

Section 3.2– Qualitative Analysis– Identifying unknown ions (Part I) WORKSHEET**key**

1. Classify each of the substances as being soluble or insoluble in water.

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| a. potassium bromide – sol | i. silver acetate – sol |
| b. lead (II) carbonate – insol | j. copper (II) sulfide – insol |
| c. barium sulfate – insol | k. $\text{Mg}_3(\text{PO}_4)_2$ – insol |
| d. zinc hydroxide – insol | l. KOH – sol |
| e. sodium acetate – sol | m. NiCl_2 – sol |
| f. silver iodide – insol | n. NH_4OH – sol |
| g. cadmium (II) sulfide – insol | o. Hg_2SO_4 – insol |
| h. zinc carbonate – insol | p. PbI_2 – insol |

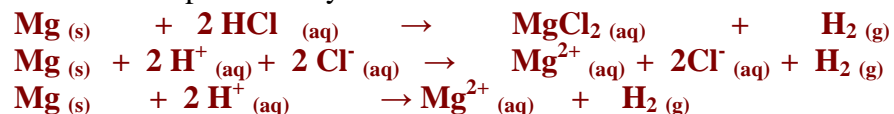
2. Identify the two new compounds which form if the solutions, as suggested by the following table, were mixed. CIRCLE the names of the compounds which would precipitate from the solutions.

	KBr	Na_2CO_3	CaS	NH_4OH
AgNO_3	<u>AgBr</u> + KNO_3	NaNO_3 + <u>Ag₂CO₃</u>	$\text{Ca}(\text{NO}_3)_2$ + <u>Ag₂S</u>	<u>AgOH</u> + NH_4NO_3
BaCl_2	KCl + BaBr_2	NaCl + <u>BaCO₃</u>	CaCl_2 + BaS	$\text{Ba}(\text{OH})_2$ + NH_4Cl
$\text{Al}(\text{NO}_3)_3$	AlBr_3 + KNO_3	NaNO_3 + <u>Al₂(CO₃)₃</u>	$\text{Ca}(\text{NO}_3)_2$ + <u>Al₂S₃</u>	NH_4NO_3 + <u>Al(OH)₃</u>
CuSO_4	CuBr_2 + K_2SO_4	Na_2SO_4 + <u>CuCO₃</u>	<u>CuS</u> + <u>CaSO₄</u>	$(\text{NH}_4)_2\text{SO}_4$ + <u>Cu(OH)₂</u>

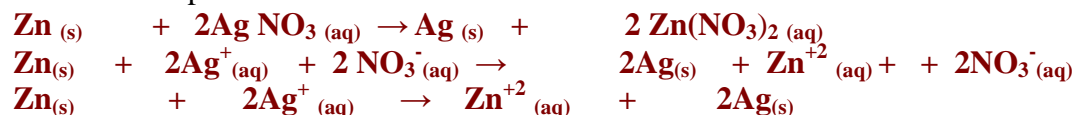
Net Ionic Equations

Write chemical equations, total ionic equations and net ionic equations for each reaction. The first one is done for you. (assume that all reactions occur):

1. Magnesium metal is placed in hydrochloric acid



2. Zinc metal is placed in silver nitrate solution



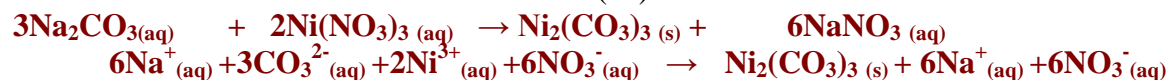
3. Barium chloride solution is added to lead (II) nitrate solution.



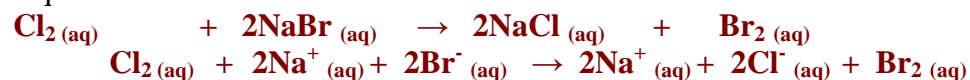
4. Sulphuric acid is added to Strontium hydroxide solution.



5. Sodium carbonate solution is added to nickel (III) nitrate solution.



6. Aqueous chlorine is added to sodium bromide solution.



7. Nitric acid is added to aluminum hydroxide solution.

