

Name \_\_\_\_\_

## Unlocking Mysteries with Phase Diagrams: Understanding Substance Behavior

### Short Answer Key

1. Phase boundaries on a phase diagram represent the conditions (temperature and pressure) at which phase transitions occur. They delineate the limits of each phase's stability and help us understand how matter changes from one phase to another.
2. When a substance crosses the boundary between the liquid and gas regions on a phase diagram, it signifies the conditions at which the substance undergoes a phase transition, specifically boiling. It transitions from the liquid phase to the gas phase.
3. The triple point serves as a universal reference in science because it provides a well-defined and consistent set of conditions (temperature and pressure) at which all three phases of matter (solid, liquid, and gas) coexist in equilibrium. This standardized reference point ensures accuracy and consistency in temperature measurements across various scientific experiments and instruments.
4. The triple point is significant in temperature measurements because it offers a precise and universally accepted reference for calibrating thermometers. Since the triple point occurs at a specific temperature for each substance, it enables accurate temperature measurements, ensuring that scientific research, technological applications, and industrial processes rely on consistent and reliable temperature data.

