

SCI 9 (Burnett) U1A3.5 - Pendulum Simulation [Extension]

Purpose: What is the relationship between the mass of a pendulum and how long it takes the pendulum to swing 10 times?

Simulation Site Address: Google Search “Phet Pendulum html5” or click the link https://phet.colorado.edu/sims/html/pendulum-lab/latest/pendulum-lab_en.html

We will be working in the “Intro” tab only!

Scenario: A student was wondering if changing the mass of the pendulum would have an effect on how fast it would swing so they developed the following research question: What is the relationship between the mass of a pendulum and how long it takes the pendulum to swing 10 times? What do you think?

Hypothesis:

Based on U1A3 develop a set of procedural steps that would need to be followed:

1. Open Phet Pendulum lab simulation to the “Intro” tab
2. ...

Now you are ready to start your investigation:

What is the relationship between the mass of a pendulum and how long it takes the pendulum to swing 10 times?

General Layout for an Experimental Design Diagram

TITLE

The Effect of _____ (Independent Variable)
on _____ (Dependent Variables)

HYPOTHESIS

If _____ (planned change in independent variable),
then _____ (predicted change in dependent variables).

INDEPENDENT VARIABLE

LEVELS OF INDEPENDENT VARIABLE AND NUMBERS OF REPEATED TRIALS

| Level 1 (Control) | Level 2 | Level 3 | Level 4 |
|----------------------------|------------------|------------------|------------------|
| Number of trials | Number of trials | Number of trials | Number of trials |

DEPENDENT VARIABLE AND HOW MEASURED

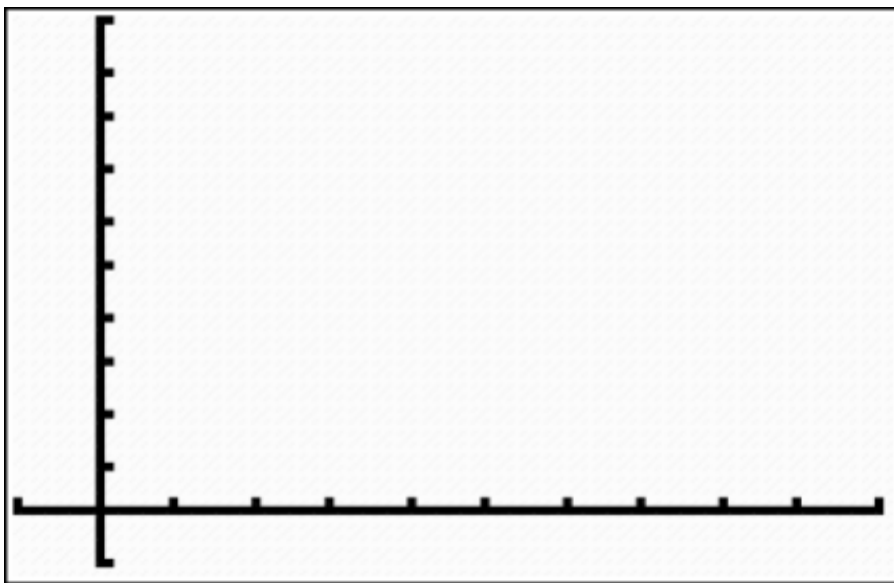
CONSTANTS

- 1.
- 2.
- 3.
- 4.

Data:

| Mass (kg) | Time (s) | | | |
|-----------|----------|---------|---------|---------|
| | Trial 1 | Trial 2 | Trial 3 | Average |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Data Analysis: (The Graph)



What is the relationship between the length of a pendulum and how long it takes the pendulum to swing 10 times?

Answer: For every _____ in pendulum mass the time it takes for ten swings _____