Name: _____ **Date:** _____

Why Doesn’t This Goo Obey the Law? 11th Grade Matter Quiz

Challenge your understanding of non-Newtonian fluids, vapor pressure curves, and the molecular forces that defy standard phase change expectations.

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1. A sample of Gallium melts in a scientist's hand at 29.7°C. Which statement identifies the thermodynamic process and the change in kinetic energy occurring?

A. Exothermic; kinetic energy decreases
B. Endothermic; kinetic energy increases
C. Exothermic; potential energy increases
D. Endothermic; potential energy increases

2. Supercritical fluids, such as CO2 used in decaffeinating coffee, possess the effusive properties of a gas but the dissolving density of a liquid.

A. True
B. False

3. At high altitudes like Mount Everest, water boils at roughly 71°C because the _____ is significantly lower than at sea level.

A. Intermolecular attraction
B. Atmospheric pressure
C. Critical temperature
D. Molar heat of fusion

4. Which substance would likely exhibit the highest viscosity at room temperature based on its molecular complexity and intermolecular forces?

A. Ethene (C2H4)
B. Glycerol (C3H8O3)
C. Hexane (C6H14)
D. Bromine (Br2)

5. In a phase diagram, the point where the solid, liquid, and gas phases coexist in dynamic equilibrium is known as the _____.

A. Critical point
B. Sublimation line
C. Triple point
D. Eutectic point

6. Amorphous solids, such as obsidian (volcanic glass), possess a long-range repeating geometric lattice structure similar to Quartz crystals.

A. True

B. False

7. If you increase the pressure on a sample of ice near its melting point, it transitions to a liquid. What unique property of water causes this behavior?

A. High surface tension
B. Negative slope of the fusion curve
C. Low vapor pressure
D. High heat of vaporization

8. Volatile liquids, such as Acetone, evaporate quickly because they possess _____ and high vapor pressures.

A. Strong ionic bonds
B. High boiling points
C. Weak intermolecular forces
D. High molecular weights

9. A student observes that Neoprene (a synthetic rubber) stretches but does not melt into a thin liquid when heated. This behavior is typical of which type of solid?

A. Ionic solid
B. Metallic solid
C. Network covalent solid
D. Polymeric/Amorphous solid

10. Kinetic Molecular Theory assumes that the volume of individual gas particles is negligible compared to the total volume of the container.

A. True
B. False