Chapter 11 Quest Review

1. In a chemical reaction, how would you represent heat being present? What about a catalyst? On top of the arrow
2. Show how the various states of matter would be represented in a chemical reaction.

(s) (g) (aq) (ℓ)

1. What are your reactants in a chemical equation? Products?

Reactants = starting materials Products = ending materials (where the arrow points)

1. What are subscripts, and how do they differ from coefficients?

Subscripts tell you how many of each element there are (balance out charge in ionic bond)

Coefficients are the big numbers you put in front of the compound to balance the equation

1. Show what the product would be if:
   1. Be reacts with gaseous F

Be + F2 🡪 BeF2

* 1. Sodium reacts with phosphate

3Na + PO4-3 🡪 Na3PO4

* 1. Strontium reacts with hydroxide

Sr + 2OH 🡪 Sr(OH)2

* 1. Hydrogen and oxygen gas react together

2H2+ O2 🡪 2H2O

1. How would you represent elements like F, H, O and Cl if they were by themselves? Why would they be represented this way?

These elements are diatomic, so you write them with a subscript of 2.

1. Name and describe the five major types of chemical reactions you will see.

Combination – A + B 🡪 AB

Decomposition – AB 🡪 A + B

Single Replacement – A + BC 🡪 B + AC

Double Replacement – AB + CD 🡪 AD + CB

Combustion – CxHyOz + O2 🡪 CO2 + H2O (heat is required)

1. Balance the following equations:
   1. I2 + NaF 🡪 NaI + F2

I2 + 2NaF 🡪 2NaI + F2

* 1. C6H6 + O2 🡪 CO2 + H2O

2C6H6 + 15O2 🡪 12CO2 + 6H2O

* 1. Zinc (I) Phosphate reacts with copper (II) sulfate to produce copper phosphate and zinc (I) sulfate.

2 Zn3PO4 + 3 CuSO4 🡪 3 Zn2SO4 + Cu3(PO4)2

* 1. Iron with a positive 3 charge reacts with Copper (I) oxide.

2 Fe+3 + 3 Cu2O 🡪 Fe2O3 + 6 Cu

* 1. Iron (III) oxide forms iron and oxygen.

2 Fe2O3 🡪 4 Fe + 3 O2

1. For the reactions described in #8, what type of reactions are they?
   1. Single Replacement
   2. Combustion
   3. Double Replacement
   4. Single Replacement
   5. Decomposition
2. Predict the products and balance the following:
   1. Ag2SO4 + Pb(NO3)2 🡪

Ag2SO4 + Pb(NO3)2 🡪 PbSO4 + 2 AgNO3

* 1. Copper (II) Phosphate decomposes

Cu3(PO4)2 🡪 3 Cu + 2 PO4-3

* 1. Lead (II) chloride reacts with Aluminum

3 PbCl2 + Al 🡪 2 AlCl3 + 3 Pb

* 1. C5H7 combusts

4 C5H7 + 27 O2 🡪 20 CO2 + 14 H2O

1. For the following double replacement reactions, predict the products, balance and predict the state of matter of the products.
   1. Mg(NO3)2(aq) + LiOH(aq) 🡪

Mg(NO3)2(aq) + 2LiOH(aq) 🡪 Mg(OH)2(s) + 2LiNO3(aq)

* 1. FeSO4(aq) + Na2S(aq) 🡪

FeSO4(aq) + Na2S(aq) 🡪 FeS(s) + Na2SO4(aq)

* 1. Aqueous solutions of Calcium chloride and sodium phosphate are mixed

3 CaCl2(aq) + 2 Na3PO4(aq) 🡪 Ca3(PO4)2(s) + 6 NaCl(aq)

* 1. Aqueous solutions of Silver (I) chloride and Potassium iodide are mixed

AgCl(aq) + KI(aq) 🡪 AgI(s) + KCl(aq)

1. For the reactions you described in #11, write the complete and net ionic equations.
   1. COMPLETE: Mg+2(aq) + NO3-1(aq) + Li+1(aq) + OH-1(aq) 🡪 Mg(OH)2(s) + Li+1(aq) + NO3-1(aq)

NET: Mg+2(aq) + 2 OH-1(aq) 🡪 Mg(OH)2(s)

* 1. COMPLETE: Fe+2(aq) + SO4-2(aq) + Na+1(aq) + S-2(aq) 🡪 FeS(s) + Na+1(aq) + SO4-2(aq)

NET: Fe+2(aq) + S-2(aq) 🡪 FeS(s)

* 1. COMPLETE: Ca+2(aq)+Cl-1(aq) + Na+1(aq) + PO4-3(aq) 🡪 Ca3(PO4)2(s) + Na+1(aq) + Cl-1(aq)

NET: 3 Ca+2(aq) + 2 PO4-2(aq) 🡪 Ca3(PO4)2(s)

* 1. COMPLETE: Ag+1(aq) + Cl-1(aq) + K+1(aq) + I-1(aq) 🡪 AgI(s) + K+1(aq) + Cl-1(aq)

NET: Ag+1(aq) + I-1(aq) 🡪 AgI(s)