Name:_____ Date:_____

Tree Data

In this activity, you will calculate the diameter and height of a tree and use the data to estimate the amount of carbon stored in the tree. When you record your measurements and calculations, be sure to circle the correct unit: cm, in, kg, or lb.

Tree Species:_____ Tree Location:_____

Calculating Diameter

1 Measure the circumference of the tree trunk at approximately 1.4 m (4.5 ft) from the ground. Take a measuring tape and wrap it around the trunk (see Figure 1).

Circumference: _____cm (or in)

2 To determine the diameter of the tree, divide the circumference by π (3.14).

Diameter: _____cm (or in)

Figure 1 Oklahoma students use string to measure the circumference of a large tree.

Tree Data

Calculating Tree Height

3 Have Student A stand at the base of the tree. Have Student B hold a ruler at arm's length. Student B should walk backward, keeping the arm stiff, until the top and bottom of the ruler line up with the top and bottom of the tree (see Figure 2). Note where the top of Student A's head appears on the ruler. This is the "ruler height" of the student.

Figure 2
Illinois students estimate tree height using a 12-inch ruler.

Length of ruler: _____cm (or in)

Ruler height of student: _____cm (or in)

4 Divide the length of the ruler by the measurement at the top of the students head to find the ratio of the tree to student height.

$$\textit{Example: } \text{Ratio} = \frac{\text{Length of ruler}}{\text{Ruler height of student}} = \frac{12 \text{ inches}}{3 \text{ inches}} = 4$$

Ratio: _____

5 Measure and record the actual height of Student A: _____cm (or in)

6 Multiply actual height of Student A (step 5) by your calculated ratio (step 4) to get the tree height.

Tree Height = Actual height of Student A x Calculated Ratio

Tree Height: _____cm (or in)

7 Divide the tree height by the appropriate unit conversion to find the tree measurement in meters or feet.
Note: 100 cm = 1 meter, and 12 inches = 1 foot.

Your Tree's Height: _____m (or ft)

Tree Data

Estimating Carbon Storage

8 Use the "How Much Carbon is in a Tree?" student page – and your previous calculations (Diameter and Tree Height) – to estimate the amount of carbon in the tree.

Carbon in Tree: _____kg (or lb)

9 Share your results and add up the total tree carbon for ALL the trees measured by your class.

Total Class Tree Carbon: _____kg (or lb)

10 How might people affect carbon storage in trees?

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