

Pushes, Pulls & Balanced Forces

Starting Line Station with Zoomling

Learning target

Explain when forces can change motion.



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 forces; strength and direction; balanced and unbalanced forces

Open Starting Line Station - 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.



Pushes, Pulls & Balanced Forces - key ideas

1. The first clues

A force is a push or pull with strength and direction. Forces can act together on an object.

2. How the clues connect

Balanced forces do not change motion. An unbalanced overall force can change speed or direction; an object already moving can continue under balanced forces.

3. Our evidence record

Our cart starts at rest. Equal opposite pushes balance; a stronger push to the right produces an overall rightward force in this simplified model.

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. What is a force?

Expected answer: A push or pull

Reasoning: A force is a push or pull with strength and direction. Forces can act together on an object.

2. Do balanced forces necessarily stop a moving object?

Expected answer: No

Reasoning: Balanced forces do not change motion. An unbalanced overall force can change speed or direction; an object already moving can continue under balanced forces.

3. Which resting-cart case has an overall force?

Expected answer: The stronger rightward push

Reasoning: Our cart starts at rest. Equal opposite pushes balance; a stronger push to the right produces an overall rightward force in this simplified model.

4. What can an unbalanced force change?

Expected answer: Speed or direction

Reasoning: Balanced forces do not change motion. An unbalanced overall force can change speed or direction; an object already moving can continue under balanced forces.

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.