AP Chemistry Daily Videos
2.7 VSEPR and Bond Hybridization

Video #1

1. What information do Lewis structures leave out?

2. What does VSEPR stand for? Describe the VSEPR Theory.

3. How do electron repulsions impact shape?

4. What are electron domains?

5. Which electron domain impacts the bond angle more than other domains? How does it impact the shape/angles?

6. Write down two important things you learned from using the Phet simulation for VSEPR?

7. Make sure you know the different shapes based on the number of domains and lone pairs.

8. Pause the video at 7:21 and attempt the problem, then evaluate how you did and identify any errors.

Two possible Lewis diagrams are shown below for cyanic acid

Diagram 1

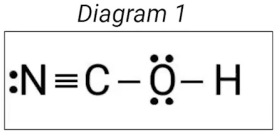
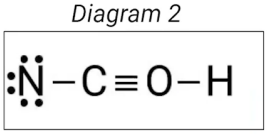
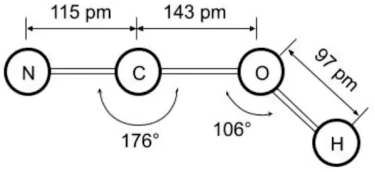


Diagram 2



Experimentally determined information about cyanic acid is presented below



Choose which diagram best agrees with the experimental data presented. Justify your answer using VSEPR theory

Video #2

1. Remind yourself what a polar bond is.

2. How is it possible that a molecule has polar bonds BUT the molecule, overall, is not polar (net dipole is zero)? Give an example.

3. What two things determine if a molecule is nonpolar?

4. What are the symmetrical shapes?

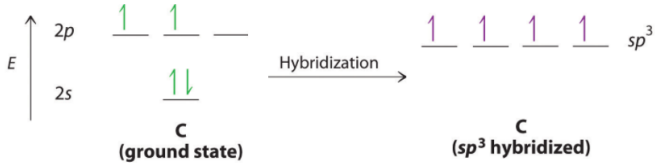
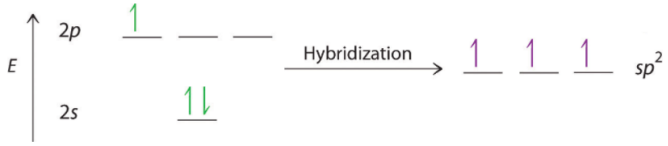
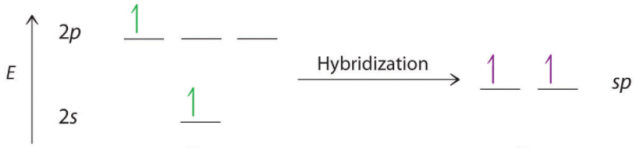
5. What are the asymmetrical shapes?

Video #3

1. Explain how Carbon, which you know makes four chemical bonds, should only form 2 bonds according to its electron configuration.

2. What are hybrid orbitals?

3. Complete the following table:

Hybridized Orbital	Energy Diagram Source	Electron Domain Options	Molecular Geometry and Angle
sp^3	 Energy is most similar to 2p. 25% s characteristic and 75% p characteristic.		
sp^2	 Energy is closer to 2p. 33% s characteristic and 67% p characteristic.		
sp	 Energy is equidistant between s and p. 50% s characteristic and 50% p characteristic.		

4. Pause the video at 4:24 and attempt the problem, then evaluate how you did and identify any errors.

Compound J below has two nitrogen atoms labeled *x* and *y*.

A. Determine the hybridization of the nitrogen labeled *y*

B. A student claims that all the atoms in the molecule exist in a single plane. Do you agree with the student's claim? Justify your answer