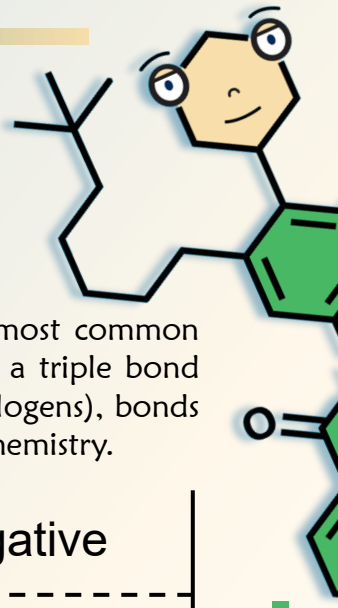
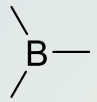
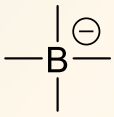
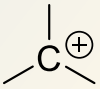
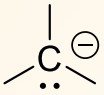
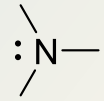
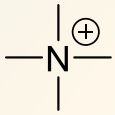
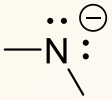
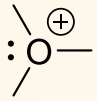
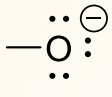
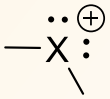
Number of Bonds



The table shows the number of bonds and lone pairs that are expected for the most common elements in organic chemistry. Note that a double bonds counts as 2 bonds, and a triple bond counts as 3 bonds. Because these numbers are always true (except for the higher halogens), bonds to hydrogen and lone pairs are usually omitted when writing structures in organic chemistry.

	Neutral	Positive	Negative
Boron	 3 bonds 0 lone pairs	rare	 4 bonds 0 lone pairs*
Carbon	 4 bonds 0 lone pairs	 3 bonds 0 lone pairs	 3 bonds 1 lone pair
Nitrogen**	 3 bonds 1 lone pair	 4 bonds 0 lone pairs	 2 bonds 2 lone pairs
Oxygen***	 2 bonds 2 lone pairs	 3 bonds 1 lone pairs	 1 bonds 3 lone pairs
Halogens****	 1 bonds 3 lone pairs	 2 bonds 2 lone pairs	 0 bonds 4 lone pairs
Hydrogen	1 bonds 0 lone pairs	 0 bonds 0 lone pairs	 0 bonds 1 lone pairs

* Technically, 2 bonds and 1 lone pair also gives negative boron, but this does not follow the octet rule. ** Phosphor (P) behaves similar to nitrogen, but it has d-orbitals and can therefore break the octet rule. Neutral phosphor can have 3 bonds and 1 lone pair, or 5 bonds and no lone pair. *** Sulfur (S) behaves similar to oxygen but can break the octet rule. Neutral sulfur can have 2 bonds and 2 lone pairs, 4 bonds and 1 lone pair, or 6 bonds and no lone pairs. **** The halogens (F, C, Br, I) usually follow the octet rule as shown here, but higher halogens (Cl, Br, I) do sometimes have more bonds.