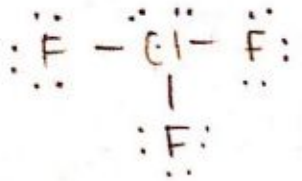
Ch 4: Molecular Structure and Hybridization

1. Methanoic acid (HCOOH) is used as a preservative and antibacterial agent in livestock feed.
    a. Draw its lewis structure.
    b. What is the hybridization of the carbon atom in methanoic acid?
    c. What is the geometric shape of the carbon atom?

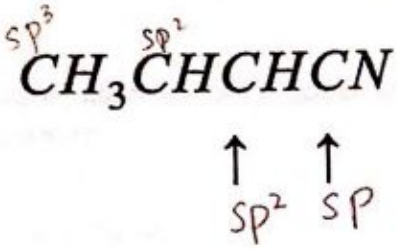
Note: This worksheet contains problems adapted from Dr. Lavelle's past exams.

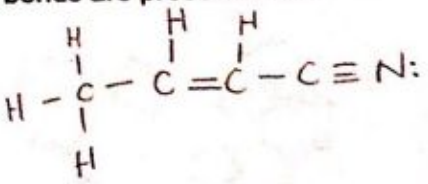
6. What is the shape of ClF_3 and the hybridization of the Cl atom? Is it polar or nonpolar?



T-shape, sp^3d, polar

7. What are the hybrid orbitals present in each of the atoms with arrows pointed at them? Write your answer below the arrows. How many sigma and pi bonds are present in this molecule?





# of sigma bonds: 9

# of pi bonds: 3

8. Knowing that carbon has a valence of 4 in nearly all its compounds and can form chains and rings of C atoms, draw two possible chain structures for C_3H_4 and label the hybridization of each carbon atom.