P 4.3 (pg 1 of 2) **Writing & Naming Ionic Formulas** Name_____

(Using Polyatomic Ions)

Write the formula or the name (as appropriate) for the following compounds.

1. magnesium nitrate
2. lithium cyanide
3. aluminum sulfate
4. mercury(II) phosphate
5. iron(III) nitride
6. $Ba(OH)_2$
7. $Ga_2(CrO_4)_3$
8. K_2SO_3
9. Na_2SO_4
10. $AgNO_3$
11. $V_3(PO_4)_5$
12. magnesium acetate
13. sodium hydroxide
14. gallium sulfite
15. copper(II) phosphite
16. scandium(III) phosphide
17. $Ca(ClO)_2$
18. $Ni_2(Cr_2O_7)_3$
19. $Au_2C_2O_4$
20. Na_2HPO_4
21. AgCN
22. $Mo_3(PO_3)_5$

Writing & Naming Ionic Formulas

(Using Polyatomic Ions)

ANSWERS

1. Mg^{2+} (NO_3^-) criss-cross to get $Mg(NO_3)_2$
2. Li^+ CN^- criss-cross to get LiCN
3. Al^{3+} (SO_4^{2-}) criss-cross to get $Al_2(SO_4)_3$
4. Hg^{2+} (PO_4^{3-}) criss-cross to get $Hg_3(PO_4)_2$
5. Fe^{3+} N^{3-} criss-cross to get Fe_3N_3 then reduce to get FeN
6. Ba^{2+} $(OH)^-$, resulting in barium hydroxide
7. Ga^{3+} (CrO_4^{2-}) resulting in gallium chromate
8. K^+ (SO_3^{2-}) resulting in potassium sulfite
9. Na^+ (SO_4^{2-}) resulting in sodium sulfate
10. Ag^+ (NO_3^-) resulting in silver nitrate (silver is always +1, no need for a Roman #
11. Since the phosphate carries a 3− charge, 5 of them × 3− equals 15−, and the vanadium ions total charge must be opposite in sign, but equal in magnitude. Thus 3 vanadium ions × "what charge" = 15+? Thus the vanadium must be 5+, resulting in vanadium(V) phosphate
12. Mg^{2+} $(C_2H_3O_2^-)$ criss-cross to get $Mg(C_2H_3O_2)_2$
13. Na^+ OH^- criss-cross to get NaOH
14. Ga^{3+} (SO_3^{2-}) criss-cross to get $Ga_2(SO_3)_3$
15. Cu^{2+} (PO_3^{3-}) criss-cross to get $Cu_3(PO_3)_2$
16. Sc^{3+} P^{3-} criss-cross to get Sc_3P_3 then reduce to get ScP
17. Ca^{2+} ClO^- resulting in calcium hypochlorite
18. Since the dichromate carries a 2− charge, 3 of them × 2− equals 6−, and the nickel ions total charge must be opposite in sign, but equal in magnitude. Thus 2 nickel ions × "what charge" = 6+? Thus the nickel must be 3+ resulting in nickel(III) dichromate
19. Since the oxalate carries a 2− charge, one of them equals 2−, and the gold ions total charge must be opposite in sign, but equal in magnitude. Thus 2 gold ions × "what charge" = 2+? Thus the gold must be 1+ resulting in gold(I) oxalate (Note that this is an exception to the reduce rule because if the formula was reduced, it would no longer symbolize oxalate which must be C_2O_4)
20. Na^+ HPO_4^{2-} resulting in sodium monohydrogen phosphate
21. Ag^+ CN^- resulting in silver(I) cyanide
22. Since the phosphite carries a 3− charge, 5 of them × 3− equals 15−, and the molybdenum ions total charge must be opposite in sign, but equal in magnitude. Thus 3 molybdenum ions × "what charge" = 15+? Thus the molybdenum must be 5+, resulting in molybdenum(V) phosphite