

Experiment 5

Simple Pendulum – Time Period/ Mass and Amplitude

Time for activity 40-60 minutes

Resources

The Virtual Lab https://phet.colorado.edu/sims/html/pendulum-lab/latest/pendulum-lab_en.html

Paper. Pencil, Calculator

Software Requirements

The new HTML5 sims can run on iPads and Chromebooks, as well as PC, Mac, and Linux systems.

iPad:

iOS 11+ Safari

[iPad compatible sims](#)

Android:

Not officially supported. If you are using the HTML5 sims on Android, we recommend using the latest version of Google Chrome.

Chromebook:

Latest version of Google Chrome

The HTML5 and Flash PhET sims are supported on all Chromebooks.

[Chromebook compatible sims](#)

Windows Systems:

Microsoft Edge and Internet Explorer 11, latest version of Firefox, latest version of Google Chrome.

Macintosh Systems:

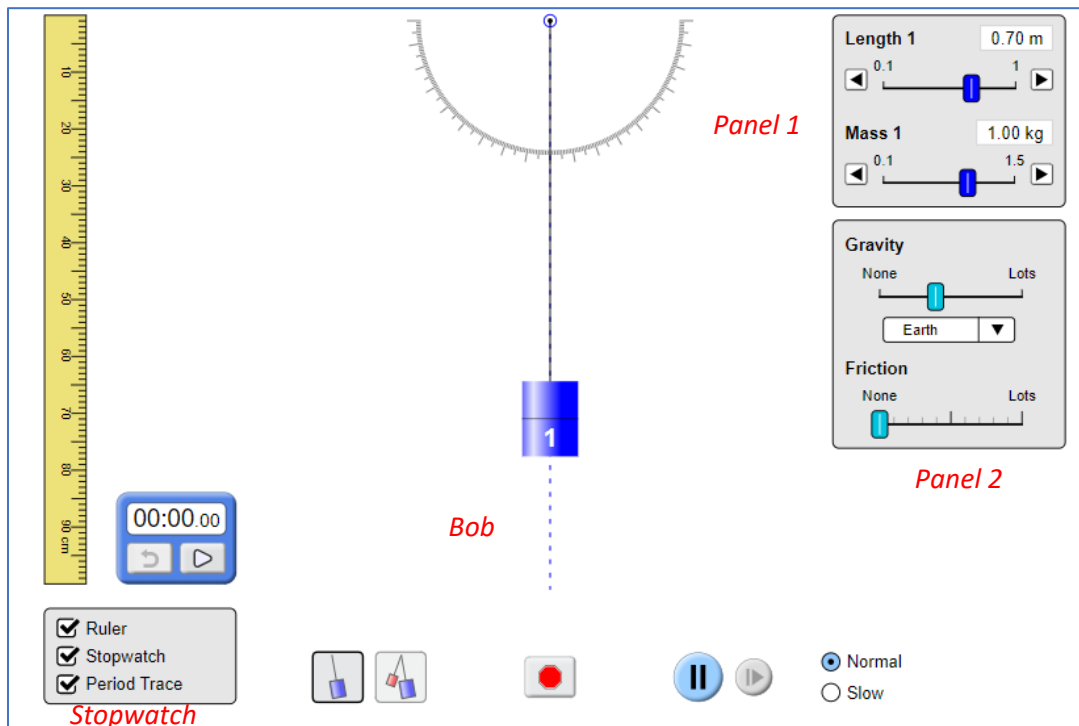
macOS 10.9.5+, Safari 9+, latest version of Chrome.

Linux Systems:

Not officially supported. Please contact phethelp@colorado.edu with troubleshooting issues.

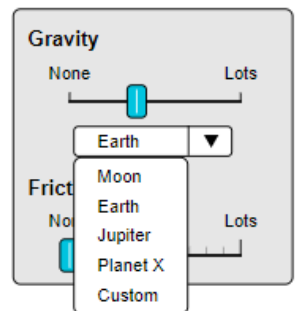
The Lab Environment

Spend a few minutes to understand/ explore the functionalities of the different tabs/components.



Instructions

1. Select the length of and the mass of the pendulum from the right length/mass tab (panel 1) and record the measurements in the table (s) below.
2. From the gravity tab, select the Earth from the dropdown menu (panel 2).
3. Check the ruler, stopwatch, and the period trace (panel 3).
4. Set the stopwatch to zero.
5. Drag the bob to its right or left extreme position, and then press the play button.
6. Note down the time for 10 (or 20 vibrations) and record it in the table(s) below.



Experiment 5

Simple Pendulum – Time Period/ Mass and Amplitude

Student's Name _____

Grade ____

Observations

1. Time Period of Simple Pendulum is independent of Mass of the Bob

TABLE 1

Note: Don't change the length of the pendulum

No. of Obs	Length of Pendulum L (m)	Mass of the Pendulum m (kg)	Time for 20 vibrations t (sec)			Time Period T = t / 20
			1	2	Average	
1						
2						
3						

Result: The **period** of oscillation of a simple pendulum does not depend on the **mass** of the bob.

2. Time Period of Simple Pendulum is independent of the Amplitude of the Vibration

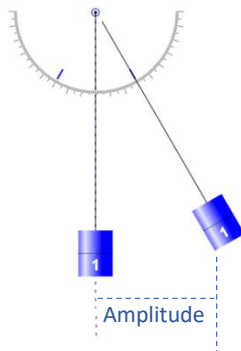


TABLE 2

Note: Don't change the length of the pendulum. Take three readings by taking the three different amplitudes (write the approximate length).

No. of Obs	Length of Pendulum L (m)	Amplitude of the Pendulum x (m)	Time for 20 vibrations t (sec)			Time Period $T = t / 20$
			1	2	Average	
1						
2						
3						

Result: The **period** of oscillation does not depend on the **amplitude** of the pendulum.