Phase Change Worksheet

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Part 1: Building a Foundation

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

Hint: Think about the melting process.

- ◯ A) Freezing
- ◯ A) Melting
- ◯ A) Condensation
- ◯ A) Sublimation

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

Hint: Consider processes that absorb heat.

- ☐ A) Melting
- ☐ A) Freezing
- ☐ A) Vaporization
- ☐ A) Deposition

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

Hint: Consider the energy transfer involved.

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

Hint: Think about the transitions involving gases.

1. What is condensation?

2. What is sublimation?

Part 2: Understanding and Interpretation

During which phase change does a substance release energy?

Hint: Consider the processes that involve cooling.

- ◯ A) Melting
- ◯ A) Sublimation
- ◯ A) Condensation
- ◯ A) Vaporization

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

Hint: Think about the role of latent heat in phase changes.

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

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

Hint: Consider the graphical representation of phase changes.

Part 3: Application and Analysis

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

Hint: Think about the transition from gas to solid.

- ◯ A) Melting
- ◯ A) Deposition
- ◯ A) Condensation
- ◯ A) Sublimation

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

Hint: Consider conditions where solids turn directly into gases.

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

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

Hint: Consider the relationship between pressure and phase changes.

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

Hint: Think about the processes that involve gases.

- ◯ A) Freezing
- ◯ A) Melting
- ◯ A) Vaporization
- ◯ A) Deposition

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

Hint: Consider the energy dynamics involved in phase changes.

- [ ] A) Energy is absorbed during freezing.
- [ ] A) Energy is released during condensation.
- [ ] A) Energy is absorbed during vaporization.
- [ ] A) Energy is released during sublimation.

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

Hint: Consider how energy transfer relates to phase changes.

Part 4: Evaluation and Creation

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

Hint: Think about processes that release heat.

- ◯ A) Ice melting in a drink
- ◯ A) Water evaporating from a lake
- ◯ A) Dew forming on grass
- ◯ A) Dry ice sublimating in air

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

Hint: Consider processes that lead to more ordered states.

- [ ] A) Water freezing into ice
- [ ] A) Ice cream melting
- [ ] A) Steam condensing into water

- [ ] A) Snow sublimating

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

Hint: Think about how to visually show sublimation.