P E3 (pg 1 of 2)

Writing & Naming Ionic Formulas

(Using Polyatomic Ions)

Name_____

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