

Pendulum Lab

Goal:

Find how the period of a pendulum depends upon the following three properties:

- The amplitude of the swing (angle)
- The length of the string
- The mass of the bob

Materials:

- 1 string
- 3 weights: 50g, 200g, 500g
- 1 Stop watch
- 1 ruler

Procedure:

Start out by testing how the mass effects the period of the pendulum. To do so we set a constant length (128 cm) and amplitude of swing (10°). We then do three trials for each weight (50, 200, 500). Record how long it takes for the pendulum to make three full swings back and forth.

Next, we test how the amplitude of the swing effects the period of the pendulum. This time the two constants will be mass (200g) and length (128cm). We do three trials for each angle (10° , 20° , 30°). From our last set of trials, we already have the data for the 10° swing (with 128cm and 200g). So we only have to do 20° and 30° . Again go through all the trials, timing the time it takes for the pendulum to make three full swings back and forth. Record the times.

Last, we test how the length of the string effects the period of the pendulum. This time the constants are the angle (10°) and mass (200g). In this case we already have the data for the string at 128 cm. So we just have to do three trials each for 103 cm and 71 cm. (The numbers are strange, b/c we adjusted the string first then measured, so as to be more accurate, rather than deciding on a length and trying to adjust it to that length.) As we did before, record how long it takes for the pendulum to make three full swings back and forth.

