

Ramps, Wedges & Screws

Screw Stair Tower with Gearling

Learning target

Connect three related machine types to their uses.



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

Inclined planes; wedge action; screw as a wrapped incline; distance tradeoffs

Open Screw Stair 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.



Ramps, Wedges & Screws - key ideas

1. The first clues

An inclined plane is a sloping surface. A longer, gentler ramp can reduce ideal effort force by increasing travel distance.

2. How the clues connect

A wedge applies forces as it moves between or into materials. A screw is an inclined plane wrapped around a cylinder.

3. Our evidence record

Our task cards match a ramp to raising cargo, a wedge to splitting or separating, and a screw to fastening through rotation. These complete the six traditional machine types taught across the route.

Keep the science accurate

This lesson groups inclined planes, wedges and screws so all six classical machines fit the six-lesson plan.

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 machine is a slope?

Expected answer: Inclined plane

Reasoning: An inclined plane is a sloping surface. A longer, gentler ramp can reduce ideal effort force by increasing travel distance.

2. Which machine is a wrapped incline?

Expected answer: Screw

Reasoning: A wedge applies forces as it moves between or into materials. A screw is an inclined plane wrapped around a cylinder.

3. Which tool type pushes materials apart in our example?

Expected answer: Wedge

Reasoning: A wedge applies forces as it moves between or into materials. A screw is an inclined plane wrapped around a cylinder.

4. What is the ramp's basic tradeoff?

Expected answer: Longer distance can reduce ideal force

Reasoning: An inclined plane is a sloping surface. A longer, gentler ramp can reduce ideal effort force by increasing travel distance.

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.