

Name: \_\_\_\_\_

Chemistry 30

## Unit 4: Solutions

### Assignment 5 – Net Ionic Equations and Precipitation Reactions

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

Compound	Soluble (yes or no)
$\text{CaI}_2$	_____
$\text{MgSO}_4$	_____
$\text{AlPO}_4$	_____
$\text{Pb}(\text{NO}_3)_2$	_____
$\text{Ag}_2\text{SO}_4$	_____
$\text{Ca}(\text{OH})_2$	_____

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	_____	_____
b) calcium carbonate	_____	_____
c) copper(II) bromide	_____	_____
d) aluminum sulfide	_____	_____

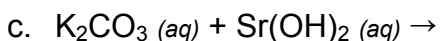
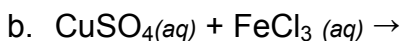
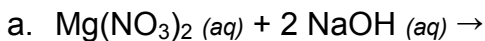
3. What are spectator ions?

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4. 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.



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

- A.  $\text{Cl}^-$
- B.  $\text{S}^{2-}$
- C.  $\text{OH}^-$
- D.  $\text{PO}_4^{3-}$
- E.  $\text{SO}_4^{2-}$

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6. An aqueous solution containing the following cations:



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



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  $\text{Na}_2\text{S}$ ,  $\text{Na}_2\text{CO}_3$ , and  $\text{NaBr}$  be added?
- identify the three precipitates that form after the addition of those solutions.
- which one cation will remain in solution?