.

Questions that could lead to additional experiments might include:

- Does temperature affect the rate of transpiration?
- Does the size of the leaf's surface affect transpiration?
- Does wind affect the rate of transpiration?
- Do broadleaf trees transpire more moisture than conifers?

### More Great Activities...

Additional activities that support these materials are available on-line at [arborday.org/youthed](http://arborday.org/youthed). Download "Tree Ring-Around", a fast paced activity that reinforces vocabulary introduced in this Activity Guide. "Life of the Forest" offers students a visual image of how trees grow.

# Step 2

## Create a Poster

### Trees are Terrific...Inside and out!

#### Objective:

- Students will create a poster that reflects the student's understanding of how trees grow, function, and benefit the environment.

#### Deadline:

- Make certain that your school winner meets your state coordinator's entry deadline as stated in the enclosed cover letter or contact your state coordinator listed on page 26.

#### Time recommended:

- A minimum of one class period is recommended.

#### Materials needed:

- paper no smaller than 8½" x 11" and no larger than 14" x 18"
- markers, crayons, colored pencils, paint pens, watercolor, ink, acrylic, and/or tempera paint

#### National Art Education Achievement Standards:

- Students generalize about the effects of visual structures and functions and reflect upon these effects in their own work.
- Students employ organizational structures and analyze what makes them effective or not effective in the communication of ideas.
- Students select and use the qualities of structures and functions of art to improve communication of their ideas.
- Students integrate visual, spatial, and temporal concepts with content to communicate intended meaning in their artworks.

## Create a Poster

Ask each student to create a poster that reflects his or her understanding of the important parts of a tree and the functions they serve to help the tree live and grow. Before they create their poster, encourage students to think about the different benefits trees provide to people, animals, and the environment.

Students should make sure their poster follows the contest rules by using the checklist on page 22. You may select the winner or have a judging panel for the classroom and school contest. Judges could include other students, garden club members, nursery personnel, arborists, the city forester, teachers, PTA members, or individuals with an interest in trees who are willing to volunteer some time.

## Poster Contest National Prizes

### First Place

- The national winner, his or her parents, and the teacher of the winning student receive an expense-paid trip to the National Awards Weekend at Lied Lodge & Conference Center in Nebraska City, Nebraska, April 25-27, 2008.
- The national winner also receives a \$1000 savings bond, a lifetime membership to The National Arbor Day Foundation, and a framed color copy of his or her poster.
- The national winner's teacher receives a \$200 check.
- A tree is planted in the winner's honor.

### Second Place

- The second place winner receives a \$500 savings bond.
- The second place winner's teacher receives a \$100 check.
- A tree is planted in the winner's honor.

### Third Place

- The third place winner receives a \$250 savings bond.
- The third place winner's teacher receives a \$50 check.
- A tree is planted in the winner's honor.

# Poster Contest Rules

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Use this checklist to make certain all entries are eligible for judging. Entries not meeting these guidelines will be disqualified.

- 1.** All entries must be original artwork created by a student who is currently in the fifth grade. A student may enter the contest only once.
- 2.** The student's first and last name must be **written** or **signed** in the lower right-hand corner on the front of the poster.
- 3.**
  - a) Entries may be done in marker, crayon, paint pens, watercolor, ink, acrylic, colored pencil, and/or tempera paint.
  - b) Collages are not acceptable. (Do not glue anything on your poster.)
  - c) Computer or photo generated art and/or printing is not acceptable.
- 4.** Entries must be no smaller than 8½ x 11" and no larger than 14 x 18."
- 5.** Entries must be done on paper that will allow for duplication, display, and framing.
- 6.** The poster must be related to the contest theme in some way. The theme **Trees are Terrific... inside and out!** must be on the poster. All words must be spelled correctly.
- 7.** Entries should not be matted, mounted, laminated, framed, or folded.
- 8.** Submit entry by designated deadline to your state coordinator (see cover letter, contact your coordinator listed on page 26, or visit [arborday.org/postercontest](http://arborday.org/postercontest) for your state deadline).

# School Winner Report Form

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After selecting a school winner, copy and complete this form, attach to the back of the poster, and send to your contest coordinator (listed on page 26 or in cover letter).

## 2008 School Winner Report Form

Send this form with the winning school poster to your contest coordinator.

All information should be complete to expedite contact of winners.

Winner's Name \_\_\_\_\_

Winner's Home Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ ZIP \_\_\_\_\_

Winner's parent or guardian name \_\_\_\_\_

Teacher's Name \_\_\_\_\_

Teacher's e-mail address \_\_\_\_\_

School Name \_\_\_\_\_

School Address \_\_\_\_\_

City \_\_\_\_\_ County \_\_\_\_\_ State \_\_\_\_\_ ZIP \_\_\_\_\_

School Phone ( \_\_\_\_\_ ) \_\_\_\_\_

### Important:

Please indicate the number of posters entered or drawn in the school contest in the box to the left.

Number of teachers in school who participated.

All artwork becomes the property of contest sponsors.

# 2008 Arbor Day National Poster Contest *Certificate of Participation*

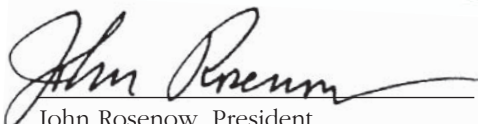
This certifies that

---

has successfully presented an understanding of  
environmental stewardship practices and the importance of trees.

Through artistic expression, the above named individual has communicated  
a message of hope for the future of our planet.

Let it be known that The National Arbor Day Foundation and Toyota  
recognize the unique and creative contribution offered by our nation's youth  
and extends special appreciation for these efforts.



---

John Rosenow, President  
The National Arbor Day Foundation

---

Teacher



**TOYOTA**



# 2008 Arbor Day National Poster Contest *School Winner*

This certifies that

---

has presented an outstanding creative representation of  
how trees grow and function.

Through artistic expression, the above named individual has  
communicated a message of hope for the future of our planet.

Let it be known that The National Arbor Day Foundation and Toyota  
recognize the unique and creative contribution offered by our nation's  
youth and extends special appreciation for these efforts.

  
John Rosenow, President

The National Arbor Day Foundation

\_\_\_\_\_  
Teacher



**TOYOTA**

# 2008 Poster Contest State Coordinators

David West \*256-237-1621  
Alabama Cooperative Ext. System  
1702 Noble Street, Ste 108  
Anniston **AL** 36201

Julie Smith \*501-671-2231  
Horticulture Program Technician  
2301 S University Pl  
Little Rock **AR** 72203

Louise Wakem \*602-542-6191  
Office of the State Forester  
Urban & Community Forestry  
1110 W. Washington #100  
Phoenix **AZ** 85007

Kay Antunez \*916-653-7958  
CA Dept of Forestry & Fire Pro.  
PO Box 944246  
Sacramento **CA** 94244-2460

Donna Davis \*719-384-9087  
Colorado Tree Coalition  
208 Santa Fe Ave, Ste #21  
La Junta **CO** 81050-0977

Bob Heffernan \*203-445-0110  
CT Nursery & Landscape Assn  
PO Box 414  
Botsford **CT** 06404

Ashley Ward \*302-698-4500  
Delaware Forest Service  
2320 S. DuPont Highway  
Dover **DE** 19901

Suzanne Lobb \*407-703-1778  
City of Apopka - Recreation Dept.  
11 North Forest Ave.  
Apopka **FL** 32703

Sherrie Gabriel \*706-542-6880  
GA Forestry Commission  
1055 E. Whitehall Rd.  
Athens **GA** 30605

Jacqueline Ralya \*808-672-5167  
Kaulunani DLNR  
92-1293 Hauone St.  
Kapolei **HI** 96707

Matt Brewer \*515-242-6892  
Forestry Bureau/Iowa DNR  
Wallace State Office Building  
502 E. 9th  
Des Moines **IA** 50319

Debbie Cook \*208-378-6576  
ID Dept of Lands  
4728 N. Linda Vista Lane  
Boise **ID** 83704

Reinee Hildebrandt \*217-785-8771  
Urban Conservation Program Admin.  
Illinois Dept. of Natural Resources  
1 Natural Resources Way  
Springfield **IL** 62702-1271

Ashley Mulis \*317-489-8775  
IN Urban Forest Council Inc.  
P.O. Box 409  
Carmel **IN** 46082

Kim Bomberger \*785-532-3315  
KS Forest Service  
2610 Claflin Road  
Manhattan **KS** 66502-2798

Laurie Blount \*270-444-8508  
Paducah Park Service  
1400 HC Mathis Dr  
Paducah **KY** 42001

Malhan Doucet \*225-952-4500  
Louisiana Office of Forestry  
5825 Florida Blvd Ste 1068  
Baton Rouge **LA** 70806

Eric Seaborn \*617-626-1468  
Dept of Conservation & Recreation  
251 Causeway Ste 600  
Boston **MA** 02114

Jan Ames Santerre \*207-623-2371  
Pine Tree State Arboretum  
PO Box 344  
Augusta **ME** 04332

Jennifer Rostar \*517-337-4999  
Michigan Arbor Day Alliance  
271 Woodland Pass, Ste 200  
East Lansing **MI** 48823

Cassie Larson \*651-633-4987  
Minnesota Nursery &  
Landscape Assn.  
1813 Lexington Ave North  
Roseville **MN** 55113

Donna Baldwin \*573-522-4115 ext 3111  
Missouri Dept. of Conservation  
2901 W. Truman Blvd.  
Jefferson City **MO** 65102

Rick Olson \*601-359-2856  
MS Forestry Commission  
301 North Lamar Street, Suite 300  
Jackson **MS** 39201

Jennifer Rall \*919-733-2162  
NC Forest Service  
1616 Mail Service Center  
Raleigh **NC** 27699-1616

Glenda Fauske \*701-228-5446  
North Dakota Forest Service  
307 First Street East  
Bottineau **ND** 58318-1100

Rachel Allison \*308-696-6718  
UNL Nebraska Forest Service  
461 W. University Dr.  
North Platte **NE** 69101

Karen Bennett \*603-862-4861  
University of NH, Cooperative Ext.  
131 Main St.  
Neismith Hall Room 212  
Durham **NH** 03824

Nina Visconti-Phillips \*609-409-8501  
Box A  
Cranbury **NJ** 08512

Susan Stead \*775-684-2500  
Nevada Division of Forestry  
2478 Fairview Dr.  
Carson City **NV** 89701

Mary Kramarchyk \*518-402-9425  
NYSDEC- Div. of Lands & Forests  
625 Broadway, 5th Floor  
Albany **NY** 12233

Jennifer Gray \*800-825-5062  
Ohio Nursery & Landscape Assoc.  
72 Dorchester Square  
Westerville **OH** 43081-3350

Christina Stallings \*405-522-6158  
OK Dept of Agriculture  
2800 North Lincoln Blvd  
Oklahoma City **OK** 73105-4298

Cheryl Watts \*717-772-0842  
Pennsylvania Dept. of Education  
333 Market Street, 8th Floor  
Harrisburg **PA** 17126

Pauline Smith \*401-861-1995  
RI Tree Council  
PO Box 6144  
Providence **RI** 02940

Chris Johnson \*605-773-3594  
SD Department of Ag/RC & F  
523 East Capitol Avenue  
Pierre **SD** 57501

Bruce Webster \*615-837-5436  
Division of Forestry  
PO BOX 40627, Melrose Station  
Nashville **TN** 37204

Pete Smith \*979-458-6650  
Texas Forest Service  
301 Tarrow Drive, Ste. 364  
College Station **TX** 77840-7896

Meredith Perkins \*801-538-5505  
Urban & Community Forestry Coordinator  
P.O. Box 145703  
Salt Lake City **UT** 84114

Trina Apple Stevens \*276-634-4141  
Virginia Museum of Natural History  
21 Starling Avenue  
Martinsville **VA** 24112

Gary Salmon \*802-786-3857  
Department of Forest & Parks  
271 N. Main St Ste 215  
Rutland **VT** 05701

Ben Thompson \*800-523-8733  
Washington State DNR  
1111 Washington Street SE  
PO Box 47037  
Olympia **WA** 98504

Dick Rideout \*608-267-0843  
State Urban Forestry Coordinator  
PO Box 7921  
Madison **WI** 53707

Andy Sheetz \*304-558-2788  
WV Division of Forestry  
1900 Kanawha Blvd E, State Capitol  
Charleston **WV** 25305-0180

Trish Penny  
Laramie Rivers Conservation District  
1050 N 3rd St, Suite B  
Laramie, **WY** 82072

Anthony Jones \*202-671-5133  
Urban Forestry Administration  
2217 14th St NE  
Washington, **DC** 20009

## National Coordinator

Jill Chaput \*1-888-448-7337  
The National Arbor Day Foundation  
PO Box 85784  
Lincoln NE 68501-5784  
Email: education@arborday.org

A complete listing of the state coordinators,  
including E-mail addresses and state  
deadlines, is available at  
[arborday.org/postercontest](http://arborday.org/postercontest).

# COMPLETE THIS SURVEY...

and send it to the Foundation to receive a **FREE** copy of the 2008 winning poster plus a **FREE** "What Tree is That?" tree identification booklet.

Please return this form to: Poster Contest, The National Arbor Day Foundation, PO Box 85784, Lincoln NE 68501-5784 or fax to 402-474-0820. Surveys may also be submitted online. Visit [arborday.org/pcsurvey](http://arborday.org/pcsurvey) to complete the survey and receive a free "What Tree is That?" tree identification booklet and a copy of the 2008 national winning poster.

Name \_\_\_\_\_

School Name \_\_\_\_\_

School Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

E-mail \_\_\_\_\_

Present teaching assignment \_\_\_\_\_

1. Was the information you received descriptive and complete?

Yes, it was fine       This is how it could be improved: \_\_\_\_\_

2. Did your state coordinator support your efforts like you expected?

Yes, support was fine     Support was minimal     No contact with state coordinator

This is how support from my state coordinator could be improved: \_\_\_\_\_

3. Did the curriculum achieve its goal of increasing knowledge on how trees grow and function?

1	2	3	4	5	6	7	8	9	10
Not at all				Somewhat					Definitely

This is how it could be improved: \_\_\_\_\_

4. Check the activities you did with the class.

<input type="checkbox"/> Basic Activity - Role play the growth process of a tree	<input type="checkbox"/> Create a Poster
<input type="checkbox"/> Extension Activity - Searching for Stoma	<input type="checkbox"/> Celebrate Arbor Day
<input type="checkbox"/> Extension Activity - Leaf Transpiration	

5. How many posters were entered into your school contest? \_\_\_\_\_

6. How likely is it that you would recommend the Arbor Day National Poster Contest to a colleague?

1	2	3	4	5	6	7	8	9	10
Not at all				Somewhat					Definitely

7. How did you hear about this contest?

<input type="checkbox"/> Principal	<input type="checkbox"/> State Coordinator mailing	<input type="checkbox"/> The National Arbor Day Foundation
<input type="checkbox"/> Colleague	<input type="checkbox"/> Internet	<input type="checkbox"/> Other

8. Approximately how many classroom hours did you spend on the Poster Contest? \_\_\_\_\_hours(s)

9. Are you aware that Toyota is the poster contest sponsor?     Yes     No

10. Do you think of Toyota as a company that is concerned about the environment?     Yes     No

# Step 3

## Celebrate Arbor Day

Get your students outside and celebrate Arbor Day!

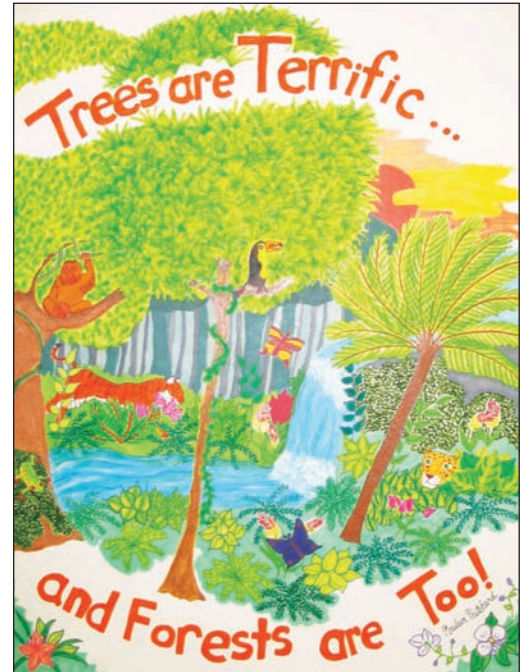


Since 1872, Arbor Day has been celebrated throughout the United States and Arbor Day celebrations in schools have always played an important role.

An Arbor Day celebration can be:

- Simple** - Plant a tree in honor of your school poster contest winner or to recognize an outstanding volunteer.
- Inspiring** - Have your graduating class plant a tree with the younger students. This is a tradition that honors the students leaving and gives new students something to enjoy throughout their years!
- Entertaining** - Students could compose poems about trees or perform an Arbor Day play (a sample play is available at [www.arborday.org/arbordayplay](http://www.arborday.org/arbordayplay)). This could be performed for fellow students, families, or senior citizens.

Whatever you choose for your celebration – go outside and enjoy the trees and environment that surround you!



The 2007 Arbor Day National Poster Contest winning art by Kaileen Pritchard of Fayetteville, North Carolina.

### Arbor Day Dates

Alabama – Last full week in February	Maine – Third full week in May	Ohio – Last Friday in April
Alaska – Third Monday in May	Maryland – First Wednesday in April	Oklahoma – Last full week in March
Arizona – Last Friday in April	Massachusetts – Last Friday in April	Oregon – First full week in April
Arkansas – Third Monday in March	Michigan – Last Friday in April	Pennsylvania – Last Friday in April
California – March 7-14	Minnesota – Last Friday in April	Rhode Island – Last Friday in April
Colorado – Third Friday in April	Mississippi – Second Friday in February	South Carolina – First Friday in December
Connecticut – Last Friday in April	Missouri – First Friday in April	South Dakota – Last Friday in April
Delaware – Last Friday in April	Montana – Last Friday in April	Tennessee – First Friday in March
District of Columbia – Last Friday in April	Nebraska – Last Friday in April	Texas – Last Friday in April
Florida – Third Friday in January	Nevada – Last Friday in April	Utah – Last Friday in April
Georgia – Third Friday in February	New Hampshire – Last Friday in April	Vermont – First Friday in May
Hawaii – First Friday in November	New Jersey – Last Friday in April	Virginia – Last Friday in April
Idaho – Last Friday in April	New Mexico – Second Friday in March	Washington – Second Wednesday in April
Illinois – Last Friday in April	New York – Last Friday in April	West Virginia – Second Friday in April
Indiana – Last Friday in April	North Carolina – First Friday following March 15	Wisconsin – Last Friday in April
Iowa – Last Friday in April	North Dakota – First Friday in May	Wyoming – Last Monday in April
Kansas – Last Friday in April		
Kentucky – First Friday in April		
Louisiana – Third Friday in January		

Visit [www.arborday.org/arborday](http://www.arborday.org/arborday) for more ideas on how your classroom can celebrate Arbor Day. You can also request a FREE copy of the Celebrate Arbor Day Guidebook.