

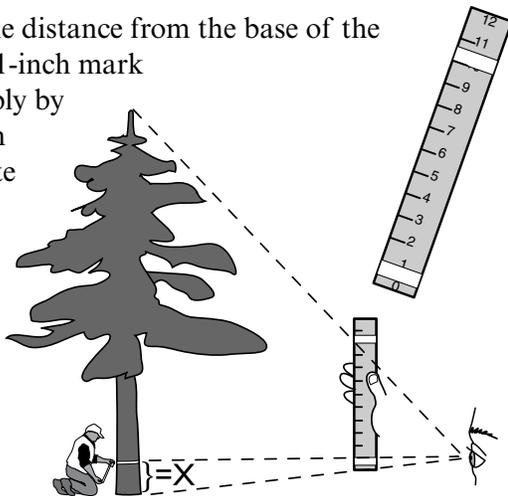
# APPENDIX FOUR HOW TO MEASURE TREES

## How High

The most reliable method to measure height uses a hand level, clinometer, or hypsometer. If these instruments are unavailable, use a ruler.

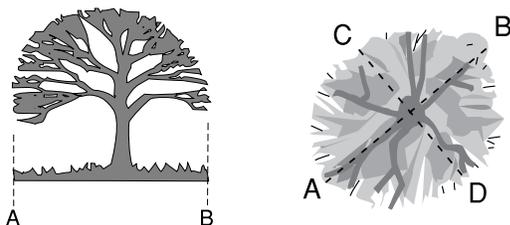
Take a 12-inch ruler and mark the 1-inch and 10-inch lines on the ruler with tape. Work in pairs. One person stands at the base of the tree. The other holds the ruler in front of his or her own eyes at arm length and moves back until he or she can see the whole tree from top to bottom between the 0-inch and the 10-inch mark on the ruler. He or she then moves the ruler until the base of the tree is exactly at 0 inches and the top of the tree is sighted exactly at 10 inches. Then he or she sights out from the 1-inch mark to a point on the trunk above the base. The partner marks this spot on the trunk with tape.

Measure the distance from the base of the tree to the 1-inch mark (X). Multiply by 10 to get an approximate idea of the height of the tree.



## Crown Size

Set a stake directly under the outside edge of the crown farthest from the trunk (A) and another directly opposite it at the outer edge of the crown on an imaginary line passing through the center of the tree (B). Next, set stakes marking the shortest diameter of the crown passing through the center



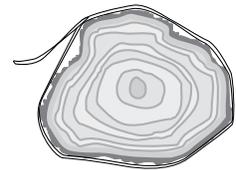
of the tree (C and D). Measure both distances to the nearest foot with a tape measure. Add the two measurements together and divide the sum by two to find the average crown spread.

## Around the Middle

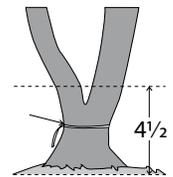
Measure, to the nearest inch\*, the distance around the tree at a point 4½ feet up from the ground to get the circumference. Using the circumference, calculate the diameter ( $d = C/\pi$ ). A flexible tape measure is a good tool to use. Measuring diameter at 4½ feet from the ground is an industry standard, also known as “diameter at breast height” or DBH.

### How to find the circumference of hard-to-measure trees:

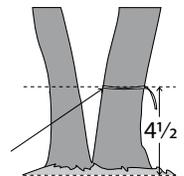
When a tree has deep convolutions or indentations, measure without pressing into the indentations.



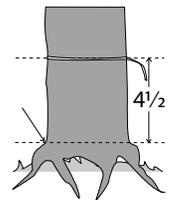
If a single tree has a double stem that forks below 4½ feet above the ground, measure at the narrowest place below the fork.



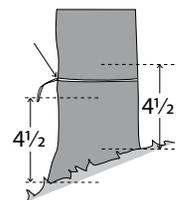
If the tree forks at ground level, measure the largest stem at 4½ feet.



When the base of a tree is “heaved” (tree roots exposed usually due to erosion, along with tree movement and growth patterns), the measuring point begins where the root mass ends and the tree trunk begins.



If a tree is growing on a slope, measure 4½ feet above the midpoint of the different ground levels.



\* Rarely does a measurement fall exactly on a whole number. In most cases, we measure to the nearest inch, which is the whole number closest to the true measurement. For example, if the circumference falls between 10 and 11 inches, but is a little closer to the 11-inch mark, the circumference is 11 inches.