

Key

Carbonic acid decomposes into carbon dioxide and water.

example A sample of carbonic acid is heated.



A binary compound may break down to produce two elements.

example Molten sodium chloride is electrolyzed.



Hydrogen peroxide decomposes into water and oxygen.

example $2\text{H}_2\text{O}_2 \longrightarrow 2\text{H}_2\text{O} + \text{O}_2$

Ammonium hydroxide decomposes into ammonia and water.

example $\text{NH}_4\text{OH} \longrightarrow \text{NH}_3 + \text{HOH}$

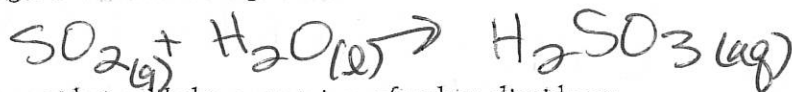
~~*~~ note - this is much harder than what you will be doing. It is good to study PATTERNS though!

Exercise 7-2: Predict and balance the following synthesis and decomposition reactions. Use abbreviations to indicate the phase of reactants and products where possible [i.e., (aq) (s) (l) (g)].

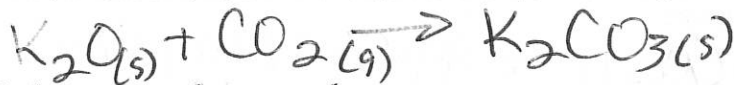
1. A sample of calcium carbonate is heated.



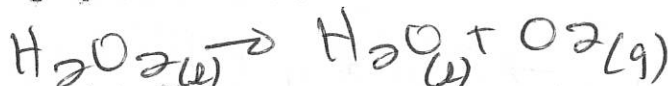
2. Sulfur dioxide gas is bubbled through water.



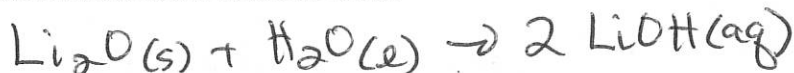
3. Solid potassium oxide is added to a container of carbon dioxide gas.



4. Liquid hydrogen peroxide is warmed.



5. Solid lithium oxide is added to water.



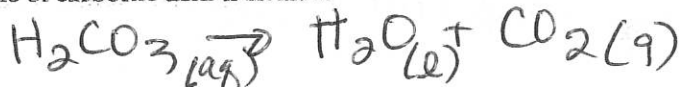
6. Molten aluminum chloride is electrolyzed.



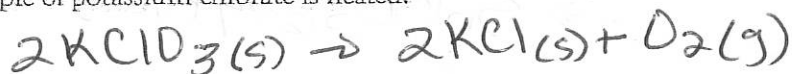
7. A pea-sized piece of sodium is added to a container of iodine vapor.



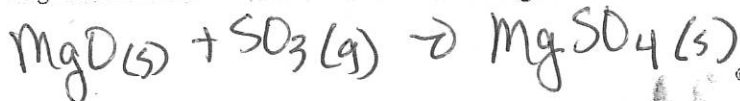
8. A sample of carbonic acid is heated.



9. A sample of potassium chlorate is heated.



10. Solid magnesium oxide is added to sulfur trioxide gas.



ROUND 4

Formation of a Precipitate

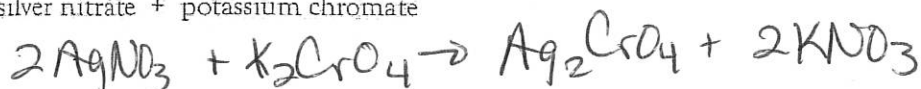
In order to predict double replacement reactions yielding precipitates, one must memorize the solubility rules listed on page 48.

Exercise 9-1: Predict and balance the following metathesis reactions based on the solubility of the products.

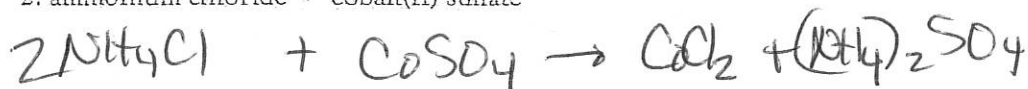
Use the abbreviations (aq) and (s) for the reactants and products. All reactants are aqueous.

Note: Some of these reactions do not go to completion.

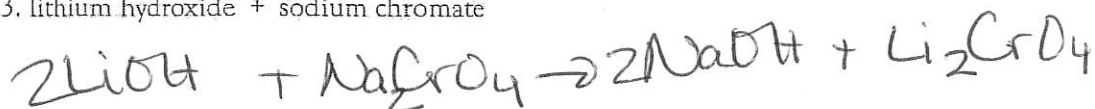
1. silver nitrate + potassium chromate



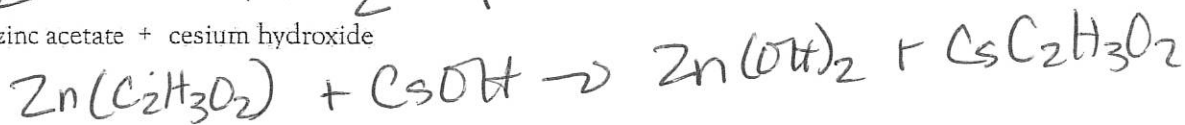
2. ammonium chloride + cobalt(II) sulfate



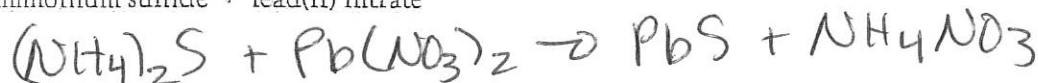
3. lithium hydroxide + sodium chromate



4. zinc acetate + cesium hydroxide



5. ammonium sulfide + lead(II) nitrate



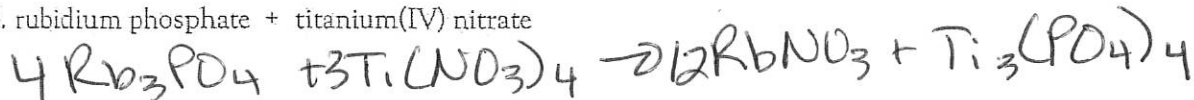
6. iron(III) sulfate + barium iodide



7. chromium(III) bromide + sodium nitrate



8. rubidium phosphate + titanium(IV) nitrate



9. ammonium carbonate + nickel(II) chloride



10. tin(IV) nitrate + potassium sulfite



Note: Correct molecular formulas must be written for both the reactants and products before an equation may be balanced.