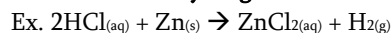
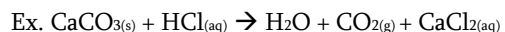
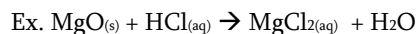


Formations:**1. Acid + Metal = Salt + Hydrogen Gas****2. Acid + Base = Salt + Water****3. Acid + Metal Carbonate = CO₂ + H₂O + Salt****4. Metal Oxide + Acid → Salt + Water****Polyatomic Ions:**

<i>Acetate</i>	CH_3COO^- or $\text{C}_2\text{H}_3\text{O}_2^-$	<i>Hydronium</i>	H_3O^+
<i>Aluminate</i>	AlO_2^- , $\text{Al}_2\text{O}_4^{2-}$	<i>Hydroxide</i>	OH^-
<i>Amide</i>	NH_2^-	<i>Hypobromite</i>	BrO^-
<i>Ammonium</i>	NH_4^+	<i>Hypochlorite</i>	ClO^-
<i>Antimonate</i>	SbO_4^{3-}	<i>Hypoiodite</i>	IO^-
<i>Antimonite</i>	SbO_3^{3-}	<i>Hypophosphite</i>	PO_2^{3-}
<i>Arsenate</i>	AsO_4^{3-}	<i>Hyposulfite</i>	SO_2^{2-}
<i>Arsenite</i>	AsO_3^{3-}	<i>Iodate</i>	IO_3^-
<i>Bicarbonate (hydrogen carbonate)</i>	HCO_3^-	<i>Iodite</i>	IO_2^-
<i>Bromate</i>	BrO_3^-	<i>Manganate</i>	MnO_4^{2-}
<i>Bromite</i>	BrO_2^-	<i>Nitrate</i>	NO_3^-
<i>Carbide</i>	C_2^{2-}	<i>Nitrite</i>	NO_2^-
<i>Carbonate</i>	CO_3^{2-}	<i>Ozonide</i>	O_3^-
<i>Chlorate</i>	ClO_3^-	<i>Perbromate</i>	BrO_4^-
<i>Chlorite</i>	ClO_2^-	<i>Perchlorate</i>	ClO_4^-
<i>Chromate</i>	CrO_4^{2-}	<i>Periodate</i>	IO_4^-
<i>Chromite</i>	CrO_2^-	<i>Permanganate</i>	MnO_4^-
<i>Cyanate</i>	OCN^-	<i>Peroxide</i>	O_2^{2-}
<i>Cyanide</i>	CN^-	<i>Phosphate</i>	PO_4^{3-}
<i>Dichromate</i>	$\text{Cr}_2\text{O}_7^{2-}$	<i>Phosphite</i>	PO_3^{3-}
<i>Dihydrogen arsenate</i>	H_2AsO_4^-	<i>Plumbate</i>	PbO_3^{2-}
<i>Dihydrogen phosphate</i>	H_2PO_4^-	<i>Plumbite</i>	PbO_2^{2-}
<i>Dihydrogen phosphite</i>	H_2PO_3^-	<i>Stannate</i>	SnO_3^{2-}
<i>Disulfide</i>	S_2^{2-}	<i>Stannite</i>	SnO_2^{2-}
<i>Ferrate</i>	FeO_4^{2-}	<i>Sulfate</i>	SO_4^{2-}
<i>Hydrogen carbonate (bicarbonate)</i>	HCO_3^-	<i>Sulfite</i>	SO_3^{2-}
<i>Hydrogen arsenate</i>	HAsO_4^{2-}	<i>Superoxide</i>	O_2^-
<i>Hydrogen phosphate</i>	HPO_4^{2-}	<i>Tartrate</i>	$(\text{CH}(\text{OH})\text{COO})_2^{2-}$
<i>Hydrogen phosphite</i>	HPO_3^{2-}	<i>Tellurite</i>	TeO_3^{2-}
<i>Hydrogen sulfate</i>	HSO_4^-	<i>Thiocyanate</i>	SCN^-
<i>Hydrogen sulfite</i>	HSO_3^-	<i>Thiosulfate</i>	$\text{S}_2\text{O}_3^{2-}$

THE EQUATION SHEET

Constants:

Avagadro's Number (N_A)	6.02×10^{23}
Universal Gas Constant (R)	$8.314 \text{ J/mol}\cdot\text{K}$
Planck's constant (h)	$6.626 \times 10^{-34} \text{ J}\cdot\text{s}$
Rydberg Constant	$2.18 \times 10^{-18} \text{ J}$
Speed of Light (c)	$3.00 \times 10^8 \text{ m/s}$
Charge of an Electron (q)	1.602×10^{-19}
Boltzmann Constant (k_B)	$1.381 \times 10^{-23} \text{ J/K}$
Molar Volume (V_{mol})	22.4 L/mol
Compton Wavelength of the Electron (λ_c)	$2.42631 \times 10^{-12} \text{ m}$
Specific Heat Capacity of Water (C)	$4.18 \text{ J/g}\cdot\text{mol}$
Faraday's Constant (F)	$9.64846 \times 10^4 \text{ C/mol}$

Conversion factors:

$1\text{A} = 1\text{C/s}$
 $1\text{C} = 1 \text{ J/V}\cdot\text{mol}$
 $1\text{L atm} = 101.3\text{J}$
 $1\text{nm} = 10^{-9}\text{m}$
 $1\text{atm} = 760 \text{ torr} = 760\text{mm Hg}$
 $0^\circ\text{C} = 273 \text{ K}$

Basic Equations:

$n = \frac{m}{M_R}$	$n = cV$
$n_{gas} = \frac{V}{22.4 \text{ mol/L}}$	$c_1V_1 = c_2V_2$

The Equations:

<p style="text-align: center;">Acid-Base Chemistry:</p> $pH = -\log[H_3O^+]$ $[H_3O^+] = 10^{-pH}$ $K_w = K_a \times K_b$ $pK_a + pK_b = pK_w$ $pK_a = -\log K_a$ $pK_b = -\log K_b$ $pK_b = 14 - pK_a$ $pH + pOH = 14$ $pOH = -\log[OH^-]$ $[OH^-] = 10^{-pOH}$	<p style="text-align: center;">Thermodynamics:</p> $\Delta H_{rxn} = H_P - H_R$ $q = \Delta H \text{ at constant pressure}$ $\Delta H^\circ = \frac{-Q}{\# \text{ mol}}$ $M_{Enthalpy} = \sum (E_k + E_p)$ $E_k = \frac{1}{2} v^2$ $C = \frac{Q}{\Delta T}$ $Q = mc\Delta T$ $\Delta H_{rxn}^\circ = \sum [\Delta H_{f(P)}^\circ] - \sum [\Delta H_{f(R)}^\circ]$ $\Delta H_{rxn}^\circ = \sum D(\text{broken}) - \sum D(\text{formed})$ $\Delta S = k \ln W = \frac{q}{T} = \frac{\Delta H}{T} = S_{System} + S_{Surrounding}$ $\Delta S_{rxn}^\circ = \sum S_{(P)}^\circ - \sum S_{(R)}^\circ$ $\Delta G^\circ = \Delta H^\circ - T\Delta S^\circ$ $\Delta G_{rxn}^\circ = \sum \Delta G_{(P)}^\circ - \sum \Delta G_{(R)}^\circ$	<p style="text-align: center;">Chemical Kinetics:</p> $Rate_{Reaction} = \frac{\Delta c}{\Delta t}$ $t_{1/2} = \frac{0.693}{k}$ $Rate_{Reaction} = k[A]^m[B]^n$ $E_A = -\frac{\ln\left(\frac{k}{A}\right)}{RT}$ $t_{1/2} = \frac{1}{k[A]_0}$ $k = Ae^{-E_a/RT}$ $[A]_t = -kt + [A]_0$ $\frac{1}{[A]} = kt + \frac{1}{[A]_0}$ $\ln[A]_t = -kt + \ln[A]_0$	
<p style="text-align: center;">Quantum Mechanics:</p> $E = \frac{hc}{\lambda}$ $c = f\lambda$ $\Delta E = R_H \left(\frac{1}{n_i^2} - \frac{1}{n_f^2} \right)$ $E = hf$	<p style="text-align: center;">Nuclear Chemistry:</p> $E = mc^2$ ${}_{92}^{238}\text{U} = {}_{90}^{234}\text{Th} + {}_2^4\text{He}$ ${}_0^1n \rightarrow {}_1^1\text{H} + {}_{-1}^0e$	<p style="text-align: center;">Gas:</p> $PV = nRT$	<p style="text-align: center;">Redox:</p> $\text{Charge} = \text{Current} \times \text{Time}$ $E_{cell}^\circ = E_{cathode}^\circ - E_{anode}^\circ$