**Chemistry Unit 5 Compounds Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Chemical Bonding Worksheet**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Element | # Valence electrons | Atomic Lewis Diagram | # electrons gain/loss | Ionic charge | Ionic Lewis Diagram |
| 1 | **Cl** |  |  |  |  |  |
| 2 | **Na** |  |  |  |  |  |
| 3 | **Mg** |  |  |  |  |  |
| 4 | **O** |  |  |  |  |  |
| 5 | **N** |  |  |  |  |  |
| 6 | **Al** |  |  |  |  |  |
| 7 | **Xe** |  |  |  |  |  |

a) Use Lewis dot symbols to show the transfer of electrons between the following atoms to form ionic compounds. b) Determine the formula of the compound. c) Draw the ionic lewis structure for the resulting compound.

8. K and S

9. O and Ba

10. Sr and S

11. Al and S

12. Mg and F

1. For each of the following sets of elements, identify the element expected to be most electronegative (EN) and which is expected to be least **electronegative (EN).**
   1. K, Sc, Ca most EN= \_\_\_\_\_\_\_\_ least EN=\_\_\_\_\_\_\_\_
   2. Br, F, At most EN= \_\_\_\_\_\_\_\_ least EN=\_\_\_\_\_\_\_\_
   3. C, O, N most EN= \_\_\_\_\_\_\_\_ least EN=\_\_\_\_\_\_\_\_
2. What does it mean to say a bond is polar?
3. How are ionic bonds and covalent bonds different?
4. How does a polar covalent bond differ from a pure covalent bond?
5. How do electronegativity values help us determine the type of bond created?
6. For each of the following molecules, determine if it is nonpolar, polar, or ionic. **Show your work by listing the electronegativities of each element in the bond.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Molecule** | **Electronegativity Values** | **Difference in Electronegativity** | **Bond Type** |
| **H – Cl** | H:  Cl: |  |  |
| **H – H** | H:  H: |  |  |
| **H - I** | H:  I: |  |  |
| **Cl - Cl** | Cl:  Cl: |  |  |
| **C – O** | C:  O: |  |  |
| **Ca – O** | Ca:  O: |  |  |
| **H2O** | H:  O: |  |  |
| **Al – Fe** | Al:  Fe: |  |  |