

Interpreting Chemical Equations

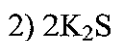
- Chemical equations use a combination of letters and numbers to tell you about the atoms that make up a substance
- The letters tell you what atoms are in the compound
 - Each element is represented by a 1 or 2 letter code
 - The first letter is ALWAYS capitalized. For example: H, O, S, F, P
 - The second letter is ALWAYS lowercase. For example: Ca, Mg, Be, Ne, Ar
 - HBr has 2 types of atoms-H for Hydrogen and Br for Bromine
 - NaSCl has 3 types of atoms- Na for Sodium, S for Sulfur and Cl for Chlorine
- There are 2 types of numbers in chemical equations
 - Small numbers tell you how many atoms are in the compound
 - If there is not a number written, there is only 1 of the atoms
 - Na means there is 1 atom of Sodium
 - For Cl₂, the small 2 tells you there are 2 atoms of Chlorine
 - For MgH₂ there is 1 atom of Mg and there are 2 atoms of Hydrogen
 - You CANNOT change the small numbers
 - Big numbers tell you how many molecules are in the reaction
 - If you see 2Cl₂, the equation is telling you that there are 2 molecules of Cl₂
 - To determine the number of atoms, you Multiply the big numbers by the small numbers
 - For 2Cl₂, you multiply 2 x 2 = 4. So there are 4 atoms of Chlorine
 - For 3H₂O, you multiply both the Hydrogen and the Oxygen by 3
 - 3 x 2 = 6 so there are 6 atoms of Hydrogen
 - 3 x 1 = 3 so there are 3 atoms of Oxygen
 - For 2MgCl₂, you multiply both the Magnesium and the Chlorine by 2
 - 2 x 1 = 2 so there are 2 atoms of Magnesium
 - 2 x 2 = 4 so there are 4 atoms of Chlorine

For each of following, list the number of atoms in each molecule:



Ca 1

Br 2



K 4

S 2

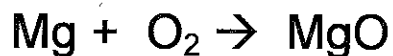


Mg 3

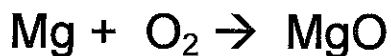
H 6

Interpreting Chemical Equations Part 2

- Chemical equations have 2 sides separated by an arrow



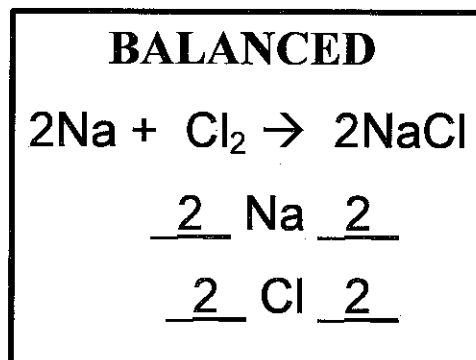
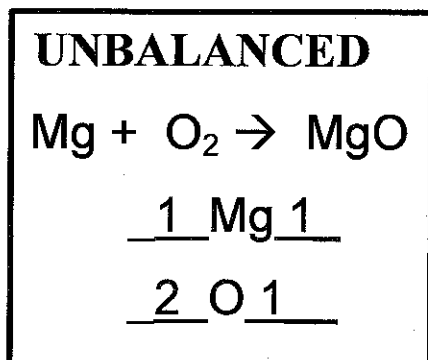
- The compounds on the LEFT side of the arrow are the REACTANTS
- The compounds on the RIGHT side of the arrow are the PRODUCTS



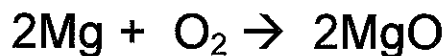
Reactants: Mg O₂

Products: MgO

- Chemical equations are **BALANCED** when there are equal numbers of each type of atom on both sides of the arrow:



- To balance the equations, you need to change the Big numbers until you have the same number of atoms on both sides of the arrow:



 2 Mg 2

 2 O 2

- The equation is now balanced
- Balancing Equations is a trial and error process, if something does not work, try a different number
- Remember that your goal is to have the same number of atoms on both sides of the reaction arrow