

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<sub>3</sub> \_\_\_\_\_

LiI \_\_\_\_\_

ZnCl<sub>2</sub> \_\_\_\_\_

PbO<sub>2</sub> \_\_\_\_\_

N<sub>2</sub>O<sub>4</sub> \_\_\_\_\_

CCl<sub>4</sub> \_\_\_\_\_

BaCl<sub>2</sub> \_\_\_\_\_

CO \_\_\_\_\_

CuS \_\_\_\_\_

C<sub>2</sub>S \_\_\_\_\_

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.

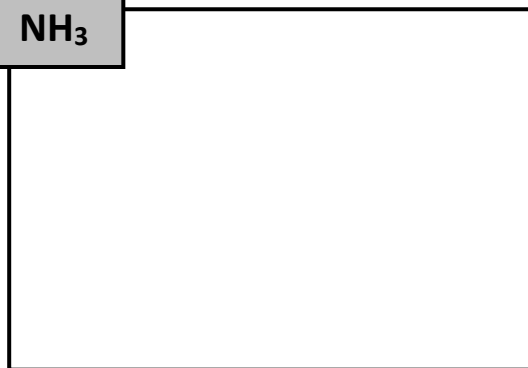
**Step 2:** Write out the elements so that the least electronegative element is in the middle of the compound. (H is *never* the central atom.)

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

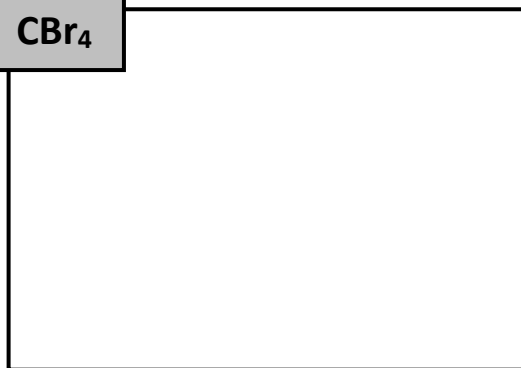
**Step 4:** Add the remaining electrons to the outer atoms. *No atom should have more than 8.*

**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.)



Total number of valence e<sup>-</sup> : \_\_\_\_\_



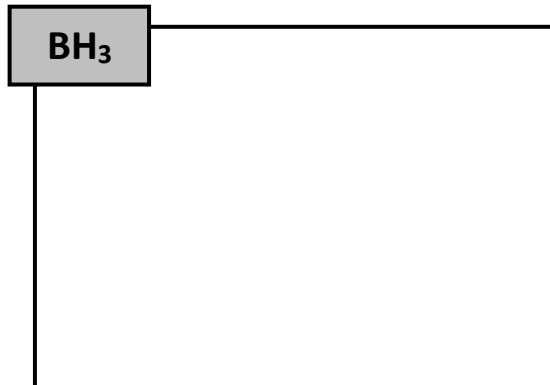
Total number of valence e<sup>-</sup> : \_\_\_\_\_

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? \_\_\_\_\_



Total number of valence e<sup>-</sup> : \_\_\_\_\_