

# CHEMICAL BONDING WORKSHEET

Name: -KEY- Period: \_\_\_\_\_

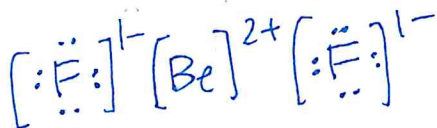
## Part I Bonds

1. What is a chemical bond? an attraction between particles that holds them together in a compound.
2. For the following compounds, determine if the elements are metals or nonmetals. Then, using that, figure out the type of bond (ionic, metallic, or covalent) that will form between the two elements:
  - A.  $\text{NO}_2$  covalent
  - B.  $\text{NaCl}$  ionic
  - C.  $\text{FeSn}$  metallic
  - D.  $\text{SO}_2$  covalent
  - E.  $\text{PI}_3$  covalent
  - F.  $\text{MgBr}_2$  ionic
  - G.  $\text{AgCu}$  metallic
  - H.  $\text{K}_2\text{O}$  ~~covalent~~ ionic
  - I.  $\text{CuCl}_2$  ionic
  - J.  $\text{AlF}_3$  ionic

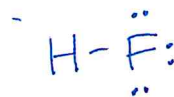
## Part II: Comparing Ionic and Molecular Compounds

3. What happens to the valence electrons in an ionic bond compared to the valence electrons in a covalent bond? ionic bonds donate or receive (give/take) electrons. Covalent bonds share electrons. Both want to have a full octet.
4. In an ionic compound, the charges of the cation and anion must balance to produce an electrically neutral substance. However, in a molecular compound the charges do not matter. In a molecular compound, each atom wants to achieve a full octet.
5. In the space below, complete a Lewis dot structure to show how beryllium fluoride ( $\text{BeF}_2$ ) is formed (notice that  $\text{BeF}_2$  is ionic). Use the Notes on pages 102-104 of your NOTEBOOK as a model. Then draw the Lewis structure for hydrofluoric acid ( $\text{HF}$ ) (notice that  $\text{HF}$  is a molecule).

$\text{BeF}_2$



$\text{HF}$



Explain why  $\text{BeF}_2$  and  $\text{HF}$  are drawn so differently.

$\text{BeF}_2$  is ionic & the bonds are based on attractive charges.

$\text{HF}$  is a molecule so dashes are drawn to show shared  $e^-$ .

6. Explain the similarities and difference between formula units and molecules.

A formula unit is the fundamental unit of an ionic compound.

A molecule is the same, but for covalent compounds.

### Part III: Covalent bonds and Lewis Structures

For the following compounds, write the total number of valence electrons in the compound and draw the Lewis dot structure. Be sure to double-check your work that the drawing has the correct number of electrons and all elements have an octet (except hydrogen!).

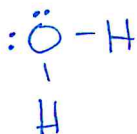
7.  $\text{H}_2$



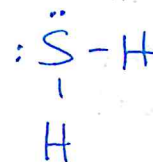
14.  $\text{H}_2\text{O}_2$



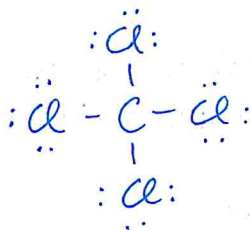
8.  $\text{H}_2\text{O}$



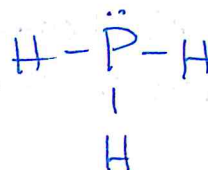
15.  $\text{SH}_2$



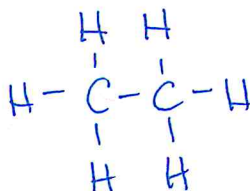
9.  $\text{CCl}_4$



16.  $\text{PH}_3$



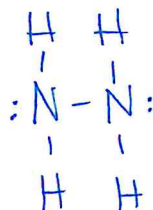
10.  $\text{C}_2\text{H}_6$



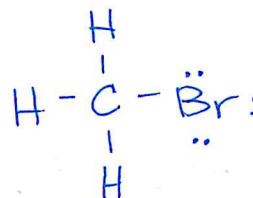
17.  $\text{Br}_2$



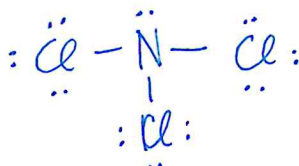
11.  $\text{N}_2\text{H}_4$



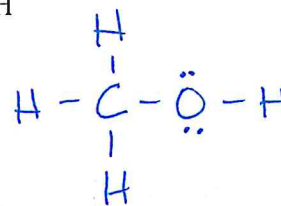
18.  $\text{CH}_3\text{Br}$



12.  $\text{NCl}_3$



19.  $\text{CH}_3\text{OH}$



13.  $\text{HCN}$



20.  $\text{CH}_2\text{I}_2$

