

GNSC 1110L LAB PRE-TEST THE SIMPLE PENDULUM

1. State the objectives of this experiment.
2. How do you measure the length of a simple pendulum?
3. Define period of a simple pendulum in words.
4. The period of a simple pendulum is related to its length and the acceleration of gravity in an equation. Write down that equation.
5. What is the amplitude of a simple pendulum?
6. What does the period of a simple pendulum depend on?

7. True or false

The period of a simple pendulum does not depend on the mass of the pendulum bob.

8. True or false

The period of a simple pendulum depends only on its length.

9. What assumptions must be made in order for the following equation for period of a simple pendulum to be valid?

$$T = 2\pi (L/g)^{1/2}$$

- 10 The period² of a simple pendulum is given by the following equation. Solve for g. Show work.

$$T^2 = 4 \pi^2 L/g$$

11. If the length of a simple pendulum is quadrupled, its period will change by what factor?

12. If it takes 23.45 s for a simple pendulum to execute 10 cycles, what is the period?

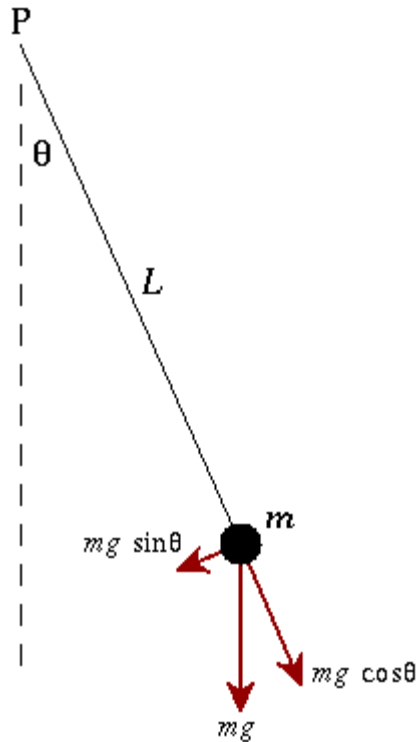
13. Give the units of the following quantities in SI system: length, time, period, and g.

14. How do you find the percent error if the theoretical value of g is 9.80 m/s² and the experimental value is 9.95 m/s²

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ANS:

2. From the pivot to the middle of the ball.



2 continued. P is the pivot point. L is the length of the pendulum. M is the mass. The angle θ is the amplitude.

5. The maximum displacement from the equilibrium position.

6. It depends on the length and the acceleration of gravity.

7. True

8. False

9. See theory in Handout

10. Ans. $g = 4\pi^2 / LT^2$

11. Two

12. $23.45 \text{ s}/10 = 2.345 \text{ s}$

14. % error = $([9.80 \text{ m/s}^2 - 9.95 \text{ m/s}^2] / 9.80 \text{ m/s}^2) \times 100\% = 0.015 \times 100 = 1.5 \%$

