

Key Hours


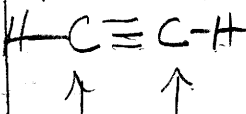
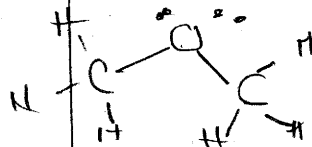
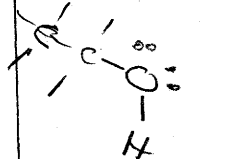
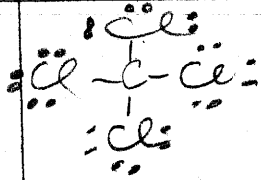
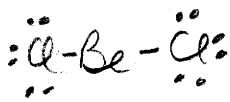
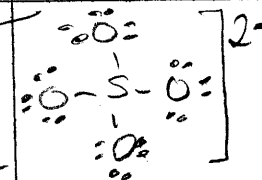
HW

MOLECULAR MODELS OBJECTIVES

1. To learn to draw Lewis structures for common compounds
2. To identify electron pairs as bonding pairs or lone pairs
3. To use electron pair repulsion theory to predict electronic and molecular geometry

	Compound <i>Polarity</i>	Lewis Structure	Bonding Regions on central atom	Lone Pairs on Central Atom	Molecular Geometry on Central Atom
1	H ₂ NP	H—H	1 s-s	0	Linear 180
2	F ₂ NP	$\text{:}\ddot{\text{F}}-\ddot{\text{F}}\text{:}$	1 sp	0	Linear 180
3	H ₂ O P	$\text{H}-\overset{\cdot\cdot}{\underset{\cdot\cdot}{\text{O}}}-\text{H}$	2 sp ³	2	Bent 105
4	N ₂ NP	$\text{:}\ddot{\text{N}}\equiv\ddot{\text{N}}\text{:}$	1	0	Linear 180 sp
5	CH ₄ NP	$\begin{array}{c} \text{H} \\ \\ \text{H}-\text{C}-\text{H} \\ \\ \text{H} \end{array}$	4	0	Tetra 109.5 sp ³
6	CO ₂ NP	$\text{:}\ddot{\text{O}}=\text{C}=\ddot{\text{O}}\text{:}$	2	0	sp 180 Linear
7	NH ₃ P	$\begin{array}{c} \cdot\cdot \\ \\ \text{H}-\text{N}-\text{H} \\ \\ \text{H} \end{array}$	3	1	sp ³ 107 TRIGONAL pyramidal
8	NH ₄ ⁺ P	$\left[\begin{array}{c} \text{H} \\ \\ \text{H}-\text{N}-\text{H} \\ \\ \text{H} \end{array} \right]^+$	4	0	sp ³ 109.5 Tetra

polar + charge because of

9	PCl ₃	<p>P</p> 	3	1	sp ³ 107 Trig pyr
10	C ₂ H ₂	<p>NP</p> 	2 on each Carbon	0	
11	CH ₃ -O-CH ₃	<p>P</p> 	2 on central oxygen	2 on central Oxg	sp ³ Bent 105°
12	CH ₃ CH ₂ OH	<p>P</p> 	2 on oxygen 4 on C's	2 lone pairs on oxygen 0 on Carbon	Bent sp ³ 105° Tetr sp ³ 109
13	CCl ₄	<p>NP</p> 	4	0	Tetra sp ³ 109
14	BeCl ₂	<p>exception to octet NP</p> 	2	0	Linear sp 180
15	SO ₄ ²⁻	<p>because it is charged</p> 	4	0	Tetra sp ³ 109.5
16					
17					