

Conversion Factors

- Length
- Volume
- Temperature
- Weight
- Light
- Area
- Apothecary Measures

Length

To convert from	into	multiply by ...
Centimeters	Feet	0.0328
Centimeters	Inches	0.3937
Decimeters	Inches	3.937
Fathoms (nautical)	Feet	6
Fathoms (nautical)	Meters	1.8288
Feet	Centimeters	30.48
Feet	Decimeters	3.048
Feet	Meters	0.3048
Inches	Centimeters	2.54
Inches	Millimeters	25.4
Kilometers	Feet	3280.8

Kilometers	Meters	1000
Kilometers	Miles	0.62137
Kilometers	Yards	1093.6
League	Nautical Miles	3
Meters	Ångstroms	1×10^{10}
Meters	Centimeters	100
Meters	Chains (Gunter's)	0.04971
Meters	Chains (Ramden's)	0.003281
Meters	Decimeters	10
Meters	Fathoms	0.54681
Meters	Feet	3.28084
Meters	Furlongs	0.00497
Meters	Inches	39.3701
Meters	Kilometers	0.001
Meters	Links (Gunter's)	4.97097
Meters	Links (Ramden's)	3.28084
Meters	Megameters	1×10^{-6}
Meters	Miles, nautical, British	0.0005396
Meters	Miles, nautical, international	0.00053996

Meters	Miles, statute	0.000621
Meters	Millimeters	1000
Meters	Millimicrons	1×10^9
Meters	Mils	39370.08
Meters	Rods	0.1988
Meters	Yards	1.0936
Miles	Kilometers	1.6093
Miles	Meters	1609.3
Millimeters	Inches	0.03937
Millimeters	Parsecs	3.2408×10^{-20}
Yards	Centimeters	91.44
Yards	Meters	0.9144

Volume

To convert from	into	multiply by ...
Cubic Centimeters	Board Feet	0.00042
Cubic Centimeters	Bushels (British)	2.7496×10^{-5}
Cubic Centimeters	Bushels (US)	2.8378×10^{-5}

Cubic Centimeters	Cubic Feet	3.5315×10^{-5}
Cubic Centimeters	Cubic Inches	0.06102
Cubic Centimeters	Cubic Meters	1×10^{-6}
Cubic Centimeters	Cubic Yards	1.308×10^{-6}
Cubic Centimeters	Drachms (British)	0.28156
Cubic Centimeters	Drams (US fluid)	0.27051
Cubic Centimeters	Gallons (British)	0.00022
Cubic Centimeters	Gallons (US dry)	0.00023
Cubic Centimeters	Gallons (US liquid)	0.00026
Cubic Centimeters	Gills (British)	0.00704
Cubic Centimeters	Gills (US)	0.00845
Cubic Centimeters	Liters	0.001
Cubic Centimeters	Ounces (British liquid)	0.03519
Cubic Centimeters	Ounces (US liquid)	0.03381
Cubic Centimeters	Pints (US dry)	0.00182
Cubic Centimeters	Pints (US liquid)	0.00211
Cubic Centimeters	Quarts (British)	0.00088
Cubic Centimeters	Quarts (US dry)	0.00091

Cubic Centimeters	Quarts (US liquid)	0.00106
Cubic Feet	Acre-feet	2.296×10^{-5}
Cubic Feet	Board feet	12
Cubic Feet	Bushels (British)	0.7786
Cubic Feet	Bushels (US)	0.8036
Cubic Feet	Cords of wood	0.00781
Cubic Feet	Cord feet	0.0625
Cubic Feet	Cubic Centimeters	28316.8
Cubic Feet	Cubic Inches	1728.0
Cubic Feet	Cubic Meters	0.02832
Cubic Feet	Cubic Yards	0.03704
Cubic Feet	Gallons (US dry)	6.42851
Cubic Feet	Gallons (US liquid)	7.48052
Cubic Feet	Liters	28.31687
Cubic Feet	Ounces (British fluid)	996.614
Cubic Feet	Ounces (US fluid)	957.506
Cubic Feet	Pints (US dry)	51.4281
Cubic Feet	Pints (US liquid)	59.8442
Cubic Feet	Quarts (US dry)	25.714

Cubic Feet	Quarts (US liquid)	29.922
Cubic Inches	Gallons (British)	0.00360
Cubic Inches	Gallons (US dry)	0.00372
Cubic Inches	Gallons (US liquid)	0.00433
Cubic Inches	Liters	0.01639
Gallons (British)	Gallons (US dry)	1.032
Gallons (British)	Gallons (US liquid)	1.2009
Gallons (British)	Liters	4.546
Gallons (US dry)	Gallons (British)	0.969
Gallons (US dry)	Gallons (US liquid)	1.163647
Gallons (US dry)	Liters	4.4049
Gallons (US liquid)	Gallons (British)	0.83267
Gallons (US liquid)	Gallons (US dry)	0.85937
Gallons (US liquid)	Liters	3.7854
Liters	Bushels (British)	0.0275
Liters	Bushels (US)	0.02838
Liters	Cubic Centimeters	1000
Liters	Cubic Feet	0.03531

Liters	Cubic Meters	61.0237
Liters	Cubic Yards	0.00131
Liters	Drams (US fluid)	270.512
Liters	Gallons (British)	0.21997
Liters	Gallons (US dry)	0.22702
Liters	Gallons (US liquid)	0.26417
Liters	Gills (British)	7.03902
Liters	Gills (US)	8.4535
Liters	Hogsheads	0.00454
Liters	Milliliters	1000
Liters	Minims (US)	16230.73
Liters	Ounces (British fluid)	35.195
Liters	Ounces (US fluid)	33.81402
Liters	Pecks (British)	0.10998
Liters	Pecks (US)	0.1135
Liters	Pints (British)	1.7598
Liters	Pints (US dry)	1.8162
Liters	Pints (US liquid)	2.1134
Liters	Quarts (British)	0.8799

Liters	Quarts (US dry)	0.9081
Liters	Quarts (US liquid)	1.0567

Temperature

To convert from	into	apply this formula
Degrees Celsius	Degrees Fahrenheit	$(\text{degrees celsius} \times \frac{9}{5}) + 32$
Degrees Celsius	Degrees Kelvin	$\text{degrees Celsius} + 273.18$
Degrees Fahrenheit	Degrees Celsius	$(\text{degrees Fahrenheit} - 32) \times \frac{5}{9}$

Weight

To convert from	into	multiply by ...
Grams	Carats (metric)	5
Grams	Decigrams	10
Grams	Dekagrams	0.1
Grams	Drams (troy)	0.2572
Grams	Drams (avoirdupois)	0.5644
Grams	Grains	15.432
Grams	Kilograms	0.001

Grams	Micrograms	1×10^6
Grams	Milligrams	1000
Grams	Myriagrams	0.0001
Grams	Ounces (troy)	0.03215
Grams	Ounces (avoirdupois)	0.03527
Grams	Pennyweights	0.64301
Grams	Pounds (troy)	0.00268
Grams	Pounds (avoirdupois)	0.002205
Grams	Scruples (apothecary)	0.77162
Grams	Tons (metric)	1×10^{-6}
Kilograms	Drams (apothecary or troy)	257.21
Kilograms	Drams (avoirdupois)	564.38
Kilograms	Grains	15432.36
Kilograms	Grams	1000
Kilograms	Hundredweights (long)	0.013684
Kilograms	Hundredweights (short)	0.022046
Kilograms	Ounces (apothecary or troy)	32.1507
Kilograms	Ounces (avoirdupois)	35.27396

Kilograms	Pennyweights	643.0149
Kilograms	Pounds (apothecary or troy)	267923
Kilograms	Pounds (avoirdupois)	2.20462
Kilograms	Scruples (apothecary)	771.6179
Kilograms	Slugs	0.06852
Kilograms	Tons (long)	0.00098
Kilograms	Tons (metric)	0.001
Kilograms	Tons (short)	0.001102
Ounces (avoirdupois)	Drams (apothecary or troy)	7.2917
Ounces (avoirdupois)	Drams (avoirdupois)	16
Ounces (avoirdupois)	Grains	437.5
Ounces (avoirdupois)	Grams	28.3495
1/8 Ounce (avdp)	Grams	3.54
Ounces (avoirdupois)	Pennyweights	18.229
Ounces (avoirdupois)	Pounds (apothecary or troy)	0.07596
Ounces (avoirdupois)	Pounds (avoirdupois)	0.0625

Ounces (avoirdupois)	Scruples (apothecary)	21.875
Pounds (avoirdupois)	Drams (apothecary or troy)	116.667
Pounds (avoirdupois)	Drams (avoirdupois)	256
Pounds (avoirdupois)	Grains	7000
Pounds (avoirdupois)	Grams	453.59
Pounds (avoirdupois)	Hundredweights (long)	0.008929
Pounds (avoirdupois)	Hundredweights (short)	0.01
Pounds (avoirdupois)	Kilograms	0.4536
Pounds (avoirdupois)	Ounces (apothecary or troy)	14.583
Pounds (avoirdupois)	Ounces (avoirdupois)	16
Pounds (avoirdupois)	Pennyweights	291.667
Pounds (avoirdupois)	Pounds (apothecary or troy)	1.21528
Pounds (avoirdupois)	Scruples (apothecary)	350
Pounds	Slugs	0.03108

(avoirdupois)		
Pounds (avoirdupois)	Tons (long)	0.0004464
Pounds (avoirdupois)	Tons (metric)	0.0004536
Pounds (avoirdupois)	Tons (short)	0.0005

Light

To convert from	into	multiply by ...
Lumens	Candela steradian	1.0
Lumens	Candle power (spherical)	0.07958
Lumens	Watts	0.0015
Lumens per square centimeter	Lamberts	1
Lumens per square centimeter	Lux	10000
Lumens per square centimeter	Phots	1
Lumens per square foot	Foot candles	1
Lumens per square foot	Foot lamberts	1

Lumens per square foot	Lumens /Square meter	10.76391
Lumens per square foot	Lux	10.76396
Lumens per square meter	Foot candles	0.0929
Lumens per square meter	Lumens/Square foot	0.0929
Lumens per square meter	Phots	0.0001
Lumens per square meter	Lux	1
Lux	Foot Candles	0.0929
Lux	Lumens/square meter	1
Lux	Phots	0.0001

Area

To convert from	into	multiply by ...
Acres	Hectares	0.404687
Acres	Square Chains (Gunters)	10
Acres	Square Centimeters	4.04686×10^7
Acres	Square Feet	43560

Acres	Square Feet (US Survey)	43559.826
Acres	Square Kilometers	4.04686×10^{-3}
Acres	Square Links (Gunter)	1×10^5
Acres	Square Meters	4046.856421
Acres	Square Miles (statute)	1.5625×10^{-3}
Acres	Square Perches	160
Acres	Square Rods	160
Acres	Square Yards	4840
Hectares	Acres	2.471
Hectares	Ares	100
Hectares	Square Centimeters	1×10^8
Hectares	Square Feet	107639.1
Hectares	Square Hectometers	1
Hectares	Square Meters	10000
Hectares	Square Miles	0.00386
Hectares	Square Rods	395.369
Square Centimeters	Ares	1×10^6
Square	Circular Millimeters	127.324

Centimeters		
Square Centimeters	Circular Mils	197352.5
Square Centimeters	Square Decimeters	0.01
Square Centimeters	Square Feet	0.001076391
Square Centimeters	Square Feet (US Survey)	0.001076387
Square Centimeters	Square Inches	0.155
Square Centimeters	Square Meters	0.0001
Square Centimeters	Square Millimeters	100
Square Centimeters	Square Mils	155000
Square Centimeters	Square Yards	0.0001196
Square Feet	Ares	0.000929
Square Feet	Square Centimeters	929.03
Square Feet	Square Chains (gunter's)	0.0002296
Square Feet	Square Feet (US Survey)	0.999996

Square Feet	Square Inches	144
Square Feet	Square Links (Gunter's)	2.2957
Square Feet	Square Meters	0.0929
Square Feet	Square Miles	3.58701×10^{-8}
Square Feet	Square Millimeters	9.290×10^4
Square Feet	Square Rods	0.003673
Square Feet	Square Yards	0.1111
Square Hectometers	(same as Hectares)	
Square Inches	Circular Mils	1273239
Square Inches	Square Centimeters	6.4516
Square Inches	Square Decimeters	0.064516
Square Inches	Square Feet	0.00694
Square Inches	Square Links (Gunter's)	0.01594
Square Inches	Square Meters	0.000645
Square Inches	Square Millimeters	645.16
Square Kilometers	Acres	247.1054
Square Kilometers	Square Centimeters	10^{10}

Square Kilometers	Square Feet	1.07639×10^7
Square Kilometers	Square Inches	1.550003×10^9
Square Kilometers	Square Meters	1×10^6
Square Kilometers	Square Miles	0.3861
Square Kilometers	Square Yards	1.196×10^6
Square Meters	Acres	0.000247
Square Meters	Ares	0.01
Square Meters	Hectares	0.0001
Square Meters	Square Centimeters	10000
Square Meters	Square Feet	10.7639
Square Meters	Square Inches	1550.003
Square Meters	Square Kilometers	1×10^{-6}
Square Meters	Square Links (Gunter's)	24.71054
Square Meters	Square Links (Ramden's)	10.764
Square Meters	Square Miles	3.861×10^{-7}
Square Meters	Square Rods	0.03954

Square Meters	Square Yards	1.19599
Square Miles	Acres	640
Square Miles	Hectares	258.999
Square Miles	Square Chains (Gunter's)	6400
Square Miles	Square Feet	2.78784×10^7
Square Miles	Square Kilometers	2.58999
Square Miles	Square Meters	2589988
Square Miles	Square Rods	102400
Square Miles	Square Yards	3.098×10^6
Square Millimeters	Circular Millimeters	1.2732
Square Millimeters	Circular Mils	1973.5
Square Millimeters	Square Centimeters	0.01
Square Millimeters	Square Feet	1.076×10^{-5}
Square Millimeters	Square Inches	0.00155
Square Millimeters	Square Meters	1×10^{-6}
Square Rods	Acres	0.00625

Square Rods	Ares	0.25293
Square Rods	Hectares	0.00253
Square Rods	Square Feet	272.25
Square Rods	Square Feet (US Survey)	272.249
Square Rods	Square Links (Gunter's)	625
Square Rods	Square Links (Ramden's)	272.25
Square Rods	Square Meters	25.293
Square Rods	Square Miles	9.7656×10^6
Square Rods	Square Yards	30.25
Square Yards	Acres	0.000207
Square Yards	Ares	0.00836
Square Yards	Hectares	8.3613×10^{-6}
Square Yards	Square Chains (Gunter's)	0.002066
Square Yards	Square Chains (Ramden's)	0.0009
Square Yards	Square Feet	9
Square Yards	Square Feet (US Survey)	8.99996
Square Yards	Square Inches	1296

Square Yards	Square Links (Gunter's)	20.661
Square Yards	Square Links (Ramden's)	9
Square Yards	Square Meters	0.8361
Square Yards	Square Miles	3.228×10^{-7}
Square Yards	Square Rods	0.00306
Townships	Acres	23040
Townships	Sections	36
Townships	Square Kilometers	93.2396
Townships	Square Miles	36

Apothecary Measure

Similar terms are detailed here to help the user sort out possible confusion.

To convert from	into	multiply by ...
Drachms (apothecary)	Drams	1.0
Drachms (apothecary)	Grams	3.8879
Drachms (apothecary)	Scruples	3
Drachms (fluid)	Cubic Centimeters	3.55163

Drachms (fluid)	Cubic Inches	0.21673
Drachms (fluid)	Minims (US)	60
Drachms (fluid)	Milliliters	3.55163
Drams (apothecary or troy)	Drams (avoirdupois)	2.19429
Drams (apothecary or troy)	Grains	60
Drams (apothecary or troy)	Grams	3.8879346
Drams (apothecary or troy)	Ounces (apoth. or troy)	0.125
Drams (avoirdupois)	Drams (apoth. or troy)	0.455729
Drams (avoirdupois)	Grains	27.3437
Drams (avoirdupois)	Grams	1.771845
Drams (avoirdupois)	Ounces (apoth. or troy)	0.056966
Drams (avoirdupois)	Ounces (avoirdupois)	0.0625
Drams (avoirdupois)	Pennyweights	1.13932
Drams (avoirdupois)	Pounds (apoth. or troy)	0.004747
Drams (avoirdupois)	Pounds (avoirdupois)	0.00391

Drams (avoirdupois)	Scruples	1.36719
Drams (US fluid)	Cubic Centimeters	3.6967
Drams (US fluid)	Cubic inches	0.225586
Drams (US fluid)	Drachms (fluid)	1.04084
Drams (US fluid)	Gills (US)	0.03125
Drams (US fluid)	Milliliters	3.69669
Drams (US fluid)	Minims (US)	60
Drams (US fluid)	Ounces (US fluid)	0.125
Drams (US fluid)	Pints (US liquid)	0.00781
Minims (British)	Minims (US)	1.0407
Minims (British)	Cubic Centimeters	0.0592
Minims (British)	Cubic Inches	0.0036
Minims (British)	Milliliters	0.05919
Minims (British)	Ounces (British, fluid)	0.00208
Minims (British)	Scruples (British, fluid)	0.05
Minims (US)	Minims (British)	0.96088
Minims (US)	Cubic Centimeters	0.06161
Minims (US)	Cubic Inches	0.00376

Minims (US)	Drams (US, fluid)	0.01667
Minims (US)	Gills (US)	0.00052
Minims (US)	Liters	6.1612×10^{-5}
Minims (US)	Milliliters	0.061612
Minims (US)	Ounces (US, fluid)	0.002083
Minims (US)	Pints (US, fluid)	0.00013
Ounces (apothecary or troy)	Dekagrams	3.11035
Ounces (apothecary or troy)	Drams (apoth. or troy)	8
Ounces (apothecary or troy)	Drams (avdp.)	17.554
Ounces (apothecary or troy)	Grains	480
Ounces (apothecary or troy)	Grams	31.1035
Ounces (apothecary or troy)	Milligrams	311035
Ounces (apothecary or troy)	Ounces (avdp.)	1.0971
Ounces (apothecary or troy)	Pennyweights	20
Ounces (apothecary or troy)	Pounds (apoth. or troy)	0.0833

Ounces (apothecary or troy)	Pounds (avdp.)	0.06857
Ounces (apothecary or troy)	Scruples (apothecary)	24
Ounces (avoirdupois)	Ounces (apoth. or troy)	0.91149
Pounds (apothecary or troy)	Pounds (avdp)	0.82286
Pounds (avdp)	Pounds (apothecary or troy)	1.21528
Pounds (apothecary or troy)	Drams (apoth. or troy)	96
Pounds (apothecary or troy)	Drams (avdp)	210.65
Pounds (apothecary or troy)	Grains	5760
Pounds (apothecary or troy)	Grams	373.24
Pounds (apothecary or troy)	Kilograms	0.37324
Pounds (apothecary or troy)	Ounces (apoth. or troy)	12
Pounds (apothecary or troy)	Ounces (avdp)	13.166
Pounds (apothecary or troy)	Penyweights	240
Pounds (apothecary or troy)	Pounds (avdp)	0.82286

or troy)		
Pounds (apothecary or troy)	Scruples (apoth)	288
Scruples (apoth)	Drams (apoth. or troy)	0.333
Scruples (apoth)	Drams (avdp)	0.73143
Scruples (apoth)	Grains	20
Scruples (apoth)	Grams	1.29598
Scruples (apoth)	Ounces (apoth. or troy)	0.041667
Scruples (apoth)	Ounces (avdp.)	0.045714
Scruples (apoth)	Pennyweights	0.8333
Scruples (apoth)	Pounds (apoth. or troy)	0.00347
Scruples (apoth)	Pounds (avdp.)	0.002857
Scruples (British, fluid)	Minims (British)	20