

# Common Chemistry Conversions

## English to Metric Conversions

(mass, length, volume, and area conversions are good to 4 significant figures)

Mass	Length	Volume	Area	Temperature
1 lb = 453.6 g	1 in = 2.540 cm	1 fl oz = 29.57 mL	$1 \text{ in}^2 = (2.54 \text{ cm})^2 = 6.452 \text{ cm}^2$	$^{\circ}\text{C} = \frac{5}{9} (^{\circ}\text{F} - 32)$ $^{\circ}\text{C} = \frac{(^{\circ}\text{F} - 32)}{1.8}$
1 oz = 28.35 g	1 ft = 30.48 cm	1 L = 1.057 qt	$1 \text{ m}^2 = (3.281 \text{ ft})^2 = 10.76 \text{ ft}^2$	$^{\circ}\text{F} = \frac{9}{5} ^{\circ}\text{C} + 32$ $^{\circ}\text{F} = 1.8(^{\circ}\text{C}) + 32$
1 kg = 2.205 lbs	1 m = 3.281 ft	1 gal = 3.785 L		$\text{K} = ^{\circ}\text{C} + 273.15$
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 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 lbs	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 = 101,325 Pa
1 J = 1 kg·m <sup>2</sup> /s <sup>2</sup>	1 Pa = 1 kg/(m·s <sup>2</sup> )

## 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	$R = 0.08206 \text{ L}\cdot\text{atm}/(\text{mol}\cdot\text{K})$ $= 8.315 \text{ J}/(\text{mol}\cdot\text{K})$ $= 8.315 \text{ kPa}\cdot\text{dm}^3/(\text{mol}\cdot\text{K})$
Faraday Constant	$F = 9.65 \times 10^4 \text{ C/mol}$
Electronic charge	$e = 1.602 \times 10^{-19} \text{ C}$