Name: **Key.**
Blk:_____ Date:_____

Chemistry 12
Solubility Lesson #1
A Review of SOLUBILITY

THE SOLUBILITY OF SALTS:

A salt is defined as an ___IONIC___ compound which can not be classified as an ARRHENIUS ___acid___ (compounds that begin with "_H_") or an ARRHENIUS ___base___ (compounds that end with "_OH⁻_").

An IONIC compound is one that is made up of a ___METAL___ and a ___NON-METAL___, whereas a MOLECULAR compound is one that is made up of ___NON-METALS___.

GENERAL RULES FOR DISTINGUISHING BETWEEN AN IONIC AND MOLECULAR COMPOUND:

1. **"IONIC"** – a. metal + non-metal
   b. polyatomic metal + non-metal
   c. metal + polyatomic non – metal
   d. polyatomic metal + polyatomic non-metal

   Ex. $NaCl$
   $(NH_4)_2S$
   Rb_3PO_4
   $(NH_4)_2SO_4$

2. **"MOLECULAR"** - a. non-metal + non-metal
   b. ORGANIC compounds

   Ex. SO_2
   $CH_3CH_2CH_3$

3. An ionic compound will undergo 100 % DISSOCIATION when placed in water, whereas a molecular compound will not.

   IONIC: $NaCl_{(s)} \xrightarrow{H_2O} Na^+_{(aq)} + Cl^-_{(aq)}$

   MOLECULAR: $CH_3CH_2CH_3{(l)} \rightleftharpoons CH_3CH_2CH_3 (aq)$

4. Ionic compounds are therefore classified as ___ELECTROLYTES___(as they can conduct an electric current. While molecular compounds are classified as ___NON-ELECTROLYTES___(as they DO NOT conduct an electric current).

THE FOLLOWING ARE A LIST OF IMPORTANT TERMS USED IN THIS UNIT:

SOLUBILITY is defined as ___the maximum amount of a substance that can dissolve in a given amount of solvent @ a given temperature.___

SATURATED SOLUTION - ___when the dissolved substance is in EQUILIBRIUM with some undissolved substance___

MOLAR SOLUBILITY is used to express the solubility of a substance in terms of
mol /L.

SOLUBILITY can also be expressed in the terms of ___grams /L___.

IN ORDER FOR A SOLUTION TO BE CONSIDERED **SATURATED**:

1. Some undissolved material is present
2. EQUILIBRIUM exists btwn dissolved + undissolved

A Saturated solution is expressed as an **EQUILIBRIUM** between the undissolved
solid and it's component ions:

$$AgBrO_3(s) \rightleftharpoons Ag^+(aq) + BrO_3^-(aq)$$
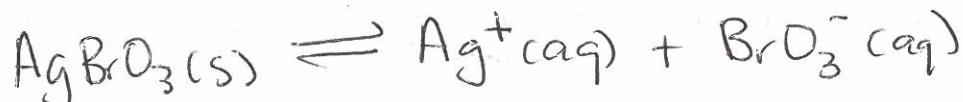
You can break down the above **EQUILIBRIUM EQUATION** to show the two
individual reactions:

1. THE FORWARD REACTION (**THE DISSOLVING REACTION**)

$$AgBrO_3(s) \longrightarrow Ag^+(aq) + BrO_3^-(aq)$$
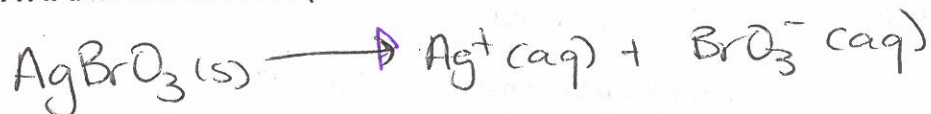
2. THE REVERSE REACTION (**THE CRYSTALLLIZATION REACTION**)

$$Ag^+(aq) + BrO_3^-(aq) \longrightarrow AgBrO_3(s)$$

SEATWORK/HOMEWORK: Exercises 1 – 7 pgs 74 + 76 in HEBDEN
PLO's : G1- G4 + G6