Conversion Factors

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

Units of Time	To Change From	To	Multiply By
1 minute = 60 seconds	minutes	seconds	60
	seconds	minutes	0.016667
1 hour = 60 minutes	hours	minutes	60
	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 = 2 weeks	fortnights	weeks	2
	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 = 10 years	decades	years	10
	years	decades	0.1
1 century = 100 years	centuries	years	100
	years	centuries	0.01

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

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

Changing Temperature between Fahrenheit and Celsius

Fahrenheit to Celsius: Subtract 32 then multiply by $\frac{5}{9}$ $\quad C = \frac{5}{9}(°F - 32)$ or $C = \frac{°F - 32}{1.8}$

Celsius to Fahrenheit: Multiply by $\frac{9}{5}$ then add 32 $\quad °F = \frac{9}{5}C + 32$ or $°F = 1.8C + 32$

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

Special Algebra Patterns for Factoring

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

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

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

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

Symbols

+	Add
−	Subtract
×, ·, *, ( )( )	Multiply
÷, ⌐, /, —	Divide
=	Equal to
≈	Approximately equal to
≠	Not equal to
%	Percent
>	Greater than
<	Less than
≥	Greater than or equal to
≤	Less than or equal to
$\sqrt{\ }$	Radical sign or square root
( ), [ ], { }, —	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
≃, ≅	Congruent to
~	Similar to (geometric figures)
∠	Angle
∥	Parallel
⊥	Perpendicular
△	Triangle
○	Circle
⌙	Right angle
Δ	Delta, change, used with slope
{ . . | . . }	Such that, used with set notation
Σ	Summation
x_1	Subscript (1)
{ }, ϕ	Empty or null set
∈	Is an element of
∪	Union (of sets)
∩	Intersection (of sets)
π	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 $n \to \infty$, approximately 2.718281828
i	The square root of −1; $\sqrt{-1}$
∞	Infinity
∴	Therefore
∃	There exists
∀	For every