

Name _____ Partner _____

Purpose: To use the VSEPR theory to predict shapes around central atoms of molecular compounds & polyatomic ions**Procedure:**Use the model kits provided to build 3-D models of the following molecular compounds.

Fill in all the missing areas of the observation table. Your textbook may be of help. (See pages 85 → 112)

Observations: Enlarge this chart and fill in all spaces. (2 marks per line) (1/2 mark will be subtracted for every error per line)

	Empirical formula / Molecular formula	Lewis Diagram	Stereo-chemical formula		Central Atom(s) – lone pairs	Central Atoms(s) – bonding e ⁻	shape(s) around each central atom	Bond dipoles	Polar or Non-polar
1	NH _{3(s)}								
2	C ₂ Cl _{4(g)}								
3	CF _{4(g)}								

	Empirical formula / Molecular formula	Lewis Diagram	Stereo-chemical formula		Central Atom(s) – lone pairs	Central Atoms(s) – bonding e ⁻	shape(s) around each central atom	Bond dipoles	Polar or Non-polar
4	$\text{OCl}_{2(g)}$								
5	$\text{C}_2\text{F}_{2(g)}$								
6	$\text{HOF}_{(l)}$								
7	$\text{NHF}_{2(g)}$								
8	$\text{C}_2\text{IBr}_{(l)}$								

	Empirical formula / Molecular formula	Lewis Diagram	Stereo-chemical formula		Central Atom(s) – lone pairs	Central Atoms(s) – bonding e ⁻	shape(s) around each central atom	Bond dipoles	Polar or Non-polar
9	CHClBr _{2(l)}								
10	C ₂ HF _{3(l)}								
11	H ₂ O _{2(l)}								
12	CO _{2(g)}								
13	N ₂ H ₃ F _(g)								

	Empirical formula / Molecular formula	Lewis Diagram	Stereo-chemical formula		Central Atom(s) – lone pairs	Central Atoms(s) – bonding e ⁻	shape(s) around each central atom	Bond dipoles	Polar or Non-polar
14	$\text{C}_2\text{H}_5\text{OH}_{(l)}$								
15	$\text{NH}_4^+_{(aq)}$								
16	$\text{CO}_3^{2-}_{(aq)}$								
17	$\text{NO}_3^-_{(aq)}$								

1. Identify molecules (compounds or polyatomic ions) with multiple bonds:

- Multiple bonds make the reagent _____ (more or less) stable
- Multiple bonds bring the atoms _____ (closer or further) apart

2. Identify the molecules with coordinate covalent bonds:

3. Based on given states, which molecules have the strongest bonds? _____

4. Based on given states, which molecules have the weakest bonds? _____

5. Do questions 9, 10, and 11 from pages 100 → 101 of your text. (Attach a piece of paper please)

6. Glucose has MANY isomers. Sketch three different line diagrams for glucose.