Measuring Tree Height using a Clinometer

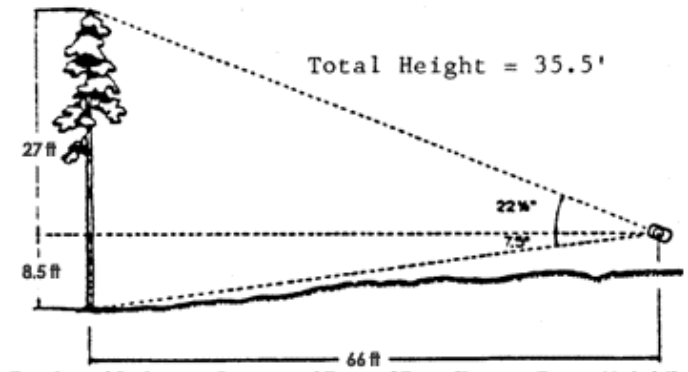
Tree *height* is measured using the principle of triangulation with a ***clinometer***. Of all the forestry tools you will use, the clinometer requires the most practice and skill. Assuming that the tree grows at a right angle to the ground (even on a slope), we use the clinometer at 1 *chain* (66 feet or 19.8 meters) away from the tree using the following steps:

The clinometer

Aim the clinometer with both eyes open.

- With both eyes open, aim the black crosshair of the clinometer level with the base of the tree at the soil. Using the right-hand scale (the left scale is for measuring percentage of slope) you will read a "negative" number if the tree is on level ground or down slope. You will read a "positive" number if the tree is up slope.
- With both eyes open, aim the black crosshair of the clinometer to the top of the tree. This is a tricky measurement because your view may be obscured by leaves or nearby tree branches. If the top of the tree were an open umbrella, you'd want to be aiming at the point on the top of the umbrella.
- Add or subtract the numbers:

1) If your eye is at a level between the base of the tree and the top, the two numbers are added together to determine total height.



Eye Level Between Base and Top of Tree (Base + Top = Height)

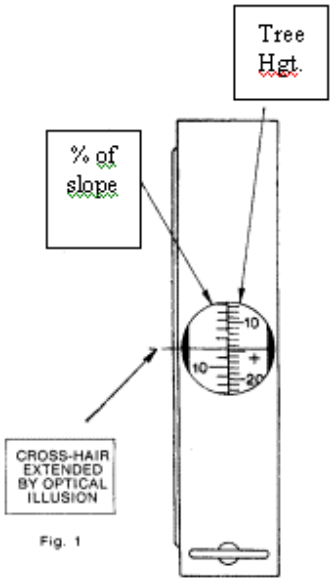
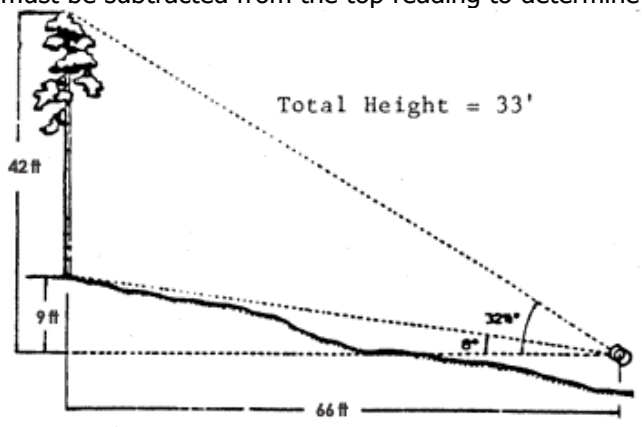


Fig. 1

2) If your eye is below the level of the base of the tree (upslope from you), the base reading must be subtracted from the top reading to determine total height:



Eye Level Below Base of Tree (Top - Base = Height)