Solubility

Rules

- Salts containing Group I elements (Li^+, Na^+, K^+, Cs^+, Rb^+) are soluble.
- Ammonium ion is soluble (NH_4^+)
- Nitrate ion is generally soluble (NO_3^+)
- (Cl^-, Br^-, I^-) are generally soluble. EXCEPTIONS - (Ag^+, Pb^{2+}, and Hg_2^{2+})
- Most silver salts are insoluble. EXCEPTIONS - ($AgNO_3$, and $Ag(C_2H_3O_2)$)
- Most sulfate salts are soluble (SO_4^{2-}) EXCEPTIONS - ($BaSO_4$, $PbSO_4$, and $SrSO_4$)

Polyatomic Ions

NO_3^- Nitrate	NO_2^- Nitrite
SO_4^{2-} Sulfate	SO_3^{2-} Sulfite
PO_4^{3-} Phosphate	PO_3^{3-} Phosphite
CO_3^{2-} Carbonate	HCO_3^- Hydrogen Carbonate
CN^- Cyanide	NH_4^+ Ammonium
OH^- Hydroxide	ClO^- Hypochlorite
$CH_3CO_2^-$ Acetate	

Nomenclature

Ionic

- Name the cation
- Then name the anion
- Add -ide to the end of the anion
- Balance it when you have various charges on metals
- EX: $CaCl_2$ - Calcium Chloride
- EX: $Fe(OH)_2$ - Iron (II) Hydroxide. Because OH is 1- and you have 2. For an overall 2-. Iron has to be a positive charge of 2+ so that its balanced.

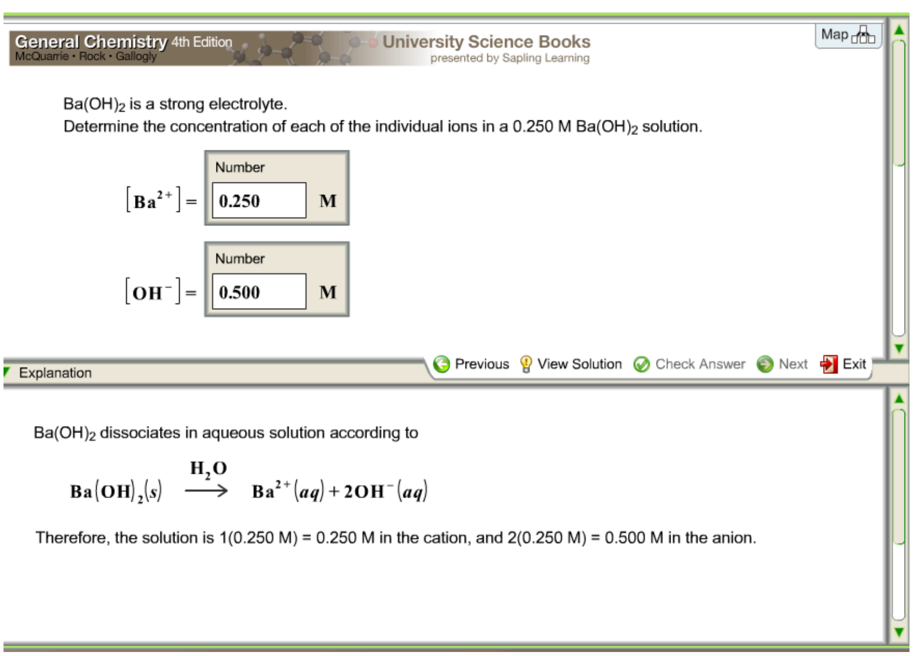
Covalent/Molecular

- Use prefixes EXCEPTION: No “mono” on the first atom if there is only one of them
- Add -ide to the end of the second atom
- EX: CO_2 - Carbon Dioxide
- EX: SF_6 - Sulfur Hexafluoride

Number	Prefix
1	Mono
2	Di
3	Tri
4	Tetra
5	Penta
6	Hexa
7	Hepta
8	Octa
9	Nona
10	Deca

Molarity

Molarity = $(Moles\ of\ solute)/(Liters\ of\ solution)$
Concentration = Determine concentration by multiplying the given M by how many there are in the equation. EX:



Temperature

Celsius to Fahrenheit	° F = 9/5 (° C) + 32
Kelvin to Fahrenheit	° F = 9/5 (K - 273) + 32
Fahrenheit to Celsius	° C = 5/9 (° F - 32)
Celsius to Kelvin	K = ° C + 273
Kelvin to Celsius	° C = K - 273
Fahrenheit to Kelvin	K = 5/9 (° F - 32) + 273

Net Ionic Equations

Sapling Learning
macmillan learning

Map

For the following chemical reaction

$$2HBr(aq) + Ba(OH)_2(aq) \longrightarrow 2H_2O(l) + BaBr_2(aq)$$

ite the net ionic equation, including the phases.

$$H^+(aq) + OH^-(aq) \longrightarrow H_2O(l)$$

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Explanation

Start by writing the ionic equation.

$$2H^+(aq) + 2Br^-(aq) + Ba^{2+}(aq) + 2OH^-(aq) \longrightarrow 2H_2O(l) + Ba^{2+}(aq) + 2Br^-(aq)$$

HBr is split up into ions because it is a strong acid. $Ba(OH)_2$ and $BaBr_2$ are split up into ions because they are aqueous, soluble ionic compounds. Water is left in molecular form because it is not an ionic compound nor a strong acid.

Now, notice that $2Br^-$ cancels from each side. Ba^{2+} also cancels leaving

$$2H^+(aq) + 2OH^-(aq) \longrightarrow 2H_2O(l)$$

Then divide ^ it all by 2 because its equivalent to $H^+(aq) + OH^-(aq) \rightarrow H_2O(l)$