Name _____

The Dance of Intermolecular Forces: Solids, Liquids, and Gases

Open-Ended Response Answer Key

1. Answers may vary, but examples could include the strength of intermolecular forces determining the hardness of metals, the behavior of water in different temperature conditions, or the operation of refrigeration systems.
2. Temperature and pressure influence the phase changes of matter by affecting the energy of molecules and the strength of intermolecular forces. For example, increasing temperature can change a solid into a liquid (melting) or a liquid into a gas (vaporization).
3. Intermolecular forces are essential in chemistry for understanding chemical reactions, in physics for explaining material properties, and in engineering for designing materials and processes.
4. In solids, molecules have the least energy and vibrate in place due to strong intermolecular forces. In liquids, they have more energy and move past each other, while in gases, they have the most energy and move independently, colliding frequently. Intermolecular forces play a crucial role in these behaviors.