

Pendulum Inquiry Lab

Name: _____

BACKGROUND: A Pendulum is a simple device that consists of a suspended weight (bob) that swings freely. Pendulums provide an excellent example of energy transformations.

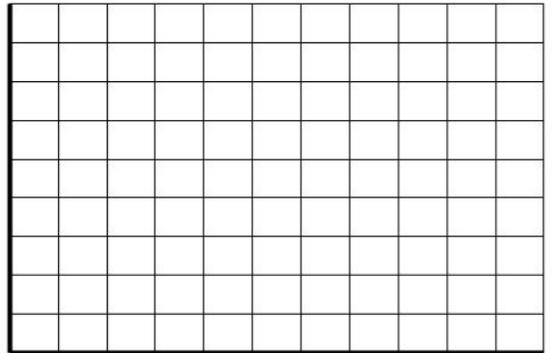
Control Pendulum:
String length of 25 cm
Mass of 200 g

Define the period of a pendulum:

How could you accurately measure the period of a pendulum?

Determine the period of the control pendulum: _____

Graph the motion of the pendulum over two periods



FORMULATING A QUALITY QUESTION TO TEST

Use QFT worksheet:

Record your top priority question: _____

Now turn your question into a hypothesis:

Hypothesis: If the _____ is increased then the period will _____ because _____ .

PROCEDURE:

Data Table:

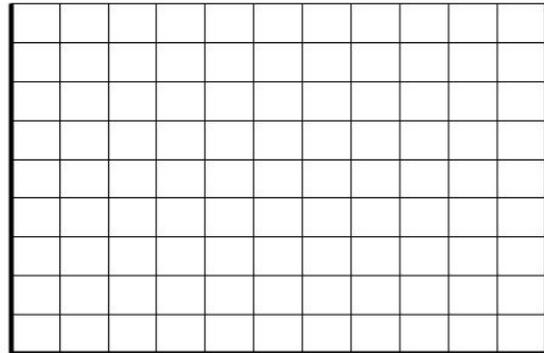
In order to run your experiment, a representative from the group must get teacher approval for:

1. Question (see above):
2. Independent Variable: _____
3. Dependent Variable: _____
4. Procedure
5. Data Table

Post Lab Investigation:

1. What are 3 different variables that could have been tested in this lab?

Make a Graph of your data:



Now for another piece of evidence use the interactive site to test three variables:

http://phet.colorado.edu/sims/pendulum-lab/pendulum-lab_en.html

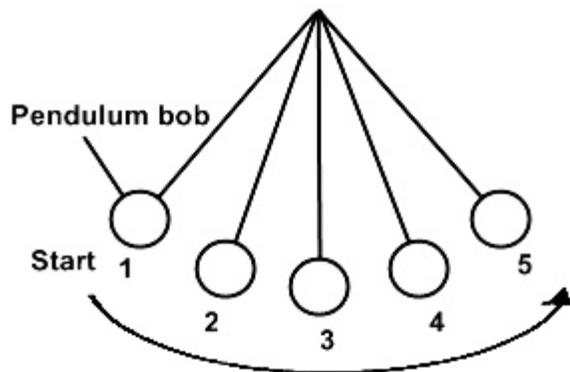
Condition	Effect

Write a Claim based on the evidence

Evidence (data)	Reasoning (How does the evidence support your claim?)

Research and Explain why: (site your source)

1. Why doesn't the mass affect the period?
2. Why doesn't the angle affect the period?



Energy:

1. At which position would the bob be traveling at the highest velocity? _____
2. At which position would the bob have the most Potential energy? _____
3. What happens to the potential as the bob travels from position 1 to 3?

TRUE OR FALSE

<http://mvhs.shodor.org/activities/physics/oscillatingf/science/TeachSt.htm>

- ____ The period of oscillation depends on the amplitude.
- ____ The heavier a pendulum bob, the shorter its period.
- ____ A pendulum accelerates through lowest point of its swing.
- ____ Amplitude of oscillations is measured peak-to-peak.
- ____ The acceleration is zero at the end points of the motion of a pendulum.

Targeting Students' Science Misconceptions Pendulums

- ____ Mass ("weight") is the primary factor determining the period of a pendulum.
- ____ The pendulum with the light bob moves faster than one with a heavier bob.
- ____ The string length is an important contributor that determines the period of the pendulum.
- ____ What the pendulum is made of determines the period of the pendulum.
- ____ The period of the pendulum is the same as how long it swings before it stops.
- ____ The shape of the pendulum determines its speed.

