

Planning a Separation

Secret Recipe Vault with Mixling

Learning target

Plan and justify a sequence to separate a simple mixture.



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

Combining methods; recovering components; measuring; conserving material

Open Secret Recipe 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.



Planning a Separation - key ideas

1. The first clues

A separation plan can combine several property-based steps. Track every component so recovered material is accounted for.

2. How the clues connect

For iron, sand and salt water, a magnet can remove iron, a filter can remove sand, and evaporation can leave salt behind. Recovering the water too requires capturing and condensing vapor in a suitable model.

3. Our evidence record

Our closed collection model keeps all components. If water vapor escapes in an open model, the remaining mass is smaller because material left, not because matter was destroyed.

Keep the science accurate

Dissolving is not disappearance and filtration does not remove dissolved salt. Use safe supplied models and data.

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 step removes iron?

Expected answer: A magnet

Reasoning: For iron, sand and salt water, a magnet can remove iron, a filter can remove sand, and evaporation can leave salt behind. Recovering the water too requires capturing and condensing vapor in a suitable model.

2. What removes undissolved sand?

Expected answer: A filter

Reasoning: For iron, sand and salt water, a magnet can remove iron, a filter can remove sand, and evaporation can leave salt behind. Recovering the water too requires capturing and condensing vapor in a suitable model.

3. How can a model recover evaporated water?

Expected answer: Capture and condense the vapor

Reasoning: For iron, sand and salt water, a magnet can remove iron, a filter can remove sand, and evaporation can leave salt behind. Recovering the water too requires capturing and condensing vapor in a suitable model.

4. Why track the components?

Expected answer: To account for where the material went

Reasoning: A separation plan can combine several property-based steps. Track every component so recovered material is accounted for.

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.