Name: _____ **Date:** _____

Wrangle Molecular Motion: Kinetic Theory Quiz for College Chemistry

Examine intermolecular forces and phase equilibria through real-world applications like butane storage and nitrogen liquefaction for lab review.

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1. When storing butane in a common lighter, the fuel remains a liquid despite butane being a gas at standard pressure. Which factor is responsible for this phase retention?

A. Lowering the kinetic energy through cooling
B. High pressure forcing molecules into closer proximity
C. The addition of stabilizers to increase surface tension
D. A chemical reaction with the plastic container

2. The constant, random motion of particles suspended in a fluid (liquid or gas) resulting from collisions with fast-moving molecules is known as _____ motion.

A. Kinetic
B. Newtonian
C. Brownian
D. Thermal

3. True or False: Amorphous solids, such as glass or certain polymers, lack the long-range periodic order found in crystalline solids.

A. True
B. False

4. Which of the following describes the process of 'Enthalpy of Fusion' in a laboratory setting?

A. Energy released when a gas becomes a solid
B. Energy required to change a substance from solid to liquid
C. The temperature at which a liquid begins to boil
D. The pressure required to liquefy a noble gas

5. In the context of phase diagrams, the _____ point represents the unique temperature and pressure at which all three phases (solid, liquid, and gas) coexist in equilibrium.

A. Critical
B. Boiling
C. Triple
D. Equilibrium

6. True or False: According to the Kinetic Molecular Theory, the average kinetic energy of gas particles is directly proportional to the Kelvin temperature.

A. True
B. False

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7. During the process of freeze-drying (lyophilization) used in food science, water is removed from food through which phase change?

A. Evaporation
B. Deposition
C. Condensation
D. Sublimation

8. A substance that has properties of both a gas and a liquid at temperatures and pressures above its critical point is called a _____ fluid.

A. Supercritical
B. Metastable
C. Viscous
D. Ideal

9. True or False: Evaporation is a cooling process because the molecules with the highest kinetic energy are the ones that escape the liquid surface.

A. True
B. False

10. Which property of liquids explains why a needle can be made to float on the surface of water if placed carefully?

A. Viscosity
B. Surface Tension
C. Capillary Action
D. Vapor Pressure