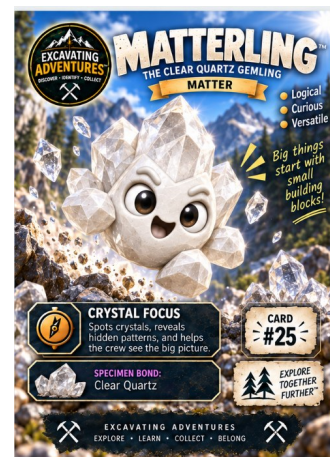


Changing State & Conserving Matter

State Change Vault with Matterling

Learning target

Explain state changes without making matter disappear.



Before you begin

Use the reference page and discussion prompts on their own, or open the optional browser adventure. No earlier lesson or physical kit is required.

For online play: use an internet-connected current browser with local storage enabled. Read the three-part Gemling briefing, answer the quick check, and apply the evidence at three checkpoints. Retry feedback supports review; results are not a secure test or gradebook.

Use for teacher-led review, science centers or partner practice. Independent readers may need support with the vocabulary below. The design target is grades 3-5; choose support based on the learner.

Vocabulary and concepts to discuss

Melting; freezing; evaporation; condensation; conservation in a closed system

Open State Change Vault - direct lesson link

Scan the QR code or use the clickable link. This guide is usable offline; the adventure runs on an external educational website.



Changing State & Conserving Matter - key ideas

1. The first clues

Melting changes solid to liquid; freezing changes liquid to solid. Evaporation changes liquid to gas, and condensation changes gas to liquid.

2. How the clues connect

Changing state does not make the material vanish. In a closed system, total mass stays the same when all material is retained.

3. Our evidence record

Our sealed-container model starts with 50 g total mass and contains water that evaporates. The total remains 50 g because the water vapor stays inside.

Keep the science accurate

Use simple particle models and measured mass/volume. Formal density calculations and molecular bonding are extensions.

Apply the evidence

Use a specific observation from this lesson to explain one choice. Point to a clue, then connect that clue to a scientific idea.

Curriculum reference: <https://www.nextgenscience.org/dci-arrangement/5-ps1-matter-and-its-interactions>

Talk through the evidence

1. Which change is liquid to gas?

Expected answer: Evaporation

Reasoning: Melting changes solid to liquid; freezing changes liquid to solid. Evaporation changes liquid to gas, and condensation changes gas to liquid.

2. What is gas to liquid called?

Expected answer: Condensation

Reasoning: Melting changes solid to liquid; freezing changes liquid to solid. Evaporation changes liquid to gas, and condensation changes gas to liquid.

3. What mass remains in the sealed model?

Expected answer: 50 g

Reasoning: Our sealed-container model starts with 50 g total mass and contains water that evaporates. The total remains 50 g because the water vapor stays inside.

4. Why is a closed system important here?

Expected answer: No material escapes or enters

Reasoning: Changing state does not make the material vanish. In a closed system, total mass stays the same when all material is retained.

Guide the discussion

Ask learners to name the evidence that supports their answer. If an answer differs, revisit the matching key idea on page 2 and invite a revised explanation.

Online rewards: this lesson grants one fixed digital Expedition Discovery. Five saved digital Gemling friends become available only after all six distinct subject lessons are complete, in any order. Digital rewards do not establish physical ownership.