

Magnetic Force at a Distance

Magnetic Crane Depot with Snapling

Learning target

Use evidence to compare magnetic effects.



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

Distance; noncontact force; intervening materials; strength tests

Open Magnetic Crane Depot - 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.



Magnetic Force at a Distance - key ideas

1. The first clues

Magnetic forces can act across a gap. Their effects generally weaken as distance increases in a simple fixed-magnet comparison.

2. How the clues connect

Some nonmagnetic materials between objects still allow noticeable magnetic attraction. The material and thickness matter, so compare test evidence.

3. Our evidence record

Our crane record lifts an iron piece across a small gap but not a larger gap using the same magnet. Reducing the gap fits the supplied result; it does not prove every load can be lifted.

Keep the science accurate

Not all metals are magnetic. Treat electromagnets qualitatively; no field mathematics or unsupervised powered builds.

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. Can magnetic attraction act without contact?

Expected answer: Yes

Reasoning: Some nonmagnetic materials between objects still allow noticeable magnetic attraction. The material and thickness matter, so compare test evidence.

2. Which gap works in the record?

Expected answer: The smaller gap

Reasoning: Our crane record lifts an iron piece across a small gap but not a larger gap using the same magnet. Reducing the gap fits the supplied result; it does not prove every load can be lifted.

3. What should stay the same to test gap size?

Expected answer: Magnet and load

Reasoning: Our crane record lifts an iron piece across a small gap but not a larger gap using the same magnet. Reducing the gap fits the supplied result; it does not prove every load can be lifted.

4. Which improvement is supported?

Expected answer: Reduce the gap within the tested range

Reasoning: Our crane record lifts an iron piece across a small gap but not a larger gap using the same magnet. Reducing the gap fits the supplied result; it does not prove every load can be lifted.

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.