

## The Metric Prefixes

| prefix | abbreviation<br>(upper and lower case important!) | Meaning written in scientific notation | Meaning written in the "normal" way        | A sense of scale<br>(Most are approximate)                     |
|--------|---|--|--|--|
| peta   | P   | $10^{15}$                              | 1000000000000000                           | 1 Ps is the number of seconds ago that the dinosaurs vanished. |
| tera   | T   | $10^{12}$                              | 1000000000000<br>(a trillion of something) | 1 Tm is the distance from sun to Jupiter                       |
| giga   | G   | $10^9$                                 | 1000000000<br>(a billion of something)     | The number of seconds that the average human lives is 1Gs      |
| mega   | M   | $10^6$                                 | 1000000<br>(a million of something)        | 1 Ms is the number of seconds in 11.6 days                     |
| kilo   | k   | $10^3$                                 | 1000<br>(a thousand of something)          | 1 km is 0.6 miles  |
| hecto  | h   | $10^2$                                 | 100<br>(a hundred of something)            | 1 hL is volume of small coffee                                 |
| deca   | da  | $10^1$                                 | 10<br>(10 of something)                    | 1 dag is the weight of a nickel coin.                          |
| deci   | d   | $10^{-1}$                              | 0.1<br>(1/10 of something)                 | 1 dL is the volume of about 2000 drops of water                |
| centi  | c   | $10^{-2}$                              | 0.01<br>(1/100 of something)               | 1 cm is 2.54 inches  |
| milli  | m   | $10^{-3}$                              | 0.001<br>(1/1000 of something)             | 1 mL is the volume of about 20 drops of water.                 |
| micro  | $\mu$   | $10^{-6}$                              | 0.000001                                   | 1 $\mu$ m (micron) is the length of a bacteria cell            |
| nano   | n   | $10^{-9}$                              | 0.000000001                                | The radius of a chlorine atom is 1 nm                          |
| pico   | p   | $10^{-12}$                             | 0.000000000001                             | 1 pg is the mass of bacterial cell.                            |
| femto  | f   | $10^{-15}$                             | 0.000000000000001                          | The radius of a proton is 1 fm                                 |

### Examples:

k means  $10^3$

1 kg =  $10^3$  g  
1 km =  $10^3$  m  
1 ks =  $10^3$  s

giga means  $10^9$

1 Gg =  $10^9$  g  
1 Gm =  $10^9$  m  
1 Gs =  $10^9$  s

milli means  $10^{-3}$

1 mg =  $10^{-3}$  g  
1 mL =  $10^{-3}$  L  
1 ms =  $10^{-3}$  s

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|---------------|--|---|
| peta          | P  | $10^{15}$                                     |
| tera          | T  | $10^{12}$                                     |
| giga          | G  | $10^9$  |
| mega          | M  | $10^6$  |
| kilo          | k  | $10^3$  |
| hecto         | h  | $10^2$  |
| deca          | da   | $10^1$  |
| deci          | d  | $10^{-1}$                                     |
| centi         | c  | $10^{-2}$                                     |
| milli         | m  | $10^{-3}$                                     |
| micro         | $\mu$  | $10^{-6}$                                     |
| nano          | n  | $10^{-9}$                                     |
| pico          | p  | $10^{-12}$                                    |
| femto         | f  | $10^{-15}$                                    |

Examples: