

Measuring & Comparing Matter

Density Drop Chamber with Matterling

Learning target

Compare matter with measurements rather than size alone.



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

Mass; volume; units; equal-size comparisons; density as optional extension

Open Density Drop Chamber - 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.



Measuring & Comparing Matter - key ideas

1. The first clues

Mass measures the amount of matter in an object. Volume measures how much space it occupies; use units when comparing measurements.

2. How the clues connect

Equal-size objects can have different masses. Size alone does not tell us which sample has more mass.

3. Our evidence record

Our table gives two 10 mL samples: A has mass 8 g and B has mass 20 g. B has more mass for the same volume in this comparison; no advanced formula is needed.

Keep the science accurate

Use mass and volume evidence. Formal density equations and density-based flotation calculations are optional.

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. What does volume measure?

Expected answer: Space occupied

Reasoning: Mass measures the amount of matter in an object. Volume measures how much space it occupies; use units when comparing measurements.

2. Which equal-volume sample has greater mass?

Expected answer: B

Reasoning: Equal-size objects can have different masses. Size alone does not tell us which sample has more mass.

3. What is the volume of each sample?

Expected answer: 10 mL

Reasoning: Our table gives two 10 mL samples: A has mass 8 g and B has mass 20 g. B has more mass for the same volume in this comparison; no advanced formula is needed.

4. Can size alone determine mass?

Expected answer: No

Reasoning: Equal-size objects can have different masses. Size alone does not tell us which sample has more mass.

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.