WORKSHOP 4: Name: _____
Writing and Balancing Equations Section _____

Part 1: Write and balance the following word equations. Remember that hydrogen, oxygen, nitrogen, chlorine, and bromine are diatomic molecules.

1. Magnesium metal and oxygen gas yield magnesium oxide.

2. Potassium chlorate, when heated, decomposes to potassium chloride and oxygen.

3. Solid iron reacts with oxygen gas to produce rust (a combination of iron oxides with a formula of Fe_3O_4).

4. Magnesium metal and hydrochloric acid react to yield magnesium chloride and hydrogen gas.

5. Sodium metal reacts with water to produce sodium hydroxide and hydrogen gas.

6. Sulfur reacts with oxygen to form sulfur dioxide.

7. Solid zinc and sulfuric acid react to form zinc sulfate and hydrogen gas.

8. Carbon and oxygen gas react to produce carbon dioxide.

9. Hydrogen and oxygen react to yield water.

1. Solid aluminum reacts with hydrochloric acid to produce aluminum chloride and hydrogen gas.

11. Nitrogen and hydrogen are gases that react to form ammonia gas (NH_3).

12. Fluorine gas reacts with water to give hydrogen fluoride and oxygen gas

1. Lead (II) nitrate decomposes, when heated, to yield lead (II) oxide, nitrogen monoxide gas, and oxygen gas

14. Aluminum and oxygen, when heated together, give aluminum oxide.

15. Phosphorus and bromine will react and form phosphorus tribromide.

16. Sodium hydrogen carbonate reacts with nitric acid to yield sodium nitrate and water and carbon dioxide.

17. Xenon gas and fluorine gas react over a platinum catalyst to form xenon hexafluoride.

Name_____ Section _____

Part 2: Complete and balance the following double displacement reactions. Use the chart on page 62 to predict insoluble products.

1. Sodium chloride solution reacts with a silver nitrate solution.

1. Barium chloride solution reacts with sulfuric acid.

2. Sodium hydroxide reacts with hydrochloric acid.

3. Solutions of Iron (III) chloride and silver nitrate are mixed.

4. Phosphoric acid reacts with a solution of calcium hydroxide.

5. Potassium carbonate solution reacts with a solution of cobalt(II) bromide.

6. Bismuth(III) chloride solution reacts with hydrosulfuric acid.

7. Potassium acetate solution reacts with hydrochloric acid.

8. Sodium sulfite solution reacts with hydrochloric acid.

Single Replacement Reactions: Activity Series

Li > K > Ba > Sr > Ca > Na > Mg > Al > Mn > Zn > Fe > Cd > Co > Ni > Sn > Pb

The above elements all replace hydrogen from acids.
The most active can replace H from water (Li – Na) . Mg can slowly react with hot water.
Al – Pb react with acids but not with water.

H > Cu > Ag > Hg > Au (Cu, Hg, Ag, do not replace H from acids)

Predict whether the following will react, and what the products will be if they do. If no reaction is predicted, write NR. Balance the equations

9. $H_2 + CuO \rightarrow$

10. $Mg + MnCl_2 \rightarrow$

11. $Mg + AgNO_3 \rightarrow$

12. $K + Na_2SiO_3 \rightarrow$

13. $Cu + Fe_2O_3 \rightarrow$

Decomposition Reactions

14. $Mg(OH)_2 \rightarrow$

15. $H_2CO_3 \rightarrow$

16. $LiClO_4 \rightarrow$

Combination reactions

17. $P_2O_3 + H_2O \rightarrow$

18. $SO_2 + H_2O \rightarrow$