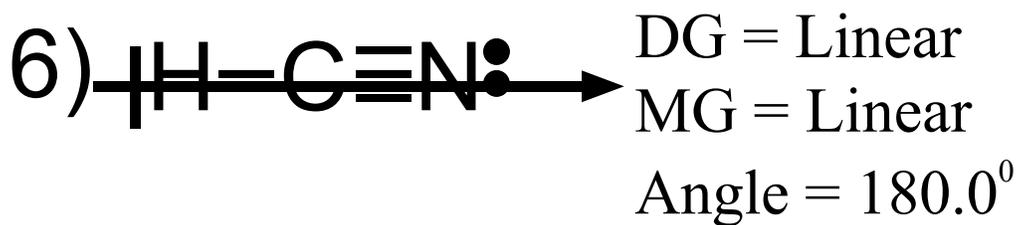
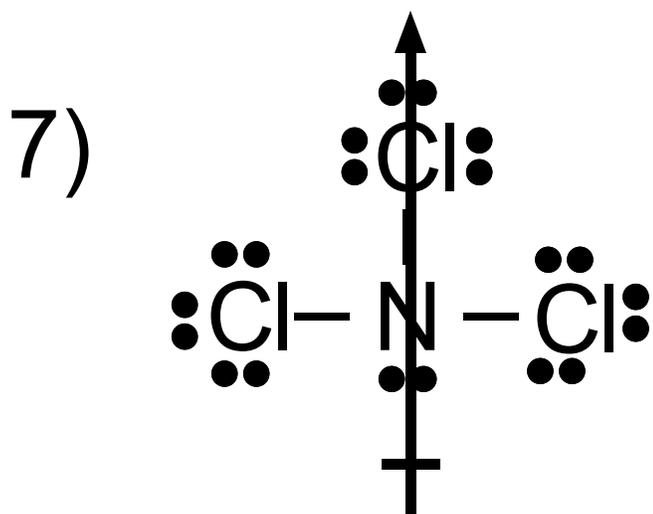


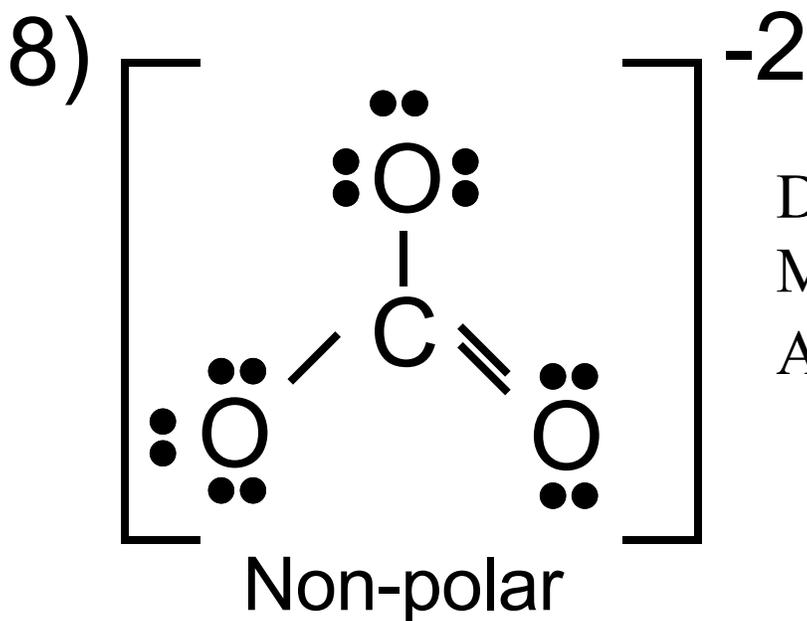
DG = Trigonal Planar  
 MG = Trigonal Planar  
 Angle =  $120.0^{\circ}$



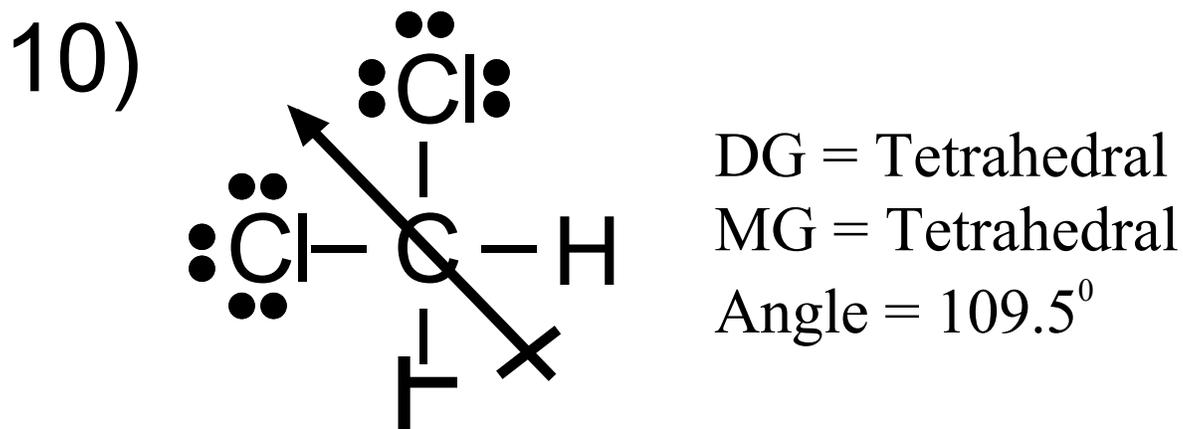
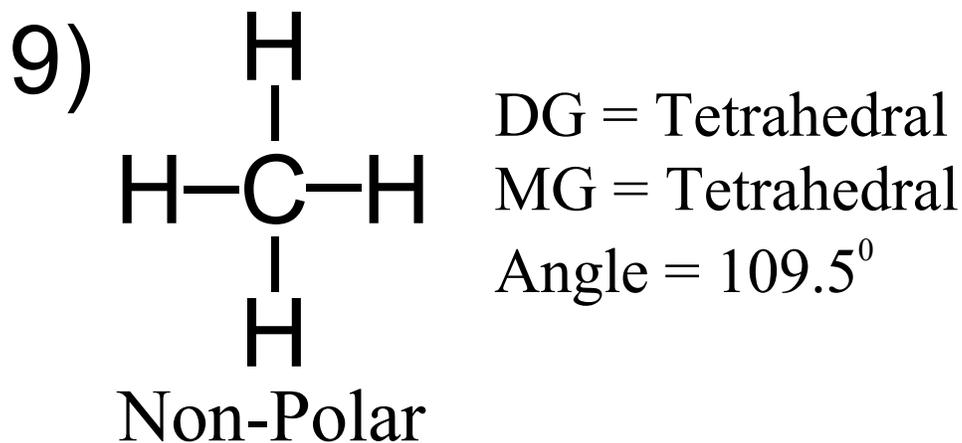
DG = Linear  
 MG = Linear  
 Angle =  $180.0^{\circ}$

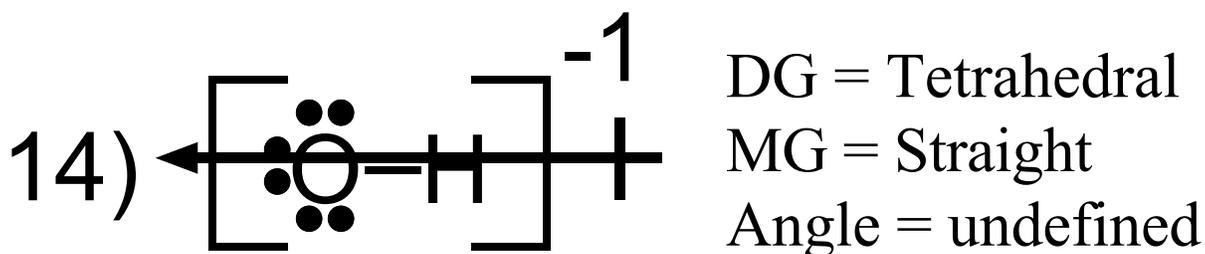
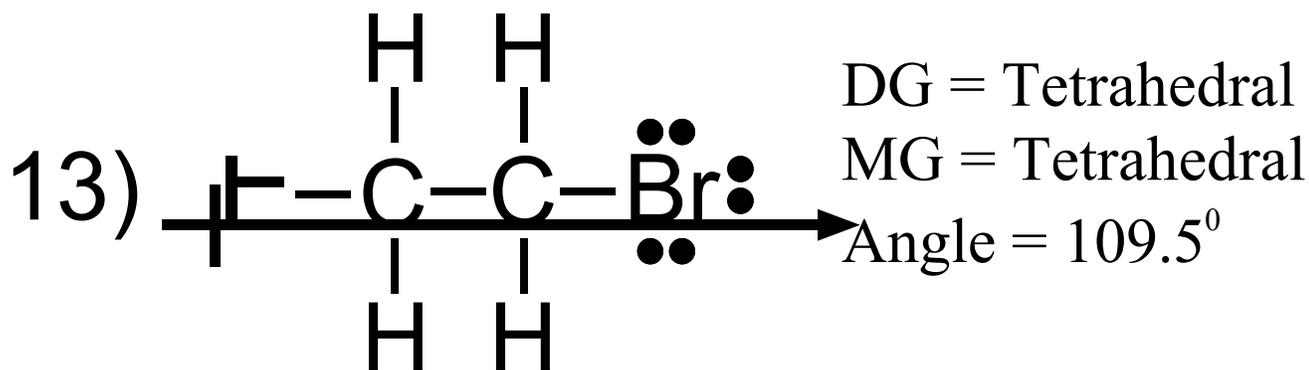
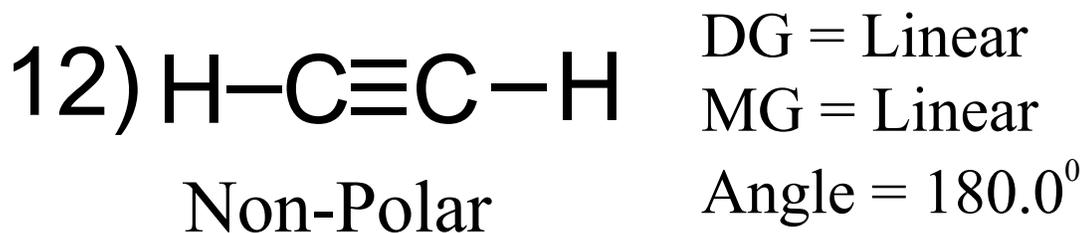


DG = Tetrahedral  
 MG = Trigonal pyramid  
 Angle =  $<109.5$



DG = Trigonal Planar  
 MG = Trigonal Planar  
 Angle =  $120.0^{\circ}$





15)

A dipole is an partial charge on a bond or molecule created by unequal electron sharing.

The positive and negative ends of the dipole are determined by the relative electronegativities of the bonded atoms.

The more electronegative atom will hold the negative dipole.

16) Cl & Si (e-neg diff = 1.26)

Cl & C (e-neg diff = 0.61)

Al & P (e-neg diff = 0.58)

Mo & Te (e-neg diff = 0.44)

H & S (e-neg diff = 0.40)

P & S (e-neg diff = 0.39)

17 a) HBr is polar because it contains one covalent bond which is itself polar, making the molecule polar.

b) CF<sub>4</sub> is nonpolar because the molecule is symmetrical, meaning the electron drifts cancel each other out.

- 17 c)  $\text{Cl}_2$  is nonpolar because it involves two of the same types of atom bonding together, meaning they share evenly.
- 18) A polar molecule has an overall imbalance in charge (or drift) meaning the molecule has a positive and a negative dipole. A nonpolar molecule does not have an imbalance in charge.
- 19) The following characteristics tend to make molecules polar:
1. Unbonded pairs of electrons
  2. Outer atoms which aren't identical
- 20) Polar covalent bonds don't necessarily create polar molecules because these polar bonds can balance each other out if they are even distributed in space around the central atom.

Examples (from above) include:

