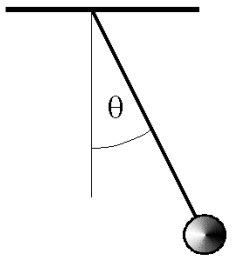
1. Please copy these definitions onto your chapter review sheet:
   a. A "**simple pendulum**" is a small object (called a "bob") hung from a rigid support with a light string. A pendulum is "simple" only if the bob is much shorter and much heavier than the string.
   b. The "**period**" of a pendulum is the amount of time required for it to swing back and forth through *one complete cycle.*
   c. There is an angle formed by the string and an imaginary vertical line. In the illustration at the right, the angle is labelled "q". That angle changes as the bob moves. The "**amplitude**" of the pendulum's motion is the maximum value reached by that angle during a swing.



2. For a simple pendulum like the one above, the greatest amplitude possible is ___ degrees. To make greater amplitudes possible you could modify the pendulum by replacing its _____ with a _____. A pendulum modified in that way can swing with amplitude no greater than _____ _____. The definition of "amplitude" is being saved for future reference on the Chapter ___ review sheet.

3. Use a stopwatch to measure the period of a simple pendulum. Then ask your partner to repeat the measurement. Taking turns with your partner, do everything you can to make these measurements precise. Measure the period at least six times and *make a histogram of the results.*
   a. Use the "olympic rule" (as on page 2) to determine the "GLV" and the "SLV", of the period. Use them to express the period in range form, as on page 2. Don't forget the units!
      "The period is probably between _____ and _____ ____."
   b. Average all of the measured periods (excluding the two that you crossed out because of the olympic rule) to find the "MLV" (most likely value) of the pendulum's period: _____ ____
   c. Subtract the SLV from the GLV and divide by 2 to estimate the "uncertainty" or "SDC" of the period: **[(____ ___) - (____ ___)] ÷ 2 = _____ ____** *Save a copy of this result on RS I.*

4. Measure the *length* of your pendulum from the pivot point to the center of the bob. Using the *same units*, estimate the SDC of that length, just as you did on page 1.
   Length of pendulum = ____ ____ **SDC of length = ____ ____**

5. Make a significant change in the length of your pendulum and then repeat #3 and 4. Write the new results into the spaces below. (The MLV goes in the first blank, the uncertainty or SDC goes into the blank after the "±" sign, and the unit goes in the third blank.) Remember to do everything you can think of to make your measurements as precise as possible.
   New Length = ____ ± ____ ____ **New Period = ____ ± ____ ____**

6. Changes are always *actions*. Does the act of changing the length cause the period to change? _____

7. A "conclusion" is a simple sentence describing an observed cause-and-effect relation. Here are some pathetic attempts written by students in recent years. Most of them are not even sentences. Which one *IS* a sentence? ___ -Is it true? ___ -Is it false? ___
   a. "The longer the pendulum its period stays the same."
   b. "The period with the smaller length the pendulum slightly slows down."
   c. "Increasing the length of a pendulum causes its period to decrease."
   d. "The greater the centimeter, the pendulum will swing faster to complete a period."

* 8. By changing *one word* in the sentence above you can transform it into a true statement. Write the *corrected* conclusion on the back of this paper, with the new word underlined. If you must change more than one word, please explain why it was necessary to do so. *The asterisk (*) by #8 indicates that you must answer with a complete statement that is clear enough for your grandmother to understand without having read the question.* If you are not sure that your statement is clear, ask an adult family member or friend to listen while you read it aloud.

* 9. Extra credit: When you change the amplitude of a pendulum's swinging motion, does that cause its period to change? Please give an answer with evidence in the form of experimental data, as in #4 & 5.