V) Formula, Complete Ionic, and Net Ionic Equations
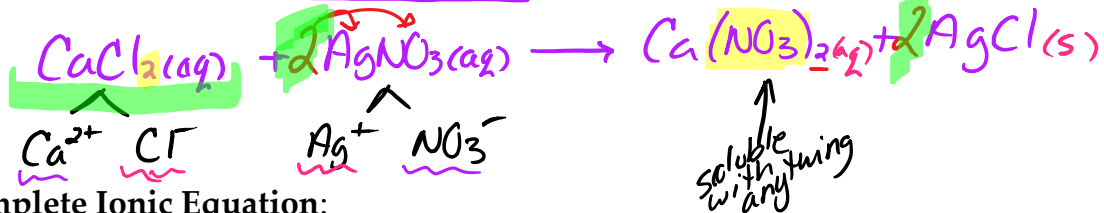
These equations describe the process of mixing two soluble solutions together.
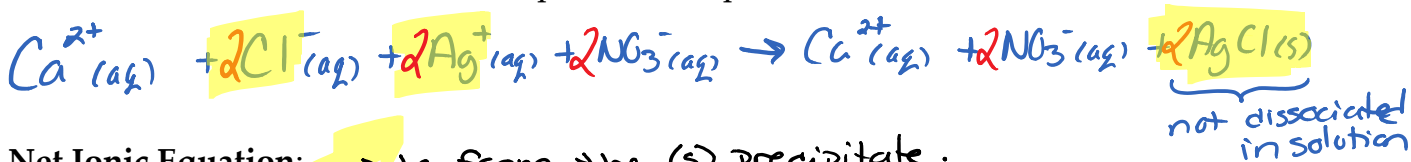Suppose $0.2M$ $CaCl_{2(aq)}$ is mixed with an equal volume of $0.2M$ $AgNO_{3(aq)}$. Write the
formula, complete ionic, and net ionic equations.

Formula Equation (<u>double replacement</u> equation):

* solubility table $< \begin{array}{l} S\ (aq) \\ LS\ (ppt) \\ (s) \end{array}$

$$CaCl_{2(aq)} + 2AgNO_{3(aq)} \longrightarrow Ca(NO_3)_{2(aq)} + 2AgCl_{(s)}$$

Ca^{2+} Cl^- Ag^+ NO_3^-

soluble w/ anything

Complete Ionic Equation:

The formula equation is inaccurate for the most part, as the salts dissociate into ions in
solution. This is reflected in the complete ionic equation.

$$Ca^{2+}_{(aq)} + 2Cl^-_{(aq)} + 2Ag^+_{(aq)} + 2NO_3^-_{(aq)} \longrightarrow Ca^{2+}_{(aq)} + 2NO_3^-_{(aq)} + 2AgCl_{(s)}$$

not dissociated in solution

Net Ionic Equation: → to form the (s) precipitate.
Only ions that react are part of the Net.

$$Cl^-_{(aq)} + Ag^+_{(aq)} \longrightarrow AgCl_{(s)}$$
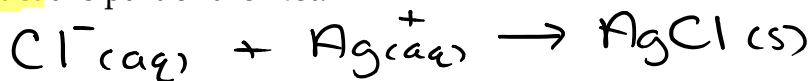
The example we did involved one low solubility ion combination. Sometimes, no low
solubility ion combinations result. Sometimes, both ion combinations are low
solubility.

$\longrightarrow$ (aq) + (aq)   or $\longrightarrow$ (s) + (s)

not net Eq.   *Net = Comp. Ionic Eq.*

Assignment 4: For each of the following, write formula, complete, and net ionic
equations:
1. Aqueous magnesium chloride is mixed with aqueous potassium hydroxide.
2. Aqueous lithium carbonate is mixed with aqueous iron (II) sulphate.
3. Aqueous copper I sulphate is mixed with aqueous strontium bromide.
4. Hebden p. 87 #25e,i