

WOC Chapter 12 Objectives Chemical Bonding

1. Define these terms:

Chemical bond	Bond energy	Ionic bonding	ionic compound
Covalent bonding	Electronegativity	Dipole moment	Polar covalent compound

2. Describe the octet and duet rules and explain to which elements they apply.

3. Draw Lewis diagrams for each element across the second row of the periodic table. Be able to draw a Lewis diagram for any element in the top three rows.

4. Draw Lewis diagrams for the following compounds: Cl_2 NH_3 SO_2 CO_2 . Be able to draw a Lewis diagram for any compound practiced in class or homework.

5. Construct a table that shows at least three differences between ionic and covalent bonds.

6. Describe two ways to predict whether a bond will be polar or non-polar. Indicate whether the following bonds are ionic, covalent, or polar covalent:

H-H F-H C-H C-C Li-F F-C O-F Mg-O

7. Describe the general trend for atom and ion size across a row of the periodic table and down a column.

8. Define these terms:

bonding pair	Lone (unshared) pairs	single bond	double bond	triple bond
resonance	bond angle			

9. State the VSEPR theory. In your own words, explain what it means.

10. In chart form, list five molecular shapes, write a formula for a molecule with that shape, draw a diagram of the molecule, and list the bond angle associated with that shape.

11. How does the presence of a pair of electrons which does not participate in a bond affect the shape of a molecule? Draw two examples of molecules which demonstrate this effect.

12. Describe two trends which are useful for predicting bond length.

13. Explain how molecular shape and polarity of bonds help predict whether or not a molecule will be polar.

14. Predict structure, bond polarity, molecule polarity, bond types, and molecule shape of a molecule of CCl_3F . Be able to do the same for other simple molecules.