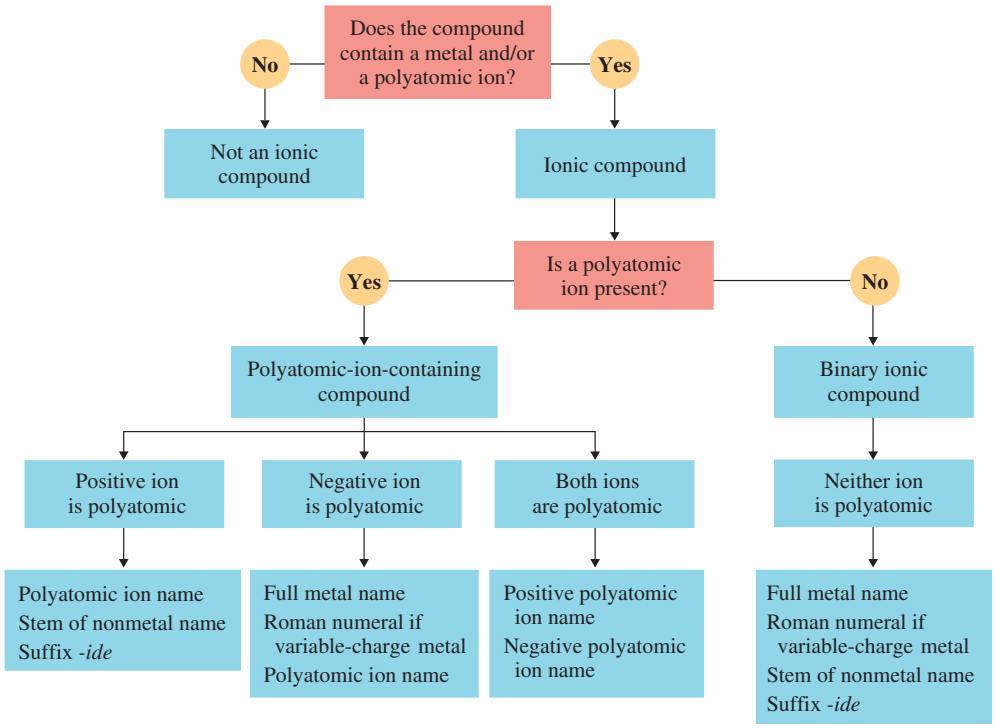
CHEMISTRY AT A GLANCE

Nomenclature of Ionic Compounds



b. The positive ion present is iron(III). The negative ion is the polyatomic sulfate ion (SO_4^{2-}). The name of the compound is *iron(III) sulfate.* The determination that iron is present as iron(III) involves the following calculation dealing with charge balance:

$$2(\text{iron charge}) + 3(\text{sulfate charge}) = 0$$

The sulfate charge is −2. (You had to memorize that.) Therefore,

$$2(\text{iron charge}) + 3(-2) = 0$$
$$2(\text{iron charge}) = +6$$
$$\text{Iron charge} = +3$$

c. Both the positive and the negative ions in this compound are polyatomic—the ammonium ion (NH_4^+) and the carbonate ion (CO_3^{2-}). The name of the compound is simply the combination of the names of the two polyatomic ions: *ammonium carbonate.*

Practice Exercise 4.10

Name the following compounds, which contain one or more polyatomic ions.

a. $Ba(NO_3)_2$ **b.** Cu_3PO_4 **c.** $(NH_4)_2SO_4$

Answers: **a.** Barium nitrate; **b.** Copper(I) phosphate; **c.** Ammonium sulfate

The Chemistry at a Glance feature above summarizes the "thought processes" involved in naming ionic compounds, both those with monatomic ions and those with polyatomic ions.