KEY

Net Ionic Equations and Precipitation Reactions

Name - _____

1. Use a **Table of Solubilities** to predict whether or not the following compounds are soluble in water.

Compound	Soluble (yes or no)
CaI_2	yes
$MgSO_4$	yes
$AlPO_4$	no
$Pb(NO_3)_2$	yes
Ag_2SO_4	no
$Ca(OH)_2$	no

2. Write formulas for the following compounds, and using a Table of Solubilities predict whether or not the compound is soluble in water.

		Formula	Soluble (y/n)
a.	potassium phosphate	K_3PO_4	yes
b.	calcium carbonate	$CaCO_3$	No
c.	copper(II) bromide	$CuBr_2$	Yes
d.	aluminium sulphide	Al_2S_3	No

3. For each of the following reactions, predict the products of the reaction. Be sure to write **balanced equations**.

Then determine if any of the products forms a precipitate.

- If no precipitate forms, write **NR** (for "No Reaction").
- If a precipitate forms, write the **net ionic equation** for the reaction.

a. $Mg(NO_3)_{2\,(aq)} + 2\ NaOH_{(aq)} \rightarrow$ $Mg(OH)_{2\,(s)} + \_2\_\ NaNO_{3\,(aq)}$

b. $CuSO_{4\,(aq)} + FeCl_{3\,(aq)} \rightarrow$ **NR**

c. $K_2CO_{3\,(aq)} + Sr(OH)_{2(aq)} \rightarrow$ ___ $SrCO_{3\,(s)} + \_2\_\ KOH_{(aq)}$

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4. An aqueous solution contains a mixture of Ba^{2+}, Pb^{2+} and Ca^{2+}. Select the **ONE** negative ion listed below which could be used to separate Pb^{2+} from the other two positive ions in the mixture.

a. NO_3^-
b. S^{2-}
c. OH^-
d. PO_4^{3-}
e. SO_4^{2-}

5. An aqueous solution containing the following cations:

Ca^{2+} Ag^+ Cu^{2+} K^+

In order to separate them, the following solutions are available:

Na_2S Na_2CO_3 NaBr

If we wish to separate the cations by causing only one cation to precipitate out of solution as a time:

- in what order should the solutions Na_2S, Na_2CO_3, and NaBr be added? NaBr, Na_2S, Na_2CO_3
- identify the three precipitates that form after the addition of those solutions.

  AgBr, CuS, $CaCO_3$
- which one cation will remain in solution? K^+