

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
	da	deca	10	10^1
	NO PREFIX		1	10^0
	d	deci	1/10	10^{-1}
	c	centi-	1/100	10^{-2}
	m	milli-	1/1000	10^{-3}
↓ Going down the table move the decimal to the right	μ	micro-	1/1000000	10^{-6}
	n	nano-	1/1000000000	10^{-9}

These are the metric divisions of quantity. The letter in the first column is used as the *prefix* before the type of quantity. Some common types of quantity are **grams (g)**, **metres (m)**, **joules (J)**, **seconds (s)**, and **bytes (B)**.

EXAMPLES

1.0 kg = ? mg 1.000000 kg = 1 000 000 mg	kilo and milli differ by six zeros; kilo → milli is going down the table; therefore move the decimal six places to the right
2.3 cm = ? m 002.3 = 0.023 m	centi and no prefix differ by two zeros; centi → no prefix is going up the table; therefore move the decimal two places to the left

From			To			Zeros difference	Move decimal left or right?
	prefix	quantity		prefix	quantity		
km	kilo	metres	m	<i>no prefix</i>	metres	3	right
Gg			Mg				
Mg			Gg				
mL			L				
kJ			mJ				
μs			ms				
B			kB				
cm			mm				
cL			μL				
mJ			cJ				

PROBLEMS

1. Convert the following to grams (g):

Before converting	Move decimal 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 metres (m):

Before converting	Move decimal to left or right?	After converting
4 mm		m
15.6 km		m
0.005 Mm		m
1,000,000 μm		m
2400 mg		m

2. Convert the following to kilojoules (kJ):

Before converting	Move to left or right?	After converting
1600 J		kJ
2050 cJ		kJ

Metric Conversions Worksheet II

1. Convert the following to km:

$1600.0 \text{ m} = \underline{\hspace{2cm}} \quad 2050 \text{ cm} = \underline{\hspace{2cm}} \quad 1.033 \text{ Mm} = \underline{\hspace{2cm}}$

$245\,565 \text{ mm} = \underline{\hspace{2cm}} \quad 20\,099 \text{ m} = \underline{\hspace{2cm}} \quad 499 \text{ m} = \underline{\hspace{2cm}}$

2. Convert the following:

$10.034 \text{ mJ} = \underline{\hspace{2cm}} \text{ cJ} \quad 36.45 \text{ cL} = \underline{\hspace{2cm}} \mu\text{L}$

$0.05 \text{ cm} = \underline{\hspace{2cm}} \text{ mm} \quad 1024 \text{ B} = \underline{\hspace{2cm}} \text{ kB}$

$0.0325 \text{ kJ} = \underline{\hspace{2cm}} \text{ cJ} \quad 1202.5 \text{ mL} = \underline{\hspace{2cm}} \text{ L}$

$0.42101 \text{ Gg} = \underline{\hspace{2cm}} \text{ Mg} \quad 25.5 \text{ km} = \underline{\hspace{2cm}} \text{ m}$

$0.12907 \text{ cm} = \underline{\hspace{2cm}} \text{ mm} \quad 756\,900 \mu\text{s} = \underline{\hspace{2cm}} \text{ ms}$

$5600.4 \text{ Ms} = \underline{\hspace{2cm}} \text{ Gs} \quad 268\,000 \text{ cm} = \underline{\hspace{2cm}} \text{ km}$

Metric Conversions Worksheet III

Convert the following:

$0.0075 \text{ Gm} = \underline{\hspace{2cm}} \text{ km} \quad 0.00091 \text{ TL} = \underline{\hspace{2cm}} \text{ ML}$

$0.00046 \text{ ks} = \underline{\hspace{2cm}} \text{ cs} \quad 244475.3 \mu\text{s} = \underline{\hspace{2cm}} \text{ hs}$

$4096 \text{ MB} = \underline{\hspace{2cm}} \text{ GB} \quad 210 \text{ hm} = \underline{\hspace{2cm}} \text{ cm}$

$0.0002 \mu\text{g} = \underline{\hspace{2cm}} \text{ mg} \quad 448.5 \text{ cg} = \underline{\hspace{2cm}} \text{ g}$

$0.00034 \mu\text{L} = \underline{\hspace{2cm}} \text{ cL} \quad 2103.55 \text{ s} = \underline{\hspace{2cm}} \text{ ks}$

$11120.33 \text{ ng} = \underline{\hspace{2cm}} \text{ cg} \quad 0.0000012 \text{ GL} = \underline{\hspace{2cm}} \text{ cL}$