

Evergreen Tree ID

Investigative Question: What tree is it? Are all evergreen trees conifers?

Goal: Students develop identification and investigation skills introduced through deciduous leaf ID.

Objectives

Knowledge: Evergreen leaves are adapted to survive winter (waxy cuticle, needle leaves, ways to reduce water loss, retarding freezing of water inside leaves) Students discuss some challenges trees face in winter (freezing temperatures and heavy snowfall) and adaptations that help them to survive.

Skills: Students develop classification and observation skills as they learn to identify several evergreen trees using a dichotomous key based on leaf/needle characteristics.

Value: Students appreciate the variety of trees and the adaptations trees have for winter.

Virginia Standards of Learning: Science (2018) 3.1, 3.4; English: 3.3, 3.4

Materials

- Numbered Flags, one for each tree
- Clipboards, one per student
- Pencils, one per student
- Dichotomous Evergreen Key (one per group of 3)
- Data sheet, one per student
- Rulers (or print rulers on the back of the dicot key)
- Trees to flag

Outdoor investigation: Native Plant Woodland trail	For Indoor investigation with collected specimens
◆ Virginia Pine	◆ Virginia Pine
◆ Holly	◆ Magnolia
◆ Hemlock	◆ Holly
◆ Red cedar	◆ White pine
◆ Boxwood	◆ Norway spruce
◆ Arbovitae	◆ Boxwood

Special Safety:

- Watch for uneven ground or holes when examining trees and leaves.
- Students need to stay on paths and watch footing, particularly in rocky or icy areas.

Instructional Strategy:

1. **Setup-** Flag trees and gather data sheets and supplies. Recommended: Make a “cheat sheet” for adult helpers.
2. **Introduction-** Outline expectations of behavior and participation for students and chaperones.
3. **Inquiry discussion** - Ask the students to take a moment to look around (or think) and then answer the question, “Are there leaves on the trees right now?” As they think through their responses, ask: What do we call trees that keep their leaves in winter (evergreen) and which lose their leaves in the fall (deciduous). Ask them to think about some of the challenges that winter poses to trees (guide responses to include cold and snow). Acknowledge that some trees lose their leaves as an adaptation to protect them from harsh winter conditions, but other trees need to have other adaptations to help them survive. For example, snow can build up and break branches, so how do trees grow to protect themselves from damage? Inform students that they will be identifying some evergreen trees and looking for ways that the trees shed snow.



4. **Dichotomous Key-** Split students into groups of 3. Each group will be given an EVERGREEN TREE ID key, clipboard and data sheet. Model/describe use of the key: A dichotomous key compares characteristics by describing two or more subsets. Model the ID with the students: Does the leaf have broad and flat leaves or does it have needles or scales? (define broad and flat, needles, and scales here as they are often unfamiliar terms). If it has broad and flat, follow the directions to the next characteristics (ex 'Broad and Flat....GO to 2) then read and classify the leaf according to the next set of characteristics. As time permits, have each group identify all six trees. If the lesson will take place in less than 45 minutes, divide trees among the groups to allow time for a discussion after identification. Make sure a chaperone is with each group, and move between groups as they work to guide discussion.
5. **Conclusion-** Once student groups ID all 6 trees, bring groups back together to discuss what trees they identified, what some of the distinguishing features of the tree were, and how they think the trees shed snow.
6. **Further thought-** Are all evergreen trees conifers? Are there any characteristics of trees that are adaptations for the tree to live in this area in winter? Why do the leaves stay on the trees? Are there any adaptations that could be helpful during the winter?



EVERGREEN TREE ID

Name _____ Flag _____
Draw the leaf

What do you observe?

Needles/scales or Broad and flat?

What type of leaf/tree?

EVERGREEN TREE ID

Name _____ Flag _____
Draw the leaf

What do you observe?

Needles/scales or Broad and flat?

What type of leaf/tree?

