Lewis Structures:

Used to understand bonding in cmpds

Used when discussing properties of cmpds

To draw:

1. sum the valence electrons from all atoms
   a. if anion involved—add an electron for each negative charge
   b. if cation involved—subtract an electron for each positive charge

2. write the symbols for the atoms and attached them using single bonds
   a. formulas are usually written in order in which atoms are connected

b. central atom is usually written first and is less electronegative than the other atoms

3. complete the octets of the atoms bonded to the central atom

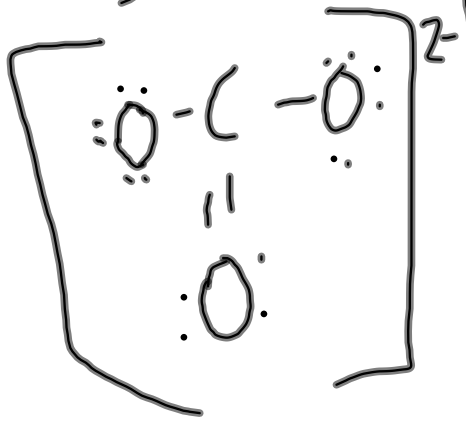
4. place leftover electrons on the central atom even if doing so means the central atom has more than 8 electrons

5. If there are not enough electrons to give the central atom an octet, try multiple bonds.

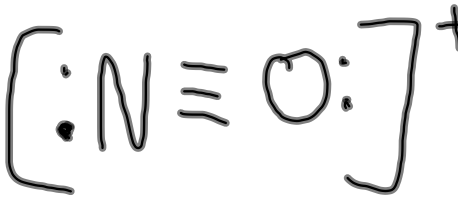
Draw Lewis structures for the following molecules and ions: PCl_3, CH_2Cl_2, HCN, CO_3^{2-}, NO^+, C_2H_4, BrO_3^-, ClO_2^-, PO_4^{3-}, NH_4^+, and CO_2

CO_3^{2-}

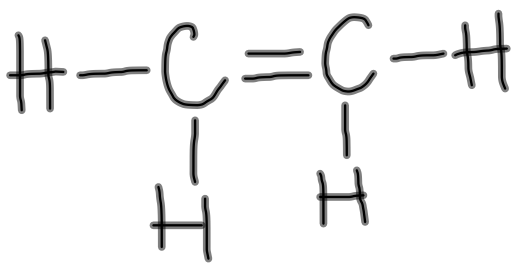
$4 + 3(6) + 2 = 24$



NO^+ $5 + 6 - 1 = 10$

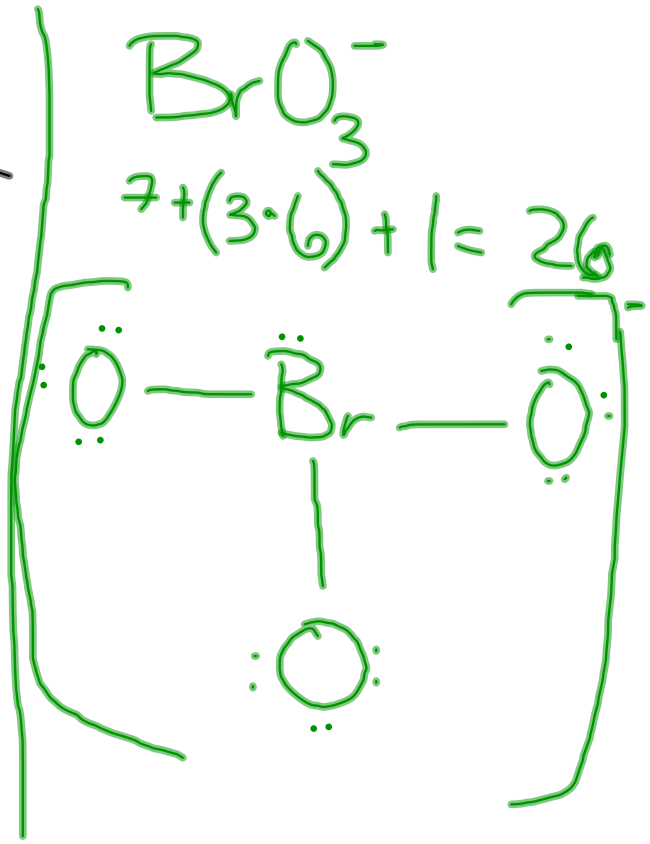


C_2H_4 $2(4)+4(1)=12$



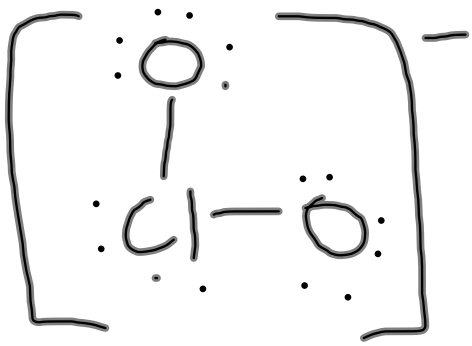
BrO_3^-

$7+(3\cdot6)+1=26$

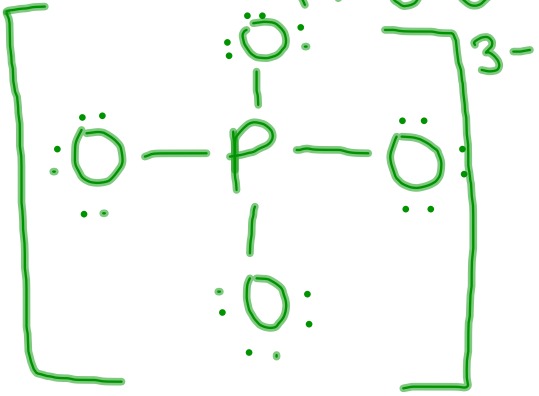


ClO_2^-

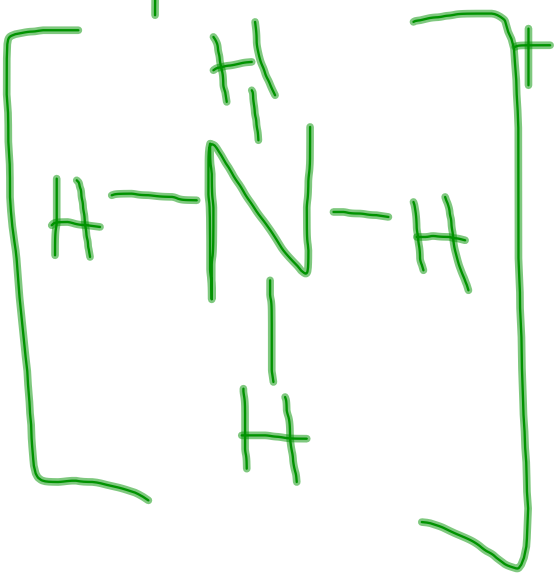
$7 + 2(6) + 1 = 20$



PO_4^{3-} $5 + 4(6) + 3 = 32$



NH_4^+ total e^- : 8



5+4(1)-1=8

CO_2 $\quad 4 + 6(2) = 16$

lone prs.