



## ACTIVITY

# Tree Detectives!

### Summary:

*Participants practice observation skills and apply them to identifying trees in their neighborhood.*

### Grade Level:

3-6

### Time:

45 minutes

### Learning Objectives:

*Participants will be able to:*

- ◆ Demonstrate basic observation and identification skills.
- ◆ Describe different characteristics of two (or more) different tree species.
- ◆ Associate particular characteristics with different tree species.

### Materials Needed:

- ◆ Age-appropriate field guides, including: The Audubon Society's Nature Guides, Golden Guides, The Peterson's Field Guide Series (Peterson First Guide to Trees for younger participants), Nature Study Guild's Tree Finder, etc.
- ◆ For younger participants, large pictures of leaves and bark of trees examined
- ◆ Small notebooks and pencils

### Background:

Learning how to identify trees by studying their different parts and examining their habitats can help participants become familiar with local plant life. In addition, once participants learn good observation and identification techniques, it is easier for them to transfer these skills to the study of other organisms that live in the area, such as songbirds or native flowering plants.

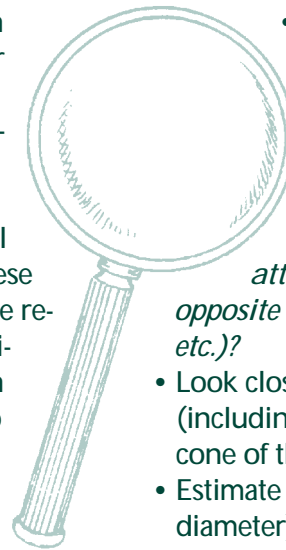
A good rule of thumb when working to identify trees, or most other life forms, is to observe three or more characteristics about the organism before heading for a field guide or making a final decision. At least two of these characteristics should not be related to the size of the specimen. Relying too heavily on one type of clue can lead to incorrect identification.

For example, imagine that a participant knows that the leaves of a quaking aspen tree flutter in the wind and that the tree generally grows somewhere between 40 and 70 feet tall. With nothing else to go by, he or she might spot a young 40 foot tall eastern cottonwood, (they grow to about 100 feet!) its leaves fluttering much the same way an aspen's would, and incorrectly call the tree an aspen. Ex-

amining other details, such as the bark of the tree, the leaf shape, and its habitat would make correct identification much more likely.

The following are things to consider when identifying trees:

- *Does it have needles or leaves?*
- *Does it lose its leaves in the winter (deciduous), or not (evergreen)?*
- *What is the size, shape, color and general appearance of the leaves or needles?*
  - Look closely at the color, texture (scaly, smooth, ridged, fissured, etc.), thickness, and anything unusual about the bark.
  - *How are the leaves attached to the stem (facing opposite each other, alternating, etc.)?*
- Look closely at the flower, fruit (including nuts and acorns), or cone of the tree.
- Estimate the size (in height and diameter) and general shape of the tree.
- *What does the crown, or top area of the tree, look like?*
- Look closely at its habitat. *What is growing around the tree? What is the area like (swampy, mountainous, near a lake, desert-like, in the tundra, etc.)?*
- Consider its geographic region. Some trees, like the live oak (found almost exclusively along





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Southeastern U.S. coastlines), are confined to certain regions.

- Consider any unusual characteristics, such as the great height and width of the California Redwoods.

### What to Do:

1. Find a wooded area that has at least five different types of trees, preferably native trees, to conduct the activity. If no such stand exists near the place your group meets, consider planning a field trip to a nearby park. Have volunteers help as needed.

*Note: A local arborist, either from a private tree care company or a county/municipal government office, can serve as an excellent resource for information on local tree species and identification. Consider contacting an arborist from the community to help with this activity.*

2. Ask participants, *Do you know how to tell one kind of tree from another?* Have them name different characteristics that can help them to identify trees. Brainstorm a list. With visual aids such as posters, or the accompanying handout (Leaf and Bark Clues, below), explain the different parts of a tree and how needles, leaves, and bark can all vary from one tree to the next. *What do trees need to survive? What kinds of things do they need in their habi-*

*tat?* Discuss with participants the idea that, like animals, trees have different habitats and need varying levels and/or types of sunlight, water, soil, and space.



have studied their leaves well enough that they will be able to find the leaf without their notes; encourage them to cite evidence in their notes, too.

3. Tell participants that they are all going to become “tree detectives” and will have the opportunity to study different trees in detail. Each participant should have at least one partner with whom he or she will work. Make sure that at least one of the partners has a clipboard or other hard surface, copies of both the Leaf and The Whole Tree Clue sheets, and a pencil. Tell participants that these worksheets are a part of their field notebook, in which they will carefully describe different tree characteristics.

4. Begin by exploring leaves. Ask the teams or small groups to find at least three leaves on the ground, and on the leaf worksheets, to write their best description of the color(s), shape, texture, and size of each of the leaves. If participants can see how the leaves are arranged on a twig (i.e., alternating, opposing, etc.; see Leaf and Bark Clues, below), have them note that as well. They can also draw the leaves in a notebook. Once they have done this, ask all the participants to throw their leaves in a large pile and mix them up. Then, ask them to look at their notes and try to locate their own leaves. Often, participants will

5. Once all participants have located their leaves, have them use field guides to try to find out what kind of tree the leaves came from. Encourage them to use several characteristics of the leaves to find their tree. Assist where necessary.

6. After they have completed their leaf hunt, have partner groups find a single tree to study. Using the Whole Tree Clue worksheet, have them take notes on every detail of the tree they can find, including the appearance of the leaves, flowers, fruits (including nuts and acorns), or needles and cones. They should also consider the color, texture, and patterns in the bark, and the general size and shape of the tree. Also ask them to consider the area in which the tree is growing. Participants can also draw a picture of their trees in their field notebook.

7. When they have finished taking notes on their tree, have them investigate what kind of tree they have found using field guides. Ask each pair or small group to make a short presentation to the whole group about their tree and any interesting information the field guides may have told them about this species.





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In particular, encourage small groups to discuss what wildlife might depend on the tree they have studied, and what kinds of native plants might grow nearby. Ask participants if they can find other trees of the same kind at their study site.

8. Ask participants, *Why do you think tree identification can be useful?* (Helps to evaluate the health of the forest, the kind of habitat available, the amount of biodiversity present, the kinds of trees certain animals use, etc.) Ask them what interesting things they learned about the process.

*Note: The leaf hunt portion can also be done with nuts, seed pods, other fruits, or pine cones. Consider doing a nut/fruit/cone hunt in addition to the leaf hunt if the items are available.*

### For Younger Participants (Grades 1-2):

Prior to the activity, select a number of different tree leaves and paste one of each on a sheet of paper. Make several sets of these guides, enough for one for each small group. On the tree hunt, have participants try to find a leaf that matches each of those in their guide. If the leaves can be found on the ground, have them take one that matches each sample. Ask participants to explain what is similar about the leaves they found and to describe some differences. *How can they tell which ones match?* Have participants draw pictures of the leaves they found.



### Questions:

- How can you tell one kind of tree from another?
- What characteristics can you use?
- What does this information tell you about a forest?

### Adaptations:

*Refer to general adaptations on pages 11-16.*

#### *Hearing Disabilities:*

- Have tree part samples such as leaves, bark, and acorns for participants to explore to help illustrate your discussion and reinforce learning.
- Have a set time and place for participants to meet in case they get separated while outside. Consider marking boundary areas with flags or rope for the tree expedition.
- Position yourself and the interpreter so the participants can see you for further directions or warnings while on the trail.

#### *Learning/Cognitive Disabilities:*

- Have tree part samples such as leaves, bark, and acorns for participants to touch to help illustrate your discussion and reinforce learning.
- Create a separate sheet for each of the graphics on the handout to use as a demonstration. Create leaf shapes, etc., out of felt or other fabric so participants can feel the differences. If possible,

### For Older Participants (Grades 7 and Up):

Instead of using the Leaf and The Whole Tree Clue Sheets below, have participants create their own field notebook. Have them answer the same questions, but do so by organizing their own notes. Older participants may come up with their own method for identifying trees.





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have real examples of each of the types represented on the sheet for participants to explore.

- Have a set time and place for participants to meet in case they get separated while outside. Consider marking boundary areas with flags or rope for the tree expedition.
- Give each participant a magnifying glass so they can closely examine the bark and other tree features. Encourage participants to look for fine details.
- Use simplified resource materials as needed. Consider making your own site specific field guides as suggested in the younger participant version of this activity.
- Have participants who have difficulty writing draw pictures of their tree and its parts, or have them circle the correct leaf, bark, etc., on the worksheets. Participants can color these items to help further illustrate their particular tree. Have partners assist as needed.

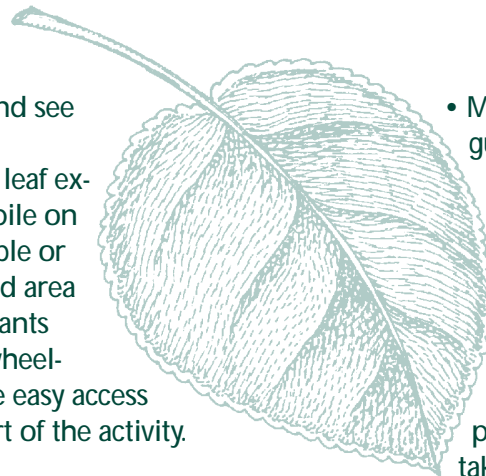
### **Motor Disabilities:**

#### *Overall:*

- Choose a largely accessible site (i.e., mostly level, no standing water, etc.) for the tree expedition.
- Encourage the use of adaptive equipment such as reachers for participants to engage fully in the collection process.
- Encourage partners to engage the participants in the exploration as much as possible. This might mean having partners pick up leaves, acorns, etc., for participants

to touch and see up close.

- Create the leaf exploration pile on a picnic table or other raised area so participants who use wheelchairs have easy access for this part of the activity.



### *For participants with limited muscle strength, coordination, or dexterity of the hands:*

- If possible, provide small tape recorders for participants who have difficulty writing to record notes on their trees. Participants can also place a mark next to the correct leaf or bark on the handout.

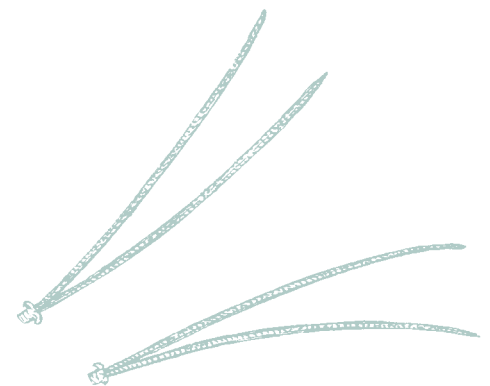
### **Visual Disabilities:**

- Have tree part samples such as leaves, bark, and acorns for participants to touch to help illustrate your discussion and reinforce learning.
- Create separate sheets for each of the graphics on the handout using fabric to create the different leaf shapes. An alternative is to enlarge the graphics and outline them in heavy black lines and raised lines of glue for participants to feel. Label the sheets in large print and Braille.
- If possible, have resources available in alternative formats including Braille, large print, and audio cassette.

- Mark off the area with a guide rope.
- Provide magnifiers for participants with low vision to use to examine their trees.
- Provide large note books or clipboards and paper for participants with low vision to take notes on their trees.

Provide thick black markers.

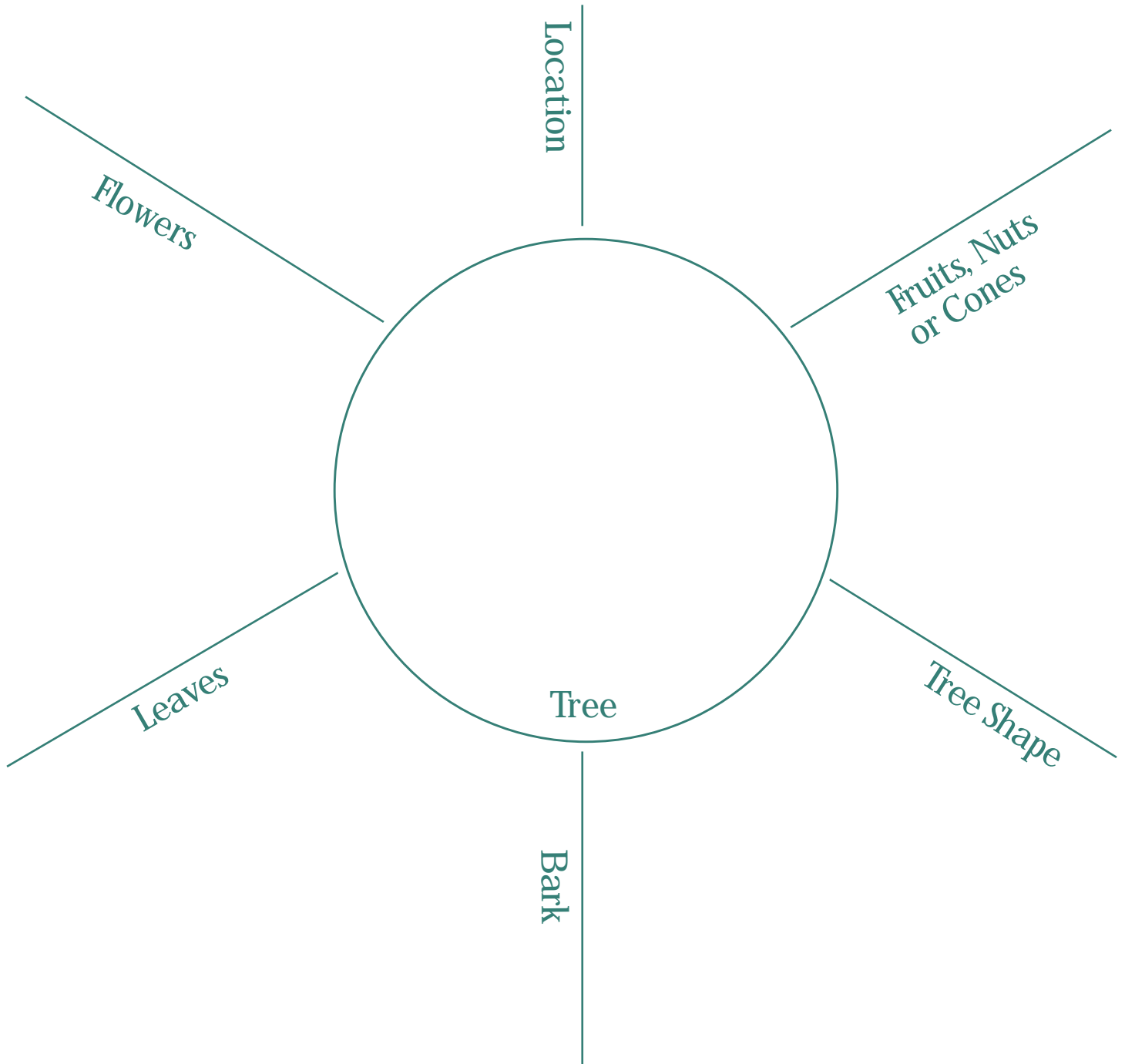
- Encourage partners to vividly describe the textures, shapes, and surroundings of the trees. Encourage the partners to guide the participants in feeling and exploring their trees and its many parts.
- If possible, provide small tape recorders for participants who are blind to record notes on their trees.
- Provide clay and pieces of cardboard for participants who are blind to make models of their leaf shape instead of drawings. If possible, have a Braille labeler for them to use.





## THE WHOLE TREE CLUE SHEET

**DIRECTIONS:** Draw a picture of your tree in the middle, where it says “Tree,” and briefly describe or draw each characteristic of the tree (e.g., location, flowers, bark, etc.) in the space provided.



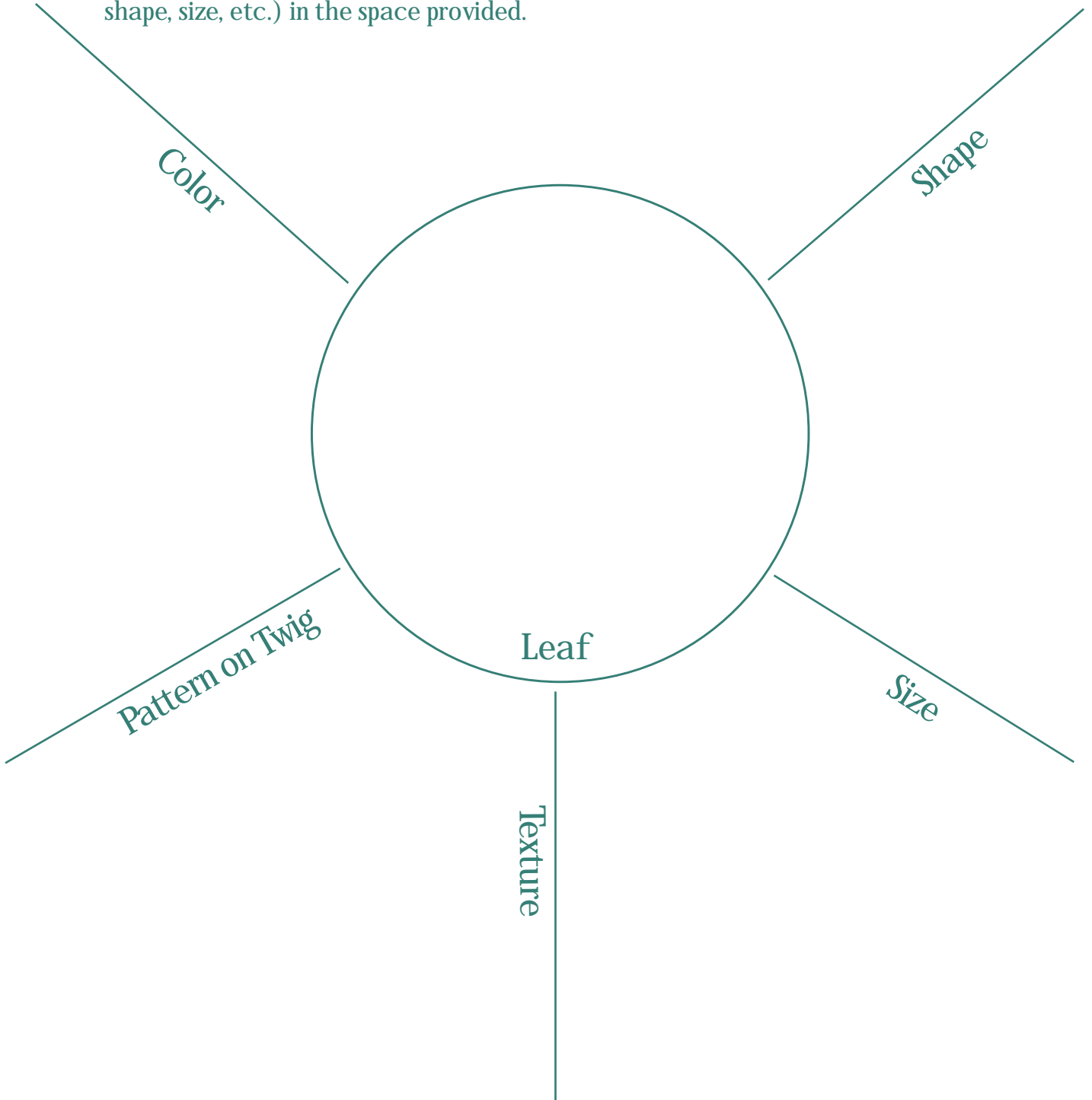


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WORKSHEET

## LEAF CLUE SHEET

DIRECTIONS: Draw a picture of your leaf in the middle, where it says "Leaf," and briefly describe or draw each characteristic of the leaf (e.g., color, shape, size, etc.) in the space provided.



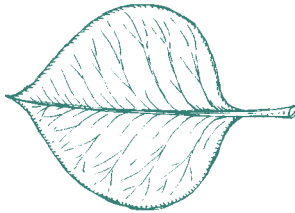


## LEAF AND BARK CLUES

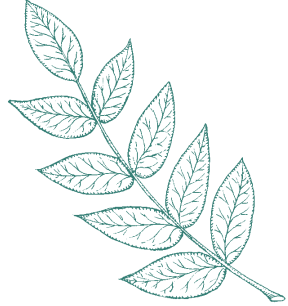
### Leaves:



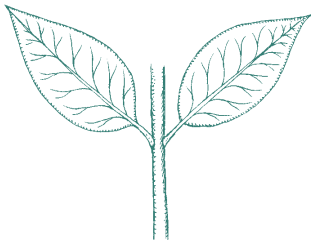
Needles



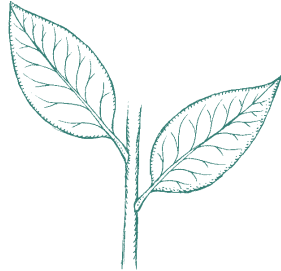
Simple leaves



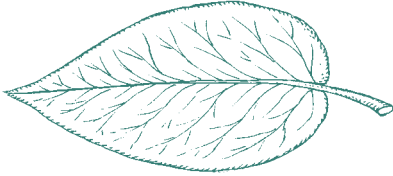
Compound leaves



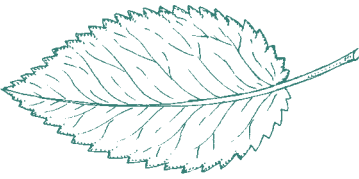
Attached opposite



Attached alternating



Smooth edged leaves

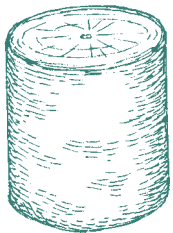


Toothed edged leaves

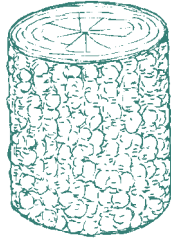


Lobed leaves

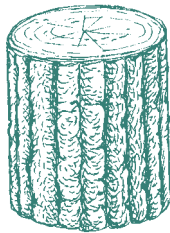
### Bark:



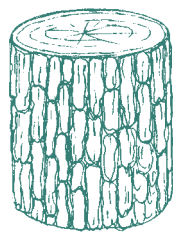
Smooth



Bumpy



Ridged



Scaly

