

Make your own D-tape

Explanation: Foresters use diameter tapes or d-tapes to quickly determine the diameter of a tree.

Since foresters often cannot cut down a tree to find the diameter, they have to measure the circumference and divide that number by π (3.14). The formula, therefore, is diameter equals

circumference divided by 3.14 or $d = \frac{C}{3.14}$. In order to save time, they invented a measuring tool that does that calculation for them. Every one inch of diameter equals 3.14 inches of circumference. So the first 3.14 inches of circumference equals one inch of diameter, which is why you mark the first increment 1. 6.28 inches of circumference equals 2 inches of diameter, and so on. The $\frac{1}{8}$ inch mark is the closest to .14 inches.

D-tapes are a form of dendrometer that measures diameter at breast height (DBH). DBH is 4.5 feet above the part of the tree that meets the ground. Foresters use it to determine the volume of the wood in the tree. There is no correlation between the circumference of the tree and its age. D-tapes do not help foresters determine the age of the tree. As with most measuring instruments, the d-tape gives an approximate measure. Trees are usually not perfectly round and these imperfections affect the volume of the wood in the tree. Instruments such as the d-tape provide an approximation that is close enough for estimating the volume.

Materials needed: inexpensive ribbon (about 40" for each student), scissors, ball point pens, rulers

Measure and cut about 40" of inexpensive ribbon or bias tape for each student. Have each student measure $3\frac{1}{8}$ inches (3.1 cm) increments on the ribbon and make a mark. Number the marks on the ribbon, beginning with one on the first mark. Try out your d-tape on objects for which you know the diameter to verify its accuracy.

NOTE: If students have trouble measuring 3.14 inches (3.1 cm) using their rulers, make a strip of sturdy cardboard that length and instruct students to use that instead. Also, do not use markers for this. The ink bleeds into the ribbon too much and the marks become indistinct. Ball point pens make clearer, more distinct marks that are easier to read.