

# Your Height Lab

NAME \_\_\_\_\_

## Purpose:

**Procedure:** Take a string (about three meters long) and measure it from knot to knot. Place one end at the extreme top of your forehead and have your lab partner hold the other end against the floor. You are now the leg of a right triangle, with the floor being the other leg and the string the hypotenuse. Measure carefully the angle formed by the ground and the string, and also measure the distance along the floor between the string and a point between the balls of your feet. This works best if you stand against a wall to avoid swaying. Finally, measure your actual height for use as a comparison later. Then, of course, answer the questions.

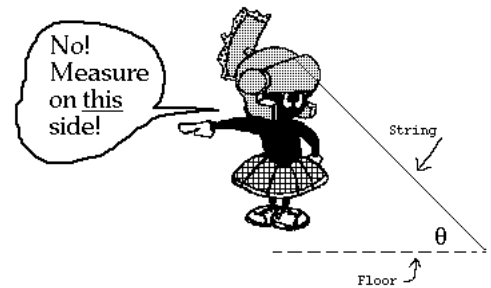
**Data:** (Lengths to nearest cm, degrees to nearest  $.1^\circ$ )

String length: \_\_\_\_\_

Angle measured: \_\_\_\_\_

Distance along floor: \_\_\_\_\_

Actual height: \_\_\_\_\_

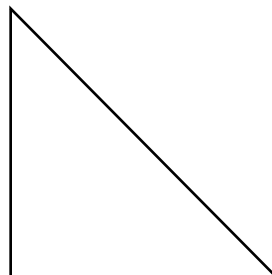
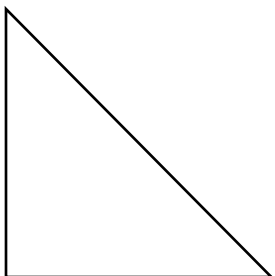


## Conclusions:

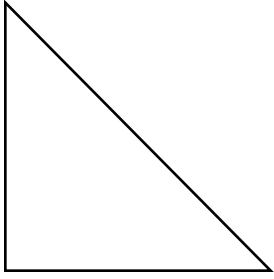
1. Why do we measure to a point between the balls of your feet?

2. Calculate your height using the string length and the distance along the floor. (show your work!)

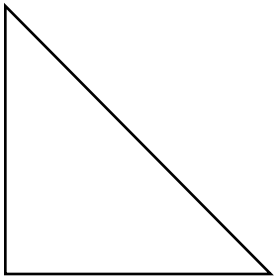
3. Calculate your height using the string length and the angle measured along the floor. (show your work!)



4. Calculate your height using the measured angle and the distance along the floor. (show your work!)



5. Calculate the angle you should have measured using the string length and the distance along the floor. (show your work!)



6. Calculate your percent error for #2 - #5.  $\% \text{ error} = (\text{actual} - \text{calculated}) / \text{actual} * 100$



7. Which one was the closest to the actual value? Which measurement did you NOT use to calculate that one? What was probably your worst measurement?

8. Name three things that you could measure more easily by an indirect method of measuring.