**Molecular Modeling Lab** Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Introduction:**

Most of our learning is in two dimensions. We often draw representations of molecules on flat paper. Two-dimensional representations including *Lewis Dot Structures*. In these structures, a single covalent bond is represented by a straight line. Each line shows the sharing of two electrons between two atoms. For example, H2 would be represented as H—H. Although such models help us understand the structure of molecules, flat models do not give us the three-dimensional view necessary for an accurate picture of most molecules.

 Scientists who describe the structure of molecules often start with molecular modeling kits. Complicated structures like DNA are often shown using three dimensional models. With these models, we can better understand how the atoms of the molecules interact. In this lab, you will be modeling using playdoh and toothpicks to build three dimensional models of covalent molecules to understand their molecular geometry.

**Procedure:**

1. Name the molecules and draw the Lewis Dot Structure of each in the data table.
2. Create the molecule using playdoh and toothpicks. Make sure that it has the correct shape!
3. Identify the molecular geometry and bond angle.
4. Using your electronegativity chart, identify if the bond is polar or nonpolar.

**Data Table:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Formula** | **Name of Molecule** | **Lewis Dot Structure** | **Molecular Geometry** | **Bond Angle** | **Bond Polarity** |
| H2O |  |  |  |  |  |
| NH3 |  |  |  |  |  |
| CH4 |  |  |  |  |  |
| CO2 |  |  |  |  |  |
| N2 |  |  |  |  |  |
| O2 |  |  |  |  |  |
| HCN |  |  |  |  | H—C C—N  |
| CCl­4 |  |  |  |  |  |
| PCl3 |  |  |  |  |  |
| CH2O |  |  |  |  | C—O C—H  |