

## Student Activity Sheet

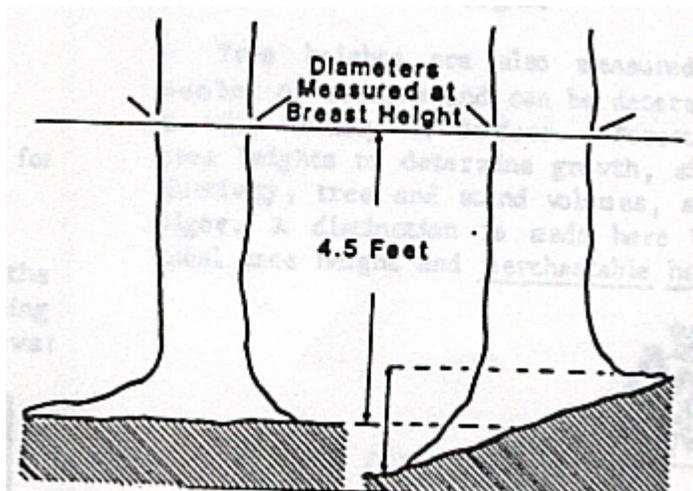
### Student Outcomes:

By the end of this four-day activity, you should be able to:

1. Explain to the class orally how to make a diameter tape to measure the diameter of a tree.
2. Explain to the class orally how to use a Biltmore stick to measure the diameter/height of a tree.
3. Estimate the diameters of your 3 trees, then measure the diameters of the trees using **Biltmore stick and diameter tape** to determine type of product for which each tree may be used.

### For Your Information: Obtaining the diameter of a tree

1. Diameter is one of the first measurements taken from a tree.
2. It is measured outside the bark at 4 ft. 6 in. above the ground line. This is called **diameter at breast height or DBH.**



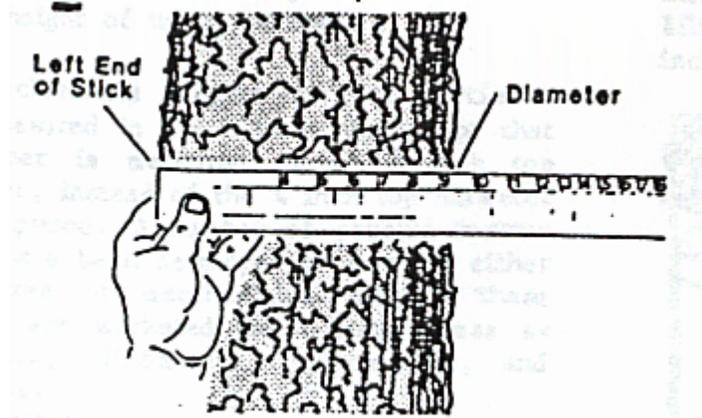
3. **DBH** is the standard point of measurement for tree volume computations.
4. The **diameter tape** is calibrated to determine diameter by measuring the circumference of the tree.

To make a diameter tape: Take a 6 foot strip of cloth about ½ inch wide and marking off 3.14 inch increments. Each of the increments on the cloth will equal one inch of diameter.

### How to use the Biltmore Stick:

5. Diameters are calculated using a **tree scale or Biltmore** stick. The stick is held about 25 inches from the eye, horizontally against the tree at DBH.

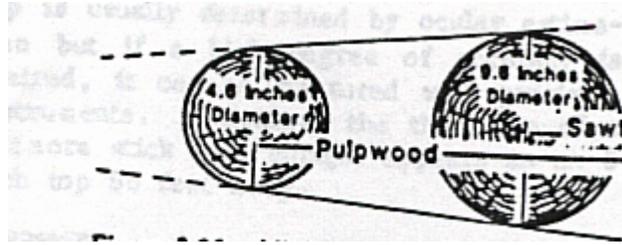
Move the left end of the stick to the left edge of the tree, keeping one eye closed. Read the diameter on the stick at the tree's right edge without moving the head. Since trees are not perfectly round in cross section take two DBH measurements at right angles to each other and average them to insure accuracy.



6. Diameters are rounded to the nearest one-inch. Rule for rounding measurements are as follows:

Round up if the measurement is .6 inches or more
Round down if the measurement is less than .6.
Example:....a diameter of 8.6 inches is rounded up to 9 inches. A diameter of 8.5 inches is rounded down to 8 inches

7. Diameter measurements are often used to determine the type of product for which a tree may be used.
8. Minimum diameters vary from product to product and from mill to mill, but some general rules apply in Florida for pulpwood and sawtimber.
9. **Pulpwood** is timber suitable for chipping and processing into pulp and paper products. It 4.6 inches for pine pulpwood, which is rounded to five inches.
10. **Sawtimber** is suitable for lumber production. It is 9.6 inches rounded to 10 inches. Note that pine sawtimber sized trees may be used for pulpwood.



11. Estimate the diameters of your 3 trees. Then take two measurements (one using Biltmore stick, and one using diameter tape) and **record on data sheet in the diameter space** provided.
12. Minimum merchantable sizes for standing trees measured at DBH are 4 inches for pulpwood and 8 inches for saw timber. Determine what kind of trees you are measuring—pulpwood or sawtimber.

Name(s) \_\_\_\_\_

## Data Sheet

### Diameter

#### Tree #1

Pers on #1	Estimation	Biltmore:	Diameter tape	Type tree
		Biltmore:	Diameter tape	
Pers on #2	Estimation	Biltmore:	Diameter tape	Type tree
		Biltmore:	Diameter tape	

#### Tree #2

Pers on #1	Estimation	Biltmore:	Diameter tape	Type tree
		Biltmore:	Diameter tape	
Pers on #2	Estimation	Biltmore:	Diameter tape	Type tree
		Biltmore:	Diameter tape	

#### Tree #3

Pers on #1	Estimation	Biltmore:	Diameter tape	Type tree
		Biltmore:	Diameter tape	
Pers on #2	Estimation	Biltmore:	Diameter tape	Type tree
		Biltmore:	Diameter tape	

Define merchantability.

Which tree had greater merchantability and why?

Which tree would you want dead or alive and why?

Student Name (s):  
 Trees identification:

### Rubric Assessing Hands-on Lab Activity

(Assess students AS they are working and the completed the Data Sheet, as well.)

Skill	Rank*
Estimates diameter	
Takes measurements twice for same tree	
Uses Biltmore and diameter tape appropriately	
Checks partner's measurements and initials data sheet beside his/her measurements	
Measurements are fairly accurate	
Correctly determines type of product for the tree	
Used diagram/model to help complete the lab	
* A = acceptable AH = acceptable with much help U = unacceptable, redo	

### Rubric Assessing Student Presentations

Skill	Rank*
Oral Presentation of how to make a diameter tape <ul style="list-style-type: none"> <li>• Defines diameter</li> <li>• Shows how to make a diameter tape as a graphic model.</li> </ul>	
Oral Presentation of how to USE Diameter tape to determine circumference. (includes rounding)	
Oral presentation of how to use Biltmore stick. (Includes rounding)	
Explains thought process in estimating the diameter of a tree.	
* A = acceptable AH = acceptable with much help U = unacceptable, redo Students may redo until teacher feels the student has mastery.	