Can a tree feel like a cave?

(Spring, Summer, and Fall | Grades 2-5) •
Map Stop 5 • Across from a bordering house, you'll see a large live oak

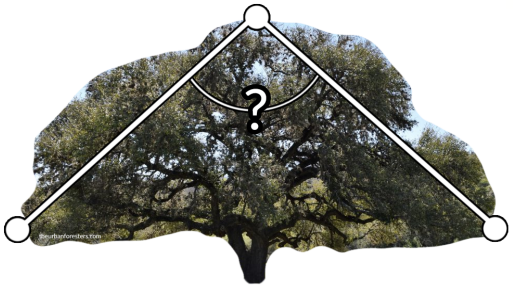
Why are trees important, especially for life in the city?

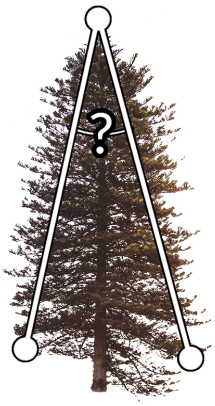
Additional Tools Needed: Air thermometers, and angle-o-trons, available in the plastic box inside the Nature Center, in the southeast corner along the gray fence. **Note:** for field trips, check with our team on organizing the amount of materials needed!

Background Information:

In hot cities like Dallas, old, established **trees can help cool us** by shading air and keeping it cold until wind can come and spread it around as a nice comfortable breeze. So what's the **ANSWER** ? More so than smaller plants, trees keep us cool, and trees with leaves that block the most sun will be cooler underneath than trees that let in dappled light and do not fully block the sun. Trees also supply **food** for living things, keep the surrounding **soil** in place, absorb **carbon dioxide** and produce **oxygen**, provide **shelter** for animals, and create **shade** to sit under.

So now we know why this tree feels cool like a cave, but why is it shaped like one? The **angle** of the leaves and branches help low-growing trees like this **live oak** grow large and sprawling. They are arranged to maximize the amount of leaves exposed to the sun while still covering a wide area. You might notice that no leaves grow underneath the outer layer of the "cave," only appearing on the surface. This low, spread-out shape also helps keep these trees from blowing over in **high winds**. In fact, live oaks are particularly well-adapted to staying upright in strong storms - even hurricanes!





For the Activity:

Using the provided **air thermometer**, you can see this effect for yourself by measuring the temperature both in the tree cave and out on the trail. Where is it cooler? Are some trees better at cooling than others? Note that this air temperature difference will be most dramatic in the **summer**!

Using the **angle-o-tron** tool, try to estimate the angle that the tree's canopy forms, measuring from its lowest, outermost leaves to its highest point (as in the illustration above). Are most angles acute or obtuse? Are there any right angles? For a video on using the tool, scan the QR code on the left.
*(Alternate link: **youtu.be/Dqm_4i0XxSM**)*

What angle do you get? How does that angle compare to the other taller, more upright trees around you? What might be the benefit of growing in a taller, more narrow shape? Which type of tree shape do you think likely **grows faster**, and why?