Phase Change Worksheet Answer Key PDF

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Part 1: Building a Foundation

What is the process called when a solid turns into a liquid?

undefined. A) Freezing
undefined. A) Melting ✓
undefined. A) Condensation
undefined. A) Sublimation

The process is called melting.

Which of the following are endothermic processes? (Select all that apply)

undefined. A) Melting ✓
undefined. A) Freezing
undefined. A) Vaporization ✓
undefined. A) Deposition

Endothermic processes include melting and vaporization.

Explain what happens to the temperature of a substance during a phase change.

During a phase change, the temperature remains constant as energy is absorbed or released.

List the types of phase changes that involve a gas. Provide a brief description of each.

1. What is condensation?

Condensation is the process where a gas turns into a liquid.

2. What is sublimation?

Sublimation is the process where a solid turns directly into a gas.

Types include condensation (gas to liquid) and sublimation (solid to gas).

Part 2: Understanding and Interpretation

During which phase change does a substance release energy?

undefined. A) Melting
undefined. A) Sublimation
undefined. A) Condensation ✓
undefined. A) Vaporization

A substance releases energy during condensation.

Which statements about latent heat are true? (Select all that apply)

undefined. A) It changes the temperature of a substance.
undefined. A) It is absorbed during melting. ✓
undefined. A) It is released during freezing. ✓
undefined. A) It is required for a phase change. ✓

Latent heat is absorbed during melting and released during freezing.

Describe how phase change diagrams can be used to identify the melting and boiling points of a substance.

Phase change diagrams show temperature and pressure conditions for phase changes, indicating melting and boiling points.

Part 3: Application and Analysis

If you observe frost forming on a window, which phase change is occurring?

undefined. A) Melting
undefined. A) Deposition ✓
undefined. A) Condensation
undefined. A) Sublimation

The phase change occurring is deposition.

In which scenarios would you expect sublimation to occur? (Select all that apply)

undefined. A) Dry ice exposed to air ✓
undefined. A) Water boiling on a stove
undefined. A) Ice cubes left in a freezer
undefined. A) Snow disappearing without melting ✓

Sublimation occurs with dry ice and snow disappearing without melting.

Predict what would happen to the phase change process if pressure is increased on a gas. Provide a scientific explanation.

Increasing pressure on a gas can lead to condensation or liquefaction, depending on temperature.

Which phase change is most likely to occur at the highest temperature?

undefined. A) Freezing
undefined. A) Melting
undefined. A) Vaporization ✓
undefined. A) Deposition

Vaporization occurs at the highest temperature.

Analyze the following statements and identify which are correct regarding energy changes during phase transitions. (Select all that apply)

undefined. A) Energy is absorbed during freezing.
undefined. A) Energy is released during condensation. ✓
undefined. A) Energy is absorbed during vaporization. ✓
undefined. A) Energy is released during sublimation.

Energy is released during condensation and absorbed during vaporization.

Analyze how the concepts of latent heat and phase change are interconnected. Provide examples to support your explanation.

Latent heat is the energy absorbed or released during phase changes, such as melting and boiling.

Part 4: Evaluation and Creation

Which of the following scenarios best demonstrates an exothermic phase change?

undefined. A) Ice melting in a drink
undefined. A) Water evaporating from a lake
undefined. A) Dew forming on grass ✓
undefined. A) Dry ice sublimating in air

Dew forming on grass is an exothermic phase change.

Evaluate the following scenarios and determine which involve a decrease in entropy. (Select all that apply)

undefined. A) Water freezing into ice ✓
undefined. A) Ice cream melting
undefined. A) Steam condensing into water ✓
undefined. A) Snow sublimating

Water freezing into ice and steam condensing into water involve a decrease in entropy.

Design an experiment to demonstrate the process of sublimation. Describe the materials, procedure, and expected results.

An experiment can involve dry ice sublimating in a warm environment, showing gas formation.