U4LM2B WS Ionic Bonding and Writing Formulas **Name: ____KEY__**

Part A. Use the criss-cross method to write the formulas produced from the listed ions.

	Cl^-	CO_3^{2-}	OH^-	SO_4^{2-}	PO_4^{3-}	NO_3^-
Na^+	$NaCl$	Na_2CO_3	$NaOH$	Na_2SO_4	Na_3PO_4	$NaNO_3$
NH_4^+	NH_4Cl	$(NH_4)_2CO_3$	NH_4OH	$(NH_4)_2SO_4$	$(NH_4)_3PO_4$	NH_4NO_3
K^+	KCl	K_2CO_3	KOH	K_2SO_4	K_3PO_4	KNO_3
Ca^{2+}	$CaCl_2$	$CaCO_3$	$Ca(OH)_2$	$CaSO_4$	$Ca_3(PO_4)_2$	$Ca(NO_3)_2$
Zn^{2+}	$ZnCl_2$	$ZnCO_3$	$Zn(OH)_2$	$ZnSO_4$	$Zn_3(PO_4)_2$	$Zn(NO_3)_2$
Fe^{3+}	$FeCl_3$	$Fe_2(CO_3)_3$	$Fe(OH)_3$	$Fe_2(SO_4)_3$	$FePO_4$	$Fe(NO_3)_3$
Al^{3+}	$AlCl_3$	$Al_2(CO_3)_3$	$Al(OH)_3$	$Al_2(SO_4)_3$	$AlPO_4$	$Al(NO_3)_3$
Co^{3+}	$CoCl_3$	$Co_2(CO_3)_3$	$Co(OH)_3$	$Co_2(SO_4)_3$	$CoPO_4$	$Co(NO_3)_3$
Fe^{2+}	$FeCl_2$	$FeCO_3$	$Fe(OH)_2$	$FeSO_4$	$Fe_3(PO_4)_2$	$Fe(NO_3)_2$
Mg^{2+}	$MgCl_2$	$MgCO_3$	$Mg(OH)_2$	$MgSO_4$	$Mg_3(PO_4)_2$	$Mg(NO_3)_2$
H^+	HCl	H_2CO_3	H_2O	H_2SO_4	H_3PO_4	HNO_3

Part B. Write the names of the compounds formed in the above table.

	Cl^-	CO_3^{2-}	OH^-	SO_4^{2-}	PO_4^{3-}	NO_3^-
Na^+	Sodium chloride	Sodium carbonate	Sodium hydroxide	Sodium sulfate	Sodium phosphate	Sodium nitrate
NH_4^+	Ammonium chloride	Ammonium carbonate	Ammonium hydroxide	Ammonium sulfate	Ammonium phosphate	Ammonium nitrate
K^+	Potassium chloride	Potassium carbonate	Potassium hydroxide	Potassium sulfate	Potassium phosphate	Potassium nitrate
Ca^{2+}	Calcium chloride	Calcium carbonate	Calcium hydroxide	Calcium sulfate	Calcium phosphate	Calcium nitrate
Zn^{2+}	Zinc (II) chloride	Zinc (II) carbonate	Zinc (II) hydroxide	Zinc (II) sulfate	Zinc (II) phosphate	Zinc (II) nitrate
Fe^{3+}	Iron (III) chloride	Iron (III) carbonate	Iron (III) hydroxide	Iron (III) sulfate	Iron (III) phosphate	Iron (III) nitrate
Al^{3+}	Aluminum chloride	Aluminum carbonate	Aluminum hydroxide	Aluminum sulfate	Aluminum phosphate	Aluminum nitrate
Co^{3+}	Cobalt (III) chloride	Cobalt (III) carbonate	Cobalt (III) hydroxide	Cobalt (III) sulfate	Cobalt (III) phosphate	Cobalt (III) nitrate
Fe^{2+}	Iron (II) chloride	Iron (II) carbonate	Iron (II) hydroxide	Iron (II) sulfate	Iron (II) phosphate	Iron (II) nitrate
Mg^{2+}	Magnesium chloride	Magnesium carbonate	Magnesium hydroxide	Magnesium sulfate	Magnesium phosphate	Magnesium nitrate
H^+	Hydrogen chloride	Hydrogen carbonate	water	Hydrogen sulfate	Hydrogen phosphate	Hydrogen nitrate

I. Name the following Ionic Compounds:

1. $LiBr$ lithium bromide
2. $CuC_2H_3O_2$ copper (I) acetate
3. $PbSO_3$ lead (II) sulfite
4. $NaClO_3$ sodium chlorate
5. CaC_2O_4 calcium oxalate
6. $NaHSO_4$ sodium bisulfate
7. Hg_2Cl_2 mercury (I) chloride
8. $NaHCO_3$ sodium bicarbonate
9. $NiBr_3$ nickel (III) bromide
10. $AuCl_3$ gold (III) chloride
11. $KMnO_4$ potassium permanganate

II. Name the following Covalent Compounds:

1. CO_2 carbon dioxide
2. CO carbon monoxide
3. SO_2 sulfur dioxide
4. SO_3 sulfur trioxide
5. N_2O dinitrogen monoxide
6. NO nitrogen monoxide
7. N_2O_3 dinitrogen trioxide
8. NO_2 nitrogen dioxide
9. N_2O_4 dinitrogen tetroxide
10. N_2O_5 dinitrogen pentoxide
11. PCl_3 phosphorous trichloride
12. PCl_5 phosphorous pentachloride
13. NH_3 nitrogen trihydride
14. SCl_6 sulfur hexachloride
15. P_2O_5 diphosphorous pentoxide
16. CCl_4 carbon tetrachloride
17. SiO_2 silicon dioxide
18. CS_2 carbon disulfide
19. OF_2 oxygen difluoride
20. PBr_3 phosphorous tribromide

III. Write the formulas for the following compounds:

1. ammonium phosphate $(NH_4)_4PO_4$
2. iron (II) oxide FeO
3. iron (III) oxide Fe_2O_3
4. carbon monoxide CO
5. calcium chloride $CaCl_2$
6. potassium nitrate KNO_3
7. magnesium hydroxide $Mg(OH)_2$
8. aluminum sulfate $Al_2(SO_4)_3$
9. copper (II) sulfate $CuSO_4$
10. lead (IV) chromate $Pb(CrO_4)$
11. diphosphorus pentoxide P_2O_5
12. potassium permanganate $KMnO_4$
13. sodium hydrogen carbonate $NaHCO_3$
14. zinc nitrate $Zn(NO_3)_2$
15. aluminum sulfite $Al_2(SO_3)_3$

IV. Hydrocarbons

Give the *name* and *chemical formula* of the first ten alkanes that have the general formula C_nH_{2n+2}

1. CH_4 methane
2. C_2H_6 ethane
3. C_3H_8 propane
4. C_4H_{10} butane
5. C_5H_{12} pentane
6. C_6H_{14} hexane
7. C_7H_{16} heptane
8. C_8H_{18} octane
9. C_9H_{20} nonane
10. $C_{10}H_{22}$ decane