General Chemistry formula sheet

Prefix	Symbol	Factor
Giga	G	10^{9}
Mega	M	10^{6}
Kilo	K	10^{3}
centi	C	10^{-2}
milli	m	10^{-3}
micro	μ	10^{-6}
nano	n	10^{-9}

$1\ mol = 6.022 * 10^{23} molecules$

$1\ cm^3 = 1\ mL$

Name	Formula	Name	Formula
Acetate	$C_2H_3O_2^-$	Phosphate	PO_4^{3-}
Carbonate	CO_3^{2-}	Ammonium	NH_4^+
Bicarbonate	HCO_3^-	Chlorite	ClO_2^-
Hydroxide	OH^-	Chlorate	ClO_3^-
Nitrite	NO_2^-	Sulfite	SO_3^{2-}
Nitrate	NO_3^-	Sulfate	SO_4^{2-}
Cyanide	CN^-		

$$Density = \frac{mass}{volume} \qquad M = \frac{mol\ solute}{L\ solution} \qquad M_1V_1 = M_2V_2$$

$$\frac{P_1V_1}{T_1} = \frac{P_2V_2}{T_2} \qquad PV = nRT \qquad \chi_A = \frac{mol\ A}{total\ mol}$$

$$P_A = \chi_A * P_{total} \qquad q = mc\Delta T \qquad q = n\Delta H$$

$$c = \lambda\nu \qquad \Delta H°_{rxn} = \sum n_p \Delta H°_f - \sum n_r \Delta H°_f$$

$$FC = \#\ of\ valance\ e^- - [\#of\ lone\ pairs + \#\ of\ bonds]$$

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$\ln\frac{P_2}{P_1} = \frac{-\Delta H_{vap}}{R}(\frac{1}{T_2} - \frac{1}{T_1})$ $\quad m = \frac{mol\ solute}{kg\ Solvent}$ $\quad \Delta T_f = imK_f$

$\Delta T_b = imK_b$ $\quad rate = k[A]^n[B]^m$ $\quad \ln\frac{K_2}{K_1} = \frac{E_a}{R}(\frac{1}{T_1} - \frac{1}{T_2})$

$pH + pOH = 14$ $\quad pH = -\log[H_3O^+]$ $\quad pOH = -\log[OH^-]$

$pK_a = -\log K_a$ $\quad pH = pK_a + \log\frac{[base]}{[acid]}$ $\quad \Delta G° = -nFE°_{cell}$

Order	Rate law	Integrated rate law	Half-life
0	$rate = k[A]^0$	$[A]_t = [A]_0 - kt$	$t_{\frac{1}{2}} = \frac{[A]_0}{2k}$
1	$rate = k[A]^1$	$\ln[A]_t = \ln[A]_0 - kt$	$t_{\frac{1}{2}} = \frac{\ln 2}{k}$
2	$rate = k[A]^2$	$\frac{1}{[A]_t} = \frac{1}{[A]_0} + kt$	$t_{\frac{1}{2}} = \frac{1}{k[A]_0}$

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