

## The Tallest Plants...are Trees!

Have you ever heard the name “treehugger”? It is a fairly new name that came into use as human beings began to realize the importance of saving and protecting our environment. The people who want to save and protect the natural systems of our planet are often called “treehuggers” because they started out fighting to protect our planet’s precious forests.

### What’s so important about protecting trees?

Trees and forests are necessary for life on Earth. They protect our soil, sustain wildlife, and convert the carbon dioxide in the air into oxygen. Without trees or plant life, we could not breathe!

Trees are actually very big plants. One thing that sets trees apart from other plants is that trees will keep on growing as long as they are alive. Some of the giant sequoia trees in California are thousands of years old and are the largest living things on Earth.

There are many species of trees on the planet. If you are interested, you can find endless books on hundreds of trees. For this lesson, we will keep to the two common categories of trees—the **needle-leaf trees** and **broad-leaf trees**-- and cover just some basic tree knowledge.

The **needle-leaf** trees are called *conifers* or evergreens. Most keep their leaves (needles) and look green all year long. Pine, spruce, fir, hemlock, juniper, and cedar are in this group. Their seeds form in cones and cling to the layers of the cones until it is time for them to start growing. Then they easily fall out of the cone and scatter on the ground or in the wind. These seeds have no protective coating and need to find a place to grow quickly.

The trunks of needle-leaf trees usually go all the way to their tops. These trees can withstand much harsher weather than most broad-leaf trees can, but the wood from a needle-leaf tree is often easy to saw or nail into and so are considered softwood trees.

The **broad-leaf** trees are often called hardwoods or *deciduous*. Broad-leaf trees drop their leaves in the fall and grow new ones each year. Their seeds are enclosed in some form of casing, berry, or fruit, and can take their time finding a good place to grow. Some members of broad-leaf trees are oak, maple, walnut, poplar, willow, and birch. Two members, the holly tree and the live oak, do not drop their leaves in fall but are considered broad-leaf because of other characteristics.

## The Tallest Plants...are Trees! (Cont'd)

**Let's explore** the different parts of a tree. Every part plays an important role in the life of the tree.

### **The Crown:**

Any part of the tree above ground is considered part of the crown. The trunk, branches, twigs, and leaves are all parts of the crown. The branches and twigs form the framework for the leaves to grow. The leaves know, by nature, to grow in a way that will best capture the air and sun they need to nourish the tree. The leaves contain chlorophyll, which turns the energy from the sun into food for the tree. This process is called photosynthesis. As the leaves turn the sun's energy into food, the nutrients are sucked down into the roots along little tubes that are under the bark. The whole tree is fed this way. Down below, the roots return the favor!

### **The Roots:**

Trees are as large (or larger) underground as they are above ground! They need a huge root system to hold the great weight of the tree to earth. At the tip of each big root, little root hairs form. They don't live long, but are constantly being replaced, in great numbers, by new ones. These little fibers form whenever moisture is available in the soil. Called the "workers" of the root system, they flatten themselves around a particle of soil and suck any moisture available there. Before they wither and die, they send the moisture up into the tree. Just as the crown, up above, needs the water the roots send it, the roots and root hairs need the "food" that the leaves in the crown send down to them.

### **The Bark:**

The bark of a tree is the tree's skin. It helps protect the tree from disease, insects, and injury. Once the bark is broken, the whole tree can be in danger. Tree bark can be thick or thin, dark, light, or spotted in colors of white, gray, and brown. Trees are often identified by the color and texture of their bark. Some trees have bark that can stretch along with its growth. Cherry, birch, and beech trees have this "elastic" bark and the trunks are very smooth. Others, such as willow, ash, and hickory, have rough bark with furrows, gouges, or shingle-like strips.

## The Tallest Plants...are Trees! (Cont'd)

### The Wood:

Bark covers the wood of the tree. Under the bark is the natural material we call wood. Running up the center of the trunk is the oldest and hardest part of the tree called the heartwood. At one time, the heartwood was new sapwood and it carried water to the rest of the tree. As a tree grows, new wood is formed on top of the old making the tree stronger and thicker. The older wood, at the core, becomes hard. The new, softer layer of formed wood is called sapwood. It may look dead and it may look solid, but the sapwood part of the tree is made up of living cells and has channels running through it that act like highways to transport the sap (water) from the roots up to the leaves. The heartwood gives the tree its strength. The sapwood supplies the tree with water.

### In Between:

In between the layer of young sapwood, and the outer bark, are the ***cambium layer*** and ***inner bark***. The ***inner bark*** carries the nutrients made by the leaves back down to the roots (as food) and into the tree's ***cambium layer***. The ***cambium layer*** is where new wood and bark develops around the trunk every year. When a new layer is formed, it is like a new coating around the whole tree. Every new layer looks like a "ring" if you look at the inner diameter of a tree. Each layer can be seen as a separate ring around the trunk and can be counted as one year's growth. Foresters have an instrument that harmlessly removes a small "plug" from the core of a tree. From this "plug," the rings can be counted and the age of the tree discovered without any damage to the tree.

## The Tallest Plants...are Trees! Questions

### Section I: Multiple Choice

1. What is the main difference between needle-leaf trees and broad-leaf trees?
  - A. Needle-leaf tree trunks are narrower than broad-leaf tree trunks.
  - B. Broad-leaf trees have broad leaves while needle-leaf trees have skinny leaves.
  - C. Needle-leaf trees stay green all year; broad-leaf trees lose their leaves in fall.
  - D. One tree grows tall; the other stays short.
  
2. Treehuggers are:
  - A. Leg warmers for tree trunks so they don't freeze.
  - B. Instruments used to get a "plug" from the tree to check its age.
  - C. Loggers who "hug" the trees while attaching chains to drag them out of the forest.
  - D. People who fight to save the environment.
  
3. Three of the main parts of a tree are:
  - A. The crown, the roots, and the bark
  - B. The crown, the trunk, and the twigs
  - C. The roots, the sap, and soil
  - D. The crown, the roots, and the leaves
  
4. What do the root hairs do?
  - A. Make the roots look older
  - B. Help the roots hold the tree in the ground
  - C. Find and suck up moisture in the soil
  - D. Join together to give the tree more strength
  
5. The sapwood part of the tree:
  - A. Makes sap for maple syrup
  - B. Sends nutrients down to the roots
  - C. Is the best firewood
  - D. Has channels for moisture to travel up to the leaves

Name \_\_\_\_\_

Date \_\_\_\_\_

## The Tallest Plants...are Trees! Questions (Cont'd)

### Section II: Fill in the Blanks

1. Without trees and plants, the \_\_\_\_\_ would not have oxygen for animals or humans.
2. Pine, fir, spruce, and hemlock are all part of the category of trees known as \_\_\_\_\_ leaf trees.
3. Oak, maple, walnut, poplar, and others are broad-leaf trees. Their \_\_\_\_\_ drop every fall.
4. Seeds from evergreen trees form and cling to \_\_\_\_\_ until they are ready to grow.
5. The leaves of a tree can make food from the sun's energy because they contain a substance called \_\_\_\_\_.
6. The \_\_\_\_\_ of a tree is sometimes smooth, but can be rough and full of furrows too.
7. The cambium layer, beneath the bark of a tree, is where new \_\_\_\_\_ is formed.
8. The branches and twigs of the tree provide a \_\_\_\_\_ for the leaves to grow on.

### List of word choices:

Photosynthesis  
Framework  
Bark  
Leaves  
Wood  
Cones

Air  
Needle  
Chlorophyll  
Sky  
Insects  
Limbs

Name \_\_\_\_\_

Date \_\_\_\_\_

## The Tallest Plants...are Trees! Answers

### Section I

1. C
2. D
3. A
4. C
5. D

### Section II

1. Air
2. Leaves
3. Needle
4. Cones
5. Chlorophyll
6. Bark
7. Wood
8. Framework