

In today's activity, you will be determining what factors affect the period of oscillation of a pendulum.

Materials:

- pendulum
- meter stick
- timer
- masses
- protractor

The three factors that you will be investigating today are the mass of the pendulum bob, the length of the pendulum, and the amplitude of the pendulum. The objective of the lab exercise is to determine which of those factors, if any, affect the period of oscillation of the pendulum.

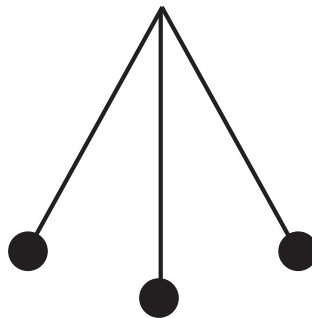
The period of oscillation of the pendulum is the amount of time it takes for the pendulum bob to make one full round trip- going from one maximum to the other, and then back to the first.

Be sure to keep the other two factors constant as you test each variable!

Pre-Lab Questions:

- Label the diagram below with "maximum" or "zero" for the energies and velocity of the pendulum as it oscillates:

$v =$ _____
 $KE =$ _____
 $PE_G =$ _____



$v =$ _____
 $KE =$ _____
 $PE_G =$ _____

$v =$ _____
 $KE =$ _____
 $PE_G =$ _____

Data Tables: answers will vary

Independent Variable: Mass

Length: _____ m

Amplitude: _____ degrees

| Mass (_____) | Period (s) |
|----------------|------------|
| | |
| | |
| | |
| | |
| | |

Independent Variable: Length

Mass: _____

Amplitude: _____ degrees

| Length (m) | Period (s) |
|------------|------------|
| | |
| | |
| | |
| | |
| | |

Name:

Date:

Data Tables: answers will vary

Independent Variable: Amplitude

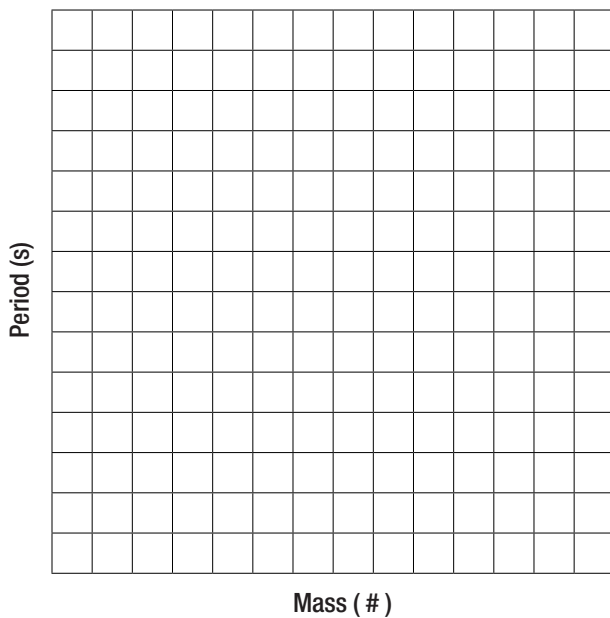
Mass: _____

Length: _____ m

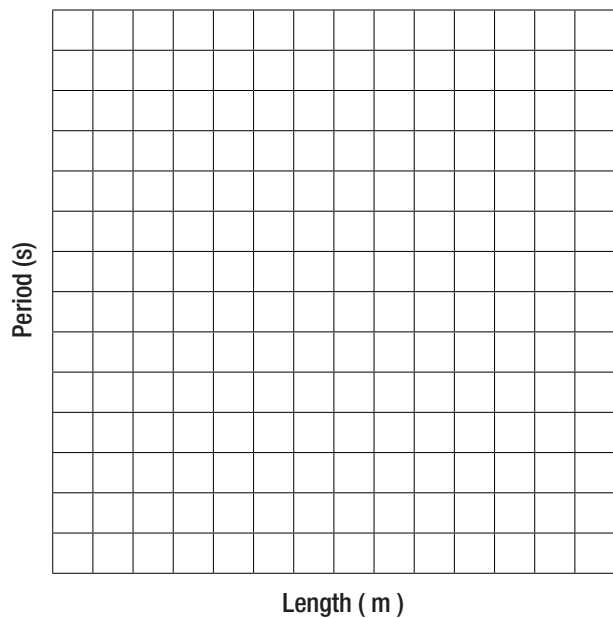
| Amplitude (Degrees) | Period (s) |
|---------------------|------------|
| | |
| | |
| | |
| | |
| | |

Graphs:

Period vs. Mass



Period vs. Length

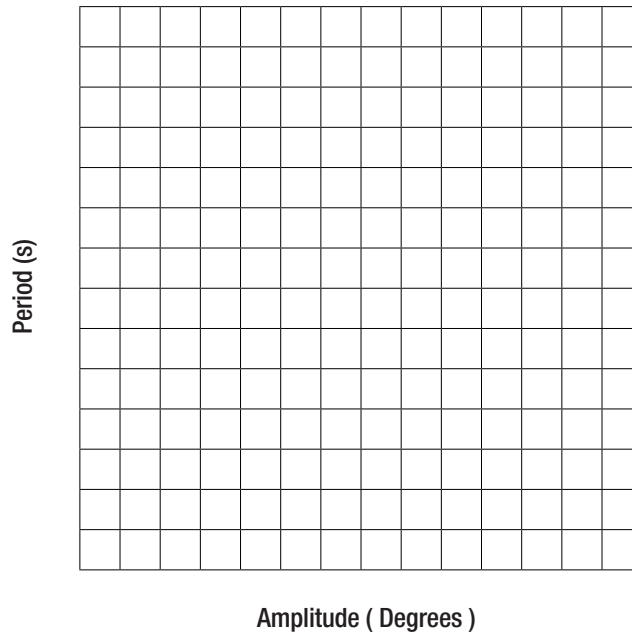


questions continued on next page

Unit 6A_Exploring Pendulums Lab

Graphs:

Period vs. Amplitude



Questions to consider:

1. Which of the three variables that were tested had the greatest impact on the period of oscillation of the pendulum?

2. Did your answer to question 1 have a linear relationship to the period of oscillation? Explain using information from your graph.
