

Drawing Lewis Structures

- Determine the number of valence electrons
 - Add one electron for each (-) charge
 - Subtract one electron for each (+) charge
- Establish connectivity and draw single bond between atoms
 - Start with the atom that gets the most bonds
 - If S or P, start with this
- Valence e-s - Bonding e-s = Remaining e-s
 - Add around each atom (starting from the outside atoms) to fill all valence shells.
 - If there are only 2 atoms, start with the most EN.
- If valence (octet) is not satisfied, then use a lone pair of electrons on adjacent atom to create a multiple bond to central atom.

When neutral:
 H - 1 bond
 O - 2 bonds
 N - 3 bonds
 C - 4 bonds

H - 2 electrons
 C,N,O,X - 8 electrons
 S, P - exceptions (d orbital)

TABLE 2.2 A Summary of Formal Charges on Atoms

Atom	C			N			O		
Structure	—C^{\oplus}	—C—	$\text{—}\ddot{\text{C}}^{\ominus}$	—N^{\oplus}	$\text{—}\ddot{\text{N}}\text{—}$	$\text{—}\ddot{\text{N}}^{\ominus}$	$\text{—}\ddot{\text{O}}^{\oplus}$	$\text{—}\ddot{\text{O}}\text{—}$	$\text{—}\ddot{\text{O}}^{\ominus}$
Number of bonds	3	4	3	4	3	2	3	2	1
Lone pairs	0	0	1	0	1	2	1	2	3
Formal charge	+1	0	-1	+1	0	-1	+1	0	-1