Common rules for solubility of salts

Ions	Solubility of salts	Solubility Exceptions
sodium (Na), potassium (K) and ammonium (NH_4^+)	all soluble	none
nitrates (NO_3^-)	all soluble	none
chlorides (Cl-) and iodides (I-)	most soluble	silver (Ag^+), lead (Pb^{2+}), mercury (Hg_2^{2+})
sulfates (SO_4^{2-})	most soluble	Ag^+, Pb^{2+}, calcium Ca^{2+}, strontium (Sr^{2+}) and barium (Ba^{2+})
carbonates (CO_3^{2-})	most insoluble	Group 1A, NH_4^+ soluble
hydroxide (OH-)	most insoluble	Group 1A, NH_4^+ soluble

Practice:

$$2\ KI(aq) + Pb(NO_3)_2(aq) \rightarrow 2\ KNO_3(aq) + PbI_2(s)$$

$$K_2SO_4(aq) + BaBr_2(aq) \rightarrow BaSO_4(s) + 2\ KBr(aq)$$

$$Na_2CO_3(aq) + Pb(NO_3)_2(aq) \rightarrow 2\ NaNO_3(aq) + PbCO_3(s)$$

$$Na_2CO_3(aq) + CoCl_2(aq) \rightarrow CoCO_3(s) + 2\ NaCl(aq)$$

$$HCl(aq) + NH_4OH(aq) \rightarrow NH_4Cl(aq) + H_2O(l)$$

$$2\ NaC_2H_3O_2(aq) + Pb(NO_3)_2(aq) \rightarrow 2\ NaNO_3(aq) + Pb(C_2H_3O_2)_2(aq)$$

$$3\ NaOH(aq) + FeBr_3(aq) \rightarrow Fe(OH)_3(s) + 3\ NaBr(aq)$$

Write down the ionic equations of the following reactions:

1. Zn with sulfuric acid

2. Copper (II) oxide with hydrochloric acid

3. Sodium with water

4. Sodium oxide with water

5. Calcium carbonate with sulfuric acid