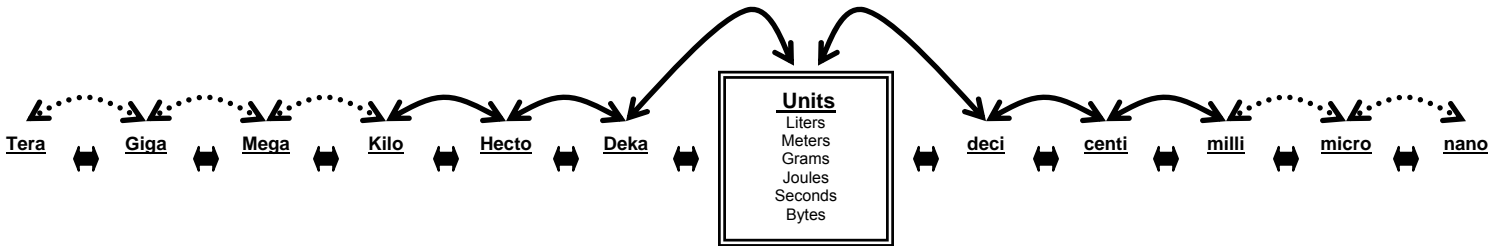


Metric Conversions Worksheet I

| | | | | |
|--|---------------------------|--------|-------------------|--------------------------|
| Going up the table move the decimal to the left | T | tera- | 1 000 000 000 000 | 10^{12} |
| | G | giga- | 1 000 000 000 | 10^9 |
| | M | mega- | 1 000 000 | 10^6 |
| | k | kilo- | 1 000 | 10^3 |
| | h | hecto- | 100 | 10^2 |
| | D | deka | 10 | 10^1 |
| | NO PREFIX (UNIT) | | 1 | 10^0 |
| Going down the table move the decimal to the right | d | deci | 0.1 | 10^{-1} |
| | c | centi- | 0.01 | 10^{-2} |
| | m | milli- | 0.001 | 10^{-3} |
| | μ | micro- | 0.000001 | 10^{-6} |
| | n | nano- | 0.000000001 | 10^{-9} |

These are the metric units. The letter in the first column is used as the *prefix* before the unit. Some common types of units are: **grams (g)**, **meters (m)**, **liters (L)**, **joules (J)**, **seconds (s)**, and **bytes (B)**.

When working in the metric system it is helpful to use a “metric map.” This metric map will enable you to successfully convert your units.



⋯ indicates that there is a difference of three steps/decimal places/zeros to get from one prefix to the next.
↔ indicates that there is a difference of only one step/decimal place/zero to get from one prefix to the next.

EXAMPLES

1.0 kg = ? mg
1.0 kg = 1 000 000 mg

kilo and milli differ by six steps/decimal places/zeros; kilo → milli is going to the right on the “map”; therefore move the decimal six places to the right

The diagram shows a metric map with a dot at 'Kilo' and an arrow pointing to 'milli'. The 'Unit' box is labeled 'Grams'.

2.3 cm = ? m
2.3 cm = 0.023 m

centi and no prefix (unit) differ by two steps/decimal places/zeros; centi → no prefix (unit) is going to the left on the “map”; therefore move the decimal two places to the left

The diagram shows a metric map with a dot at 'centi' and an arrow pointing to 'Unit'. The 'Unit' box is labeled 'Meters'.

| From | | | To | | | Difference in zeros/ decimal places/steps | Move decimal left or right? |
|---------|--------|--------|---------|------------------|--------|--|-----------------------------|
| | prefix | unit | | prefix | unit | | |
| km | kilo | meters | m | <i>no prefix</i> | meters | 3 | right |
| Mg | | | Gg | | | | |
| mL | | | L | | | | |
| kJ | | | mJ | | | | |
| μ s | | | ms | | | | |
| B | | | kB | | | | |
| cm | | | mm | | | | |
| cL | | | μ L | | | | |

PROBLEMS

1. Convert the following to grams (g):

| Before converting | Difference in zeros/ decimal places/steps | Move to left or right? | After converting |
|-------------------|--|------------------------|------------------|
| 1.0 kg | | | g |
| 2.5 kg | | | g |
| 0.045 kg | | | g |
| 100 mg | | | g |
| 2400 mg | | | g |

2. Convert the following to meters (m):

| Before converting | Difference in zeros/ decimal places/steps | Move to left or right? | After converting |
|-------------------------|---|------------------------|------------------|
| 4 mm | | | m |
| 15.6 km | | | m |
| 0.005 Mm | | | m |
| 1,000,000 μm | | | m |
| 2400 mm | | | m |

3. Convert the following to kiloliters (kL):

| Before converting | Difference in zeros/ decimal places/steps | Move to left or right? | After converting |
|---------------------|---|------------------------|------------------|
| 1600 L | | | kL |
| 2050 cL | | | kL |
| 5000 mL | | | kL |
| 1.5 HL | | | kL |
| 0.003 μL | | | kL |

Name: _____
Metric Conversions

Section: _____

Metric Conversions Worksheet II

1. Convert the following to km:

$1600.0 \text{ m} = \underline{\hspace{2cm}}$

$2050 \text{ cm} = \underline{\hspace{2cm}}$

$1.033 \text{ Mm} = \underline{\hspace{2cm}}$

$245\,565 \text{ mm} = \underline{\hspace{2cm}}$

$20\,099 \text{ m} = \underline{\hspace{2cm}}$

$499 \text{ m} = \underline{\hspace{2cm}}$

2. Convert the following:

$10.034 \text{ mJ} = \underline{\hspace{2cm}} \text{ cJ}$

$36.45 \text{ cL} = \underline{\hspace{2cm}} \mu\text{L}$

$0.05 \text{ cm} = \underline{\hspace{2cm}} \text{ mm}$

$1024 \text{ B} = \underline{\hspace{2cm}} \text{ kB}$

$0.0325 \text{ kJ} = \underline{\hspace{2cm}} \text{ cJ}$

$1202.5 \text{ mL} = \underline{\hspace{2cm}} \text{ L}$

$0.42101 \text{ Gg} = \underline{\hspace{2cm}} \text{ Mg}$

$25.5 \text{ km} = \underline{\hspace{2cm}} \text{ m}$

$0.12907 \text{ cm} = \underline{\hspace{2cm}} \text{ mm}$

$756\,900 \mu\text{s} = \underline{\hspace{2cm}} \text{ ms}$

$5600.4 \text{ Ms} = \underline{\hspace{2cm}} \text{ Gs}$

$268\,000 \text{ cm} = \underline{\hspace{2cm}} \text{ km}$

Name: _____
Metric Conversions

Section: _____

Metric Conversions Worksheet III

Convert the following:

$0.0075 \text{ Gm} = \underline{\hspace{2cm}} \text{ km}$

$0.00091 \text{ TL} = \underline{\hspace{2cm}} \text{ ML}$

$0.00046 \text{ ks} = \underline{\hspace{2cm}} \text{ cs}$

$244475.3 \text{ } \mu\text{s} = \underline{\hspace{2cm}} \text{ hs}$

$4096 \text{ MB} = \underline{\hspace{2cm}} \text{ GB}$

$210 \text{ hm} = \underline{\hspace{2cm}} \text{ cm}$

$0.0002 \text{ } \mu\text{g} = \underline{\hspace{2cm}} \text{ mg}$

$448.5 \text{ cg} = \underline{\hspace{2cm}} \text{ g}$

$0.00034 \text{ } \mu\text{L} = \underline{\hspace{2cm}} \text{ cL}$

$2103.55 \text{ s} = \underline{\hspace{2cm}} \text{ ks}$

$11120.33 \text{ ng} = \underline{\hspace{2cm}} \text{ cg}$

$0.0000012 \text{ GL} = \underline{\hspace{2cm}} \text{ cL}$

Word Problems

1. The distance from your home to the airport is 0.0000075 Gm. How far is this in km?

2. There are 10 computers in the computer lab that each have 20 GB hard drives. How many bytes (B) of disk space do we have in the computer lab in total.

3. A challenge: convert 100125368477004 ng to Teragrams.