

Name \_\_\_\_\_ Period \_\_\_\_\_ Date \_\_\_\_\_

### VSEPR Practice

For each of the following molecules, draw the (Lewis) Dot Structure / Electron Dot Formula. Then, identify the correct the molecular shape based on the number of electrons groups (the sum of bonding groups [bonded atoms] and lone pairs of electrons / unbonded pair of electrons).

MOLECULE	(LEWIS) DOT STRUCTURE/ELECTRON DOT FORMULA	# OF BONDED ATOMS GROUPS	# OF LONE PAIRS	SHAPE
1. H <sub>2</sub> O	Example  <div style="display: flex; justify-content: center; gap: 20px;"> <math>\text{H} \begin{array}{c} \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \end{array} \text{O} \begin{array}{c} \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \end{array} \text{H}</math> <math>\text{H}-\overset{\cdot\cdot}{\underset{\cdot\cdot}{\text{O}}}-\text{H}</math> </div>	2	2	bent
2. NH <sub>3</sub>				
3. CCl <sub>4</sub>				
4. CO <sub>2</sub>	<i>Hint: double bonds between carbon and oxygen</i>			

MOLECULE	(LEWIS) DOT STRUCTURE / ELECTRON DOT FORMULA	# OF BONDED ATOMS GROUPS	# OF LONE PAIRS	SHAPE
5. Carbon monoxide	<i>Hint: triple bonds between carbon and oxygen, with one of the triple bonds being a coordinate covalent bond</i>	Does not apply to two atom molecules		
6. H <sub>2</sub> S				
7. AsBr <sub>3</sub>				
8. BCl <sub>3</sub>	<i>Note: Boron (B) is an exception to the octet rule. It does need to have 8 e- on its outer level to be stable</i>			

MOLECULE	(LEWIS) DOT STRUCTURE / ELECTRON DOT FORMULA	# OF BONDED ATOMS GROUPS	# OF LONE PAIRS	SHAPE
8. Cl <sub>2</sub>		Does not apply to two atom molecules		
9. C <sub>2</sub> H <sub>6</sub>	<i>Note: In order to determine the number of electron groups and hence the molecular shape, select one of the carbon atoms to be the central atom</i>			
10. C <sub>2</sub> H <sub>2</sub>	<i>Hint: Triple bond between the carbons</i> <i>Note: In order to determine the number of electron groups and hence the molecular shape, select one of the carbon atoms to be the central atom</i>			
11. Sulfate	<i>Note: This is a -2 charged polyatomic ion, which means that the ion has 2 extra electrons.</i> <i>Hint: This molecule requires coordinate covalent bonds in order for all of its atoms to obtain their octets.</i>			