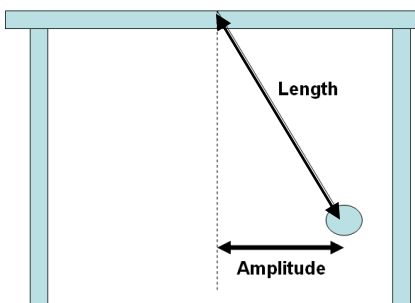


Pendulum Activity

In this activity, you will measure the period and frequency of a simple pendulum. Using your thumb to hold a piece string against the table top, you will suspend a mass from the edge of your lab table, allowing it to swing it sideways.

Materials – 1 meter of string, 1x50 g mass, 2x100g masses, and a stopwatch.



Period (T) = the time it takes for the pendulum to complete one oscillation.

Frequency (f) = the number of oscillations completed per unit time. It may be thought of as the RATE, or SPEED of repetition. A frequency of *one oscillation per second* is equal to 1 Hertz (abbreviated as, 1 Hz).

Amplitude (A) = maximum distance from the rest position.

$$f = 1/T \quad \text{and} \quad T = 1/f$$

Predictions

1. If *mass is increased*, what do you think will happen to the frequency of the pendulum? Why?
2. If *length is decreased*, what do you think will happen to the frequency of the pendulum? Why?
3. If *amplitude is increased*, what do you think will happen to the frequency of the pendulum? Why?

Data and Calculations

	Total Time for 25 oscillations (seconds)	Period, T (seconds) show calculation	Frequency, f (Hz) show calculation
Trial A M=50 g L=0.70 m A=10 cm			
Trial B M=200 g L=0.70 m A=10 cm			
Trial C 50 g L=0.20 m A=10 cm			
Trial D M=50 g L=0.70 m A=20 cm			

*make all length measurements are to center of disks

Questions

1. Describe the relationship between **frequency and mass**. Justify your answer by stating which trials you used for comparison (A vs B, B vs C, etc)

2. Describe the relationship between **frequency and string length**. Justify your answer by stating which trials you used for comparison (A vs B, B vs C, etc)

3. Describe the relationship between **frequency and amplitude**. Justify your answer by stating which trials you used for comparison (A vs B, B vs C, etc)