

Quick Summary: The basic metric units are meters (for length), grams (for mass or weight), and liters (for volume). The metric system originated in France in 1799 following the French Revolution although decimal units had been used in many other countries and cultures previously.

Tips and Tricks:

Pictures and drawings and graphs and diagrams:

Length	Weight	Volume
1 km = 1,000 m	1 kg = 1,000 g	1 kL = 1,000 L
1 m = .001 km	1 g = .001 kg	1 L = .001 kL
1 m = 100 cm	1 g = 100 cg	1 L = 100 cL
1 cm = .01 m	1 cg = .01 g	1 cL = .01 L
1 m = 1,000 mm	1 g = 1,000 mg	1 L = 1,000 mL
1 mm = .001 m	1 mg = .001 g	1 mL = .001 L

Prefix	Symbol		Multiplier
exa	E	$10^{18}$	1,000,000,000,000,000,000
peta	P	$10^{15}$	1,000,000,000,000,000
tera	T	$10^{12}$	1,000,000,000,000
giga	G	$10^9$	1,000,000,000
mega	M	$10^6$	1,000,000
kilo	k	$10^3$	1,000
hecto	h	$10^2$	100
deka	da	$10^1$	10
deci	d	$10^{-1}$	0.1
centi	c	$10^{-2}$	0.01
milli	m	$10^{-3}$	0.001
micro	$\mu$	$10^{-6}$	0.000,001
nano	n	$10^{-9}$	0.000,000,001
pico	p	$10^{-12}$	0.000,000,000,001
micro-micro	$\mu\mu$	$10^{-12}$	0.000,000,000,001
femto	f	$10^{-15}$	0.000,000,000,000,001
atto	a	$10^{-18}$	0.000,000,000,000,000,001

- All Formulas
- 2 Examples

- 1-5 Practice problems

1. 1000 mg = \_\_\_\_\_ g
2. 1 L = \_\_\_\_\_ mL
3. 160 cm = \_\_\_\_\_ mm
4. 14 km = \_\_\_\_\_ m
5. 109 g = \_\_\_\_\_ kg

**EXAMPLES:**

Convert 60.8 decimeters to kilometers.

deci = 1/10  
kilo = 1000

60.8 **decimeters** x 1/10 **meters**/decimeters = 6.08

**Steps**

- convert to meters
- multiply
- decimeters cancel out
- divide 60.8 by 10

Deci to Kilo = **6.08 / 1000 = 0.00608**

Milligrams to grams - divide by 1000 or move decimal three places to the left.

500 mg = 0.5 g  
1000 mg = 1.0 g

Grams to milligrams - multiply 1000 or move decimal three places to the right.

0.15 g = 150 mg

