Lewis Structure

Rules for drawing Lewis structure:

1. calculate the total number of valance electrons for all atoms.

*** If the molecule (group) has negative charge, add electron(s) (that equal to the magnitude of that charge) to the total number of valence electrons.**

*** If the molecule (group) has positive charge, substract electron(s) (that equal to the magnitude of that charge) from the total number of valence electrons.**

2. Determine the central atom

3. Distribute the attached atoms around the central atom

4. Starts to distribute valence electrons as pairs to form covalent bonds between the central atom and attached atoms.

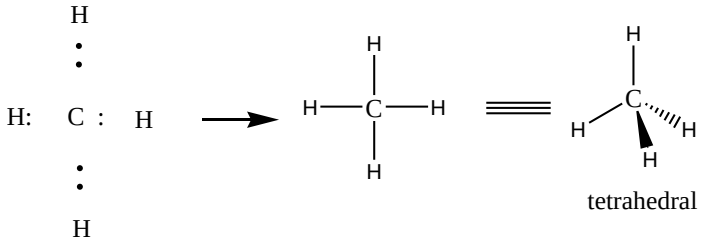
5. Distribute the rest of valence electrons around the attached atoms to acheive the octet.
6. If the central atom does not achieve the octet, Borrow pair(s) of electrons from attached atoms to make double or triple bonds between the central atom and attached atom(s).

6. If extra electrons remains, distribute them around the central atom as pairs

Ex 1; CH4

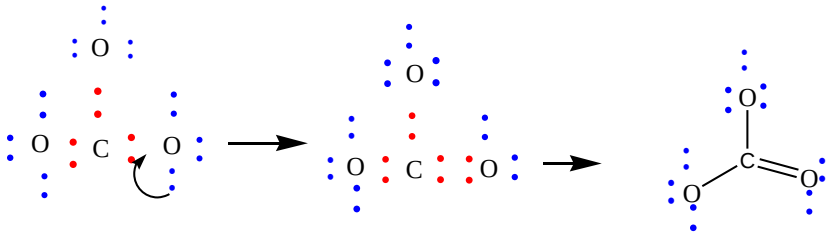
# of valence electrons = 4 + 1x 4 = 8

central atom is carbon and H-atoms are attached atoms



Ex 2: CO_3^{-2}

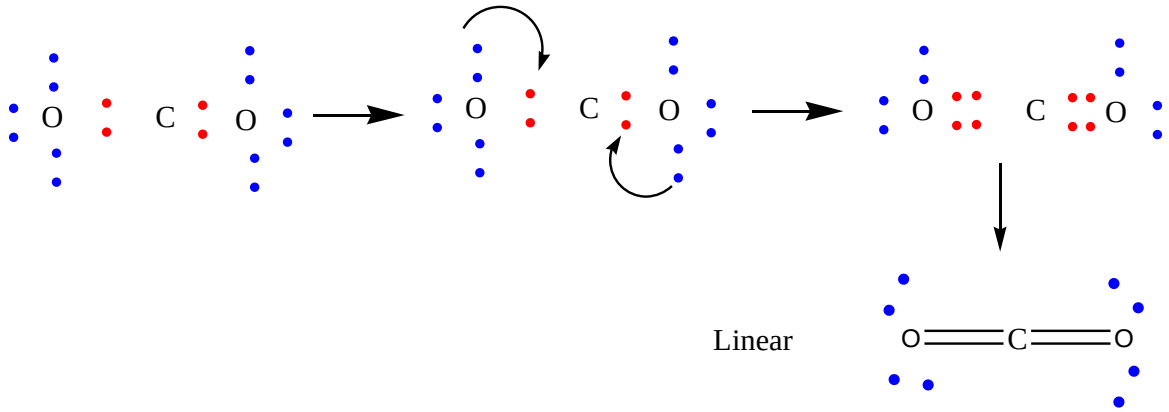
# of valence electrons = 4 + 3 X6 + 2= 24 **Central atom is C**



Ex 1; CO_2

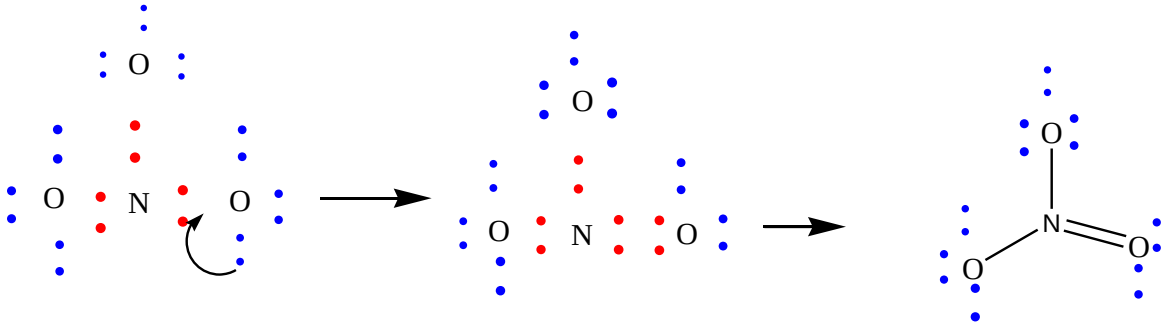
# of valence electrons = 4 + 2 x 6 = 16

central atom is carbon and H-atoms are attached atoms



Ex 2: NO_3^{-1}

# of valence electrons = 5 + 3 X6 + 1= 24 **Central atom is C**



Qustion: Draw the lewis structures for:

NH_4^+

PO_4^{-3}

CH_3CN

C_2H_5OH in which two carbons atoms attached with each other and one of them attached with oxygen atom where five hydrogen atoms attached with carbon atoms and the sixth one with oxygen atom.