

Levers

Lever Lift Yard with Gearling

Learning target

Use a lever model to explain a lifting advantage.



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

Load; effort; fulcrum; lever arrangement; force-direction changes

Open Lever Lift Yard - 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.



Levers - key ideas

1. The first clues

A lever is a rigid part turning about a fulcrum. The effort is the applied force; the load is what it acts on.

2. How the clues connect

Changing the arrangement changes the force and distance tradeoff. Moving the effort farther from the fulcrum can reduce the force needed for a given load in an ideal model.

3. Our evidence record

Our record keeps the load near the fulcrum and applies effort farther away. The setup lifts the model load with a smaller effort force but a larger effort movement.

Keep the science accurate

Teach all six traditional simple machines in grouped lessons. Gears connect to wheels/axles, not a new seventh classical type. No efficiency equations.

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 the fulcrum?

Expected answer: The pivot

Reasoning: A lever is a rigid part turning about a fulcrum. The effort is the applied force; the load is what it acts on.

2. What is the effort?

Expected answer: The applied force

Reasoning: A lever is a rigid part turning about a fulcrum. The effort is the applied force; the load is what it acts on.

3. Which arrangement fits the supplied result?

Expected answer: Effort farther from the pivot than the load

Reasoning: Changing the arrangement changes the force and distance tradeoff. Moving the effort farther from the fulcrum can reduce the force needed for a given load in an ideal model.

4. What tradeoff accompanies the smaller effort force?

Expected answer: A greater effort movement distance

Reasoning: Changing the arrangement changes the force and distance tradeoff. Moving the effort farther from the fulcrum can reduce the force needed for a given load in an ideal model.

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.