UNIT

Name: _____

Chemistry: *Balancing Chemical Equations*

*Directions: First, balance each of the chemical equations below. Then, classify each reaction as **synthesis, decomposition, single-replacement**, or **double-replacement**. To earn full credit, write the words out when classifying.*

Balance the equation...	**...and classify it.**
1. ___ Sb + ___ Cl_2 → ___ $SbCl_3$	_____
2. ___ Mg + ___ O_2 → ___ MgO	_____
3. ___ $CaCl_2$ → ___ Ca + ___ Cl_2	_____
4. ___ $NaClO_3$ → ___ NaCl + ___ O_2	_____
5. ___ Fe + ___ HCl → ___ $FeCl_2$ + ___ H_2	_____
6. ___ CuO + ___ H_2 → ___ Cu + ___ H_2O	_____
7. ___ Al + ___ H_2SO_4 → ___ $Al_2(SO_4)_3$ + ___ H_2	_____
8. ___ $MgBr_2$ + ___ Cl_2 → ___ $MgCl_2$ + ___ Br_2	_____
9. ___ SnO_2 + ___ C → ___ Sn + ___ CO	_____
10. ___ $Pb(NO_3)_2$ + ___ H_2S → ___ PbS + ___ HNO_3	_____
11. ___ HgO → ___ Hg + ___ O_2	_____
12. ___ $KClO_3$ → ___ KCl + ___ O_2	_____
13. ___ N_2 + ___ H_2 → ___ NH_3	_____
14. ___ NaBr + ___ Cl_2 → ___ NaCl + ___ Br_2	_____
15. ___ Zn + ___ $AgNO_3$ → ___ $Zn(NO_3)_2$ + ___ Ag	_____
16. ___ Sn + ___ Cl_2 → ___ $SnCl_4$	_____
17. ___ $Ba(OH)_2$ → ___ BaO + ___ H_2O	_____

Word Equations

Write the word equations below as chemical equations and balance:

1) Zinc and lead (II) nitrate react to form zinc nitrate and lead.

2) Aluminum bromide and chlorine gas react to form aluminum chloride and bromine gas.

3) Sodium phosphate and calcium chloride react to form calcium phosphate and sodium chloride.

4) Potassium metal and chlorine gas combine to form potassium chloride.

5) Aluminum and hydrochloric acid react to form aluminum chloride and hydrogen gas.

6) Calcium hydroxide and phosphoric acid react to form calcium phosphate and water.

7) Copper and sulfuric acid react to form copper (II) sulfate and water and sulfur dioxide.

8) Hydrogen gas and nitrogen monoxide react to form water and nitrogen gas.

Worksheet: Writing Equations

Write equations for the following reactions:

1) The reaction of ammonia with iodine to form nitrogen triiodide (NI_3) and hydrogen gas.

2) The combustion of propane (C_3H_8).

3) The incomplete combustion of propane to form CO and water.

4) The reaction of nitric acid with potassium hydroxide.

5) The reaction of copper (II) oxide with hydrogen to form copper metal and water.

6) The reaction of iron metal with oxygen to form iron (III) oxide.

7) The complete combustion of 2,2-dimethylpropane (C_4H_{10}) in oxygen.

8) The reaction of $AlBr_3$ with $Mg(OH)_2$

9) The decomposition of hydrogen peroxide to form water and oxygen.

10) The reaction of ammonia with sulfuric acid.

Predicting the products of chemical reactions

Predict the products of the following reactions:

1) __ Ag + __ $CuSO_4$ → Type:_____

2) __ NaI + __ $CaCl_2$ → Type:_____

3) __ O_2 + __ H_2 → Type:_____

4) __ HNO_3 + __ $Mn(OH)_2$ → Type:_____

5) __ $AgNO_2$ + __ $BaSO_4$ → Type:_____

6) __ HCN + __ $CuSO_4$ → Type:_____

7) __ H_2O + __ AgI → Type:_____

8) __ HNO_3 + __ $Fe(OH)_3$ → Type:_____

9) __ $LiBr$ + __ $Co(SO_3)_2$ → Type:_____

10) __ $LiNO_3$ + __ Ag → Type:_____

13) __ $AlCl_3$ + __ Cs → Type:_____

14) __ $Al(NO_3)_3$ + __ Ga → Type:_____

15) __ H_2SO_4 + __ NH_4OH → Type:_____

16) __ CH_3COOH + __ O_2 → Type:_____

17) __ C_4H_8 + __ O_2 → Type:_____

18) __ KCl + __ $Mg(OH)_2$ → Type:_____

19) __ Zn + __ $Au(NO_2)_2$ → Type:_____

20) __ KOH + __ H_2SO_4 → Type:_____

21) __ BaS + __ $PtCl_2$ → Type:_____