

Metric System

The basic units in metric system are as follows:

mass: gram, symbol **g**

length: meter, symbol **m**

time: second, symbol **s**

volume: liter, symbol **L**

temperature: celsius, symbol **°C**

The following is a list of the commonly used prefixes in metric system.

Prefix	symbol	value
mega	M	10^6
kilo	k	10^3
deci	d	10^{-1}
centi	c	10^{-2}
milli	m	10^{-3}
micro	μ	10^{-6}
nano	n	10^{-9}
pico	p	10^{-12}

We can write the following equivalences for mass measurements:

$$1 \text{ megagram(Mg)} = 10^6 \text{ g}$$

$$1 \text{ kilogram(kg)} = 10^3 \text{ g}$$

$$1 \text{ decigram(dg)} = 10^{-1} \text{ g} \quad \text{or} \quad 1 \text{ g} = 10^1 \text{ dg}$$

$$1 \text{ centigram (cg)} = 10^{-2} \text{ g} \quad \text{or} \quad 1 \text{ g} = 10^2 \text{ cg}$$

$$1 \text{ milligram (mg)} = 10^{-3} \text{ g} \quad \text{or} \quad 1 \text{ g} = 10^3 \text{ mg}$$

$$1 \text{ microgram}(\mu\text{g}) = 10^{-6} \text{ g} \quad \text{or} \quad 1 \text{ g} = 10^6 \mu\text{g}$$

$$1 \text{ nanogram (ng)} = 10^{-9} \text{ g} \quad \text{or} \quad 1 \text{ g} = 10^9 \text{ ng}$$

$$1 \text{ picogram(pg)} = 10^{-12} \text{ g} \quad \text{or} \quad 1 \text{ g} = 10^{12} \text{ pg}$$

- Fill in the following blanks for units of length .
 1 megameter(Mm) = _____ m or 1 m = _____ Mm
 1 kilometer(km) = _____ m or 1 m = _____ km
 1 decimeter(dm) = _____ m or 1 m = _____ dm
 1 centimeter(cm) = _____ m or 1 m = _____ cm
 1 millimeter(mm) = _____ m or 1 m = _____ mm
 1 micrometer(μm) = _____ m or 1 m = _____ μm
 1 nanometer(nm) = _____ m or 1 m = _____ nm
 1 picometer(pm) = _____ m or 1 m = _____ pm
- Give the full names of each of the following units:
 a. mL
 b. ns
 c. mg
 d. cL
- Write symbols for each of the following units:
 a. Liter
 b. nanometer
 c. picosecond
 d. megameter
 e. microliter
 f. milligram
- Express each of the following in terms of their base units(for e.g. 1 mL = 0.001L)
 a. 1 cm
 b. 1 mg
 c. 1 km
 d. 1 cL
- Write the correct prefixes for the following measurements:
 a. 1000g = _____ g
 b. 0.001m = _____ m
 c. 1,000,000 s = _____ s
 d. 0.01g = _____ g
 e. 0.0046 g = _____ g
 f. 3300 s = _____ s
- Which is the larger unit?
 a. centimeter or decimeter
 b. milliliter or microliter
 c. milligram or megagram
 d. nanosecond or picosecond
- Complete the following blanks:
 a. 1 L = _____ dL
 b. 1 m = _____ cm
 c. 1 km = _____ m
 d. 1 mL = _____ L
 e. 1 mg = _____ g
 f. 1 cm³ = _____ mL