

17.2: Conversions and Constants

Versions of Conversion Tables below:

- PNG Image Version ([Figure 17.2.1](#))
- Downloadable PDF Version ([Figure 17.2.2](#))

Common Chemistry Conversions

English to Metric Conversions

The mass, length, volume, and area conversions are given to 4 significant figures. The temperature conversions are exact.

Mass	Length	Volume	Area	Temperature
1 lb = 453.6 g	1 in. = 2.540 cm	1 fl oz = 29.57 mL	$1 \text{ in.}^2 = (2.54 \text{ cm})^2 = 6.452 \text{ cm}^2$	$T_{\text{C}} = \frac{5}{9}(T_{\text{F}} - 32)$
1 oz = 28.35 g	1 ft = 30.48 cm	1 L = 1.057 qt	$1 \text{ m}^2 = (3.281 \text{ ft})^2 = 10.76 \text{ ft}^2$	$T_{\text{F}} = \frac{9}{5}T_{\text{C}} + 32$
1 kg = 2.205 lb	1 m = 3.281 ft	1 gal = 3.785 L		$T_{\text{K}} = T_{\text{C}} + 273.15$
1 metric ton = 1000 kg	1 mi = 1.609 km	$1 \text{ in}^3 = (2.54 \text{ cm})^3 = 16.39 \text{ cm}^3$		

English to English Conversions. All of these conversions are exact.

Mass	Length	Volume	Area
1 lb = 16 oz	1 ft = 12 in.	1 cup = 8 fl oz	$1 \text{ ft}^2 = (12 \text{ in})^2 = 144 \text{ in.}^2$
1 ton = 2000 lb	1 yd = 3 ft	1 pt = 2 cups	$1 \text{ mi}^2 = 640 \text{ acres}$
	1 mi = 5280 ft	1 qt = 2 pt	
		1 gal = 4 qt	

Other Conversions

Energy	Pressure
1 cal = 4.184 J	1 atm = 760 mm Hg = 760 torr = 29.92 in. Hg
$1 \text{ J} = 1 \frac{\text{kg} \cdot \text{m}^2}{\text{s}^2}$	1 atm = 14.7 psi = 101,325 Pa = 1.01325 bars
	1 Pa = $1 \frac{\text{kg}}{\text{m} \cdot \text{s}^2}$

Constants

speed of light (in a vacuum)	$c = 2.998 \times 10^8 \text{ m/s}$
Planck's constant	$h = 6.626 \times 10^{-34} \text{ J} \cdot \text{s}$
electron mass	$m_e = 9.109 \times 10^{-31} \text{ kg}$
proton mass	$m_p = 1.673 \times 10^{-27} \text{ kg}$
neutron mass	$m_n = 1.675 \times 10^{-27} \text{ kg}$
Avogadro's number	$N_A = 6.0221367 \times 10^{23} \text{ particles/mol}$
Gas Constant	$R = 0.08206 \frac{\text{L} \cdot \text{atm}}{\text{mol} \cdot \text{K}}$ $= 8.315 \frac{\text{J}}{\text{mol} \cdot \text{K}}$ $= 8.315 \frac{\text{kJ}}{\text{mol} \cdot \text{K}}$
Faraday Constant	$F = 9.65 \times 10^4 \text{ C/mol}$
Electronic charge	$e = 1.602 \times 10^{-19} \text{ C}$

Figure 17.2.1: Common Chemistry Conversions. (Lance S. Lund)

Figure 17.2.2: Common Chemistry Conversions. (Lance S. Lund)

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