AP Chemistry Summer Assignment

Welcome to AP Chemistry! To ensure that you are prepared for class, there are a few things that I am asking you to do this summer.

1. **Learn the formulas and charges of the polyatomic ions in this table.**

+1		
ammonium, NH_4^+		
-1	**-2**	**-3**
acetate, $C_2H_3O_2^-$, or CH_3COO^-	carbonate, CO_3^{-2}	phosphate, PO_4^{-3}
bromate, BrO_3^-	chromate, CrO_4^{-2}	phosphite, PO_3^{-3}
chlorate, ClO_3^-	dichromate, $Cr_2O_7^{-2}$	arsenate, AsO_4^{-3}
chlorite, ClO_2^-	oxalate, $C_2O_4^{-2}$	
cyanide, CN^-	peroxide, O_2^{-2}	
hydrogen carbonate, HCO_3^- (also called bicarbonate)	sulfate, SO_4^{-2}	
	sulfite, SO_3^{-2}	
hydroxide, OH^-		
hypochlorite, ClO^-		
iodate, IO_3^-		
nitrate, NO_3^-		
nitrite, NO_2^-		
permanganate, MnO_4^-		
perchlorate, ClO_4^-		
thiocyanate, SCN^-		

2. **Name the following compounds:**
   a. $KClO$
   b. Ag_2CO_3
   c. HNO_2
   d. $KMNO_4$
   e. $CsClO_3$
   f. KNH_4SO_4
   g. FeO
   h. Fe_2O_3
   i. $TiCl_4$
   j. NaH
   k. Li_3N
   l. Na_2O
   m. Na_2O_2

3. **Write the formula of the following compounds:**
   a. rubidium nitrite
   b. potassium sulfide
   c. sodium hydrogen sulfide
   d. magnesium phosphate
   e. calcium hydrogen phosphate
   f. sulfuric acid
   g. iodine heptafluoride
   h. ammonium sulfate
   i. silver perchlorate
   j. boron trichloride
   k. copper (I) cyanide
   l. strontium chlorite
   m. hydroiodic acid
   n. lead (II) carbonate
   o. tin (II) fluoride
   p. tetraphosphorous decasulfide
   q. mercury (II) oxide
   r. mercury (I) iodide
   s. selenium hexafluoride

4. **Learn the general solubility guidelines in the next table.**

Solubility Guidelines for Aqueous Solutions

Ions That Form *Soluble* Compounds	Exceptions
Group 1 ions (Li^+, Na^+, etc.)	
ammonium (NH_4^+)	
nitrate (NO_3^-)	
acetate ($C_2H_3O_2^-$ or CH_3COO^-)	
hydrogen carbonate (HCO_3^-)	
chlorate (ClO_3^-)	
halides (Cl^-, Br^-, I^-)	when combined with Ag^+, Pb^{2+}, or Hg_2^{2+}
sulfates (SO_4^{2-})	when combined with Ag^+, Ca^{2+}, Sr^{2+}, Ba^{2+}, or Pb^{2+}

Ions That Form *Insoluble* Compounds*	Exceptions
carbonate (CO_3^{2-})	when combined with Group 1 ions or ammonium (NH_4^+)
chromate (CrO_4^{2-})	when combined with Group 1 ions, Ca^{2+}, Mg^{2+}, or ammonium (NH_4^+)
phosphate (PO_4^{3-})	when combined with Group 1 ions or ammonium (NH_4^+)
sulfide (S^{2-})	when combined with Group 1 ions or ammonium (NH_4^+)
hydroxide (OH^-)	when combined with Group 1 ions, Ca^{2+}, Ba^{2+}, Sr^{2+}, or ammonium (NH_4^+)

*compounds having very low solubility in H_2O

5. **Use your knowledge of solubility to complete the missing boxes in the table below.**

Chemical Formula	*Name*	*Solubility in Water*
1. $NH_4C_2H_3O_2$		Soluble
2. $Ba(OH)_2$		
3.	Iron (II) Carbonate	Insoluble
4. NaOH		
5. $RbNO_3$		
6.	Cesium Sulfate	
7. $MgSO_4$		
8. $ZnCl_2$		
9.	Zinc Hydroxide	
10. $Zn_3(PO_4)_2$		
11. AgBr		
12. KNO_3		
13. Al_2S_3		
14.	Silver Acetate	
15. Sr_2CrO_4		
16.	Aluminum Phosphate	
17. $BaSO_4$		
18. $Ca(OH)_2$		
19. $BaCO_3$		
20. $MgCrO_4$		
21.	Iron (III) Sulfide	
23.	Silver Iodide	
24. Hg_2SO_4		
25.	Lithium Chloride	