

Name: _____

Date: _____

Period: _____

Worksheet – Chapter 11 – Understanding Molecular Geometry

1. In the space below draw figure 11.12 from page 356. Also draw a pyramid next to it as shown just above and to the right of this figure (it has a C for carbon and two dots at each corner that represent electron pairs). This is a tetrahedral molecule called Methane and shows the tetrahedral arrangements of electron pairs around Carbon.

2. In the space below, draw the entire set of figures on the bottom of page 357. These are three ways of looking at Ammonia, or NH_3 . In the first picture on the left you have the central atom, N in the center of a pyramid just as in Methane above. The second picture shows how the unshared pair of electrons at the top of the pyramid affect the bond angles for the Hydrogens in relation to the Nitrogen. The third figure shows what a model of the molecule would look like. The model would not show the unpaired electron above that are causing the Hydrogens to bend down and not stay in the planar arrangements (everything in one plane).

3. In the space below, draw the entire set of figures on the bottom of page 358. These are three ways of looking at water, H_2O . In the first picture you see the central atom O in the center of the pyramid as in your first two drawings above. In the second you see the unpaired electrons that are forcing the Hydrogen bonds to bend to the characteristic angle of H_2O . The third picture shows what our normal water models look like without showing the unpaired electrons that cause the bending of the Hydrogen bonds.

4. Give the complete meaning of each letter in VSEPR.

5. Give three examples of tetrahedral (molecular structure) molecules. Show them as both chemical formulas and as drawings:

	Formula	Drawing (Lewis Structure)	Drawing (molecular shape)
a.			
b.			
c.			

6. Give three examples of Trigonal Planar (molecular structure) molecules. Show them as both chemical formulas and as drawings (see p 360 for help):

	Formula	Drawing (Lewis Structure)	Drawing (molecular shape)
a.			
b.			
c.			

7. Give three examples of Trigonal Pyramid (molecular structure) molecules. Show them as both chemical formulas and as drawings:

	Formula	Drawing (Lewis Structure)	Drawing (molecular shape)
a.			
b.			
c.			

8. Why is H₂S bent and CO₂ linear?