

Build A Tree

Science Activity | Grades 3-5

Standards: 5-LS2 (Ecosystems: Interactions, Energy, & Dynamics)
4-LS-1 & LS1.A (From Molecules to Organisms: Structures & Processes)



Overview:

Trees have different parts and functions, many of which cannot be seen. Students will experience these parts and functions through movement and sound activities.

Materials:

No materials required. For 30 students, assign 2 to Heartwood, 2 to Taproot, 4 to Lateral Roots, 4 to Sapwood, 10 to Cambium/Phloem/Leaves, and 8 to Bark.

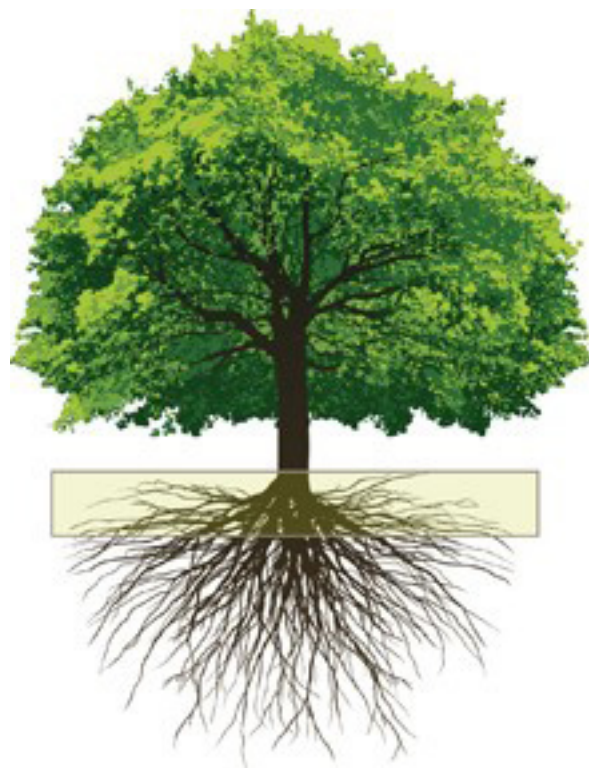
In a large group more than one child can take each role.

HEARTWOOD is the inner core of the trunk and provides strength and support for the tree. The heartwood is dead but well preserved! The heartwood used to be alive but now its thousands of tiny tubes that carried water up and food down are now clogged with resin and pitch. [**Choose one or two tall children, have them stand in the center with their backs to each other. When teacher says “Heartwood, stand tall and strong,” students yell “Trunk!”**]

TAPROOT enables tree to get water and trace minerals from deep in the earth and anchors tree firmly to the ground. Most but not all trees have taproots. Some taproots go thirty feet deep! [**Ask several children to sit at the base of the heartwood, facing outward.**]

LATERAL ROOTS grow outward all around the tree like branches only underground. There are hundreds and hundreds of lateral roots ending in tiny root hairs which hold the tree upright. Trees have thousands of miles of root hairs that cover every inch of the soil in which they grow. When they sense there is water nearby they grow towards it and suck it up! [**Have children lay on the ground with their feet toward the trunk. Role: Both types of roots (tap and lateral) will make a loud slurping noise when teacher says, “Let’s slurp!”**]

SAPWOOD or **XYLEM** draws water up from the roots to the highest branches. It is the most efficient pump in the world with no moving parts. (Faster than your car goes.) [**Choose enough children to form a circle around the heartwood, facing inward; being careful not to step on any roots. When teacher says “Bring water up,” students say “Wheeee” and throw their arms up into the air.**]



Tree Tidbit:

A tree is able to lift hundreds of gallons (buckets) of water a day at speeds over 100 miles per hour!

CAMBIUM or PHLOEM are the growing parts of the tree. LEAVES are where food is manufactured. Every year trees add a new layer to the sapwood and phloem. A tree grows outward from its trunk (rings) and from the tips of its roots and branches. Phloem carries food manufactured by the leaves to the rest of the tree. **[Choose enough children to form a circle around the sapwood; facing inward. On the front side of their body is the cambium, on the back side is the phloem. Have them stretch their arms upward and outward leaving their hands free to flutter like leaves. Role: When teacher says, “Let’s make food!” students raise their arms and flutter their leaves and absorb the energy from the sun and make food. And when teacher says, “Bring the food down!” students go “Whooo!” in a long descending sound while they bend their knees and drop their arms and body toward the ground.]**

BARK is the thick layer that protects the tree from fire, insects, extreme weather conditions. **[Have remaining children form around the tree facing outward. Raise arms like a football blocker with both elbows out and both fists close to the chest. When teacher says “Bark, protect the tree!” students yell “Bark!”]**

While you are going around the tree you or an adult helper shouts out the commands to the rest of the tree as follows:

- 1) “Heartwood, stand tall and strong!”
- 2) “Bark, protect the tree”
- 3) “Roots, let’s slurp!”
- 4) “Leaves, make food!”
- 5) “Xlyem, bring up the water!”
- 6) “Phloem, bring the food down!”

After the first round, just shout out the commands without giving the names of the tree parts.

Activity Reference: Joy of Nature by Joseph Cornell

Additional Activities: Plant or Adopt A Tree

On the school grounds either plant a tree (ask a local nursery to donate a tree in honor of Arbor Week) or adopt a tree already growing nearby. Visit it, care for it, draw it, watch it through the year keeping a journal of how it changes, when? why? What does it need to survive? to thrive? Consider how the tree affects and is affected by the environment, weather, people. Enrichment activities could include writing (journaling, writing stories, poetry), art (drawing, painting, leave or bark rubbings), science (weather, seasons, seeds cycle, water cycle, photosynthesis, urban development, soil), math (tree measuring, graphing, estimating amounts of leaves, daily water consumption, height, width, etc.), social science (developing empathy for other living beings and an understanding that a tree needs many of the same things that humans need to survive.

California ReLeaf is funded in part by the California Department of Forestry and Fire Protection and the National Urban and Community Forestry Program of the USDA Forest Service. This institution is an equal opportunity provider.

