



Which of the following molecules is not planar?

- A)  $\text{BF}_3$
- B)  $\text{ClF}_3$
- C)  $\text{NH}_3$
- D)  $\text{XeF}_4$
- E) All the compounds above are planar

Which of the following molecules has a dipole moment?

- A)  $\text{CH}_4$
- B)  $\text{CO}_2$
- C)  $\text{O}_2$
- D)  $\text{SO}_2$

Determine the hybridization of the central atom in the compound  $\text{XeF}_4$ .

- A)  $\text{sp}^3\text{d}$
- B)  $\text{sp}^3$
- C)  $\text{sp}^3\text{d}^2$
- E)  $\text{sp}^2$

Indicate the most likely hybridization of the central atom in the compound  $\text{PCl}_5$ .

- A)  $\text{sp}^3\text{d}$
- B)  $\text{sp}^3$
- C)  $\text{sp}^3\text{d}^2$
- E)  $\text{sp}^2$

Indicate which of the following molecules has a dipole moment and a central atom with  $\text{sp}^3$  hybridization

- A)  $\text{CCl}_4$
- B)  $\text{BF}_3$
- C)  $\text{CHCl}_3$
- D)  $\text{C}_2\text{H}_2$

For an octahedral geometry of the electron pairs distribution around the central atom of an ion or compound we would expect the hybridization of the central atom to be...

- A)  $\text{sp}$
- B)  $\text{dsp}^2$
- C)  $\text{dsp}^3$
- D)  $\text{sp}^3\text{d}^2$

Ethylene gas is widely used in industry as well as in biology as a hormone and anesthetic agent. Consider the molecular formula of ethylene ( $\text{C}_2\text{H}_4$ ) what is the most likely hybridization for the central C atoms in this molecule?

- A)  $\text{sp}$
- B)  $\text{sp}^2$
- C)  $\text{dsp}^3$
- D)  $\text{sp}^3\text{d}^2$