Name: **Date:**

Lesson 13
Preparing To Measure Tree Circumference in the Field

1) How high is 1.35m?

   a) Measure 1.35m from the ground and determine where this falls on your body (nose/neck/shoulder/etc) as a basic reference. This reference point will be used when making field measurements. By standing near a tree, and using this reference point, you will not have to measure from the ground at each tree to determine the 1.35m height.
   b) Follow your teacher's instructions for how to create a height measurement tool.

2) Measuring trees greater than 15 centimeters circumference.

   a) When measuring trees in the field you will only record information for trees greater than or equal to 15cm circumference. While this value may seem arbitrary it is equal to 2 inches diameter, a cutoff used by scientists in many other forest inventory programs. A cutoff value is used for several reasons:
      i) It is not practical to measure every small sapling on a sample site,
      ii) In a forest, saplings do not contribute a significant amount of biomass,
      iii) Many saplings smaller than 15cm die off due to lack of available light.

In some forest inventories saplings are counted separately on a sub-plot, however, since we are only trying to assess basic carbon storage we will not include saplings in our study.

3) Two key concepts scientists must consider when they measure trees in the field, are accuracy and precision.

   a) Accuracy: Accuracy is the degree to which a measured or calculated value matches the true value. In the case of circumference measurements this can be influenced by:
      i) Placement of the measuring tape: Is the measurement 1.35m from the ground? Was the tape perpendicular to the main axis of the tree? Was the tape twisted?
      ii) Reading and recording data: Was the correct number read from the tape? Was this number correctly entered on the datasheet?

By closely following the rules in the *Tree Circumference Guide*, and carefully recording data, one will be able to make accurate circumference measurements. Accuracy becomes particularly important if trees are measured in future years and compared to previous measurements.

   b) Precision: Precision is the degree to which repeated measurements of the same tree are in agreement. You can determine how precise circumference can be measured by making repeated measurements of the same tree – either by one person, or by several people.

i) With your group, re-examine your tree cookie circumference results from Part 2. How precise were your measurements?

ii) Why might they be different? How tight did you pull the tape to read the measurement? What decimal place did they record to? Was the measuring tape flat or twisted as it was pulled around cookie? How many measurements do you think should be made in order to know if you have a precise measurement? Why?

c) Make a list of at least 4 things you can do in the field to make sure all of your measurements are made accurately and precisely?