Determining a Lewis Structure: Some Tricks/Guidelines

Several parameters of a valid Lewis structure can be calculated from just the chemical formula of a substance. These "rules" will work as long as you are dealing with a compound that obeys the octet rule.

Calculate the following attributes:

"Electrons needed" = N = 8 x (# of non-hydrogen atoms) + 2 x (# of hydrogen atoms)

"Electrons you have" = H = Sum of the number of valence electrons + charge adjustment

Then you can use these numbers to learn about the number of bonds and lone pairs for the correct Lewis structure(s):

"Shared electrons" = S = subtract "Electrons you have" from "Electrons needed" = N – H

Divide this number by 2 = the number of bonds in the Lewis structure

"Nonbonded Electrons" = subtract "Shared electrons" from "Electrons you have" = H – S

Divide this number by 2 = the number of lone pairs in the Lewis structure