

Leaf Characteristics Lesson:

Leaves come in all different shapes, sizes, and colors. Studying leaves for their various characteristics helps with plant identification as well as understanding how plants are grouped into families. The science of naming, defining, and classifying organisms into related groups is known as taxonomy. In botany (the study of plants), taxonomists look at many different traits of plants, including their leaves, to determine what plants are related to each other. The most common characteristic used for tree identification is the leaves.

Leaves have many different characteristics that make them unique. Let's look deeper at six major categories of leaf characteristics.

1. Leaf type or category
 - a. Needle-like leaves – these leaves are typical of many evergreen trees
 - b. Scaly leaves – these leaves overlap each other like scales on a fish, and are also found on evergreens
 - c. Broadleaf or flat leaves – these leaves are flat and will be what we find falling from trees in the fall*

*The rest of the characteristics we are going to talk about will be in relation to broadleaves.

2. Leaf Structure
 - a. Simple leaf: each leaf is made up of a single blade attached to the stem
 - b. Compound leaf: each leaf is made up of smaller blades (leaflets), which then has one point of attachment to the stem
3. Leaf Arrangement
 - a. Opposite: Leaves are attached to the stem directly across from each other
 - b. Alternate: Leaves are attached to the stem in alternating positions
 - c. Whorled: Three or more leaves are attached to the stem at approximately the same place
4. Leaf Shapes
 - a. Elliptical: oval with a short or no point
 - b. Oval: oval
 - c. Oblong: elongated shape with slightly parallel sides
 - d. Ovate: oval to egg-shaped with a tapering point and the widest portion near the base of the leaf
 - e. Linear: long and very narrow
 - f. Lanceolate: long and wider near the middle
 - g. Deltoid: triangular-shaped
 - h. Cordate: heart-shaped
5. Leaf Margin
 - a. Entire: smooth edge
 - b. Toothed: serrations (pointed or rounded notches) along edge
 - c. Lobed: deep indentations from the edge in towards the center vein, but not reaching the center
6. Leaf Venation
 - a. Palmate: veins originate from a common spot at the base of the leaf

- b. Pinnate: one central vein runs down the middle with more veins spread out along the sides of the central vein
- c. Parallel: veins run parallel to each other

Closely looking at leaf characteristics is one of the ways to help identify trees. When collecting leaves, notice the type of leaf you are collecting, the structure of the leaf, and figure out the leaf's shape, margin, and venation. After doing a leaf rubbing, label the characteristics of each leaf. As you become more familiar with leaf characteristic terminology, you can begin looking at other tree characteristics, such as buds, stems, flowers, and fruits, and use field guides to try and identify different types of trees while you are out walking.