

Type Your Tree.

1. What kind of tree is your tree?
2. Is the tree deciduous or coniferous? How do you know?
3. What does the bark look like?
4. What does the bark feel like?
5. Sketch a leaf here.
6. Measure the circumference of your tree at chest height.
7. Where does your tree get its primary source of water?
8. Is your tree similar to or different from trees around it? How is it similar or different?

Measuring Tree Height

Measuring tree height is an important part of site analysis. Determine location, size, and height of the trees at your site. Trees affect the plants around them, the animals that will inhabit the area, water availability, the microclimate, sunlight and soil type. Knowledge of how the tree casts a shadow through the day and through the seasons will help determine the type and placement of trees in the area.

Materials needed for some of the measurements:

Tree height data sheet from

wiscwiscinfo.doit.wisc.edu/arboretum/woodland/tree_height_data_sheet.htm

Measuring tapes.

Sighting stick - 10-inch long stick with a hole, large enough to see through, drilled at one inch.

Clinometer (measures angles).

There are many ways to estimate tree height. Below are five methods, starting with the simplest and least accurate:

Rough Estimate

Work in pairs. Measure the height of one person and record. That person then stands straight against the tree. The second person stands at a distance and estimates how many "heights" of that person make up the tree height. Walk farther back and repeat. Do this until a consistent estimate is obtained.

Logger's Estimate

Work in pairs. One person stands at a distance from the tree and extends their arm to full arm's length. Bracket the tree height between the thumb and forefinger. If the tree is too big, walk farther away from the tree. Without changing the distance between the fingers, rotate the hand so the distance runs along the ground from the base of the tree outward. The second student should locate the spot on the ground identified by the first student's forefinger. (Note: It is important that the first student keep their arm fully extended throughout this exercise.) The distance on the ground equals the height of the tree.

Shadows

Work in pairs. Measure the height of one person and the measure their shadow. Record. Measure the shadow length of the tree and record. The following proportion can calculate the tree height:

$$\frac{\text{Height of tree}}{\text{length of tree's shadow}} = \frac{\text{height of person}}{\text{length of person's shadow}}$$

Sighting Stick

Work in pairs. Using the sighting stick, move a distance from the tree such that, when held at arm's length, the base of the stick is at the base of the tree and the stick just covers the height of the tree. In this position, sight through the hole to the tree. The second person should mark the spot on the tree that is visible through the hole. Because the stick is ten inches long and the hole is drilled at one inch, tree height can be calculated using the following proportion:

$$\frac{1''}{10''} = \frac{\text{height of the marked spot on the tree}}{\text{height of tree}}$$

Trigonometry

Work in pairs. Pick a spot at some distance from the tree. Measure the distance from the base of the tree to the spot. Record. Measure the angle necessary to sight to the top of the tree from the spot. Be sure to sight from the ground.

Tree height can be calculated using the following equation:

$$\tan \text{ of angle} = \frac{\text{length of leg opposite angle}}{\text{length of leg adjacent angle}} = \frac{\text{tree height}}{\text{distance to tree}}$$

Therefore, tree height = tan of angle X distance to tree

Distance to tree _____

Angle _____

Tan of angle _____

Height of tree _____

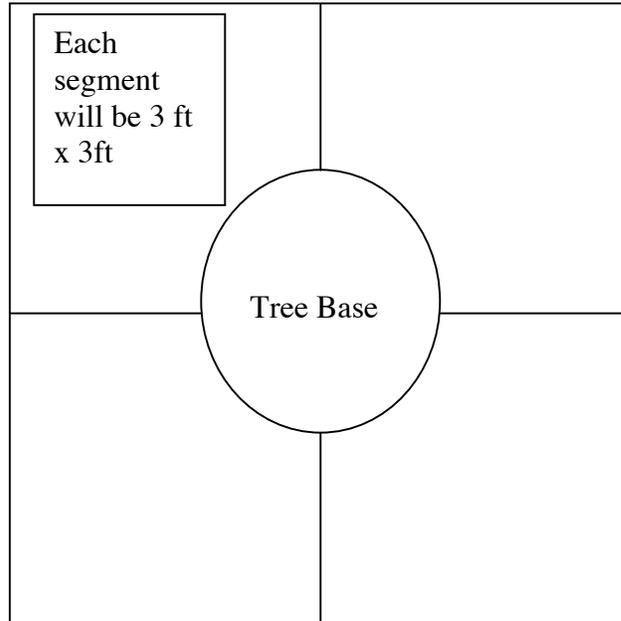
Tree Base Worksheet

Divide the ground around the base of the tree into four quadrants, examine the ground, by quadrant, and report what you find there. On this sheet, draw your four quadrants and list what you find in each quadrant.

Look for the following: the types of plants that are growing there, nearby insect and animal life, and dead materials in each quadrant.

Tree Base Example

Each outside line will be a total of 6-feet across. The individual sections will be 3 feet. Because the base of each tree is different, have the students use their skills of estimation to plot their dowels and then check for proper footage with a tape measure. The measurements can be easily adjusted as space allows.



Writing Prompt

First Observation

Document the date. Imagine you are your adopted tree. Write a journal entry, using your five senses, and describe what you notice about your surroundings. What do you see, what is your world like, how do students use/abuse you, and what is your role in the school? Be sure to develop a sequential story line and use figurative language as well as descriptive words.

Second Observation

Document the date. Imagine you are your adopted tree. Write a journal entry and describe how things have changed over the time in your region. What has changed, what remains the same, and what do you think will happen to you in the future?

Third Observation

Document the date. Imagine you are your adopted tree again. Write a journal entry with a description about how you and your region have changed and developed over the school year.

Now take all of your observations and turn them into a narrative by

- Introducing your topic
- Developing your topic
- Using appropriate transitions (since, when, although, etc.)
- Using vocabulary appropriate to describing change over time
- Providing a conclusion