Unit 5 – Ch 10: Describing and Balancing Chemical Equations

CHEMICAL REACTION:

- A substance (_____) is *chemically* _____ into _____ substance(s) (_____).
- **General Expression:** **Arrow:**
  - Ex) _____
    - Reactant " + " = _____

1) WORD EQUATION: **$Fe_{(s)} + O_{2(g)} \rightarrow Fe_2O_3$**

- **How do we write this? →**
- **Another Chemical Equation:** _____
  - **Word Equation →**

2) CHEMICAL EQUATION:

- **Skelton Equation →**
  - _____ indicate *relative* _____ of each atom.
    - Equation is _____.
  - Ex) Skeleton Equation: _____
    - Reactants: _____ Products: _____

LAW OF CONSERVATION OF MATTER (MASS):

- _____ of atoms of _____ = _____ of atoms of _____
  - Total _____ of reactants = Total _____ of products

***GUIDELINES & PATTERNS* for Balancing Chemical Equations:**

- **G1.** Ensure/Write ***ALL*** chemical _____ ***CORRECTLY***.
- **G2.** Determine *initial* _____ of _____ *reactant(s)* and *product(s).*
- **G3.** Balance using _____ .
  - _____ change the chemical formula's _____.
- **P4.** Balance _____ subscripts _____ *(except understood "1")* with _____ coefficient.
- **P5.** Balance _____ .
  - **P5a.** Keep *(don't break apart)* all _____ polyatomics as _____ unit ***IF*** on _____ sides of chemical equation.
  - **P5b.** If _____ the same polyatomic, *MAY* break apart into _____ atoms.
- **G6.** ***GENERALLY*** balance _____ and _____ LAST *(often appears in multiple formulas on the same side of equation)*.
- **G7.** _____ **RATIO**: **MUST** _____ ***ALL*** _____ ***IF*** possible.

BALANCING CHEMICAL EQUATIONS PRACTICE:

Ex #1) _____ Al_2O_3 → _____ Al + _____ O_2

Ex #2) _____ $KClO_3$ → _____ KCl + _____ O_2

Ex #3) _____ $Al_2(SO_4)_3$ + _____ $Ca(OH)_2$ → _____ $Al(OH)_3$ + _____ $CaSO_4$

Ex #4) _____ $Ca(OH)_2$ + _____ H_3PO_4 → _____ $Ca_3(PO_4)_2$ + _____ H_2O

Ex #5) _____ $Hg(OH)_2$ + _____ H_3PO_4 → _____ $Hg_3(PO_4)_2$ + _____ H_2O

Ex #6) _____ $HClO_4$ + _____ P_4O_{10} → _____ H_3PO_4 + _____ Cl_2O_7

Ex #7) _____ N_2 + _____ O_2 → _____ H_2O + _____ HNO_3