Lewis structures

Review of steps to drawing Lewis structures:

1) Calculate number of valance electrons in the molecule.
2) Calculate the number of electrons each atom needs to complete its octet.
3) Subtract 1 from 2 – this will give you the number of bonding electrons in the molecule.
4) Draw the skeletal structure of the molecule with the least electronegative atom at the center.
5) Complete the octets of the atoms in the molecule.
6) Add multiple bonds to complete the octets (if necessary).

Examples:

1) Draw Lewis structures for the following molecules:

a) Cl_2

b) HCl

c) CH_3Cl

d) CF_4

e) PF_3

f) BF_3

g) $BeCl_2$

h) N_2H_4

i) H_2O

j) CH_3OH

k) CO

l) C_2H_4

j) HCN

2) Draw Lewis structures for the following ions:

a) Cl^-

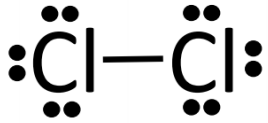
b) NH_4^+

c) OH^-

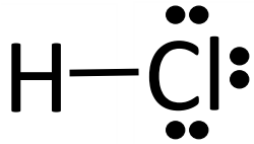
Answers:

1)

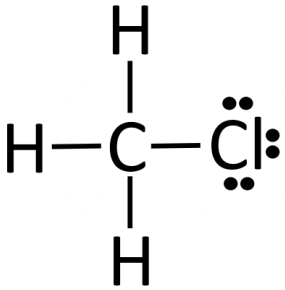
Cl_2



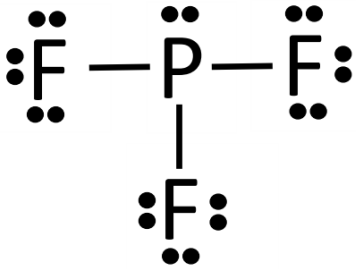
HCl



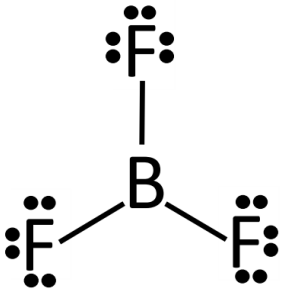
CH_3Cl



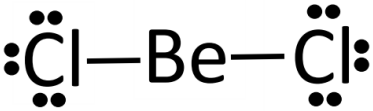
PF_3



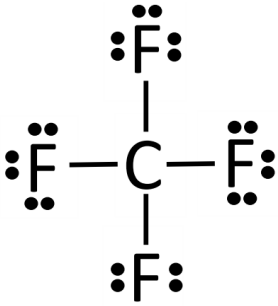
BF_3*



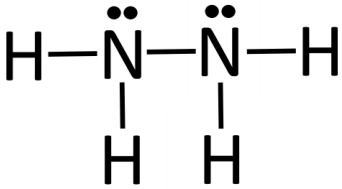
$BeCl_2$*



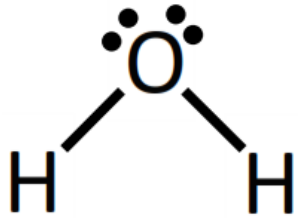
CF_4



N_2H_4

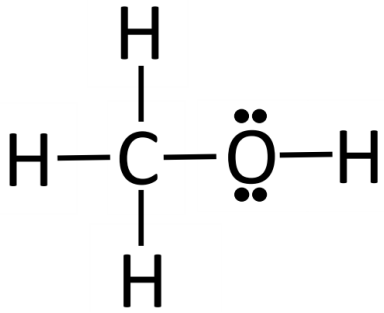


H_2O



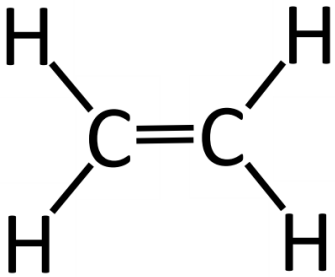
* Boron and Beryllium are exceptions to the octet rule.

CH_3OH



CO

C_2H_4

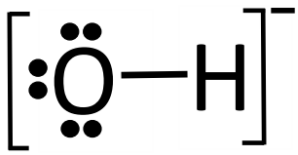
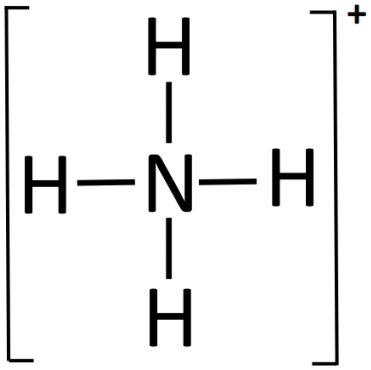


HCN

2)

Cl^-

OH^-



NH_4^+