Name _____

Molecule Magic: How Shapes Matter in Chemistry

Short Answer Key

1. Covalent bonds occur when atoms share electrons to form molecules. These bonds are formed by the sharing of electron pairs between atoms.
2. An example of a molecule with a linear shape is carbon dioxide (CO_2). It has two oxygen atoms bonded to a central carbon atom in a straight line due to the presence of two bonding pairs and no lone pairs.
3. Non-bonding pairs of electrons exert greater repulsion, causing atoms to be pushed away from them. For example, in water (H_2O), the two lone pairs on the oxygen atom push the hydrogen atoms closer together, resulting in a bent shape.
4. Molecule shape is vital in biological processes because it determines how molecules interact in biological systems. For instance, enzymes have specific shapes that allow them to catalyze chemical reactions in cells.
5. Knowledge of molecule shapes can be useful in environmental science and chemistry for understanding how pollutants behave in the environment, predicting their reactivity, and designing environmentally friendly materials.