

Activity 1. Parts of a Tree, Functions of Tree Parts, and the Tree Factory

INSTRUCTIONS:

Students will understand different parts and functions of a tree.

- 1) a) Use Project Learning Tree's (PLT) Tree Factory Activity to have students act out the parts of a tree (the background information can be used to help students understand the function of each part of a tree).
 - I. This activity uses the scientific term phloem instead of inner bark. It further explains sapwood in the scientific term xylem.
 - II. The variation and extensions have been included; they are for your information and not intended as an activity for the students.
- b) Pass out 'The Parts of a Tree' worksheet. You will read the background while you have the students fill in the worksheets showing the cross section of a tree.
 - I. You may want to project the worksheet on the board and use a dry erase marker to fill in the boxes. Please note the labeling in the PLT activity and on the worksheet are opposite from one another. A in the PLT activity is E on the worksheet, B is D, C is correct, D is B, and E is A.

'The Parts of a Tree' Worksheet Key

The definitions here are added for your purposes.

- A. The outer bark is the tree's protection from the outside world. Continually renewed from within, it helps keep out moisture from the rain, and prevents the tree from losing moisture when the air is dry. It insulates against cold and heat and wards off insect enemies.
- B. The inner bark, or "phloem," is the pipeline through which food is passed to the rest of the tree. The phloem lives for only a short time, then dies and turns to cork to become part of the protective outer bark.
- C. The cambium cell layer is the growing part of the trunk. Every year it produces new bark and new wood in response to hormones that pass down through the phloem with food from the leaves. These hormones, called "auxins," stimulate growth in cells. Auxins are produced by leaf buds at the ends of branches as soon as they start growing in spring.
- D. Sapwood, or "xylem," is the tree's pipeline for moving water up to the leaves. Sapwood is new wood. As newer rings of sapwood are laid down, inner cells lose their vitality and turn to heartwood.
- E. Heartwood is the central, supporting pillar of the tree. Although dead, it will not decay or lose strength while the outer layers are intact. A composite of hollow, needlelike cellulose fibers bound together by a chemical glue called lignin, it is in many ways as strong as steel. A piece 12" long and 1" by 2" in a cross section set vertically can support a weight of twenty tons!

- 2) Have the students journal about this activity.
- 3) Students will read and further explore how a tree grows.
 - a) Connect a computer to a projector, connect to the Internet, and open the link <http://www.arborday.org/kids/carly/lifeofatree/>. The Arbor Day website has some great information, and some students may want to explore this site further after the activity.
 - b) Have students take turns reading the slides in the life of a tree presentation from the link.
 - c) Make sure the students understand the xylem becomes the tree ring.
 - d) Have students fill out the 'Function of the Tree Parts' worksheet at the end of the activity.

'Functions of the Tree Parts' Worksheet Key

Underlined words indicate answers for each fill-in-the-blank

- A. The outer bark is the tree's protection from the outside world.
- B. The inner bark or "phloem" is the pipeline through which food is passed to the rest of the tree.
- C. The cambium is a very thin layer of growing tissue.
- D. Sapwood or "xylem" moves water up to the leaves. It is new wood.
- E. Heartwood forms the central core of the tree. It is made of dense dead wood and provides strength for the tree.