



## Dichotomous Key Activity

Students practice using a dichotomous tree key and then create their own place-based tree key.

### Materials

- Activity Key
- Getting Started on Leaf Characteristics
- Sample Leaf Cards
- Tree Information Cards

### Resources

- Texas A&M Forest Service, Trees of Texas
  - How to ID: <http://texastreeid.tamu.edu/content/howToID/>
  - ID by Leaf: <http://texastreeid.tamu.edu/content/idByLeaf/>
  - List of Trees: <http://texastreeid.tamu.edu/content/listOfTrees/>
  - Leaf Collection & Safety: <http://texastreeid.tamu.edu/content/leafCollectingSafety/>
- Arbor Day Foundation
  - What Tree Is That?: <https://www.arborday.org/trees/whattree/>

### Instructions

1. Print activity pages, cutting Sample Leaf and Tree Information Cards apart. Print either a set for each group or individual, or enough to swap during the activity.
2. Review the handout Getting Started with Leaf Characteristics or use the How to ID section of the Trees of Texas website with students.
3. Provide the students with one of the Sample Leaf cards. Ask students to observe the characteristics of leaves: leaf tips and bases, leaf margins, leaf textures, leaf structure, and leaf arrangements. Optional: have them write a list of the characteristics for their leaf.
4. Have students use the Activity Key to identify their tree species.
5. Once the students have identified their species, give them their declared Tree Information Card to verify their decision. They can also look up their tree on the List of Trees section of the Trees of Texas website to review more information.
6. Have students continue practicing with the key by identifying all of the Sample Cards.

7. If leaves are available on your local trees, have students collect samples. Review the Leaf Collection & Safety section of the Trees of Texas website with students.
8. Have students identify their collected species using the ID by Leaf key on the Trees of Texas website or the What Tree Is That? key from the Arbor Day Foundation website.

### **Extension**

Create a place-based tree key that is unique to your campus.

Have your students choose trees to include, collect leaf samples, categorize the leaves based on their characteristics, then write out a key. After creating the key, have another class or another group use it to identify the local trees. Publish a print copy of the key to share or add a digital version to your school website.

If your class or school already has a Tree Trail, consider creating a key for the trail. If you do not have a Tree Trail, find more information about creating one at <http://tfsweb.tamu.edu/ConservationEducationResources/TreeTrails/>.

**Question 1**

Is the tree coniferous? Does the tree have needle-like leaves and bear cones?..... Yes, you have a Loblolly Pine.

OR

Is the tree a broadleaf? Does it have thin, flat leaves?..... Yes, go to Question 2.

**Question 2**

Are the leaves simple? Is there one leaf attached to the petiole?..... Yes, go to Question 3.

OR

Are the leaves compound? Are there multiple leaflets on a single petiole?..... Yes, go to Question 4.

**Question 3**

Are the simple leaves opposite?..... Yes, you have a Red Maple.

OR

Are the simple leaves alternate?..... Yes, go to Question 5.

**Question 4**

Are the compound leaves alternate with lanceolate shaped leaflets?..... Yes, you have a Pecan.

OR

Are the compound leaves opposite with oval shaped leaflets?..... Yes, you have a Texas Ash.

**Question 5**

Are the margins serrated or toothed and is the leaf shape oval?..... Yes, you have an American Elm.

OR

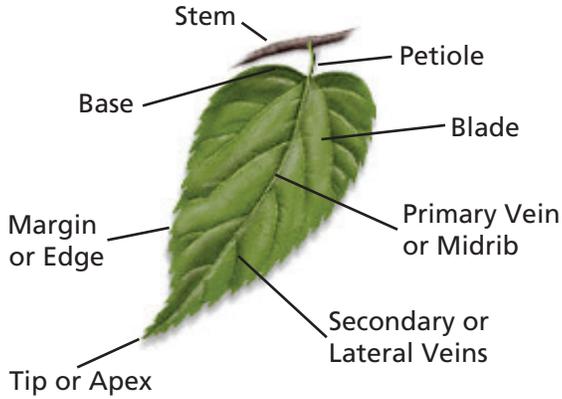
Are the margins lobed and is the leaf apex rounded?..... Yes, you have a Post Oak.

# Getting Started on Leaf Characteristics

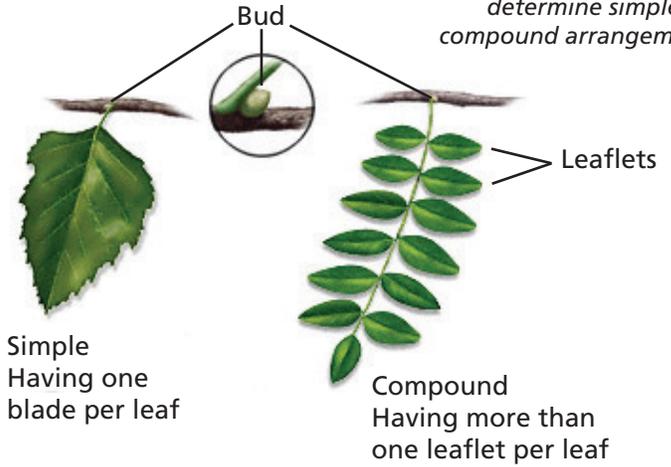
## Tree Type

Coniferous - a tree with needles or scales instead of leaves, bearing cones  
 Broadleaf - a tree with wide flat leaves

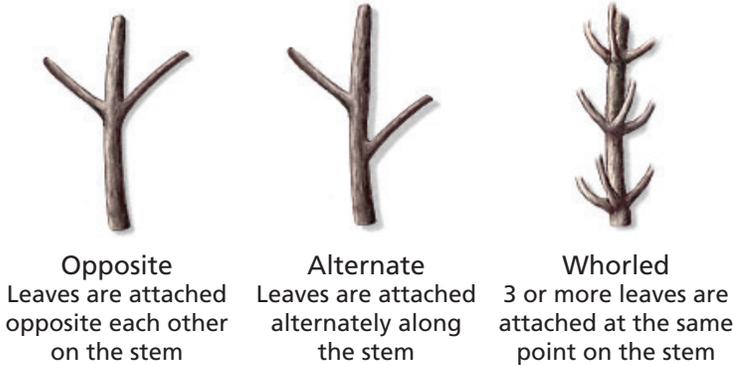
## Parts of a Leaf



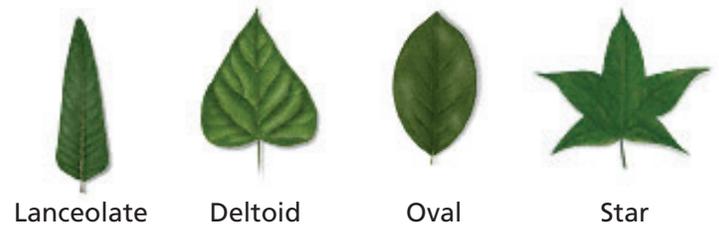
## Simple & Compound Leaf



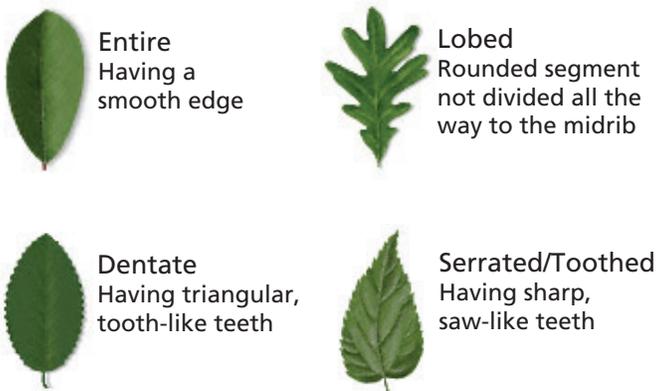
## Leaf Arrangement



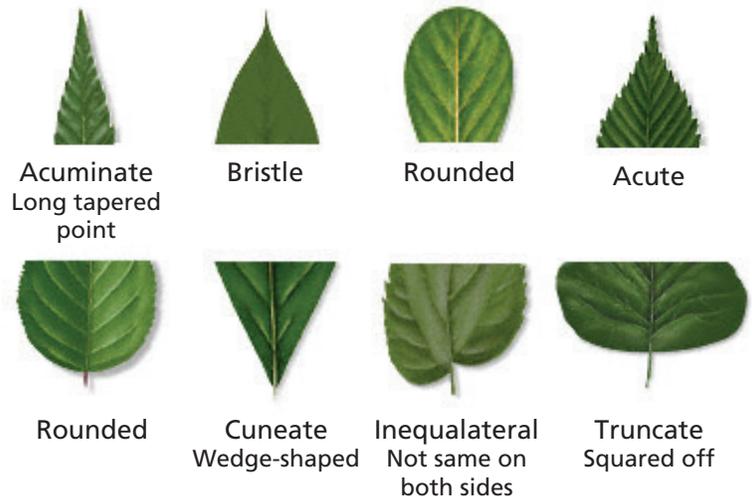
## Leaf Shapes



## Leaf Margins



## Leaf Apexes and Bases



To find more Leaf Characteristics, visit the Trees of Texas website's How to ID section:  
<http://texastreeid.tamu.edu/content/howToID/>



**A**



**B**



**C**



**D**



**E**



**F**



# Post Oak

## Leaf

Deciduous leaves are 4 to 6 inches long  
Lobes form a cross shape

## Tree Description

Medium to large size  
Up to 50 feet tall with trunk 2 feet in diameter

## Bark

Thick, gray-brown  
Narrow, irregular cracks and scaly ridges on  
older trees

## Wood

Heavy, hard  
Used for crossties and fence posts, sometimes for  
lumber

## Notes

So common that an entire ecoregion is  
named Post Oak Savannah

Trees of Texas website <http://texastreeid.tamu.edu>



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# American Elm

## Leaf

Deciduous leaves are 4 to 6 inches long, 2 to 3  
inches wide  
Oval, tip comes to a point  
Base is lopsided and double toothed

## Tree Description

Large size, up to 90 feet tall

## Bark

Dark gray  
Divided into irregular flat-topped, thick ridges

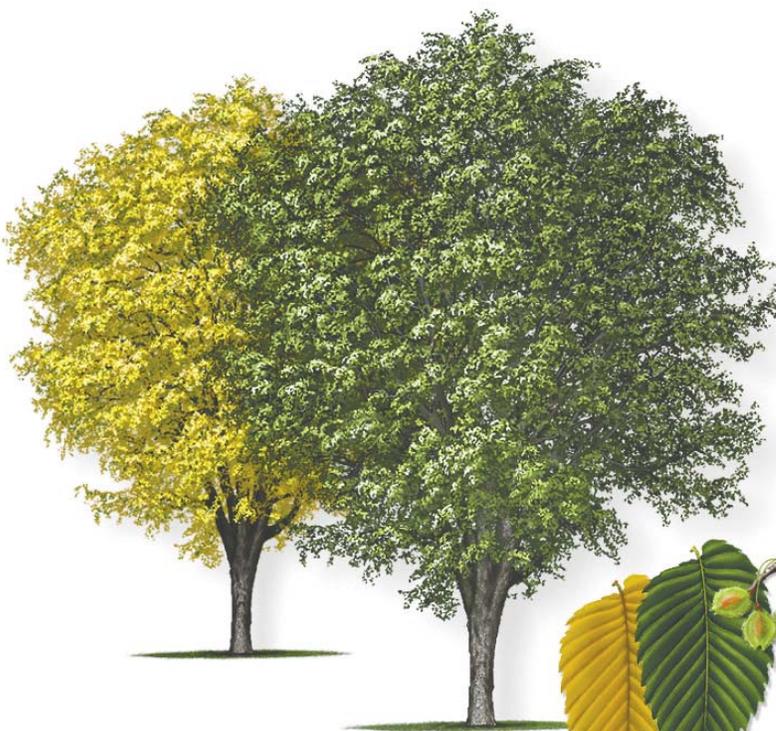
## Wood

Heavy, hard, strong  
Once used for wheel hubs, furniture parts,  
veneer for baskets

## Notes

Historically a common street tree, but  
almost wiped out by Dutch Elm Disease

Trees of Texas website <http://texastreeid.tamu.edu>



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# Red Maple

## Leaf

Deciduous leaves are 2 to 5 inches long  
Has 3 to 5 pointed saw-toothed lobes  
In autumn, leaves turn a brilliant shade of red or orange-yellow

## Tree Description

Medium size, fast growing, reaches 90 feet tall

## Bark

Smooth and light gray on young tree  
Rough, scaly, dark gray on old limbs and trees

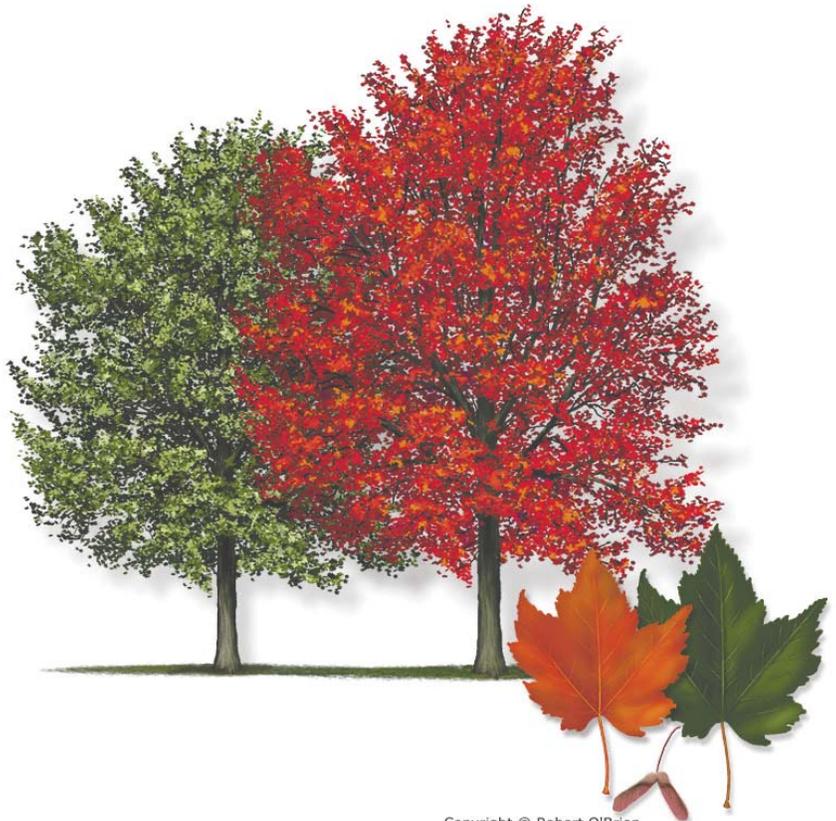
## Wood

Heavy, close-grained, light brown color  
Used for furniture, turned items, fuel

## Notes

Also named Swamp Maple, Trident Maple,  
Drummond Red Maple

Trees of Texas website <http://texastreeid.tamu.edu>



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# Pecan

## Leaf

Deciduous leaves have 11 to 17 leaflets, lanceolate  
Margins are finely-toothed and long-pointed

## Tree Description

Large size, but can grow tall and slender in wooded settings  
Up to 120 feet tall with trunk 4 feet in diameter

## Bark

Gray-brown and smooth at first  
Thin scales on older trees that flake off, creating a rough texture

## Wood

Heavy and hard, but brittle and not strong  
Used for flooring and cooking wood, especially for barbeques

## Notes

State tree of Texas

Trees of Texas website <http://texastreeid.tamu.edu>



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# Loblolly Pine

## Leaf

Evergreen needles in bundles of three, 5 to 10 inches long

## Tree Description

Large, fast growing  
Up to 125 feet tall with trunk 4 feet in diameter

## Bark

Thick, dark red-brown to black flaky plates

## Wood

Most commercially valuable southern pine,  
coarse-grained  
For lumber, posts, boxes, pulp, and many more uses

## Notes

Southern Pine Beetle once damaged large pine stands that today are protected by sustainable management practices

Find more at <http://tfsweb.tamu.edu/insects>



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# Texas Ash

## Leaf

Deciduous leaves with 5 oval or round leaflets  
Dark green on top, lighter below

## Tree Description

Medium sized, oval crown  
Up to 45 feet tall with trunk 2 feet in diameter

## Bark

Gray with brown or black blotches with interlocking flattened ridges

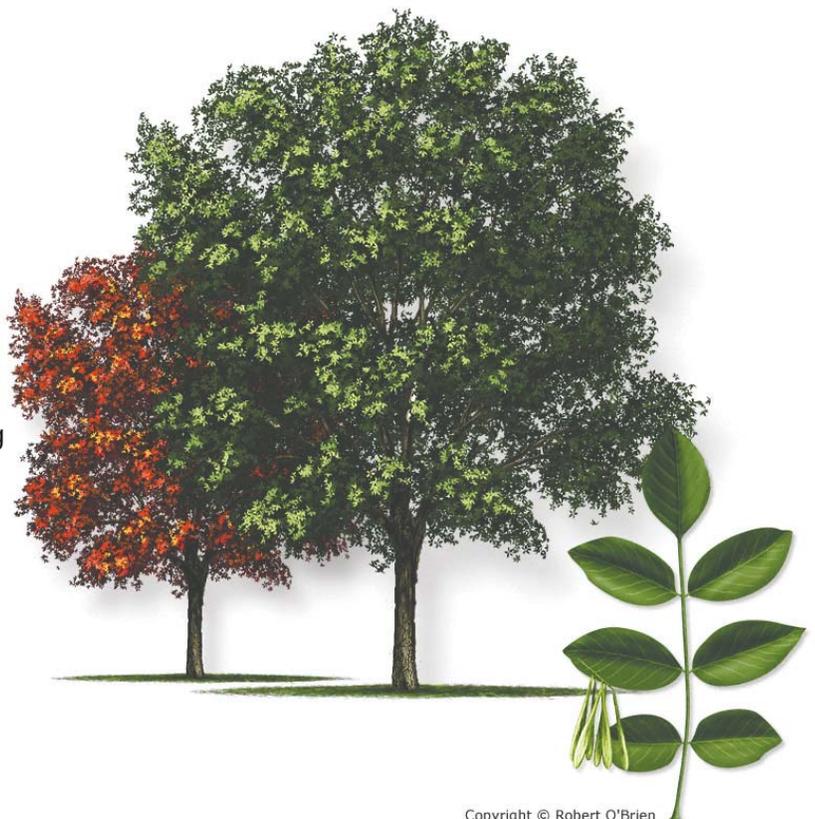
## Wood

Light colored with brown heartwood  
Used for firewood and flooring

## Notes

Emerald Ash Borer is a threat to all ash species and has been recently discovered in Texas

Find more at <http://tfsweb.tamu.edu/eab>



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