

Friction & Surfaces

Friction Flats with Zoomling

Learning target

Use evidence to explain friction's effect.



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

Contact resistance; surface differences; slowing; fair tests

Open Friction Flats - 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.



Friction & Surfaces - key ideas

1. The first clues

Friction is a contact force that resists relative sliding between surfaces. It can slow a moving object and also help provide grip.

2. How the clues connect

Surfaces and conditions affect friction. Compare the same cart, starting conditions and track slope when investigating surface changes.

3. Our evidence record

Our record releases the same cart in the same way on two tracks. It stops sooner on the rough test surface. That result supports greater slowing in this particular comparison.

Keep the science accurate

Keep force and speed comparisons qualitative or simple. No formal Newton-law algebra or momentum calculations.

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/3-ps2-motion-and-stability-forces-and-interactions>

Talk through the evidence

1. Which force resists sliding?

Expected answer: Friction

Reasoning: Friction is a contact force that resists relative sliding between surfaces. It can slow a moving object and also help provide grip.

2. Which track stops this cart sooner?

Expected answer: The rough test surface

Reasoning: Our record releases the same cart in the same way on two tracks. It stops sooner on the rough test surface. That result supports greater slowing in this particular comparison.

3. What should stay the same for a fair comparison?

Expected answer: Cart and release conditions

Reasoning: Our record releases the same cart in the same way on two tracks. It stops sooner on the rough test surface. That result supports greater slowing in this particular comparison.

4. Is friction always unhelpful?

Expected answer: No, it can provide grip

Reasoning: Friction is a contact force that resists relative sliding between surfaces. It can slow a moving object and also help provide grip.

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.