Gases & Their Properties

Gas Balloon Loft with Matterling

Learning target

Use observations to explain properties of gases.

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

Taking container space; no fixed shape or volume; air; compression overview

Open Gas Balloon Loft - 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.

Gases & Their Properties - key ideas

1. The first clues

A gas does not keep its own fixed shape or volume. It spreads through the available container space.

2. How the clues connect

Gas has mass. It can often be compressed because its particles are far apart compared with their size in a simple particle model.

3. Our evidence record

Our sealed syringe model reduces the air space when pushed. The air is compressed, not destroyed. This is a supplied model, not a task requiring equipment.

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. Does air have mass?

Expected answer: Yes

Reasoning: Gas has mass. It can often be compressed because its particles are far apart compared with their size in a simple particle model.

2. What happens when the model's air space is reduced?

Expected answer: The gas is compressed

Reasoning: Our sealed syringe model reduces the air space when pushed. The air is compressed, not destroyed. This is a supplied model, not a task requiring equipment.

3. How does gas fill a container?

Expected answer: It spreads through available space

Reasoning: A gas does not keep its own fixed shape or volume. It spreads through the available container space.

4. What does the simple particle model suggest?

Expected answer: There is space between gas particles

Reasoning: Gas has mass. It can often be compressed because its particles are far apart compared with their size in a simple particle model.

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.