

ANALYZING DATA

Infer Rules for Naming Acids

Acids are a group of ionic compounds with unique properties. You can consider an acid to consist of an anion combined with as many hydrogen ions as needed to make the compound electrically neutral. Instead of following the normal conventions for naming ionic compounds, there are specific rules for the naming of acids.

Figure 1 shows the names and formulas for some common acids. **Figure 2** shows the names and formulas for some common anions.

Figure 1

Common Acids	
Formula	Name
HCl	hydrochloric acid
HBr	hydrobromic acid
HI	hydroiodic acid
H ₂ SO ₄	sulfuric acid
H ₂ SO ₃	sulfurous acid
HNO ₃	nitric acid
HNO ₂	nitrous acid
H ₃ PO ₄	phosphoric acid
H ₂ CO ₃	carbonic acid

Figure 2

Common Anions	
Formula	Name
Cl ⁻	chloride ion
Br ⁻	bromide ion
I ⁻	iodide ion
SO ₄ ²⁻	sulfate ion
SO ₃ ²⁻	sulfite ion
NO ₃ ⁻	nitrate ion
NO ₂ ⁻	nitrite ion
PO ₄ ³⁻	phosphate ion
CO ₃ ²⁻	carbonate ion

- 1. SEP Compare Data** Look at the chemical formulas for the acids in **Figure 1**. How does the atomic makeup of the first three acids differ from the other acids in the list?
- 2. SEP Compare Data** Look at the names for the first three acids in **Figure 1**. How do they differ from the names of the other acids in the list?
- 3. SEP Analyze Data** Compare the names for the acids in **Figure 1** and the ion names in **Figure 2**. Some of the ion names end with “-ate” and some end with “-ite.” How do the names of the acids relate to the names of these ions?
- 4. SEP Interpret Data** Compare the information in **Figure 1** and **Figure 2**. Use the data and your observations to write a set of general rules for naming an acid.
- 5. Apply Concepts** An S^{2-} ion is known as a sulfide ion. The chemical symbol for the acetate ion is $\text{C}_2\text{H}_3\text{O}_2^-$. Following the rules you identified, name the acids with these chemical formulas: H_2S and $\text{HC}_2\text{H}_3\text{O}_2$.