Name _____date _____ period ____

Counting Atoms and Balancing Equations

Put your answers on another sheet, and remember to show your work when you need too.

For the following molecules, list the different elements that are present in the molecule.

1.
2. H_2O
3. NaCl
4. $C_6H_{12}O_6$
5. $HeNaClPbTiCoC_3$
6. $2C_8H_{18}$
7. $C_{16}H_{10}N_2O_2$
8. S_8
9. HHeOCo

For the following molecules, list each element symbol; next to each symbol put how many atoms there are of that element, and then total up all the atoms in the molecule.

10.
11. H_2O
12. NaCl
13. $C_6H_{12}O_6$
14. HeNaClPbTeI
15. $2C_8H_{18}$
16. $C_{16}H_{10}N_2O$
17. HHeOCo
18. COPbZnHITi

Balance the following equations. Use a separate sheet of paper to work them out. You must show your work!

19. ____Mg + ____O_2 → ____MgO
20. ____H_2O_2 → ____H_2O + ____ O_2
21. ____H_2 + ____Cl_2 → ____HCl
22. ____ C_8H_{18} + ____O_2 → ____ CO_2 + ____ H_2O
23. ____ CO + ____ O_2 → ____ CO_3
24. ____ Na + ____Cl_2 → ____ $NaCl$
25. ____CH_4 + ____ O_2 → ____CO_2 + ____ H_2O
26. ____$Pb(NO_3)_2$ + ____ K_2CrO_4 → ____$PbCrO_4$ + ____KNO_3
27. ____KOH + ____ HCl → ____KCl + ____H_2O
28. ____$Pb(NO_3)_2$ + ____KI → ____KNO_3 + ____PbI_2
29. ____$NaHCO_3$ → ____H_2O + ____CO_2 + ____Na_2CO_3
30. ____$NaCl$ + ____H_2SO_4 → ____Na_2SO_4 + ____HCl
31. ____FeS + ____HCl → ____$FeCl_2$ + ____H_2S
32. ____KI + ____Br_2 → ____KBr + ____I_2
31. ____$NaCl$ + ____F_2 → ____NaF + ____Cl_2
32. ____$AgNO_3$ + ____$MgCl_2$ → ____$AgCl$ + ____$Mg(NO_3)_2$
33. ____$AlBr_3$ + ____K_2SO_4 → ____KBr + ____$Al_2(SO_4)_3$
34. ____Cu_2O + ____NO → ____CuO_2 + ____N_2
35. ____C_3H_8 + ____O_2 → ____CO_2 + ____H_2O
36. ____P + ____O_2 → ____P_2O_5
37. ____Ag_2O → ____Ag + ____O_2
38. ____S_8 + ____O_2 → ____SO_3

39. ____CO_2 + ____H_2O → ____$C_6H_{12}O_6$ + ____O_2
40. ____K + ____$MgBr_2$ → ____KBr + ____Mg
41. ____HCl + ____$CaCO_3$ → ____$CaCl_2$ + ____H_2O + ____CO_2

Convert the names below into formulas in an equation then balance the equation.

42. Aluminum bromide plus chlorine yields aluminum chloride plus bromine.

43. Sodium phosphate + calcium chloride yields calcium phosphate + sodium chloride.

44. Potassium chlorate when heated yields potassium chloride + oxygen gas.

45. Hydrogen plus nitrogen monoxide yields water plus nitrogen.

Classification of Chemical Reactions

Balance the following equations then **classify** the reactions below as synthesis, decomposition, single replacement, double replacement, or combustion.

46. ____H_2 + ____O_2 → ____H_2O
47. ____Zn + ____H_2SO_4 → ____$ZnSO_4$ + ____H_2
48. ____CO + ____O_2 → ____CO_2
49. ____HgO → ____Hg + ____O_2
50. ____$C_{10}H_{20}$ + ____O_2 → ____CO_2 + ____H_2O
51. ____H_2O → ____H_2 + ____O_2
52. ____KBr + ____Cl_2 → ____KCl + ____Br_2
53. ____CaO + ____H_2O → ____$Ca(OH)_2$
54. ____$AgNO_3$ + ____NaCl → ____AgCl + ____$NaNO_3$
55. ____H_2O_2 → ____H_2O + ____O_2
56. ____$Ca(OH)_2$ + ____H_2SO_4 → ____$CaSO_4$ + ____H_2O