Name: _____ Date: _____

Notes: Covalent Compounds

Define ***covalent bond***: _____

What do covalent bonds create? _____

Why do atoms share electrons? _____

When are atoms most stable? _____

_____

Which group is already in a stable configuration? _____

How does this affect their reactivity? _____

What is the smallest particle of a covalent compound? _____

Which bond is stronger: ionic or covalent? _____

Types of elements in ionic or covalent compounds:

Ionic compounds: _____

Covalent compounds: _____

Decide whether the following compounds contain ionic or covalent bonds:

MgO____	PBr_3 _____	LiI _____
$ZnCl_2$ _____	PbO_2_____	N_2O_4_____
CCl_4____	$BaCl_2$ _____	CO _____
CuS _____	C_2S_____	CuOH_____

Why is hydrogen unique among the elements? _____

_____

How many electrons are shared in a covalent bond? _____

What are ***lone pair electrons***? _____

Define **electronegativity**: _____

_____

Which element is the most electronegative element? _____

Determine which of the elements in each of the pairs below is less electronegative.

fluorine or **chlorine**	**phosphorous** or **sulfur**	**iodine** or **bromine**
carbon or **nitrogen**	**silicon** or **phosphorous**	**oxygen** or **nitrogen**

Creating a Lewis Dot Structure for Covalent Molecules

Step 1: Add together the total number of valence electrons for each of the elements.

Step 2: Write out the elements so that the least electronegative element is in the middle of the compound. (H is *never* the central atom.)

Step 3: Place a bond between each of the elements. (*Each bond represents 2 shared electrons.*)

Step 4: Add the remaining electrons to the outer atoms. *No atom should have more than 8.*

Step 5: Add any remaining *lone pairs* of electrons to the central atom.

Step 6: Check to make sure that each atom has 8 valence electrons around it. (Remember, hydrogen should only have 2.)

NH_3

Total number of valence e^- : _____

CBr_4

Total number of valence e^- : _____

Which elements can form double and triple bonds? _____

How would you recognize a double or triple bond was needed? _____

_____

How many valence electrons can **Boron** have? _____

How many valence electrons can **Phosphorous** have? _____

BH_3

Total number of valence e^- : _____