

Living Things, Chemical Weathering & Soil

Rootsplit Ravine with Crumbling

Learning target

Explain several contributions to weathering and soil formation.



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

Root action; water-driven chemical change; rock particles; organic matter

Open Rootsplit Ravine - 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.



Living Things, Chemical Weathering & Soil - key ideas

1. The first clues

Roots growing into cracks can push rock apart physically. Chemical weathering changes minerals through reactions, often involving water.

2. How the clues connect

Soil includes mineral particles, organic matter, water and air. Decayed remains contribute organic matter; soil is not just crushed rock.

3. Our evidence record

Our cards describe a root widening a crack and a mineral changing through reaction with water. Match the first to physical action and the second to chemical change.

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. Which example is physical action?

Expected answer: A root widening a crack

Reasoning: Our cards describe a root widening a crack and a mineral changing through reaction with water. Match the first to physical action and the second to chemical change.

2. What distinguishes chemical weathering?

Expected answer: Minerals change through reactions

Reasoning: Roots growing into cracks can push rock apart physically. Chemical weathering changes minerals through reactions, often involving water.

3. Which belongs in a simple soil model?

Expected answer: Mineral particles and organic matter

Reasoning: Soil includes mineral particles, organic matter, water and air. Decayed remains contribute organic matter; soil is not just crushed rock.

4. Does every plant root chemically dissolve rock?

Expected answer: No, root pushing is physical

Reasoning: Roots growing into cracks can push rock apart physically. Chemical weathering changes minerals through reactions, often involving water.

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.