

## Conversions Using the Metric System

### Metric Units

What are you measuring?	Units that might be used (largest to smallest)
Length	kilometer, meter, centimeter, millimeter, sometimes others
Area	any of the above squared, also hectare (ha)
Volume	cubic meter, liter, milliliter
Mass ("weight")	metric ton, kilogram, gram, milligram, microgram
Force	Newton
Pressure	bar, millibar or hectopascal, pascal
Temperature	Celsius, Kelvin

### Prefixes

Prefix	Symbol	It means	What it means in words
mega	M	1 000 000	One million
kilo	k	1 000	One thousand
hecto*	h	100	One hundred
centi*	c	.01	One hundredth
milli	m	.001	One thousandth
micro	μ	.000 001	One millionth
nano	n	.000 000 001	One billionth

\*These prefixes have limited usage. You will usually only see them in the centimeter, hectopascal, and hectare.

### Metric to Metric Conversions

#### Moving the decimal

Down the scale = move decimal to the right

Up the scale = move decimal to the left

(Count steps between units to see how much decimal moves)

Examples:

6.82 cm → \_\_\_\_\_ mm  
 Centimeter to millimeter moves down the scale the decimal moves to the **right one** step

6.82 cm → 68.2 mm

962 m → \_\_\_\_\_ km  
 Meter to kilometer moves up the scale the decimal moves to the **left three** steps

962 m → .962 km

- Kilo -
- Hecto -
- Deca -
- **BASE** (meter, Gram, Liter)
- Deci -
- Centi -
- Milli -
- -
- -
- Micro -

## English to Metric Conversions (approximate)

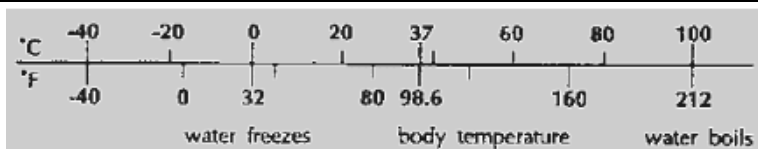
<i>Symbol</i>	<i>When You Know</i>	<i>Multiply by</i>	<i>To Find</i>	<i>Symbol</i>
<b>LENGTH</b>				
in	inches	2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
<b>AREA</b>				
in <sup>2</sup>	square inches	6.5	square centimeters	cm <sup>2</sup>
ft <sup>2</sup>	square feet	0.09	square meters	m <sup>2</sup>
yd <sup>2</sup>	square yards	0.8	square meters	m <sup>2</sup>
mi <sup>2</sup>	square miles	2.6	square kilometers	km <sup>2</sup>
	acres	0.4	hectares	ha
<b>MASS (weight)</b>				
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons	0.9	metric ton	t
	(2000 lb)			
<b>VOLUME</b>				
tsp	teaspoons	5	milliliters	mL
Tbsp	tablespoons	15	milliliters	mL
in <sup>3</sup>	cubic inches	16	milliliters	mL
fl oz	fluid ounces	30	milliliters	mL
c	cups	0.24	liters	L
pt	pints	0.47	liters	L
qt	quarts	0.95	liters	L
gal	gallons	3.8	liters	L
ft <sup>3</sup>	cubic feet	0.03	cubic meters	m <sup>3</sup>
yd <sup>3</sup>	cubic yards	0.76	cubic meters	m <sup>3</sup>
<b>TEMPERATURE (exact)</b>				
°F	degrees Fahrenheit	subtract 32, multiply by 5/9	degrees Celsius	°C
<b>TEMPERATURE (approximate)</b>				
°F	degrees Fahrenheit	subtract 32, multiply by 0.56	degrees Celsius	°C

References:

<http://themetricssystem.info/overviewofunits.htm> and [http://ts.nist.gov/WeightsAndMeasures/Metric/mpo\\_home.cfm](http://ts.nist.gov/WeightsAndMeasures/Metric/mpo_home.cfm)

## Metric to English Conversions (approximate)

<b>Symbol</b>	<b>When You Know</b>	<b>Multiply by</b>	<b>To Find</b>	<b>Symbol</b>
<b>LENGTH</b>				
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
<b>AREA</b>				
cm <sup>2</sup>	square centimeters	0.16	square inches	in <sup>2</sup>
m <sup>2</sup>	square meters	1.2	square yards	yd <sup>2</sup>
km <sup>2</sup>	square kilometers	0.4	square miles	mi <sup>2</sup>
ha	hectares	2.5	acres	(10,000 m <sup>2</sup> )
<b>MASS (weight)</b>				
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
	metric ton	1.1	short tons	(1,000 kg)
<b>VOLUME</b>				
mL	milliliters	0.03	fluid ounces	fl oz
mL	milliliters	0.06	cubic inches	in <sup>3</sup>
L	liters	2.1	pints	pt
L	liters	1.06	quarts	qt
L	liters	0.26	gallons	gal
m <sup>3</sup>	cubic meters	35	cubic feet	ft <sup>3</sup>
m <sup>3</sup>	cubic meters	1.3	cubic yards	yd <sup>3</sup>
<b>TEMPERATURE (exact)</b>				
°C	degrees Celsius	multiply by 9/5, add 32	degrees Fahrenheit	°F
<b>TEMPERATURE (approximate)</b>				
°C	degrees Celsius	multiply by 1.8, add 32	degrees Fahrenheit	°F



References:

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