

BASIC UNITS AND STANDARD UNITS FOR MEASUREMENTS-2025

- ❖ **A basic unit** is a fundamental/core unit from which all other measurements are derived while **a standard unit** is a widely accepted unit for practical measurements.
- ❖ **All Basic units** are official part of international system of units (**SI**) whereas not all **standard units** are part of the SI system.
- ❖ **Basic units** are typically used in scientific and technical applications while **standard units** are often used in everyday practical applications for convenience.
- ❖ **A standard unit** can be a basic unit or a derived unit depending on the context.

	MEASURE	BASIC UNIT (SI SYSTEM)	SYMBOL	STANDARD UNIT	SYMBOL
1.	Mass	Kilogram	kg	Kilogram	kg
2.	Weight	Newton	N	Newton	N
3.	Volume	Cubic metre	m ³	Cubic metre (CUBES)	m ³
				Litres (LIQUIDS)	L
4.	Density	Kilogram per Cubic Metre	kg/m ³	Gram per Cubic Centimetre	g/cm ³
				Kilogram per Cubic Metre	kg/m ³
5.	Area	Square metre	m ²	Square metre	m ²
6.	Length	Metre	m	Metre	m
				centimetre	cm
7.	Force	Newton	N	Newton	N
8.	Energy	joule	J	joule	J
9.	Heat	joule	J	joule	J
10.	Temperature	Kelvin	K	Degree Celsius	°C
11.	Sound	Pascal	Pa	Decibel	dB
12.	Frequency	Hertz	Hz	Hertz	Hz

13.	Capacity	Litre or Cubic Metre	L / m ³	Litre	L
14.	Time	Second	s	Second/Minute/Hour	s/min/h
15.	Power	Watt	W	Kilowatt/Horsepower	kW/hp
16.	Electric current	Ampere	A	Ampere	A
17.	Electric charge	Coulomb	C	Coulomb	C
18.	Electric resistance	Ohm	Ω	Ohm	Ω
19.	Pressure	Pascal	Pa	Pascal	Pa
20.	Light intensity	Candela	cd	Candela	cd

Note:

- ✓ **Mass** is the amount of matter in an object.
- ✓ **Gram** is neither a **basic unit** nor **standard unit** for mass, it is a **derived unit** from the SI system and is commonly used in everyday measurements, where **1kg =1000g**.
- ✓ **Weight** is the force of gravity acting upon an object.
- ✓ Mass is **constant** while weight **changes** according to location of an object.
- ✓ **Density** is mass per unit volume or **density** is the ratio of mass to volume.
- ✓ **Volume** is the amount of space occupied by an object.
- ✓ **Cubic metre (m³)** is the **basic** and **standard unit** for volume. Litres (L) and Cubic centimetres (cm³) are derived units commonly used for liquids but not the SI system, where **1cubic metre(m³) = 1000litres(L)**
- ✓ **Square Metre (m²)** is the basic and standard unit for area (**Area = Length x Width**) in the SI system. However, for practical purposes, **square centimetre (cm²)** and **square kilometres (km²)** are frequently used.
- ✓ **Calorie(cal)** is used to measure energy content in food but not in scientific applications

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