

ISA Arborist Certification Training Chapter 2 Tree Identification

**Illinois Arborist Association
Arborist Certification
Training**

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TAXONOMY

- Based on similar biological characteristics
 - Kingdom
 - Division or Phylum (Angiosperms and Gymnosperms)
 - Class (monocots and dicots)
 - Orders, Families, Genus, Species



GYMNOSPERMS

(Cone-bearing Plants)

- ✦ “Naked” seeds
- ✦ Conifers or cone-bearing plants



ANGIOSPERMS

(Flowering Plants)

- ✦ **Seeds covered by an ovary**
- ✦ **Deciduous trees**
- ✦ **Broadleaved evergreens**
- ✦ **Classes of angiosperms**
 - **Dicots** – two cotyledons or seed leaves
 - **Monocots** – one cotyledon or seed leaf



COMMON NAMES

Very regional in nature

- ❖ *Carpinus caroliniana* may be called American hornbeam, blue beech, ironwood, musclewood
- ❖ Tulip poplar may be *Magnolia x soulangiana*, *Spathodea campanulata*, and *Liriodendron tulipifera*



SCIENTIFIC NAMES

- ❖ Two parts to the name (Genus and species epithet)

- *Quercus alba*

- *Acer rubra*



- ❖ Underlined or *italics* is required.



PLANT NOMENCLATURE

Variety:

Subdivision of a species that highlights a specific quality and reproduces naturally.



PLANT NOMENCLATURE

Cultivar:

- A cultivated variety
- Names are written with single quotes
- *Acer freemanii* 'Autumn Blaze'



PLANT MORPHOLOGY

Woody plant identification is based on plant morphology

- ❖ **Morphology** – the size, shape and appearance of plant parts



PLANT MORPHOLOGY

Identify using a number of features:

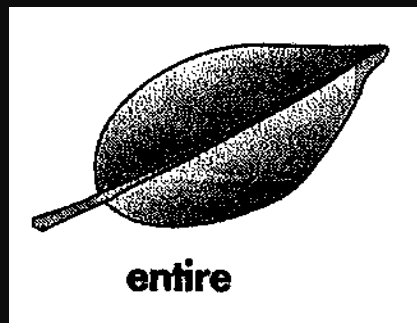
- Leaves
- Buds
- Fruit
- Flowers
- Bark
- Form
- Texture



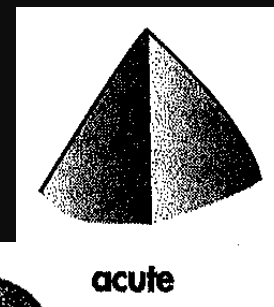
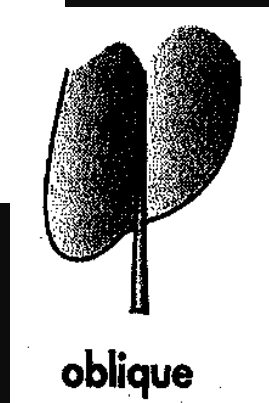
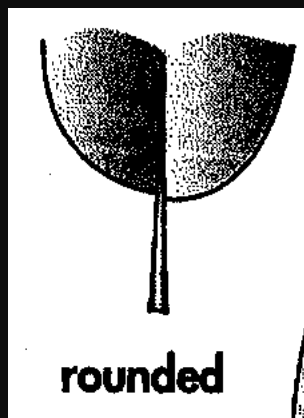
PRINCIPLES OF IDENTIFICATION

Leaf structures:

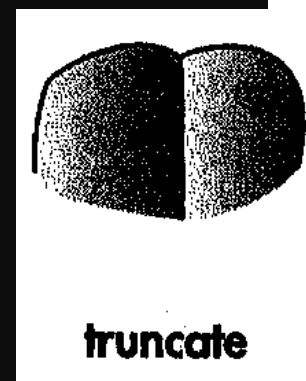
- ✦ Leaf margin
 - entire
 - serrate

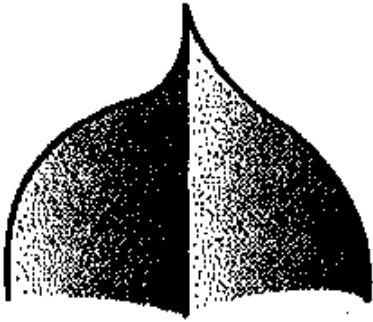


- ✦ Leaf base
 - rounded
 - oblique

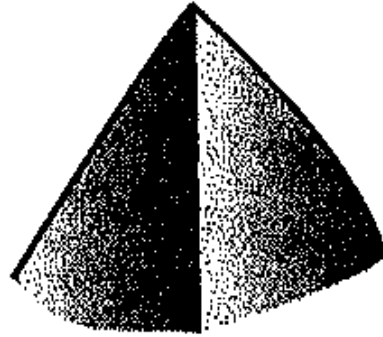


- ✦ Leaf tip
 - acute
 - truncate

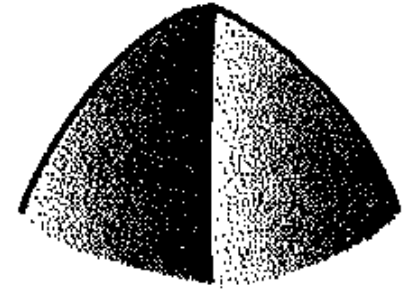




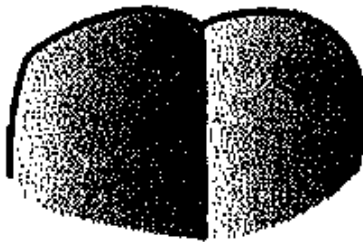
acuminate



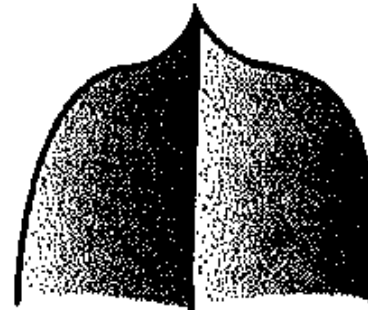
acute



obtuse



truncate



cuspidate

LEAF TYPES

Simple leaves have a single petiole and leaflet

Examples:

- ❑ *Quercus alba*
- ❑ *Tilia americana*
- ❑ *Morus species*



LEAF TYPES

Compound leaves have a more complex system of petioles and rachii. There are two basic types:

- ❑ Pinnate
- ❑ Palmate.



LEAF TYPES

- ✦ **Pinnately compound**
(Juglans, Fraxinus)
- ✦ **Bi-pinnately compound**
(Gleditsia, Gymnocladus)
- ✦ **Palmate** (Aesculus)



LEAF ARRANGEMENTS

- ✦ **Alternate**
(Quercus, Ulmus)



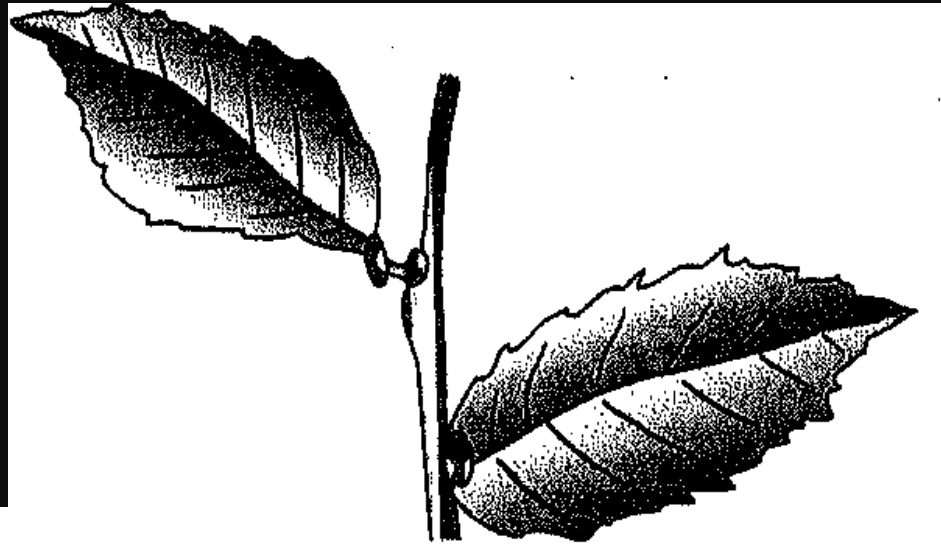
- ✦ **Opposite**
(Acer, Cornus)



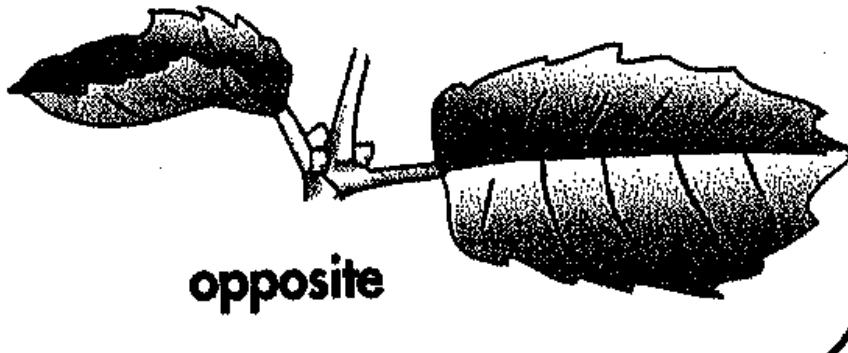
- ✦ **Whorled**
(Catalpa)



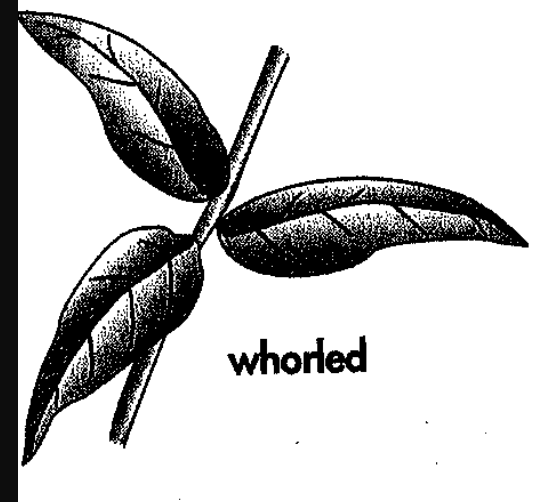
LEAF ARRANGEMENTS



alternate



opposite

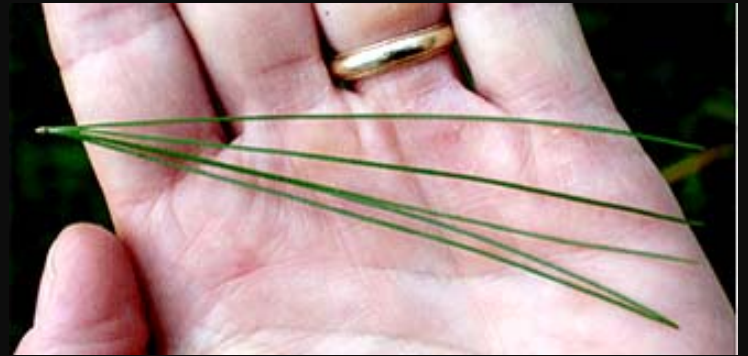


whorled

LEAF ARRANGEMENT CONIFERS

Needles

- Needles in **clusters** of 2,3,5 (Pinus)
- Needles produced **singly** (Picea, Abies)



LEAF ARRANGEMENT CONIFERS

- ✦ **Awl-like or Scale-like**
(Juniperus, Thuja, and Cupress)



BUDS

❑ Narrowly conical

❑ Ovoid

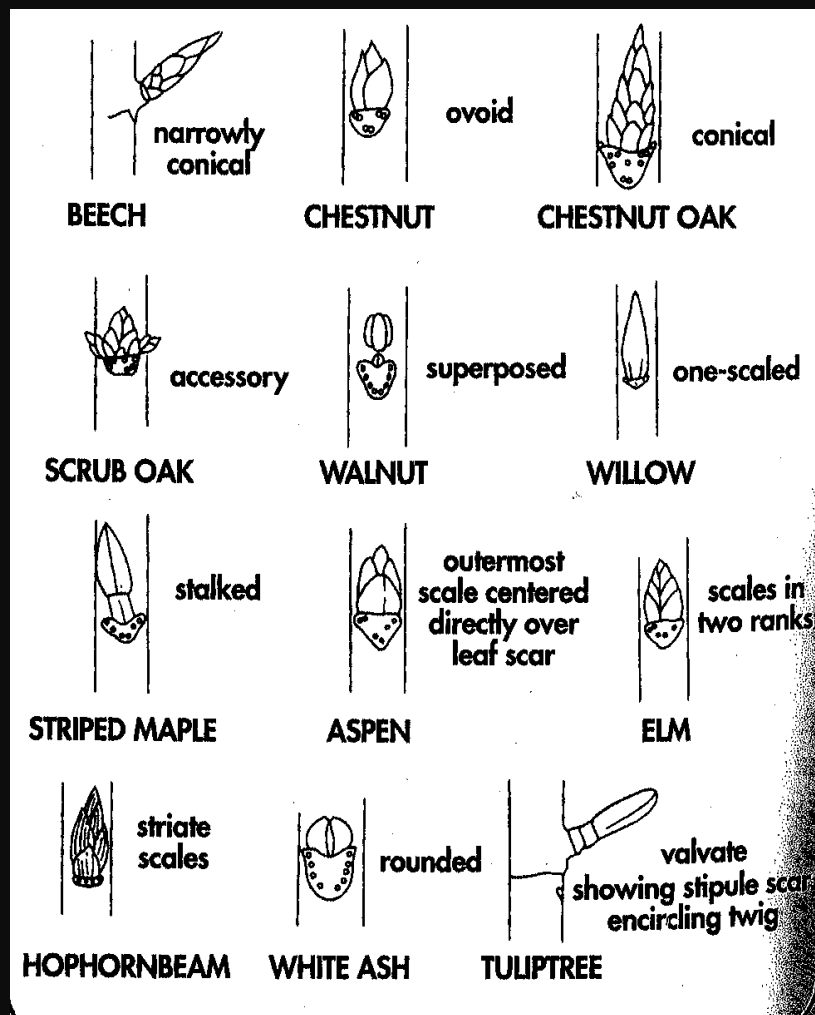
❑ Conical

❑ Stalked

❑ Scaled

❑ Rounded

❑ Valvate



IDENTIFICATION KEYS

- ❖ Step by step method for identifying plants
- ❖ Consist of yes or no questions (dichotomous key)
- ❖ Must understand the terms used

