Section 14A – Precipitation Reactions

1) Describe the difference between a strong electrolyte and a weak electrolyte.

2) Predict if the following compound are strong, weak, or non-electrolytes.

a) $MgCl_2$ b) HF c) $C_6H_{12}O_6$ d) KNO_3 e) CH_3COOH

3) Determine which of the following are weak or strong electrolytes and write out what will happen to these compounds when they are placed in water. For reactions show states of matter, assume all compounds begin as solids.

a) KOH b) C_6H_5COOH c) NH_4Cl d) HNO_2

4) Name and predict the solubility of the following compounds:

a) KCl b) $Mn(OH)_2$ c) Na_2CrO_4 d) $PbBr_2$ e) $Sr(NO_3)_2$

f) $BaSO_4$ g) CuS h) $Ca(ClO_3)_2$ i) AgCl j) Hg_2I_2

5) Write out what ions are in solution when each of the following compounds dissolves.

Compound	Formula	Ions formed
A. sodium chloride		
B. barium hydroxide		
C. nitric acid		
D. magnesium sulfate		
E. potassium dichromate		
F. sodium hydrogen phosphate		
G. hydrobromic acid		
H. copper (II) sulfate		
I. sodium bicarbonate		
J. potassium carbonate		

6) Signify whether the following compounds are soluble or insoluble

Compound Name	Formula	Solubility
A.	$BaCl_2$	
B. sodium sulfate		
C.	$Cu(OH)_2$	
D. manganese (IV) oxide		
E.	$FeCl_3$	
F. sodium phosphate		
G.	$Ca_3(PO_4)_2$	
H. silver nitrate		
I.	$AgOH$	
J. silver iodide		
K.	$PbSO_4$	
L. lithium carbonate		
M.	$Zn(NO_3)_2$	
N. strontium sulfate		
O.	$Ni(C_2H_3O_2)_2$	

Precipitation Reactions

For each reaction be sure to write states of matter!

1. **Write a balanced equation for the reaction between a solution of potassium carbonate and a solution of strontium chloride?**

Write a balanced equation for the reaction between solutions of magnesium chloride and lead (II) nitrate.

2. **Write a balanced equation for the reaction between a solution of sodium hydroxide and iron (III) hydroxide.**
3. **What are the products when a solutions of strontium chloride and lithium sulfate?**
4. **Write a balanced equation for the reaction between solutions of potassium iodide and calcium nitrate.**
5. **A solution of chromium (III) acetate reacts with a solution of barium hydroxide. Write a balanced equation for the reaction.**

Write the net-ionic equation for the following reactions.

6. **A solution of sodium hydroxide is mixed with a solution of nickel (III) nitrate.**
7. **Solutions of sodium sulfide and zinc chloride are added to each other.**
8. **A solution of silver nitrate is added to a solution of sodium sulfate.**
9. **A solution of magnesium nitrate is mixed with a solution of rubidium chloride.**
10. **Magnesium nitrate in solution is added to a solution of sodium hydroxide.**
11. **Mixing a solution of barium nitrate with a solution of potassium sulfate.**

5) Predict the products and balance the reactions, if states of matter are not included the question will be marked incorrect:

a) ____ $AgNO_{3(aq)}$ + ____ KCl →

b) ____ K_3PO_4 + ____ $NaNO_3$ →

c) ____ $CuSO_{4(aq)}$ + ____ NaOH →

d) ____ $K_2S_{(aq)}$ + ____ $AgNO_{3(aq)}$ →

e) ____ $Na_3PO_{4(aq)}$ + ____ $SrCl_{2(aq)}$ →

6) Predict the products, balance, and write out the net ionic equation for the following reaction.

____ $Pb(NO_3)_{2(aq)}$ + ____ $LiI_{(aq)}$ →

Net-Ionic Equation:

Solubility Rules Lab

The chart below is a chart that we will use to determine the solubility of different ions in solution. This will require a great deal of communication and organization. Everyone will be assigned at least one solution. You are

not going to get a lot of your solution so be cautious with how much you use in each reaction. The reactions will take place in small test tubes, after each reaction is run throw your solution in the PLASTIC garbage can. Plastic bags are porous and some of the metals used with rust the metal trash cans. This is why I drink from a glass container.

The following compound solutions will be available for you:

Copper (II) sulfate	Ammonium chloride	Lithium bromide
Sodium iodide	Potassium chloride	Sodium hydroxide
Iron (III) chloride	Magnesium sulfate	Potassium nitrate
Sodium carbonate	Strontium chloride	Zinc sulfate
Calcium nitrate	Silver nitrate	Nickel (II) nitrate

Sodium hydrogen phosphate Potassium carbonate Sodium acetate

	Cl^-	NO_3^{-1}	I^{-1}	$C_2H_3O_2^{-1}$	CO_3^{-2}	SO_4^{-2}	HPO_4^{-3}	OH^-	Br^-
Na^+									
Ca^{+2}									
Ag^+									
K^+									
Fe^{+3}									
Zn^{+2}									
Cu^{+2}									
Mg^{+2}									
NH_4^+									
Sr^{+2}									
Ni^{+2}									