Balancing Chemical Equations



The Basics

$\begin{array}{c} A + B \rightarrow C + D \\ \hline Reactants \\ (starting materials) \end{array} (ending materials) \end{array}$

Phases

$\mathbf{A}_{(g)} + \mathbf{B}_{(s)} \rightarrow \mathbf{C}_{(l)} + \mathbf{D}_{(aq)}$

- g = gas
- s = solid
- l = liquid

aq = "aqueous" – ions in water

H, Cl_2 N, Br, O_2

Diatomic Gases

Horses Need Oats For Clear Brown "Eyes"

Writing Equations

Word Equations

Written with the names of the compounds hydrogen gas and chlorine gas combine to form hydrogen chloride gas

Skeleton Equations

Written with formulas $H_2(g) + Cl_2(g) --> 2HCl(g)$

Balancing Equations

Law of Conservation of Matter

Matter is not created or destroyed

- # of atoms for each element before and after the reaction must be equal.
 - Example: $H_2(g) + Cl_2(g) --> 2HCl(g)$
- Reactants: 2 H & 2 Cl
- Products 2 H & 2 Cl
- The two sides are balanced!