

## EXPERIMENT - 1

# Systems of Measurement and Common Household Measures

Like other field of sciences, it is accepted to use International System (SI) of Units in pharmaceutical sciences and practice. The few relevant fundamental units are:

Parameter	Unit
Length	Meter (m)
Mass	Kilogram (kg)
Volume (capacity)	Cubic meter (m <sup>3</sup> )
Temperature	° Kelvin
Amount of substance	Mole (mol)
Radio activity	Becquerel

Though SI units are expected to be used, still it is found to have the common (older systems) units in daily practice. Hence, it is essential that the pharmacist should know the common units too and their equivalents, how to convert them to SI units and vice versa.

### Volume

The volume is commonly expressed in terms of millilitre (ml) or litre.

$$1 \text{ litre} = 1000 \text{ ml} = 1 \text{ dm}^3$$

Concentration expressed in gram per litre = g/dm<sup>3</sup>

### Mass

The mass is commonly expressed as milligram (mg) or gram (g).

$$1 \text{ kilogram (kg)} = 1000 \text{ g}$$

$$1 \text{ g} = 1000 \text{ mg}$$

$$1 \text{ mg} = 1000 \text{ microgram } (\mu\text{g})$$

The 'curie' is the traditional unit of radioactivity (Ci) =  $3.7 \times 10^{10}$  Bq

**Intersystem Conversion Equivalents**

<b>Weight measure (mass)</b>	<b>Liquid measure (volume)</b>
1 kg = 2.2 pounds (lb)	1 ml = 16.23 minims (m)
1 lb = 453.4 g	1 minim = 0.06 ml (app.)
1 ounce (oz) = 28.35 g	1 fluid ounce = 29.57 ml (app. 30 ml)
1 grain (gr) = 64.8 mg (app. 65 mg)	1 pint (pt) = 473 ml
1 g = 15.432 gr	1 gallon (gal) USA = 3785 ml
	1 gallon (gal) UK = 4546 ml

**Common Domestic Measures**

<b>Domestic Measure</b>	<b>Value</b>
1 tumblerful	240 ml
1 teacupful	120 ml
1 wine glass	60 ml
1 tablespoonful	15 ml
1 teaspoonful	5 ml