Earth's Magnetism & Compasses

Compass Canyon with Snapling

Learning target

Explain what a compass can show.

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

Magnetic field overview; compass direction; maps; limits near magnets

Open Compass Canyon - 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.

Earth's Magnetism & Compasses - key ideas

1. The first clues

Earth has a magnetic field. A freely turning compass needle tends to align with the local magnetic field, helping indicate magnetic north.

2. How the clues connect

Magnetic north and geographic north are not exactly the same. Nearby magnets or some metal objects can disturb a compass reading.

3. Our evidence record

Our record shows the compass changing direction beside a bar magnet and returning when moved away. That is interference evidence, not Earth instantly moving its north pole.

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. What influences a compass needle?

Expected answer: The local magnetic field

Reasoning: Earth has a magnetic field. A freely turning compass needle tends to align with the local magnetic field, helping indicate magnetic north.

2. Can a nearby magnet disturb the reading?

Expected answer: Yes

Reasoning: Magnetic north and geographic north are not exactly the same. Nearby magnets or some metal objects can disturb a compass reading.

3. What explains our changing reading?

Expected answer: Nearby magnetic interference

Reasoning: Our record shows the compass changing direction beside a bar magnet and returning when moved away. That is interference evidence, not Earth instantly moving its north pole.

4. Are magnetic and geographic north exactly identical?

Expected answer: No

Reasoning: Magnetic north and geographic north are not exactly the same. Nearby magnets or some metal objects can disturb a compass reading.

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.