

Name:

Class:

Experiment 1: Simple Harmonic Motion

Read over the lab manual and then answer the following question.

- a) State the objective of the experiment.
To determine the, g due to gravity using a simple pendulum and to investigate the effect of amplitude oscillation to the of g obtained from the experiment.

- b) Identify the variables of the experiment.

Manipulated variable :

Responding variable :

Constant variable :

- c) Theory:

- i) An oscillation of a simple pendulum is a simple harmonic motion if:

a) The mass of the spherical bob is a

b) The mass of the string is

c) of the oscillation is small (..... 10°).

- ii) According to the theory of SHM, the period of oscillation of a simple pendulum, T is given as:

$$T = 2\pi \sqrt{\frac{l}{g}}$$

$$T^2 = \frac{4\pi^2 l}{g}$$

- d) Procedures & Data Analysis:

To determine the acceleration g due to gravity using a simple pendulum.

- i) The pendulum should be released at less than from the plane. Then, measure the time for complete oscillations.

- ii) How to calculate the period of oscillation, T of the pendulum?

$$T = \frac{\text{Average time for 20 complete oscillations}}{\dots \dots \dots}$$

- iii) What graph you need to plot for this part of the experiment?

Graph of against

- iv) How do you determine the acceleration, g due to gravity from the graph?

The gradient of the graph, m is equal to $\frac{4\pi^2}{T^2}$. Hence, $g = \frac{4\pi^2}{T^2}$.

- v) What is the theoretical value of g ?

..... ms^{-2} .

To investigate the effect of large amplitude oscillation.

- i) Fixed the length of the pendulum at cm. The pendulum should be released about° from the vertical and measure the time for complete oscillations.

- ii) How do you calculate the acceleration, g due to gravity for this part of the experiment?
Using equation and the value of l and T from step (f) of the experiment procedures.

- iii) Between the values of g obtained from procedure (e) and procedure (f), which one do you think will be closer with the standard value of g ?

The value of g obtained from procedure (e).

The value of g obtained from procedure (e).