

UNIT

1

MEASUREMENT



Learning Objectives

After the completion of this lesson, students will be able to:

- ◆ understand fundamental quantities and units.
- ◆ explain the system of units and measurements.
- ◆ analyse the different system of units.
- ◆ know about temperature, amount of substance, electric current and luminous intensity.
- ◆ explore the knowledge of accuracy in measurements.
- ◆ differentiate plane angle and solid angle.
- ◆ solve problems related to measurement.



Introduction

Physics is the study of nature and natural phenomena. Physics is considered as the base of all science subjects. It is based on experimental observations. The principles and observations allow us to develop a deeper understanding of nature. Scientific theories are valid, only if they are confirmed through various experiments. Theories in physics use many physical quantities that have to be measured.

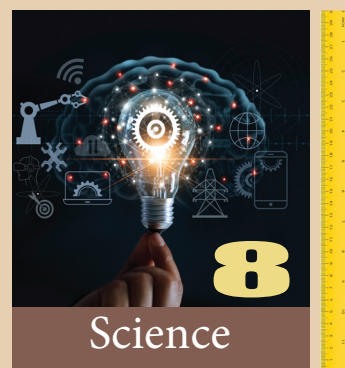
Measurement is the base of all scientific studies and experimentations. It plays a vital role in our daily life. It is the process of finding an unknown physical quantity by using a standard quantity. In this lesson, we will study about measurement in detail. We will also study about accuracy and precision, approximation and rounding off.

1.1 Unit Systems

We need three things for a perfect measurement. They are: an instrument, a standard quantity and an acceptable unit.

Activity 1

Measure the length and breadth of your science book using a ruler (scale) and compare your value with those of your friends.



Let us say that the length of the book be 30 cm. Here, the length is the physical quantity, ruler is the instrument, 30 is the magnitude and 'cm' is the unit. This process is called measurement.

In the above activity the values of all the students will not be same. Similarly, people in various parts of the world are using different systems of units for measurement. Some common systems of units are as follows.

1. FPS System (Foot for length, Pound for mass and Second for time)