

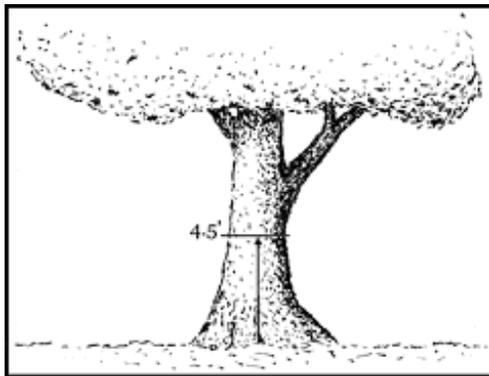
# Tree Data Sheet

*Collect data on your tree*  
*Forest Mensuration*

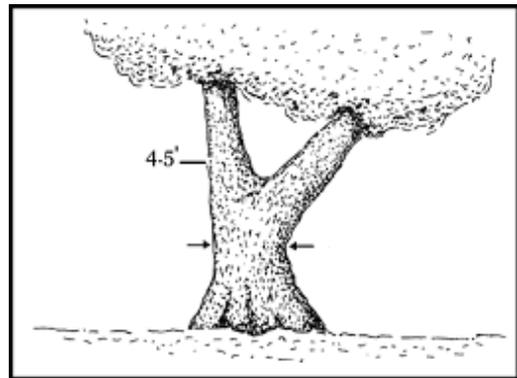


1. **Measure the trunk circumference:** Use a measuring tape to determine the circumference of your tree at breast height (1.3 m or 4.5 ft from ground level). If your tree forks as shown in figure B, then measure between 1.3 m and the base just below where the tree forks.

**Divide the circumference by  $\pi$  to determine the diameter at breast height (DBH)**



A.



B.

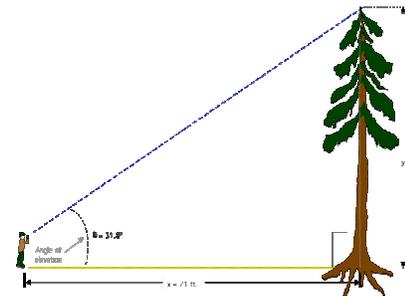
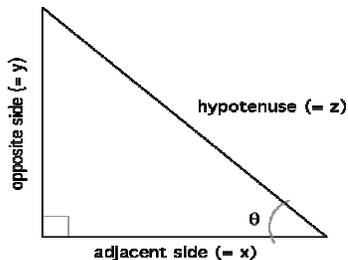
2. **DBH (diameter at breast height) metric units (cm):** \_\_\_\_\_

3. **The basal area** - is the cross-sectional area (over the bark) at breast height measured in meters squared (m<sup>2</sup>). TBA can be used to estimate tree volumes and stand competition. Calculate the basal area of your tree -  $\pi \cdot (DBH/200)^2$

TBA (m<sup>2</sup>): \_\_\_\_\_

#### 4. Tree Height

- **Estimate the height of your tree using simple trigonometry:** There are many tools that can be used to estimate the height of a tree including something as simple as a Biltmore stick. Choose two methods to estimate the height of your tree and compare your answers to make sure you are certain about the height.



**Formula:**  $\tan \theta = \text{opposite/adjacent} = y/x$

**Isolate the unknown variable:**  $y$  (tree height)

**Calculate:**  $\text{Adjacent} (\tan \theta) = y$  (tree height)

- **Make your own protractor clinometer:**
  - Get a protractor with one straight edge (a 180 degree protractor).
  - Tape a straw along the straight edge of the protractor.
  - Tie a string through the small hole on the straight edge that is directly across from the 0 degree mark on the protractor. This may also be labeled as 90 degrees. If your protractor does not have a small hole here, or if the hole is not situated correctly (this is a common problem with some cheap protractors), tape or glue the string to the protractor at this mark. Make sure the string dangles a few inches below the protractor.
  - Attach a washer or fishing weight to the dangling end of the string.
  - Sight the top of the tree through the straw.
  - Note the number where the string crosses. Subtract this number from 90 to determine the angle of elevation between your eye and the top of the object you are sighting.

• **How to use a Biltmore stick:**

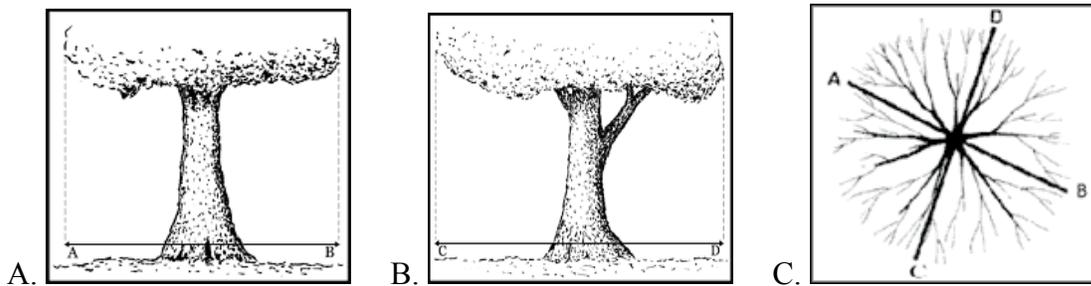
- i. Hold the stick at its base vertically; making certain that the length of the stick above your hand equals the distance from your hand to your eye.
- ii. Staying on ground level (or on the same contour as the base of the tree).
- iii. Move away from the tree while sighting the trunk base above your hand.
- iv. Stop when the top of the stick is level with the top of the tree. You should be looking over your hand at the base of the tree and, moving only your eyes, looking over the top of your stick at the top of your tree.
- v. Measure how far you are from the tree and that measurement - this is the tree's height.

5. **Find Standing Tree Volume:** Tree volume (m<sup>3</sup>) = [Tree Basal Area (m<sup>2</sup>) • Tree Height (m)] / 3.

**Standing Tree Volume:** \_\_\_\_\_

6. **Find the average crown spread of your tree (the drip zone):**

Two measurements of the crown spread are taken and recorded (in meters), at right angles to one another. The first is the widest crown spread, which is the greatest distance between any two points along the drip line of the tree (Figure A). The drip line is the outline on the ground of the outermost leaves of the crown. Once the widest spread has been found, turn the axis of measurement 90 degrees and find the crown spread (Figure B). The two crown spreads are averaged together (Figure C).



**Widest crown spread (A to B):** \_\_\_\_\_

**90° Axis (C to D):** \_\_\_\_\_

**Average Crown Spread [(A to B) + (C to D) / 2]:** \_\_\_\_\_

## 7. GPS your tree location

Accuracy of unit the day the points are obtained:

\_\_\_\_\_

**Coordinates: Latitude**    \_\_\_\_\_    \_\_\_\_\_ °    \_\_\_\_\_ . \_\_\_\_\_

**Longitude**    \_\_\_\_\_    \_\_\_\_\_ °    \_\_\_\_\_ . \_\_\_\_\_

### Resource & Figures:

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