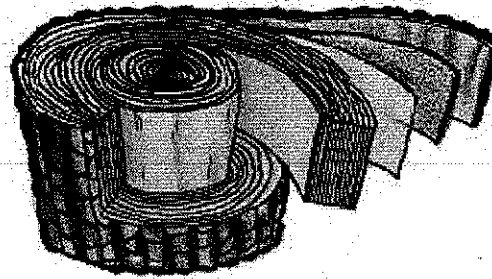
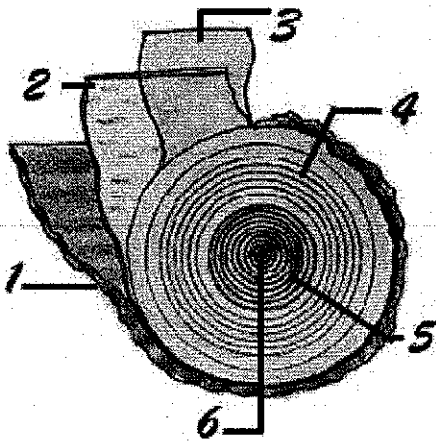


What is wood and how do trees grow? Use this information to fill in the worksheet.

There are six main parts to the wood of a tree.



1. The outer bark protects the tree from extreme temperatures, bad weather, insects and fungi. Very thin in birch trees, the outer bark may be one foot thick in the Douglas fir.

2. The **phloem** (bast) is also called the inner bark. It conveys the food-bearing sap developed in the leaves down to the various parts of the tree.

3. The **cambium** is a thin layer of cells which produce phloem on one side and sapwood on the other.

4. **Sapwood** is the living wood in the tree through which the raw sap rises from the roots to the leaves.

5. The **heartwood** consists of old cells. This is the dead part of the tree that nevertheless provides structural strength. If air could reach these cells, the heartwood would rot quickly.

6. The **pith** is the central core of the tree.

Each year, the tree forms new cells, arranged in concentric circles called annual rings or annual growth rings. These annual rings show the amount of wood produced during one growing season.

In Canada, the growing season begins in the spring. At first, the cambium produces numerous large cells with thin walls that form the springwood (earlywood). If you look at a cross section of a tree, this is the light-coloured ring.

Then, towards the end of the summer, growth slows down. The cells manufactured at this time of year are small, with thick walls. They form the summerwood (latewood) which appears as a darker ring on the tree cross section.

One year of growth is therefore represented by a ring consisting of a light part and a dark part. The darker wood is not formed in winter, as some people believe, because the cambium is completely inactive in the winter.

The following year, a new two-part ring is added. The older rings are closest to the centre of the tree. The tree grows in diameter because it manufactures new cells around its circumference, not because the old cells get larger.

The old annual rings form the heartwood of inactive cells: this is the dead part of the tree. The live portion includes only the most recent rings. Depending on the tree's age and species, this portion is 1.5 to 7.5 cm wide. The dead wood is the largest part of the tree. Often, it takes on a darker colour.

Annual rings generally exist in trees where the climate halts growth at some point during the year. In our country, winter causes this shutdown. In other countries, it is the dry season. Growth begins again in the spring or rainy season.

But what happens to trees growing in countries where there is no alternation between growth and rest periods?

For example, a country where it rains all year long! Remember that all trees grow by adding successive rings. So in such an area, the beginning and end of the growth period may occur any time during the year, depending on the local conditions.

Trees – Fill in the Blanks

Write the letter corresponding to the word in the boxes below:

A. branches	B. cambium	C. canopy	D. chlorophyll
E. conservation	F. dormant	G. forest ecology	H. forest floor
I. germinates	J. leaves	K. phloem	L. photosynthesis
M. renewable resource	N. roots	O. springwood	P. stem
Q. summerwood	R. understory	S. xylem	

1. Seeds that go through a period of cold before they germinate are called
2.  is a thin layer of growing cells between the inner bark and new wood.
3.  is the conversion of water and carbon dioxide into sugar.
4. The  and  support the tree's crown and serve as a transport line for sugar and water.
5. When a seed , it starts growing.
6. The cambium produces  and .
7. Dark, narrow rings of wood are called  in trees.
8. The  anchor the tree and absorb water and minerals from the soil.
9.  are the food factories in a tree.
10. Light, wide rings of wood are called .
11.  is a green material in leaves that is used to make sugar.
12. The  is the top of the forest and is made up of branches and leaves from the tallest trees.
13.  is the study of how soil, sunlight, water and living things work together, blending to make a unique forest.
14. Proper care of our natural resources is called .
15. Forests are a  because they can regrow and renew themselves.
16. The layer of shorter trees and shrubs directly below the canopy is called the .
17. The  is the bottom layer in a forest ecosystem, where seedlings, grasses and wildflowers grow