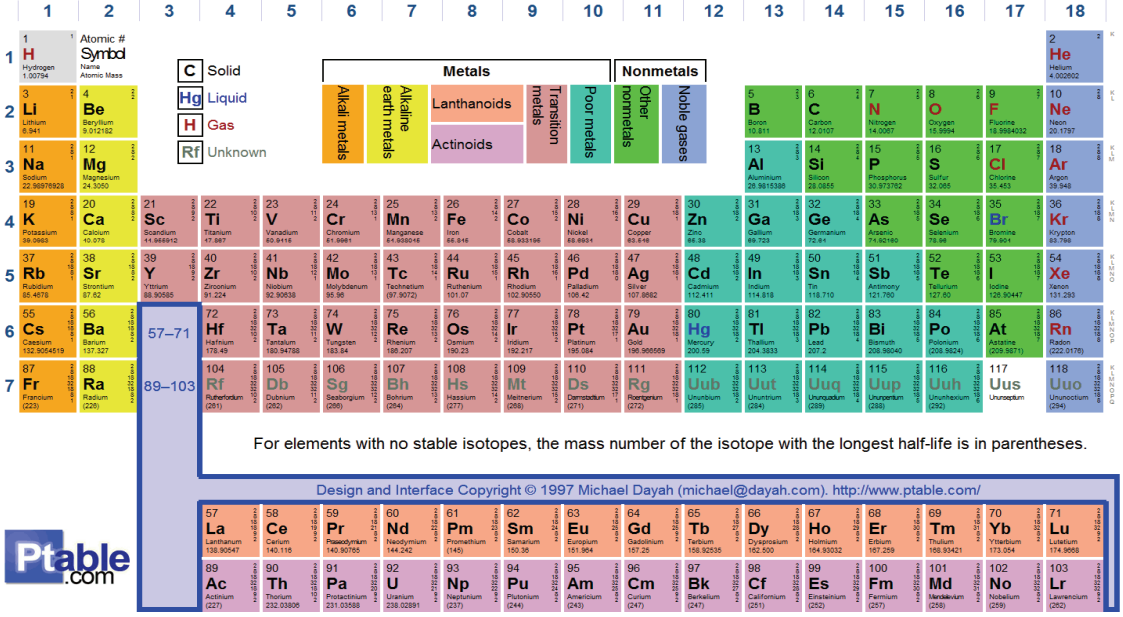
Reference ♦ CHEMISTRY ♦ Information

Formulas

Density = $\frac{\text{mass}}{\text{volume}}$	$D = \frac{m}{V}$
Equilibrium constant for $aA + bB \rightleftharpoons cC + dD$	$K_{eq} = \frac{[C]^c[D]^d}{[A]^a[B]^b}$
Ionization constant of water = $\left(\begin{smallmatrix}\text{hydrogen ion}\\ \text{concentration}\end{smallmatrix}\right)\left(\begin{smallmatrix}\text{hydroxide ion}\\ \text{concentration}\end{smallmatrix}\right)$	$K_w = [H^+][OH^-]$
pH = –logarithm (hydrogen ion concentration)	$pH = -\log[H^+]$
Molarity = $\frac{\text{moles of solute}}{\text{liter of solution}}$	$M = \frac{\text{mol}}{\text{L}}$
Molality = $\frac{\text{moles of solute}}{\text{kilogram of solvent}}$	$m = \frac{\text{mol}}{\text{kg}}$
Boiling point elevation = $\left(\begin{smallmatrix}\text{molal boiling point}\\ \text{constant}\end{smallmatrix}\right)$(molality)	$\Delta T_b = K_b m$
Freezing point depression = $\left(\begin{smallmatrix}\text{molal freezing point}\\ \text{constant}\end{smallmatrix}\right)$(molality)	$\Delta T_f = K_f m$
$\left(\begin{smallmatrix}\text{Volume of}\\ \text{solution a}\end{smallmatrix}\right)\left(\begin{smallmatrix}\text{molarity of}\\ \text{solution a}\end{smallmatrix}\right) = \left(\begin{smallmatrix}\text{volume of}\\ \text{solution b}\end{smallmatrix}\right)\left(\begin{smallmatrix}\text{molarity of}\\ \text{solution b}\end{smallmatrix}\right)$	$V_a M_a = V_b M_b$
(Pressure)(volume) = (moles)(ideal gas constant)(temperature)	$PV = nRT$
$\frac{\text{(Initial pressure)(initial volume)}}{\text{(Initial moles)(initial temperature)}} = \frac{\text{(final pressure)(final volume)}}{\text{(final moles)(final temperature)}}$	$\frac{P_1V_1}{n_1T_1} = \frac{P_2V_2}{n_2T_2}$
Total pressure of a gas = $\left(\begin{smallmatrix}\text{sum of the partial pressures}\\ \text{of the component gases}\end{smallmatrix}\right)$	$P_T = P_1 + P_2 + P_3 + \ldots$
Heat gained or lost = (mass)$\left(\begin{smallmatrix}\text{specific}\\ \text{heat}\end{smallmatrix}\right)\left(\begin{smallmatrix}\text{change in}\\ \text{temperature}\end{smallmatrix}\right)$	$Q = mc_p\Delta T$
Final mass = (initial mass)$\left(\frac{1}{2}\right)$(number of half-lives)	$m_f = m_i\left(\frac{1}{2}\right)^n$
Enthalpy of reaction = $\left(\begin{smallmatrix}\text{enthalpy}\\ \text{of products}\end{smallmatrix}\right) - \left(\begin{smallmatrix}\text{enthalpy}\\ \text{of reactants}\end{smallmatrix}\right)$	$\Delta H = \Delta H_f^\circ(\text{products}) - \Delta H_f^\circ(\text{reactants})$
Percent error = $\left(\frac{\text{accepted value} - \text{experimental value}}{\text{accepted value}}\right)(100)$	
Percent yield = $\left(\frac{\text{actual yield}}{\text{theoretical yield}}\right)(100)$	

10^n	Prefix	Symbol	Decimal
10^{24}	yotta-	Y	1 000 000 000 000 000 000 000 000
10^{21}	zetta-	Z	1 000 000 000 000 000 000 000
10^{18}	exa-	E	1 000 000 000 000 000 000
10^{15}	peta-	P	1 000 000 000 000 000
10^{12}	tera-	T	1 000 000 000 000
10^{9}	giga-	G	1 000 000 000
10^{6}	mega-	M	1 000 000
10^{3}	kilo-	k	1 000
10^{2}	hecto-	h	100
10^{1}	deca-	da	10
10^{0}	*(none)*	*(none)*	1
10^{-1}	deci-	d	0.1
10^{-2}	centi-	c	0.01
10^{-3}	milli-	m	0.001
10^{-6}	micro-	μ	0.000 001
10^{-9}	nano-	n	0.000 000 001
10^{-12}	pico-	p	0.000 000 000 001
10^{-15}	femto-	f	0.000 000 000 000 001
10^{-18}	atto-	a	0.000 000 000 000 000 001
10^{-21}	zepto-	z	0.000 000 000 000 000 000 001
10^{-24}	yocto-	y	0.000 000 000 000 000 000 000 001

Periodic Table of Elements



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