

# Conversion Factors

U.S. Customary	To Change		Multiply By
	From	To	
<b>Length or Distance</b>			
12 inches (in.) =	feet	inches	12
1 foot (ft)	inches	feet	0.833333
3 feet (ft) =	feet	yards	0.333333
1 yard (yd)	yards	feet	3
36 inches (in.) =	yards	inches	36
1 yard (yd)	inches	yards	0.027778
5,280 feet (ft) =	miles	feet	5,280
1 mile (mi)	feet	miles	0.000189
<b>Weight or Mass</b>			
16 ounces (oz) =	pounds	ounces	16
1 pound (lb)	ounces	pounds	0.0625
2,000 pounds (lb) =	tons	pounds	2,000
1 ton (T)	pounds	tons	0.0005
<b>Liquid Capacity or Volume</b>			
3 teaspoons (t) =	tablespoon	teaspoon	3
1 tablespoon (T)	teaspoon	tablespoon	0.333333
2 tablespoons (T) =	ounce	tablespoon	2
1 ounce (oz)	tablespoon	ounce	0.5
8 ounces (oz) =	cups	ounces	8
1 cup (c)	ounces	cups	0.125
2 cups (c) =	pints	cups	2
1 pint (pt)	cups	pints	0.5
2 pints (pt) =	quarts	pints	2
1 quart (qt)	pints	quarts	0.5
4 quarts (qt) =	gallons	quarts	4
1 gallon (gal)	quarts	gallons	0.25

Units of Time	To Change		Multiply By
	From	To	
1 minute =	minutes	seconds	60
60 seconds	seconds	minutes	0.016667
1 hour =	hours	minutes	60
60 minutes	minutes	hours	0.016667
1 day = 24 hours	days	hours	24
	hours	days	0.041667
1 week = 7 days	weeks	days	7
	days	weeks	0.142857
1 fortnight =	fortnights	weeks	2
2 weeks	weeks	fortnights	0.5
1 month = 30 days (ordinary time)	months	days	30
	days	months	0.033333
1 leap month = 29 days	leap months	days	29
	days	leap months	0.034483
1 year = 12 months	years	months	12
	months	years	0.083333
1 year = 365 days	years	days	365
	days	years	0.002740
1 decade =	decades	years	10
10 years	years	decades	0.1
1 century =	centuries	years	100
100 years	years	centuries	0.01

Metric System	To Change		Multiply By
	From	To	
<b>Length or Distance</b>			
1 kilometer (km) =	kilometers	meters	1,000
1,000 meters (m)	meters	kilometers	0.001
1 hectometer (hm) =	hectometers	meters	100
100 meters	meters	hectometers	0.01
1 dekameter (dkm) =	dekameters	meters	10
10 meters	meters	dekameters	0.1
1 decimeter (dm) =	decimeters	meters	0.1
0.1 meter	meters	decimeters	10
1 centimeter (cm) =	centimeters	meters	0.01
0.01 meter	meters	centimeters	100
1 millimeter (mm) =	millimeters	meters	0.001
0.001 meter	meters	millimeters	1,000
<b>Weight</b>			
1 kilogram (kg) =	kilograms	grams	1,000
1,000 grams (g)	grams	kilograms	0.001
1 hectogram (hg) =	hectograms	grams	100
100 grams	grams	hectograms	0.01
1 dekagram (dkg) =	dekagrams	grams	10
10 grams	grams	dekagrams	0.1
1 decigram (dg) =	decigrams	grams	0.1
0.1 gram	grams	decigrams	10
1 centigram (cg) =	centigrams	grams	0.01
0.01 gram	grams	centigrams	100
1 milligram (mg) =	milligrams	grams	0.001
0.001 gram	grams	milligrams	1,000
<b>Capacity</b>			
1 kiloliter (kL) =	kiloliters	liters	1,000
1,000 liters (L)	liters	kiloliters	0.001
1 hectoliter (hL) =	hectoliters	liters	100
100 liters	liters	hectoliters	0.01
1 dekaliter (dkL) =	dekaliters	liters	10
10 liters	liters	dekaliters	0.1
1 deciliter (dL) =	deciliters	liters	0.1
0.1 liter	liters	deciliters	10
1 centiliter (cL) =	centiliters	liters	0.01
0.01 liter	liters	centiliters	100
1 milliliter (mL) =	milliliters	liters	0.001
0.001 liter	liters	milliliters	1,000

Units of Area	To Change		Multiply By
	From	To	
1 square foot =	square feet	square inches	144
144 square inches	square inches	square feet	0.006944
1 square yard =	square yards	square feet	9
9 square feet	square feet	square yards	0.111111
1 square mile =	square miles	square kilometers	2.5887
2.5887 square kilometers	square kilometers	square miles	0.386294

## Changing Temperature between Fahrenheit and Celsius

Fahrenheit to Celsius: Subtract 32 then multiply by  $\frac{5}{9}$

$$C = \frac{5}{9}(F - 32) \text{ or } C = \frac{F - 32}{1.8}$$

Celsius to Fahrenheit: Multiply by  $\frac{9}{5}$  then add 32

$$F = \frac{9}{5}C + 32 \text{ or } F = 1.8C + 32$$

U.S. Customary and Metric Comparisons	To Change		Multiply By
	From	To	
<b>Length</b>			
1 meter =	meters	inches	39.37
39.37 inches	inches	meters	0.0254
1 meter =	meters	feet	3.2808
3.2808 feet	feet	meters	0.3048
1 meter =	meters	yards	1.0936
1.0936 yards	yards	meters	0.9144
1 centimeter =	centimeters	inches	0.3937
0.3937 inch	inches	centimeters	2.54
1 millimeter =	millimeters	inches	0.03937
0.03937 inch	inches	millimeters	25.4
1 kilometer =	kilometers	miles	0.6214
0.6214 mile	miles	kilometers	1.6093
<b>Weight or Mass</b>			
1 gram =	grams	ounces	0.0353
0.0353 ounce	ounces	grams	28.3286
1 kilogram =	kilograms	pounds	2.2046
2.2046 pounds	pounds	kilograms	0.4536
<b>Liquid Capacity</b>			
1 liter =	liters	quarts	1.0567
1.0567 quarts	quarts	liters	0.9463
<b>Capacity or Volume</b>			
1 cubic inch =	cubic inches	cubic centimeters	16.387
16.387 cubic centimeters	cubic centimeters	cubic inches	0.0610
1 cubic inch =	cubic inches	liters	0.01639
0.01639 liters	liters	cubic inches	61.0128
1 cubic foot =	cubic feet	cubic meters	0.0283
0.0283 cubic meter	cubic meters	cubic feet	35.3357
1 teaspoon =	teaspoons	milliliters	4.93
4.93 milliliters	milliliters	teaspoons	0.2028
1 tablespoon =	tablespoons	milliliters	14.97
14.97 milliliters	milliliters	tablespoons	0.0668
1 fluid ounce =	fluid ounces	milliliters	29.57
29.57 milliliters	milliliters	fluid ounces	0.0338
1 cup = 0.24 liters	cups	liters	0.24
	liters	cups	4.1667
1 pint = 0.47 liters	pints	liters	0.47
	liters	pints	2.1277
1 gallon =	gallons	cubic meters	0.00379
0.00379 cubic meters	cubic meters	gallons	263.85

## Symbols

+	Add
-	Subtract
$\times, \cdot, *, ( ) ( )$	Multiply
$\div, \square, /, \text{—}$	Divide
$=$	Equal to
$\approx$	Approximately equal to
$\neq$	Not equal to
%	Percent
>	Greater than
<	Less than
$\geq$	Greater than or equal to
$\leq$	Less than or equal to
$\sqrt{\quad}$	Radical sign or square root
$( ), [ ], \{ }, \text{—}$	Grouping symbols
$  $	Absolute value
$f(x)$	Function notation, read "f of x"
$\overleftrightarrow{AB}$	Line AB
$\overline{AB}$	Line segment AB
$\overrightarrow{AB}$	Ray AB
$\cong, \equiv$	Congruent to
$\sim$	Similar to (geometric figures)
$\angle$	Angle
$\parallel$	Parallel
$\perp$	Perpendicular
$\triangle$	Triangle
$\bigcirc$	Circle
$\square$	Right angle
$\Delta$	Delta, change, used with slope
$\{ \dots \}$	Such that, used with set notation
$\Sigma$	Summation
$x_1$	Subscript (1)
$\{ \}, \emptyset$	Empty or null set
$\in$	Is an element of
$\cup$	Union (of sets)
$\cap$	Intersection (of sets)
$\pi$	Constant—Pi (ratio of diameter to circumference of circle, approximately 3.141592654)
$e$	Constant—natural exponential; from $\left(1 + \frac{1}{n}\right)^n$ where $n \rightarrow \infty$ , approximately 2.718281828
$i$	The square root of -1; $\sqrt{-1}$
$\infty$	Infinity
$\therefore$	Therefore
$\exists$	There exists
$\forall$	For every

## Special Algebra Patterns for Factoring

$$a^2 + 2ab + b^2 = (a + b)^2$$

$$a^2 - b^2 = (a + b)(a - b)$$

$$a^3 + b^3 = (a + b)(a^2 - ab + b^2)$$

$$a^3 - b^3 = (a - b)(a^2 + ab + b^2)$$