Name _____

Molecular Magic: Solids, Liquids, and Gases

Open-Ended Response Answer Key

1. Answers may vary, but examples could include ice (solid), water (liquid), and water vapor (gas). Ice is solid and maintains its shape, water flows and takes the shape of its container, and water vapor spreads out to fill its container.
2. As water transitions from a solid (ice) to a liquid, the molecules gain energy and start vibrating more, causing the ice to melt. Further heating turns the liquid water into water vapor (gas), where the molecules move even faster and are widely spaced apart.
3. Understanding the behavior of molecules in different states of matter helps in everyday tasks like cooking, driving, and heating homes. It's also crucial for scientific research, such as studying climate change and developing new materials.
4. Energy plays a vital role in phase changes. Adding energy (heat) to a substance increases the motion of its molecules, while removing energy (cooling) decreases their motion. This energy change determines whether a substance stays in the same state or undergoes a phase transition.