

Covalent Bonding – Electron Dot Structures

Name _____

WS C

Molecules composed of only nonmetals must share their electrons in covalent bonds because the attraction they have for their own electrons prevents them from giving up their electrons to other atoms. When forming covalent bonds, the elements share enough electrons between them to maintain a **stable octet**. Hydrogen and boron are exceptions. When hydrogen combines covalently with nonmetals, it is stable with only two electrons in its valence shell. Boron will form compounds in which it has either six or eight electrons in its valence shell, although the six-configuration is not very stable. In this assignment, each of the following molecules forms only covalent bonds.

1. Diagram the distribution of valence electrons (draw the electron dot structure) for each of the following atoms:

H

C

N

O

F

S

Cl

2. For each molecule below, diagram the electron dot, Lewis, and structural formulas that best describe the distribution of the shared and lone pair (non-bonding) electrons.

Molecule	Dot/Lewis/Structural	Molecule	Dot/Lewis/Structural
CH ₄		CS ₂	
H ₂ O ₂		N ₂ O – Sample Problem	
		Dot	Lewis
			Structural
CCl ₄		CCl ₃ F	
CH ₃ NH ₂		Cl ₂ CO	

Molecule	Dot/Lewis/Structural	Molecule	Dot/Lewis/Structural
CO ₂		C ₂ H ₆	
CO X		C ₂ H ₄	
OF ₂		C ₂ H ₂	
CH ₃ OH		H ₂ O	
H ₂ S		NCl ₃	
CHCl ₃		N ₂ H ₄	