

Strength, Hardness & Durability

Strength Test Tower with Craftling

Learning target

Distinguish strength from hardness and choose a relevant test.



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

Supporting loads; resisting scratches; wear; different properties

Open Strength Test 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.



Strength, Hardness & Durability - key ideas

1. The first clues

Strength, hardness and durability are different properties. Supporting a load, resisting scratches and resisting wear require different tests.

2. How the clues connect

A scratch-resistant material is not automatically the strongest beam. Use evidence relevant to the intended job.

3. Our evidence record

Our table says A resists scratches but breaks under the test load; B scratches more easily but supports the load. For the model support beam, B fits the given requirement.

Keep the science accurate

Compare properties through fair tests. Strength, hardness and flexibility are not interchangeable; no live electrical testing 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/2-ps1-matter-and-its-interactions>

Talk through the evidence

1. Which test matters most for this support beam?

Expected answer: The load test

Reasoning: Our table says A resists scratches but breaks under the test load; B scratches more easily but supports the load. For the model support beam, B fits the given requirement.

2. Which sample supports the stated load?

Expected answer: B

Reasoning: Our table says A resists scratches but breaks under the test load; B scratches more easily but supports the load. For the model support beam, B fits the given requirement.

3. Does hardness guarantee strength in every use?

Expected answer: No

Reasoning: Strength, hardness and durability are different properties. Supporting a load, resisting scratches and resisting wear require different tests.

4. What does durability concern?

Expected answer: Resistance to wear or damage through use

Reasoning: Strength, hardness and durability are different properties. Supporting a load, resisting scratches and resisting wear require different tests.

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.