

Class 9(physics)

Simple pendulum: A simple pendulum is a heavy point mass (known as bob) suspended from a rigid support by a massless and inextensible string.

Some terms related to simple pendulum.

- I) **Oscillation:** One complete to fro motion of the bob of pendulum is called one oscillation.
- II) **Time period:** This is the time taken to complete one oscillation. It is denoted by the symbol t . its unit is second.
- III) **Frequency of oscillation:** It is number of oscillation made in one second. It is denoted by f or n . Its unit is per second (s^{-1}).
- IV) **Amplitude:** The maximum displacement of the bob from its mean position on either side is called the amplitude of oscillation. It is denoted by a or A . its unit is metre.
- V) **Effective length of a pendulum:** It is the distance of the point of oscillation o from the point of oscillation s . it is shown by l .

Second's pendulum: A pendulum with a time period of oscillation equal to two seconds, is known as a **Second's** pendulum.

NUMERICAL Ex -1(c):

Q.2 The time period of a simple pendulum is 2s. What is its frequency? What name is given to such a pendulum?

Solution:

$$\text{Given } T = 2\text{s}$$

Therefore,

$$f = 1/T = 1/2 = 0.5\text{s}^{-1}.$$

Q.5 Compare the time periods of two pendulums of length 1m and 9m.

Solution: Given: $l_1 = 1\text{m}$ and $l_2 = 9\text{m}$

since $T \propto \sqrt{l}$ $T_1/T_2 = \sqrt{l_1/l_2}$

$$T_1/T_2 = \sqrt{1/9} = 1/3$$

i.e, $T_1:T_2 = 1:3$

ASSIGNMENT: EXERCISE 1(C) Q. 2, Q4, Q4 Q5 AND Q6.

NUMERICAL: Q1, Q4, Q7.