Calculate the % composition for $Mg(OH)_2$.

$$24.3\ g + 2(16.0\ g) + 2(1.0\ g) = 58.3\ g$$

$$\frac{24.3\ g\ Mg}{58.3\ g\ Mg(OH)_2} \times 100\% = 41.7\%\ Mg \qquad \frac{32.0\ g\ O}{58.3\ g\ Mg(OH)_2} \times 100\% = 54.9\%\ O$$

$$\frac{2.0\ g\ H}{58.3\ g\ Mg(OH)_2} \times 100\% = 3.4\%\ H$$

What is the empirical formula for a compound if a 2.50 g sample contains 0.900 g of calcium and 1.60 g of chlorine?

$$?\ mol\ Ca = 0.900\ \cancel{g\ Ca} \times \frac{1\ mol\ Ca}{40.1\ \cancel{g\ Ca}} = 0.0224\ mol\ Ca$$

$$?\ mol\ Cl = 1.60\ \cancel{g\ Cl} \times \frac{1\ mol\ Cl}{35.5\ \cancel{g\ Cl}} = 0.0451\ mol\ Cl$$

$$Ca_{0.0224}Cl_{0.0451}$$
$$CaCl_2$$

Calculate the % composition for potassium sulfate.

$$K_2SO_4$$

$$2(39.1\ g) + 32.1\ g + 4(16.0\ g) = 174.3\ g$$

$$\frac{78.2\ g\ K}{174.3\ g\ K_2SO_4} \times 100\% = 44.9\%\ K \qquad \frac{32.1\ g\ S}{174.3\ g\ K_2SO_4} \times 100\% = 18.4\%\ S$$

$$\frac{64.0\ g\ O}{174.3\ g\ K_2SO_4} \times 100\% = 36.7\%\ O$$

A compound is 85.7 % carbon and 14.3 % hydrogen. Calculate the empirical formula.

$$?\ mol\ C = 85.7\ \cancel{g\ C} \times \frac{1\ mol\ C}{12.0\ \cancel{g\ C}} = 7.14\ mol\ C \qquad ?\ mol\ H = 14.3\ \cancel{g\ H} \times \frac{1\ mol\ H}{1.0\ \cancel{g\ H}} = 14.3\ mol\ H$$

$$C_{7.14}H_{14.3}$$

$$CH_2$$