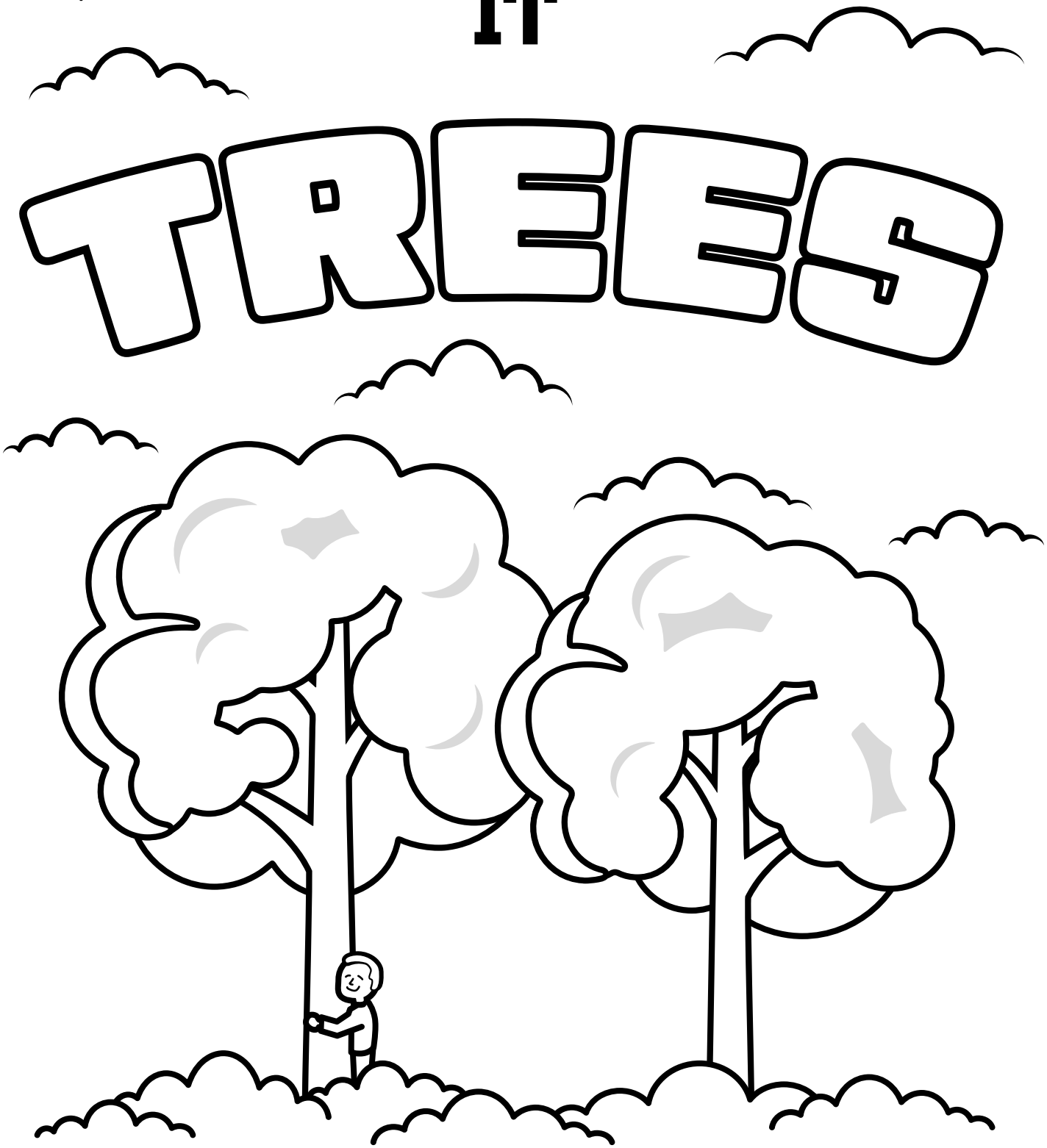
DIG IT

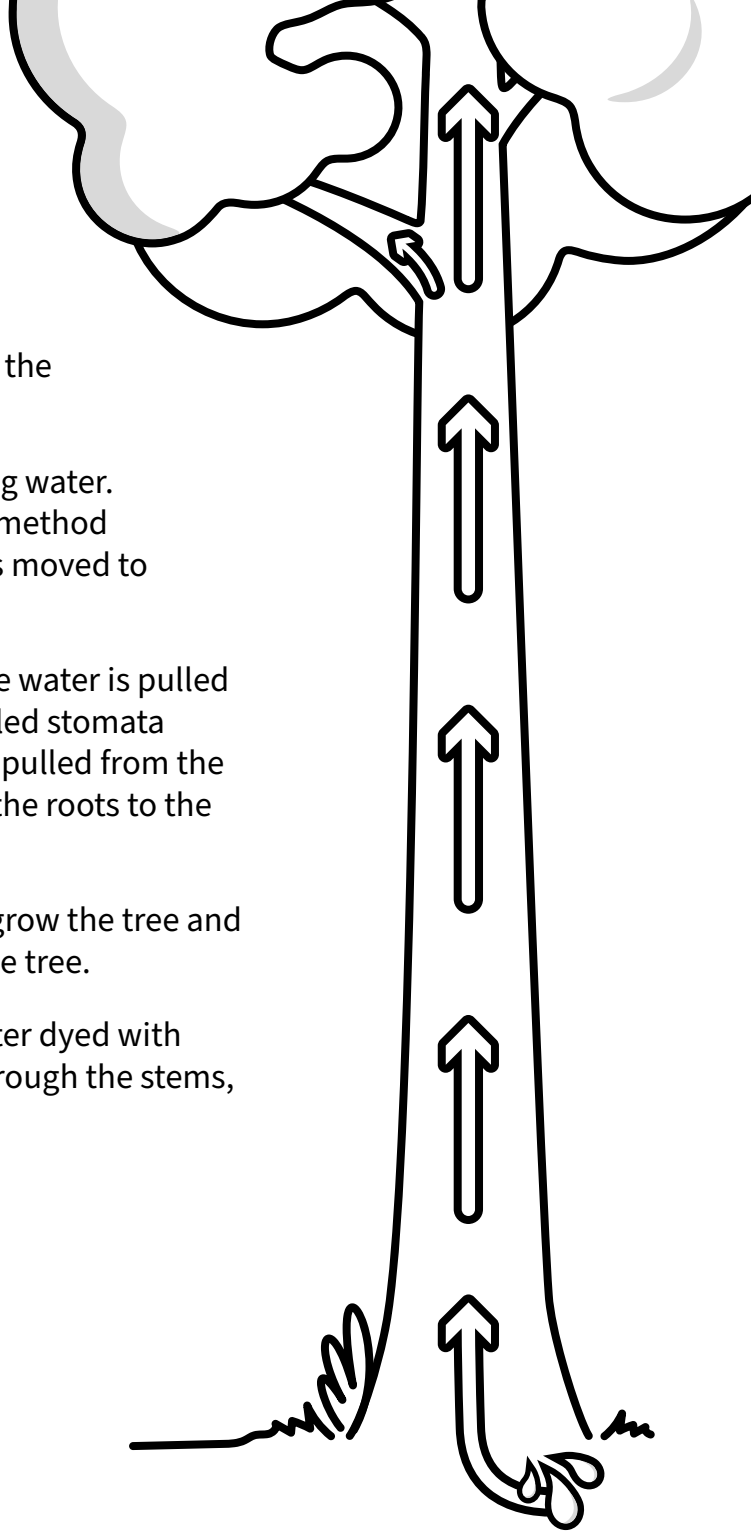
TREES



Illinois Extension
UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

College of Agricultural, Consumer and Environmental Sciences. University of Illinois, U.S. Department of Agriculture, Local Extension Councils Cooperating.

How Water Moves In a Tree



Some of the world's biggest trees like the Giant Sequoia can be hundreds of feet tall. But how do they move water from the roots in the ground all the way to the very top of the tree?

There are no machines or pumps inside the tree moving water. It is all done using living cells and physics. Physics is a method for scientists to study how things move. How water has moved to the tops of trees has puzzled scientists for a long time.

Trees first take in water from their roots. From there the water is pulled up to the leaves because the leaves have tiny holes called stomata where most of the water will leave the tree. As water is pulled from the leaves this creates pressure that brings water up from the roots to the leaves through fibers (tubes) the width of a hair.

The water is full of nutrients from the soil that help to grow the tree and the water going out through the leaves helps to cool the tree.

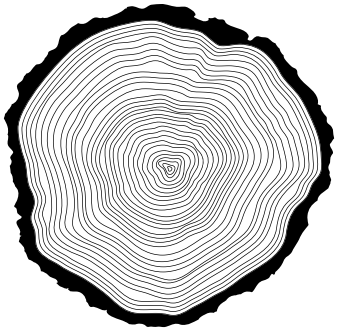
You can experiment using celery stalks and cups of water dyed with food coloring to observe how plants move water up through the stems, branches, and leaves.

Activity

1. Make a fresh cut on the bottom of the celery stalk.
2. Place it in a cup with red or blue food coloring.
3. Wait for a day or two to see what happens.
   Did the celery turn a different color?
4. Record your observations below.

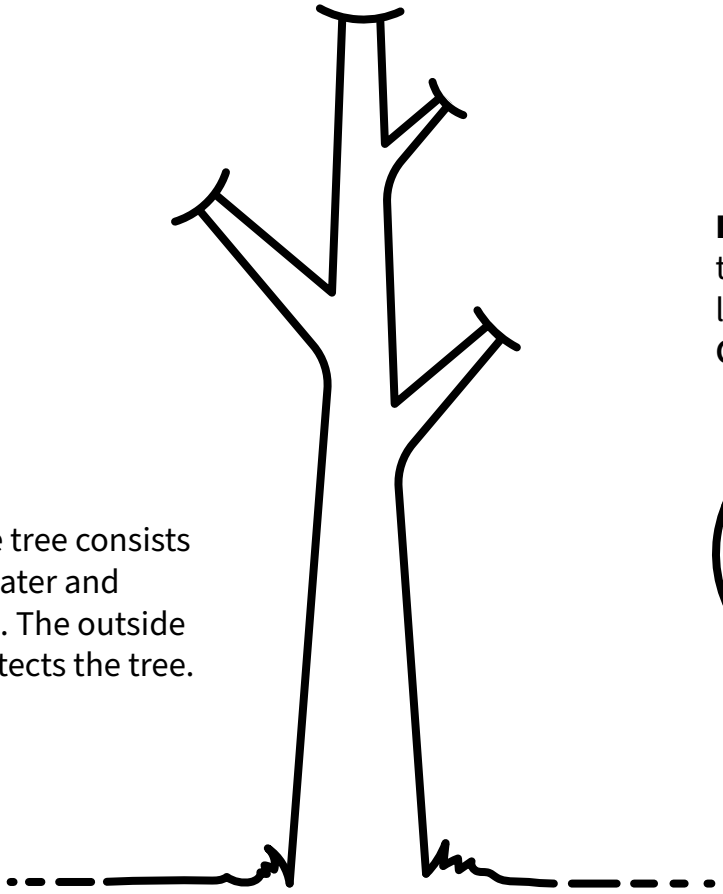
https://thekidshouldseethis.com/post/how-do-trees-transport-water-from-roots-to-leaves

Parts of a Tree

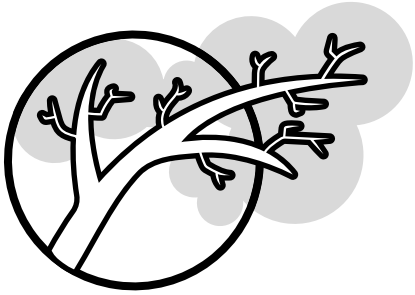


Leaves are where the tree combines energy from sunlight, carbon dioxide from the air, and water to form food for the tree and oxygen for us to breath. **Draw green leaves on the branches.**

Did you know: if you count the rings inside of a tree it will tell you how old it is?



Branches grow from the trunk and hold the leaves to collect sunlight. **Color them brown.**



Trunk, or the stem of the tree consists of tiny tubes that carry water and nutrients from root to tip. The outside layer, called the bark protects the tree. **Color it brown.**

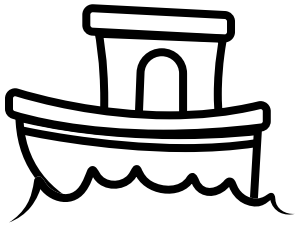
Roots absorb water and nutrients from the soil, and they anchor the tree in the soil so it doesn't fall over! **Draw yellow roots under the soil.**

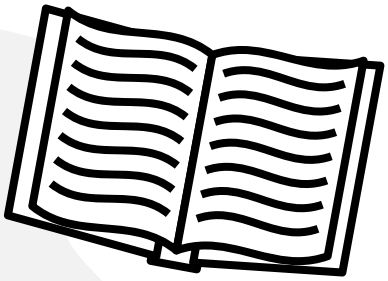
Dig Deeper: Deciduous vs. Evergreen

Deciduous trees have leaves that change colors and drop every year. Evergreen trees have smaller leaves, called needles, that stay connected and green on the tree all year! Go outside and collect a leaf from a deciduous tree and an evergreen tree. What differences do you notice? Do they have any similarities?

What Comes From a Tree?

Trees provide many items we use everyday. Some of the items that come from trees are easy to identify, like paper! Some are not. Let's discover items you may not realize come from trees. Circle all the items from the list below that you see around you.





Leaves and Needles
Pine Oil
Cedar Oil

Trunk
Toothpicks
Furniture
Shingles*
Shoe heels
Musical Instruments
Plywood
Veneer
Lumber
Popsicle Sticks
Boats

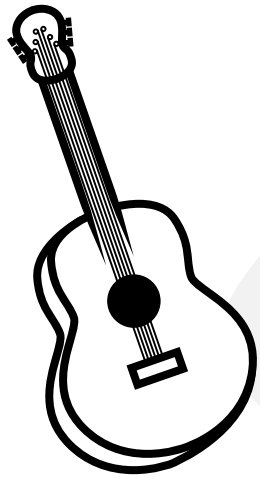
Saps, Gums, and Resins
Crayons*
Hair Spray*
Shaving Cream*
Eyeglass Frames*
Maple Syrup
Chewing Gum
Medicine
Paint*
Football Helmets*

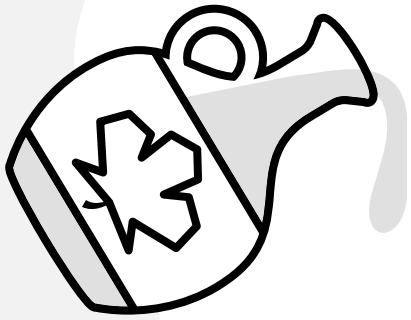
Roots
Tea
Oil

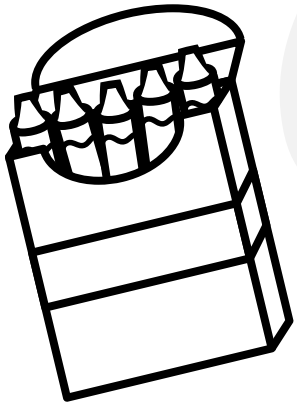
Bark
Dyes
Adhesives*
Flavorings*
Mulch
Fuel

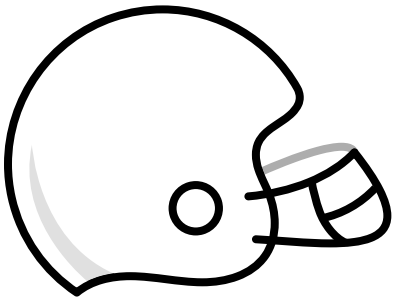
Sawdust
Composition Board
Filler for Linoleum flooring
Plastics
Soil Conditioner
Fuel Briquettes
Pulp

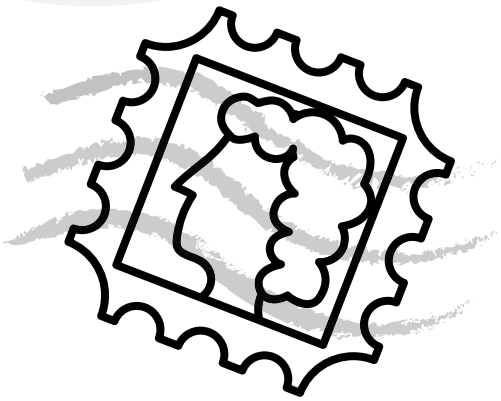
Pulpwood
Books
Calendars
Menus
Postage Stamps
Cellophane*
Shatterproof Glass





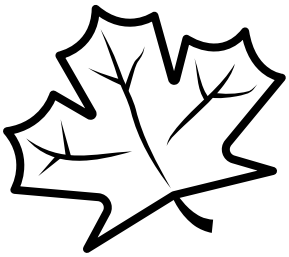






*Made from cellulose, oils and resins - natural by-products of the paper-making process.

4 Seasons of a Tree



Simple Leaf

Compound Leaf

Observe trees in school yard, park, or home.
Notice differences in leaves, bark, twigs, and trunk.
What shape is the tree?
Are there needles or leaves?
Are leaves simple or compound?
What color and texture is the bark?
Are there fruits, nuts, or seeds on the tree?
What does the area around the tree look like?

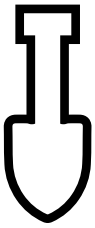
Draw the same tree in each season

Spring
- How big are leaves?
- Are there flowers?

Summer
- Do all the branches look healthy and full of green leaves?
- What do the leaves look like?
- Do you see any berries? How big are they?

Autumn
- Are leaves turning colors? What colors do you see?
- Have leaves fallen?
- Are there any nuts or seeds? What do they look like?

Winter
- Are branches bare or evergreen?
- Is there snow on the ground?
- Do you see any wildlife?



Dig Deeper
Describe your tree using all 5 senses. Write a paragraph on another paper about your tree using descriptive words.

Where do the Colors Come From?

As fall approaches you've probably noticed that the leaves of many of our trees begin to change color. Why do you think that happens?

Getting ready for winter

Have you ever noticed that the days get shorter the close we get to fall? Trees do too! As the day length gets shorter in the fall, this tells trees, and other plants, that it's time to get ready for winter.

Many trees, like oaks, maples, and sycamores, are deciduous. This means they lose their leaves during the winter. But, before they get rid of their leaves, their leaves change from green to red, orange, yellow, purple, or brown.

Leaf color

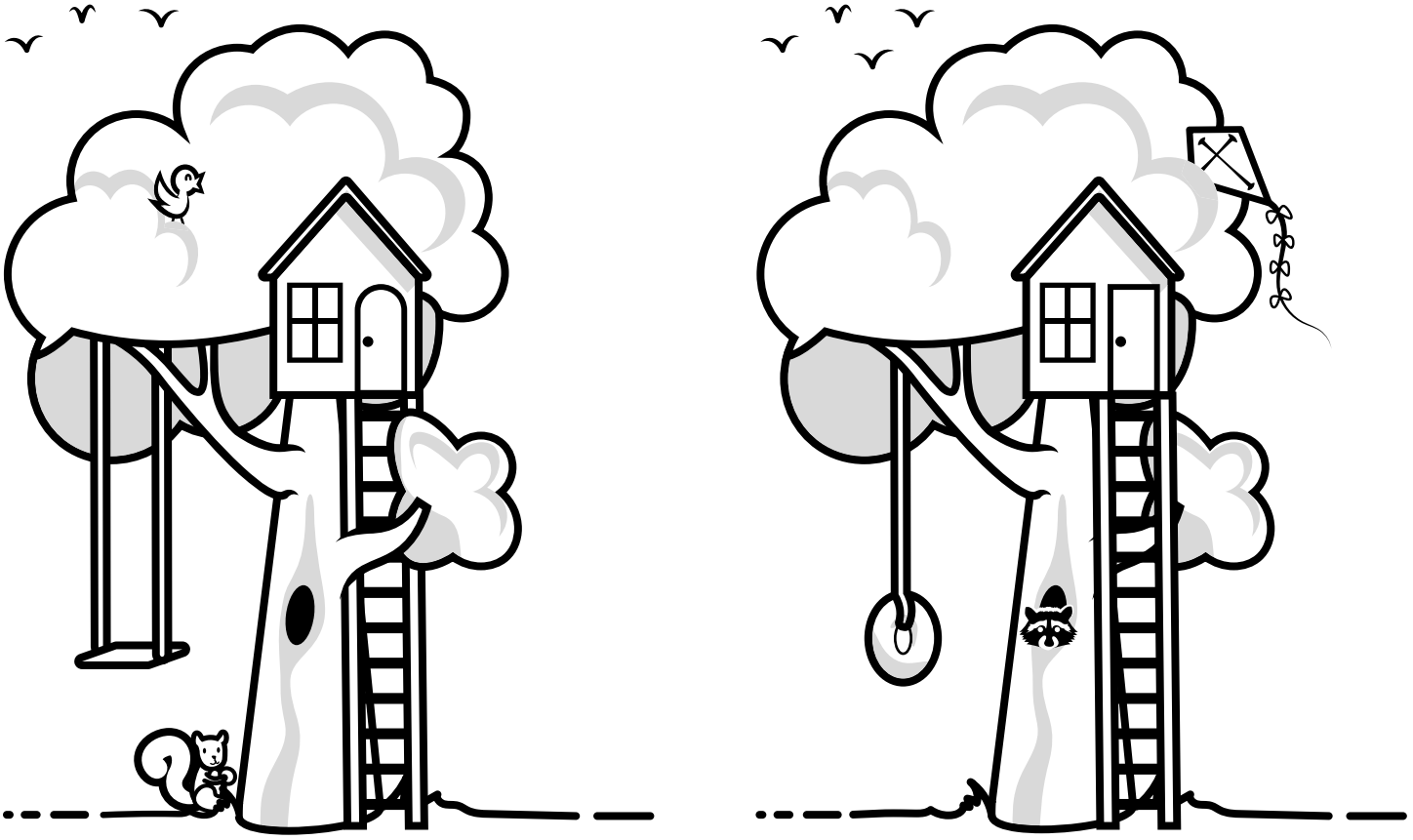
Leaves get their color from things called pigments. Different pigments create different colors.

- carotenoids - orange and yellow
- tannins - browns
- anthocyanins - red and purple
- chlorophyll - green

Can you think of other places we can find these pigments?

These pigments are not only in leaves, but they can be found in other plant parts like fruits and vegetables! For example, carrots are orange because they have a lot of carotenoids in them.

Spot the Differences



Key: Left side: three birds, bird in tree, round door, squirrel, ladder behind branch, swing. Right Side: four birds, kite in tree, square door, tire swing, raccoon, ladder in front of branch.

Dig Deeper

The colors you see in fall are always present in the leaf. However, the leaves have so much chlorophyll in them you can't see them. Chlorophyll has lots of nutrients in it that the plants don't want to lose. So, as winter approaches plants will break down chlorophyll and store the nutrients. When this happens, you are able to see the other colors present in the leaves.