**Things You Just Have to Memorize**

There are some things that you MUST memorize in AP Chemistry. Here is a starting list.

**Element Names & Symbols**

*The periodic table you get has symbols & #’s, but no names*

* Know the name & symbol for the 1st 38 elements ***AND*** Ag, Cd, Sn, I, Xe, Cs, Ba, Pt, Au, Hg, Pb, Bi, Rn, U

**Polyatomic Ions**

*Know name, formula, and charge*

**Positive Ions (Cations)**

|  |  |  |
| --- | --- | --- |
| **1+** | **2+** | **3+** |
| * Ammonium (NH4+) * Silver (Ag+) * Hydronium (H3O+) | * Cadmium (Cd2+) * Zinc (Zn2+) | * Aluminum (Al3+) |

**Negative Ions (Anions)**

|  |  |  |
| --- | --- | --- |
| **1-** | **2-** | **3-** |
| * Acetate (C2H3O2-) * Chlorate (ClO3-) * Chlorite (ClO2-) * Cyanide (CN-) * Hydride (H-) * Hydrogen carbonate or bicarbonate (HCO3-) * Hydrogen sulfite or bisulfite (HSO3-) * Hydroxide (OH-) * Nitrate (NO3-) * Nitrite (NO2-) * Perchlorate (ClO4-) * Permanganate (MnO4-) * Thiocyanate (SCN-) | Carbonate (CO32-)  Chromate (CrO42-)  Dichromate (Cr2O72-)  Peroxide (O22-)  Sulfate (SO42-)  Sulfite (SO32-)  Oxalate (C2O42-) | Phosphate (PO43-)  Phosphite (PO33-) |

**Solubility Rules:**

All sodium, potassium, ammonium, and nitrate salts are soluble in water.

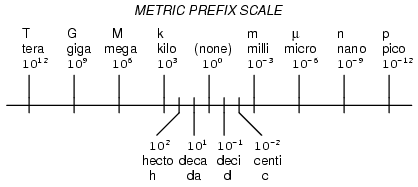
**Periodic Table Patterns**

* Groups: noble gases, halogens, alkaline metals, alkaline earth metals, transition metals
* Trends: atomic radius, ionic radius, ionization energy, electronegativity

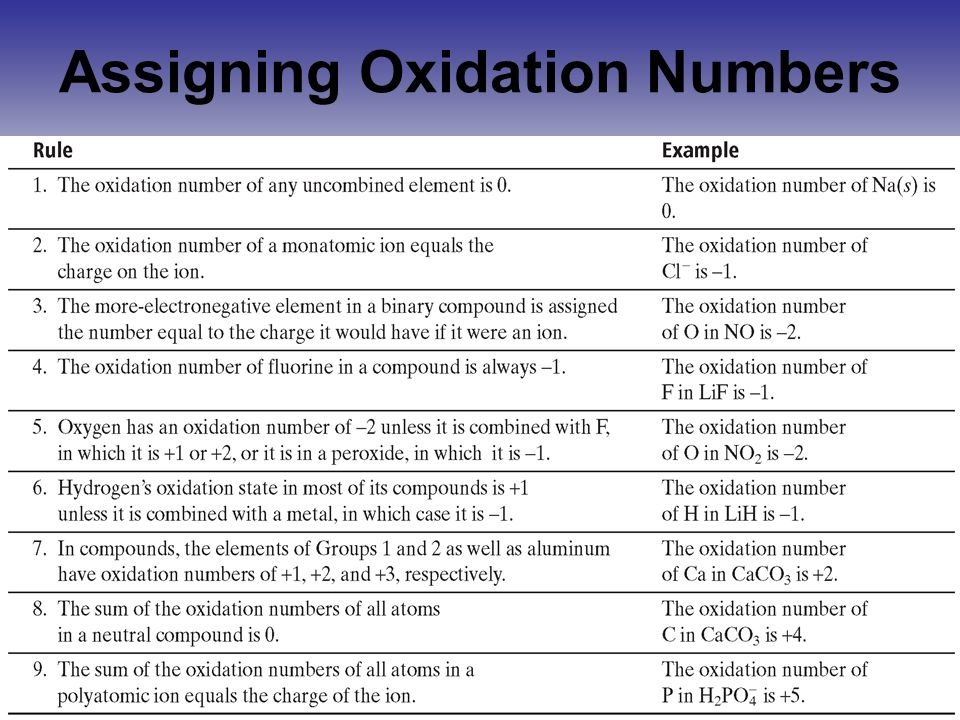
**The 7 Diatomic Elements**

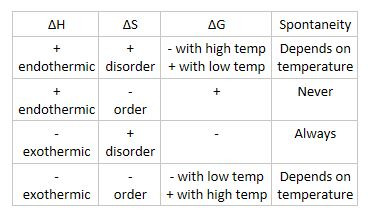
* These are diatomic when they are alone as a neutral element (not in a compound, not as an ion)
* Remember: Start at #7 and make a 7
  + Hydrogen (H2); Nitrogen (N2); Oxygen (O2); Fluorine (F2); Chlorine (Cl2); Bromine (Br2); Iodine (I2)

**Metric Prefixes**

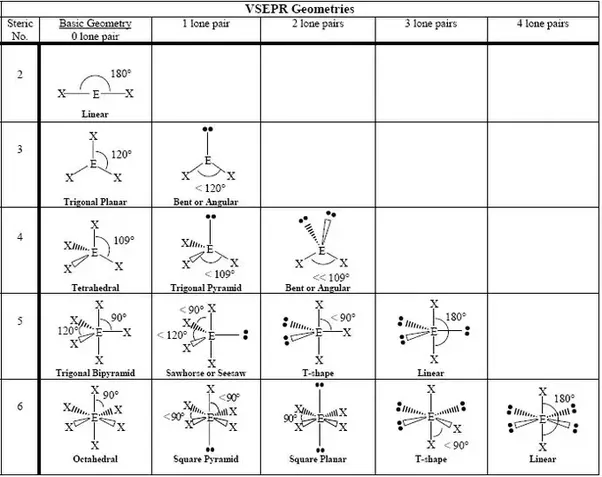
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**Rules for Assigning Oxidation States**

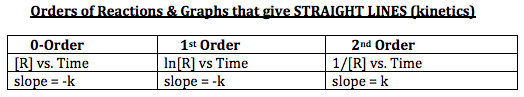
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**Thermodynamic quantities**

**Molecular Geometry: shapes & bond angles**

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**Straight line plots**



**Strong Acids and Bases**

|  |  |
| --- | --- |
| The 7 Strong Acids  •HNO3 nitric acid  •H2SO4 sulfuric acid  •HBr hydrobromic acid  •HI hydroiodic acid  •HCl hydrochloric acid  •HClO3 chloric acid  •HClO4 perchloric acid | The 8 Strong Bases  •LiOH lithium hydroxide  •NaOH sodium hydroxide  •KOH potassium hydroxide  •RbOH rubidium hydroxide  •CsOH cesium hydroxide  •Ca(OH)2 calcium hydroxide  •Sr(OH)2 strontium hydroxide  •Ba(OH)2 barium hydroxide |