**Dougherty Valley HS Chemistry**

**Thinking About Lewis Structures Using Patterns**

**Name: Period: Seat#:**

**For each of the generic molecules below give answers to the following questions:**

1. Replace X with an element that could possibly work for the molecule   
   In other words – what element can X be in order to make a valid molecule?   
   *\*Hint\* think about how many valence electrons it would need to have and/or how many bonds it can make!*
2. Identify which element in the molecule is more electronegative
3. Draw in the polarity for each *bond*   
   \*Hint\* remember you can use the arrow notation or the partial positive notation δ+ δ-
4. Is the *overall molecule* polar or nonpolar?

|  |  |
| --- | --- |
| 1. XCl4 | 1. XH2 |
| 1. XF3 | 1. XF6 |

**Give the name or formula, draw the Lewis Structure, identify if the molecule is polar or non-polar**

|  |  |  |
| --- | --- | --- |
| 1. Sulfur dihydride | 1. Nitrogen trifluoride | 1. O2 |
| 1. CH2O (don’t name) | 1. CBr4 | 1. Selenium trisulfide |
| 1. Sulfate | 1. OF2 | 1. CO32- |
| 1. Phosphorus pentafluoride | 1. Nitrate | 1. Sulfur Tetrachloride |
| 1. CO2 | 1. NH41+ | 1. N2 |
| 1. CH2Br2 (don’t name) |  |  |

**For the ionic compounds below give the charge of each cation and anion and give the name or formula:**

|  |  |
| --- | --- |
| 1. Sodium chloride | 1. MgS |
| 1. Calcium fluoride | 1. FeCl3 |
| 1. Magnesium phosphate | 1. Al(NO3)3 |
| 1. Titanium (IV) Oxide | 1. (NH4)2SO4 |

**Fill in the table with ionic compounds that are made of the same charges – in other words, build ionic compounds where all the cations have all the same charge and all anions have the same charge.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Cation** | **Anion** | **Neutral Formula** | **Name** |
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**Answer the following questions:**

1. Describe the trend in electronegativity that you used when determining the polarity of your covalent bonds.
2. Why do all metals like to form cations, and all non-metals like to form anions?