

## CHM 100: How to write the chemical formula of a simple acid

### IDENTIFY THE TYPE OF ACID

The names of the common acids all contain the word "acid". To write the formula of the acid, you also need to know *what kind of acid* you have.

The names of *binary acids* contain the *hydro-* prefix, attached to the stem name of (typically) a group VIIA element.

The names of *oxoacids* do not contain the *hydro-* prefix.

#### BINARY ACIDS

The formula of the acid starts with hydrogen (H), followed by the symbol of the other element.

Figure out the number of hydrogen atoms to use based on assuming the hydrogen has a charge of  $+1$  and the other element has whatever charge it would take *if it formed an anion*. For group VIIA elements, one hydrogen atom is required.

- Examples: hydrofluoric acid = HCl
- hydroiodic acid = HI

#### OXOACIDS

The formulas of these acids are based on polyatomic ions. Find out which polyatomic ion the acid is based on from the name, then assume that hydrogen will have a  $+1$  charge in the compound. Add enough hydrogens to neutralize the charge on the polyatomic ion.

- 1) If the acid's name ends in "-ic", the polyatomic ion in the acid ends in "-ate".
  - 2) If the acid's name ends in "-ous", the polyatomic ion in the acid ends in "-ite".
- Examples: carbonic acid =  $\text{H}_2\text{CO}_3$
  - sulfurous acid =  $\text{H}_2\text{SO}_3$
  - nitric acid =  $\text{HNO}_3$