

TABLE 2.1 Sample Currency Exchange Rates (March 2009)

Currency	Dollars per Foreign	Foreign per Dollar
British pound	1.414	0.7072
Canadian dollar	0.7834	1.277
European euro	1.256	0.7965
Japanese yen	0.01007	99.34
Mexican peso	0.06584	15.19

TABLE 2.2 USCS Lengths (common abbreviations in parentheses)

1 inch (in.) = 2.54 centimeters	1 furlong = 40 rods = $\frac{1}{8}$ mile
1 foot (ft) = 12 inches	1 mile (mi) = 1760 yards = 5280 feet
1 yard (yd) = 3 feet	1 nautical mile = 1.852 km \approx 6076.1 feet
1 rod = 5.5 yards	1 land league = 3 miles
1 fathom = 6 feet	1 marine league = 3 nautical miles

TABLE 2.3 USCS Weights (common abbreviations in parentheses)

Avoirdupois Measures	Troy Measures	Apothecary Measures
1 grain = 0.0648 gram	1 grain = 0.0648 gram	1 grain = 0.0648 gram
1 ounce (oz) = 437.5 grains	1 carat = 0.2 gram = 3.086 grains	1 scruple = 20 grains
1 pound (lb) = 16 ounces	1 pennyweight = 24 grains	1 dram = 3 scruples
1 ton = 2000 pounds	1 troy ounce = 480 grains	1 apoth. ounce = 8 drams
1 long ton = 2240 pounds	1 troy pound = 12 troy ounces	1 apoth. pound = 12 ounces

TABLE 2.4 USCS Volumes (common abbreviations in parentheses)

Liquid Measures	Dry Measures
1 tablespoon (tbsp or T) = 3 teaspoons (tsp or t)	1 in. ³ \approx 16.387 cm ³
1 fluid ounce (fl oz) = 2 tablespoons = 1.805 in. ³	1 ft ³ = 1728 in. ³ = 7.48 gallons
1 cup (c) = 8 fluid ounces	1 yd ³ = 27 ft ³
1 pint (pt) = 16 fluid ounces = 28.88 in. ³	1 dry pint (pt) = 33.60 in. ³
1 quart (qt) = 2 pints = 57.75 in. ³	1 dry quart (qt) = 2 dry pints = 67.2 in. ³
1 gallon (gal) = 4 quarts	1 peck = 8 dry quarts
1 barrel of petroleum = 42 gallons	1 bushel = 4 pecks
1 barrel of liquid = 31 gallons	1 cord = 128 ft ³

TABLE 2.5 Common Metric Prefixes

Small Values			Large Values		
Prefix	Abbrev.	Value	Prefix	Abbrev.	Value
deci	d	10^{-1} (one-tenth)	deca	da	10^1 (ten)
centi	c	10^{-2} (one-hundredth)	hecto	h	10^2 (hundred)
milli	m	10^{-3} (one-thousandth)	kilo	k	10^3 (thousand)
micro	μ	10^{-6} (one-millionth)	mega	M	10^6 (million)
nano	N	10^{-9} (one-billionth)	giga	G	10^9 (billion)
pico	P	10^{-12} (one-trillionth)	tera	T	10^{12} (trillion)

Note: The abbreviation for micro, μ , is the Greek letter mu.

TABLE 2.6 USCS-Metric Conversions

USCS to Metric	Metric to USCS
1 in. = 2.540 cm	1 cm = 0.3937 in.
1 ft = 0.3048 m	1 m = 3.28 ft
1 yd = 0.9144 m	1 m = 1.094 yd
1 mi = 1.6093 km	1 km = 0.6214 mi
1 lb = 0.4536 kg	1 kg = 2.205 lb
1 fl oz = 29.574 mL	1 mL = 0.03381 fl oz
1 qt = 0.9464 L	1 L = 1.057 qt
1 gal = 3.785 L	1 L = 0.2642 gal

TEMPERATURE CONVERSIONS

The conversions are given both in words and with formulas in which C , F , and K are Celsius, Fahrenheit, and Kelvin temperatures, respectively.

To Convert from	Conversion in Words	Conversion Formula
Celsius to Fahrenheit	Multiply by 1.8 (or $\frac{9}{5}$). Then add 32.	$F = 1.8C + 32$
Fahrenheit to Celsius	Subtract 32. Then divide by 1.8 (or multiply by $\frac{5}{9}$).	$C = \frac{F - 32}{1.8}$
Celsius to Kelvin	Add 273.15.	$K = C + 273.15$
Kelvin to Celsius	Subtract 273.15.	$C = K - 273.15$

ENERGY AND POWER

Energy is what makes matter move or heat up. The international metric unit of energy is the joule.

Power is the *rate* at which energy is used. The international metric unit of energy is the watt, defined as

$$1 \text{ watt} = 1 \frac{\text{joule}}{\text{s}}$$

Energy: 1000 calories (lower-case c) = 1 Calorie (upper-case C)
 1 Calorie = 4184 joules

Energy: 1 kilowatt-hour = 3.6 million joules