LAB 8: SIMPLE PENDULUM

AIM: To determine the acceleration due to gravity, **g**, using the simple pendulum

APPARATUS & MATERIALS:

metal bob stopwatch

retort stand meter rule

string

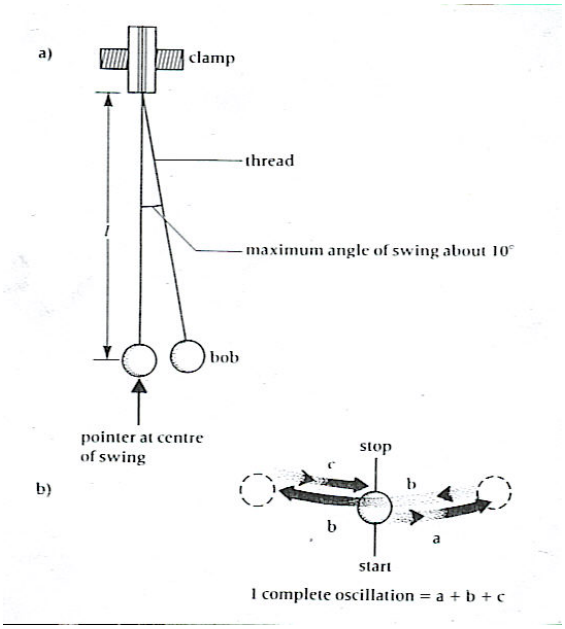

Diagram: Apparatus for the simple pendulum

METHOD:

- Set up pendulum as shown in the diagram with the length, **l**, of about 50 cm. A small metal object was used as the bob
- Fix a pointer opposite the position of the bob when it hangs at rest
- Set the pendulum swinging and check with a protractor that the angle of the swing is not more than 10^{o}.
- Sit in the front of the pendulum so that your eye is level with the bob and right angles to the swing.

- As the bob passes the pointer, start the stopwatch.
- When it next passes the pointer going in the same direction, this is one oscillation.
- Use the countdown method, time for 20 oscillations of the pendulum and calculate the period, **T**.
- Repeat the experiment for six (6) additional values of the length, **l**.

THEORY:

- State the period of the pendulum and formula.

RESULTS:

- Record and tabulate all results in table below (showing all headings and units)

Length **l / m**	**Time for 20 oscillations** **t / s**	**Period** **T / s**	**(Period)^2** **T^2 / s^2**

- Plot a graph of the period, **T^2** against length, **l.**

CALCULATIONS:

- Calculate the gradient, **S**, of the line, showing clearly how you have obtained your answer.
- Find the acceleration due to gravity, **g,** given that

$$g = 4\pi^2 / S$$

CONCLUSION:

- State the acceleration due to gravity, **g.**