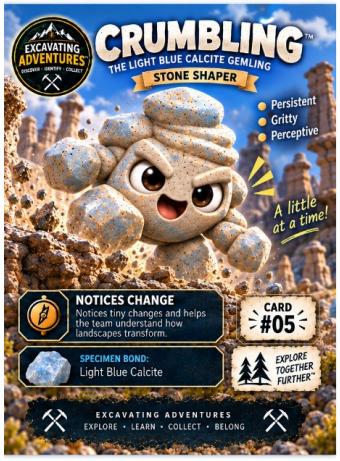
Physical Weathering

Wind-Carved Archway with Crumbling



Learning target

Explain physical weathering with an observable model.

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

Ice wedging; temperature changes; abrasion; smaller pieces of the same material

Open Wind-Carved Archway - 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.

Physical Weathering - key ideas

1. The first clues

Physical weathering changes rock into smaller pieces without changing the material into a different substance. Abrasion happens when particles scrape or rub surfaces.

2. How the clues connect

Water in cracks can freeze and expand, helping widen a crack. Repeated heating and cooling can also contribute to physical breakdown.

3. Our evidence record

Our model compares a rock rubbed by sand with a rock split by expanding ice. Both show physical breakdown, even though the forces are different.

Keep the science accurate

Explain breaking, moving and settling distinctly. Chemical weathering is descriptive; no acid experiments are required.

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/4-ess2-earths-systems

Talk through the evidence

1. What remains the same during physical weathering?

Expected answer: The kind of material

Reasoning: Physical weathering changes rock into smaller pieces without changing the material into a different substance. Abrasion happens when particles scrape or rub surfaces.

2. What is abrasion?

Expected answer: Scraping or rubbing by particles

Reasoning: Physical weathering changes rock into smaller pieces without changing the material into a different substance. Abrasion happens when particles scrape or rub surfaces.

3. How can freezing water widen a crack?

Expected answer: It expands as it freezes

Reasoning: Water in cracks can freeze and expand, helping widen a crack. Repeated heating and cooling can also contribute to physical breakdown.

4. What do both model rocks show?

Expected answer: Physical weathering

Reasoning: Our model compares a rock rubbed by sand with a rock split by expanding ice. Both show physical breakdown, even though the forces are different.

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.