

Evaluating Tree Benefits

Name(s): _____

Location: _____

Date: _____

1. Select a tree to study. Use a field guide or other source to determine the tree's species.

Tree Species: _____

2. Determine the tree's diameter at breast height (DBH), and then measure the tree's height. Methods for collecting these measurements are described at the end of this student page.

DBH: _____ inches (or _____ cm)

Height: _____ feet (or _____ m)

3. Visit the Tree Benefits website (<http://www.treebenefits.com>) to determine the ecological services that your selected tree provides by entering the species name and DBH (in inches).

Record your findings below.

Overall Benefits

At current size: \$_____ a year

If it continues to grow: \$_____ a year

Stormwater

_____ gallons of storm water intercepted a year

Property Value

\$_____

Energy

Electricity conserved (for cooling): _____ kilowatt/hours

Oil/Natural gas conserved (for heating): _____ therms

Air Quality

Ozone (O₃), deposited: _____

Volatile Organic Chemicals (VOC), avoided: _____

Nitrogen Dioxide (NO₂), deposited: _____Nitrogen Dioxide (NO₂), avoided: _____Sulfur Dioxide (SO₂), deposited: _____Sulfur Dioxide (SO₂) avoided: _____Particulates less than 10 microns (PM₁₀), deposited: _____Particulates less than 10 microns (PM₁₀), avoided: _____

Carbon Dioxide (CO₂)

Total pounds of atmospheric carbon reduced: _____

4. Describe any other ecosystem services or benefits provided by this tree.

Evaluating Tree Benefits (cont.)

How to Measure Diameter at Breast Height

Because some trees may be much wider at the base than others, foresters measure tree diameter using a standard called Diameter at Breast Height—or DBH. The DBH is the diameter of the tree at 4.5 feet (1.4 meters) above the ground.

First, use a tape measure to determine the circumference of the tree at 4.5 feet (1.4 meters) above the ground. This measurement is the Circumference at Breast Height (CBH). To obtain the diameter at breast height (DBH), divide the CBH by 3.14 (or π). The Tree Benefits website requires this measurement to be in inches.

$$\text{CBH} \div 3.14 = \text{DBH}$$

Foresters often use tools, such as a diameter tape or a biltmore stick, to measure diameter directly.

How to Measure Tree Height

One of the simplest methods for measuring a tree's height is setting up a proportion.

- Have a friend stand at the base of the tree while you walk a distance away from it.
- Hold a ruler at arm's length. Walk backward or forward until both the top and bottom of the ruler line up with the top and bottom of the tree.
- Note how tall your friend appears on the ruler (for example, 5 cm).
- Divide the length of the ruler by the apparent height of your friend. (For example, if the ruler is 30 cm, you would divide that number by the 5 cm from above, to get 6.)
- Multiply this number by the actual height of your friend. The result is the height of the tree. (For example, if your friend is 140 cm tall, you would multiply by 6, from above, to get 840 cm, or 8.4 m.)

