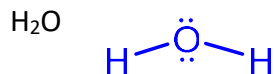
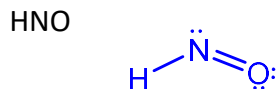
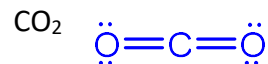
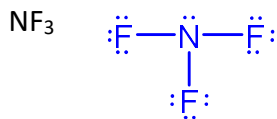
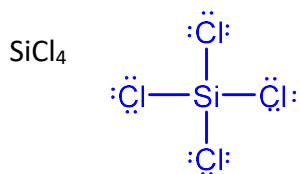


Chapter 9 Practice

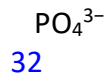
9.1 Covalent Molecules

1. Draw Lewis structures for each of the following molecules:

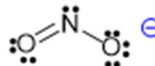
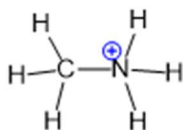
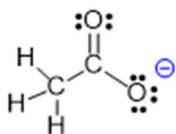


9.2 Molecules and Charge

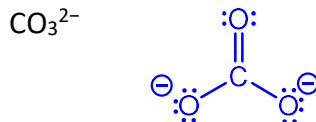
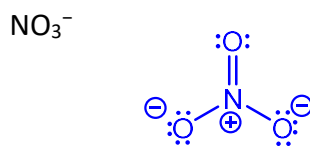
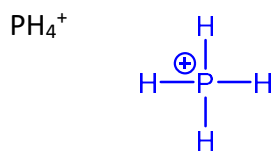
2. Indicate the total number of valence electrons in the following ions:



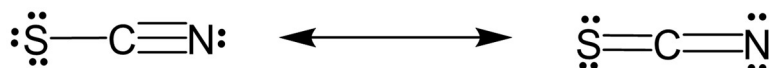
3. In the following structures, one atom has a nonzero formal charge. Locate that atom and indicate the charge.



4. Draw Lewis structures for the following ions. Show formal charges where appropriate.



5. Thiocyanate, SCN^- , can be drawn in two resonance structures, shown below. Calculate the formal charge on each atom of the two forms.



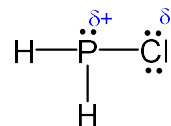
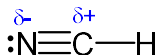
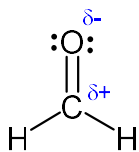
9.3 Shapes of Molecules

6. Complete the table below structure and geometry of the central atom of each molecule or ion.

Formula	Structure	Bonding sets (central atom)	Nonbonding sets (lone pairs)	Electronic geometry	Molecular geometry
CH ₄		4	0	tetrahedral	tetrahedral
HCN		2	0	linear	linear
NH ₃		3	1	tetrahedral	trigonal pyramidal
PCl ₃		3	1	tetrahedral	trigonal pyramidal
SCl ₂		2	2	tetrahedral	bent
CO ₃ ²⁻		3	0	trigonal planar	trigonal planar
SO ₄ ²⁻		4	0	tetrahedral	tetrahedral

9.4 Polar Bonds and Molecules

7. Each Lewis structure below contains one polar covalent bond. Identify that bond and use either the δ^+/δ^- notation or the arrow notation to show the direction of polarity.



8. Draw Lewis structures for each of the following molecules. Identify any polar covalent bonds and tell whether the molecule has a net dipole. Show the direction of the net dipole.

