

2. Indoor Botanical Garden of Art

-----**Objective:** To create plant sculptures in order to become familiar with terms by which plants are classified

-----**Time:** First session 50 minutes; second session 30 to 45 minutes

-----**Materials:** “Classifying Characteristics” page (following page), botanical garden place cards (Appendix A), tissue paper, construction paper, colored pencils, glue

-----Session One

As youths become more familiar with many different types of plants, they will soon be able to recognize similar characteristics of various plants by which they are classified. On the next page are several basic terms and characteristics used to classify plants. First, introduce each of the terms listed under *plant category* and *leaf type* and *leaf arrangement* by having students draw the leaves or their placement on a plant as you describe the term and sketch examples below.

Pass out copy of “Classifying Characteristics” page to each student. Point out that leaves can also be grouped by the *shape of the leaf* and the plant’s *root system*. Ask the group to look closely at the listing of leaf shapes and have them point out any of those shapes that seem to fit the term (such as orbicular leaf shape being round or elliptic being in the shape of an ellipse). Explain that a plant’s root system can say a lot about a particular plant’s needs and the environment in which it grows. A **fibrous root system** is dense and shallow allowing plants to take in water just below the surface of the ground. A **tap root** allows the plant to get water that is deeper in the soil and provides a strong anchor in the ground to prevent the plant from being uprooted.

Break group into partners. To demonstrate an understanding of these new terms, allow time outdoors to locate a plant possessing a specific characteristic learned in this lesson. If grasses and other plants are not found in the immediate area, images of plants found in magazines or through online sources would likely provide examples of most terms used for this activity. As gardeners are completing their hunts for plants possessing certain characteristics, have them attach their specimens to a piece of paper and label the characteristics.

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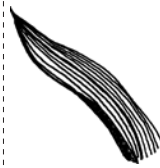
Classifying Characteristics

Plant Category



Dicot

Leaves have netted veins and produce flowers. Their seeds have two cotyledons (oak trees, bean plants).



Monocot

Leaves have parallel veins and produce flowers. Seeds have only one cotyledon (corn plant, grasses).



Conifer

Have needle-like leaves, no flowers, produce cones, and leaf type is always simple (pine trees, cedar trees).

Leaf Type



Simple leaf

Blade of leaf is one unit.



Compound leaf

Leaf is made up of smaller individual blades called leaflets.

Leaf Arrangement



Opposite



Alternate



Whorled

Leaf Shapes



1. needle-shaped
2. awl-shaped
3. linear
4. cordate
5. deltoid
6. lanceolate
7. elliptic
8. oblong

9. ovate
10. obovate
11. sagittate
12. peltate
13. spatulate
14. reniform
15. orbicular

Root Types



Tap root



Fibrous root



Storage root

When trying to determine the shape of leaves with lobes like this, draw an outline around the edges of the leaf to see its true shape. [●]



Session Two

Review from last session by having students share samples of plants they found that were examples of terms discussed. Tell the group that their next task is to begin work on an indoor garden that will be built along a wall of your meeting site or hallway. It will be a combination of a botanical garden and a gallery of paper sculptures.

Break gardeners into partners. Assign partners a botanical garden place card (Appendix A). The gardeners should create a work of art that is an example of a plant with those characteristics listed on their card. Before they begin, have them plan their paper sculptures by sketching what they want their creation to look like.

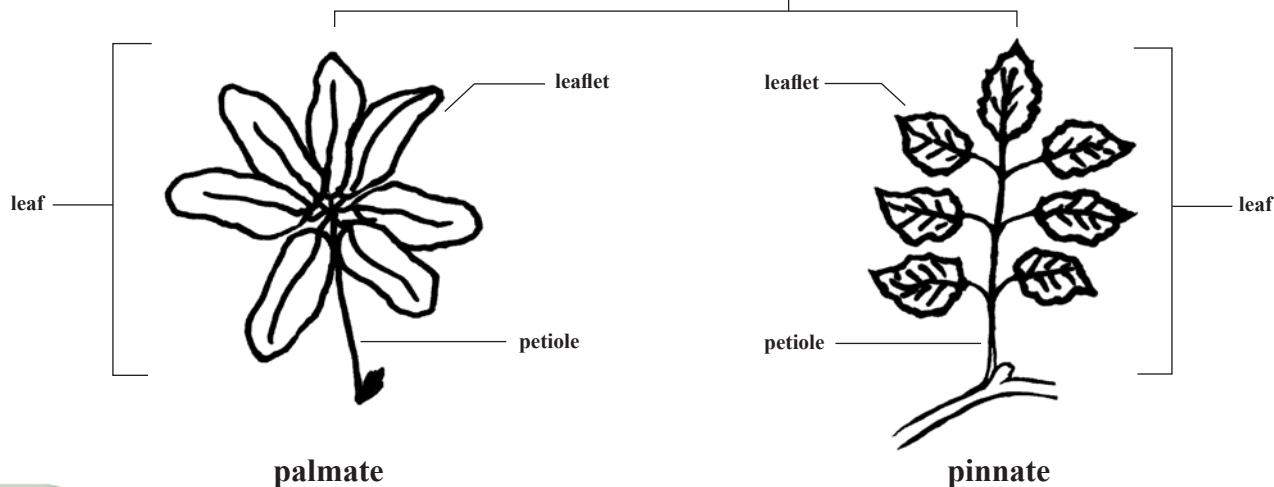


Give partners a section of the wall on which to build their plant. Provide construction paper and tissue paper to cut out the pieces of their plant and use colored pencils to create leaf veins and other details. If possible, use a solid colored butcher paper to serve as a backdrop for *The Indoor Botanical Garden of Art*. Attach pot-shaped templates (cut from brown paper) to the wall paper as if the pots are sitting on the ground along the wall. Learners can attach their newly created botanical sculptures to the wall atop a pot; then attach their place card above the plant. Although you want to encourage creativity, the focus of the activity is the accuracy and detail of their created plants to match the terms on their place card.



Science

Explain that compound leaves can be further divided into two main categories. Remind your students that compound leaves are made up of smaller leaflets. Make a sketch of the two compound leaf types. Explain that these are classified by how the leaflets are arranged on the petiole. [●]



Botanical Garden Place Cards

monocot plant
simple
linear-shaped leaves
opposite leaf arrangement
fibrous root system

conifer plant
simple
needle-shaped leaves
tap root system

monocot plant
simple
cordate-shaped leaves
opposite leaf arrangement
tap root system

conifer plant
simple
awl-shaped leaves
storage root system

monocot plant
simple
elliptic-shaped leaves
whorled leaf arrangement
storage root system

dicot plant
simple
deltoid-shaped leaves
whorled leaf arrangement
tap root system

conifer plant
simple
needle-shaped leaves
fibrous root system

dicot plant
compound
cordate-shaped leaves
whorled leaf arrangement
fibrous root system