

Measuring Earthquake Effects

Tremor Tower with Quakeling

Learning target

Compare earthquake records and explain why damage can differ.



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

Seismographs; magnitude versus local effects; ground and building differences

Open Tremor Tower - 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 Earthquake Effects - key ideas

1. The first clues

Seismographs record ground motion. Magnitude describes an earthquake's overall size; local shaking effects can vary from place to place.

2. How the clues connect

Ground conditions, distance and building design influence damage. The same earthquake can affect two buildings differently.

3. Our evidence record

Our models receive the same shaking. The braced model stays upright and the unbraced model falls. This supports comparing design, not claiming every real building is safe.

Keep the science accurate

Focus on maps, simple fault/wave models and risk reduction. Detailed seismic calculations and exact prediction are out of scope.

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 does a seismograph record?

Expected answer: Ground motion

Reasoning: Seismographs record ground motion. Magnitude describes an earthquake's overall size; local shaking effects can vary from place to place.

2. Does one earthquake cause identical damage everywhere?

Expected answer: No

Reasoning: Ground conditions, distance and building design influence damage. The same earthquake can affect two buildings differently.

3. Which model performed better in the given test?

Expected answer: The braced model

Reasoning: Our models receive the same shaking. The braced model stays upright and the unbraced model falls. This supports comparing design, not claiming every real building is safe.

4. What conclusion is justified?

Expected answer: Design affected performance in this test

Reasoning: Ground conditions, distance and building design influence damage. The same earthquake can affect two buildings differently.

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.