

3. Nitrogen reacts with hydrogen to form two compounds. Compound A contains 18.8 g of nitrogen for each 2.7 g hydrogen. Compound B contains 13.3 g of nitrogen for each 2.9 g hydrogen. What is the mass ratio of nitrogen per gram of hydrogen in the two compounds?
4. Identify the number and kinds of atoms present in a molecule of each compound.
- a. citric acid, $C_6H_8O_7$ c. glycine, $C_2H_5NO_2$
 b. chloroform, $CHCl_3$ d. sulfur hexafluoride, SF_6

SECTION 6.3 IONIC CHARGES

1. What is the charge on the ion typically formed by each element?
- a. oxygen O^{2-} c. sodium Na^+ e. nickel, 2 electrons lost Ni^{2+}
 b. iodine I^- d. aluminum Al^{3+} f. magnesium Mg^{2+}
2. How many electrons does the neutral atom gain or lose when each ion forms?
- a. Cr^{3+} lost 3 c. Li^+ lost 1 e. Cl^- gained 1
 b. P^{3-} gained 3 d. Ca^{2+} gained 2 f. O^{2-} gained 2
3. Name each ion. Identify each as a cation or anion.
- a. Sn^{2+} cation c. Br^- anion e. H^- anion
 b. Co^{3+} cation d. K^+ cation f. Mn^{2+} cation
4. Write the formula (including charge) for each ion. Use Table 6.4 if necessary.
- a. carbonate ion $(CO_3)^{2-}$ c. sulfate ion $(SO_4)^{2-}$ e. chromate ion $(CrO_4)^{2-}$
 b. nitrate ion $(NO_3)^-$ d. hydroxide ion $(OH)^-$ f. ammonium ion $(NH_4)^+$
5. Name the following ions. Identify each as a cation or anion.
- a. CN^- cyanide c. PO_4^{3-} phosphate, anion e. Ca^{2+} calcium ion ← cation
 b. HCO_3^- hydrogen carbonate d. Cl^- chloride f. SO_3^{2-} sulfite ← anion

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anions

SECTION 6.4 IONIC COMPOUNDS

1. Write the formulas for these binary ionic compounds.
- a. magnesium oxide c. potassium iodide KI e. sodium sulfide Na_2S
 b. tin(II) fluoride d. aluminum chloride $AlCl_3$ f. ferric bromide $FeBr_3$
2. Write the formulas for the compounds formed from these pairs of ions.
- a. Ba^{2+}, Cl^- $BaCl_2$ c. Ca^{2+}, S^{2-} CaS e. Al^{3+}, O^{2-} Al_2O_3
 b. Ag^+, I^- AgI d. K^+, Br^- KBr f. Fe^{2+}, O^{2-} FeO
3. Name the following binary ionic compounds.
- a. MnO_2 e. $CaCl_2$ g. $CuCl_2$
 b. Li_3N f. K_2S h. $SnCl_4$

MgO_2
 SnF_2

iron
 Ferric = Fe^{3+}
 Ferrous = Fe^{2+}
 *not expected to know this.

- a. manganese oxide c. calcium chloride e. nickel II chloride g. Copper II chloride
 b. lithium nitride d. strontium bromide f. potassium sulfide h. tin IV chloride