

Metric System

Name _____

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:

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

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

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

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

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

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

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

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

1. 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(μ m) = _____ m or 1 m = _____ μ m

1 nanometer(nm) = _____ m or 1 m = _____ nm

1 picometer(pm) = _____ m or 1 m = _____ pm

2. Give the full names of each of the following units:

a. mL

c. mg

b. ns

d. cL

3. Write symbols for each of the following units:

a. Liter

b. nanometer

c. picosecond

d. megameter

e. microliter

f. milligram

4. Express each of the following in terms of their base units(for e.g. 1 mL = 0.001L)

a. 1 cm

c. 1 km

b. 1 mg

d. 1 cL

5. Write the correct prefixes for the following measurements:

a. 1000g = _____ g

c. 1,000,000 s = _____ s

b. 0.001m = _____ m

d. 0.01g = _____ g

e. 0.0046 g = _____ g

f. 3300 s = _____ s

6. Which is the larger unit?

a. centimeter or decimeter

c. milligram or megagram

b. milliliter or microliter

d. nanosecond or picosecond

7. 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