

## Units

<u>Name</u>	<u>Symbol</u>	<u>Value (scientific Notation)</u>	<u>Value (Decimal)</u>
nano	n	$1 \times 10^{-9}$	0.000000001
micro	$\mu$	$1 \times 10^{-6}$	0.000001
milli	m	$1 \times 10^{-3}$	0.001
centi	c	$1 \times 10^{-2}$	0.01
Standard Unit		1	1
kilo	k	$1 \times 10^3$	1,000
mega	M	$1 \times 10^6$	1,000,000
giga	G	$1 \times 10^9$	1,000,000,000

**Converting units:** Multiply unit you want to change by the conversion factor (ratio of unit of interest to unit you are eliminating). The units will divide out and you will be left with the unit of interest.

$$1 \text{ cm} = 10 \text{ mm} \Rightarrow \left( \frac{1\text{cm}}{10\text{mm}} \right) \text{ or } \left( \frac{10\text{mm}}{1\text{cm}} \right)$$

This would be for converting mm to cm or for converting cm to mm respectively.

### Examples:

How many cm are in 1 mm? in 1 m?

$$1 \text{ mm} \left( \frac{1\text{cm}}{10\text{mm}} \right) = \frac{1}{10} \text{ cm} = 0.1 \text{ cm} \quad 1 \text{ m} \left( \frac{100\text{cm}}{1\text{m}} \right) = \frac{100}{1} \text{ cm} = 100 \text{ cm}$$

How many m are in 1 cm, 1 mm?

$$1 \text{ cm} \left( \frac{1\text{m}}{100\text{cm}} \right) = \frac{1}{100} \text{ m} = 0.01 \text{ m} \quad 1 \text{ mm} \left( \frac{1\text{m}}{1000\text{mm}} \right) = \frac{1}{1000} \text{ m} = 0.001 \text{ m}$$

How many ml are in 100 L?

$$100 \text{ L} \left( \frac{1000\text{ml}}{1\text{L}} \right) = \frac{100000}{1} \text{ ml} = 100000 \text{ ml}$$

How many megabytes (MB) are in 1 gigabyte (GB)?

$$1 \text{ GB} \left( \frac{1000\text{MB}}{1\text{GB}} \right) = \frac{1000}{1} \text{ MB} = 1000 \text{ MB}$$

Note: When multiplying units remember to convert each unit separately!

How many  $\text{m}^2$  are there in  $1 \text{ cm}^2$ ?

$$1 \text{ cm}^2 \left( \frac{1\text{m}}{100\text{cm}} \right) \left( \frac{1\text{m}}{100\text{cm}} \right) = \frac{1}{(100)^2} \text{ m}^2 = \frac{1}{10000} \text{ m}^2 = 0.0001 \text{ m}^2$$