Unit 5: Ch 10 – Reactions in Aqueous Solutions: *Net Ionic Equations*

AQUEOUS SOLUTIONS:

- **DEFINITION** →

  - Compounds separate _____ into *individual* _____.
    - _____ *aqueous* (_____) solutions can _____!
    - If *NOT* (_____) solution: Compound _____ in its current *state* - _____.

HOW TO DETERMINE IF *(AQUEOUS)* OR NOT:

- 1. Use the _____ → *Soluble* (_____) OR *Insoluble* (_____).
  - Ex) ___ $Ba(NO_3)_{2\,(\ \ )}$ + ___ $(NH_4)_3PO_{4\,(\ \ )}$ → ___ $Ba_3(PO_4)_{2\,(\ \ )}$ + ___ $NH_4NO_{3\,(\ \ )}$

HOW TO WRITE A *COMPLETE IONIC EQUATION (C.I.E.)*:

- 2a. Write the _____ ***(C.I.E.)*** to show _____ dissociated _____ non-dissociated *chemical formulas*.
  - 2b. Carry through ***AND*** distribute _____ to ***ALL*** _____.

C.I.E. = _____

  - 2b. Notice that _____ ***AND*** _____ appear _____ on _____ sides of the equation.

HOW TO IDENTIFY *SPECTATOR IONS*:

- 3a. _____ identical _____ from both sides of the equation.
  - 3b. _____ ions _____ out _____ *actively* participate in the reaction.

C.I.E. Spectator Ions: $3\ Ba^{2+}_{(aq)} + 6\ NO_3^-{}_{(aq)} + 6\ NH_4^+{}_{(aq)} + 2\ PO_4^{3-}{}_{(aq)} \rightarrow 1\ Ba_3(PO_4)_{2\,(s)} + 6\ NH_4^+{}_{(aq)} + 6\ NO_3^-{}_{(aq)}$

HOW TO WRITE A *NET IONIC EQUATION (N.I.E.)*:

- 4a. Write the _____ ***(N.I.E.)*** → _____ ***ions*** actively involved in the reaction *(what is left over).*

N.I.E. = _____

  - 4b. The net ionic equation (N.I.E.) _____ still be _____ ***AND*** _____ if possible.

PRACTICE EXAMPLES:

1. ___$CoBr_3$ ( ) + ___K_2S ( ) → ___Co_2S_3 ( ) + ___KBr ( )

   a. **C.I.E. =** _____

   b. **S.I. =** _____

   c. **N.I.E. =** _____

2. ___ Zn ( ) + ___ $SnBr_4$ ( ) → ___ $ZnBr_2$ ( ) + ___ Sn ( )

   a. **C.I.E. =** _____

   b. **S.I. =** _____

   c. **N.I.E. =** _____

3. ___$Pb(NO_3)_2$ ( ) + ___Na_2CO_3 ( ) → ___$NaNO_3$ ( ) + ___$PbCO_3$ ( )

   a. **C.I.E. =** _____

   b. **S.I. =** _____

   c. **N.I.E. =** _____