

Radiation

Radiant Sun Deck with Sizzling

Learning target

Explain radiant heating with familiar examples.



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

Transfer without direct contact; sunlight; absorption and reflection

Open Radiant Sun Deck - 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.



Radiation - key ideas

1. The first clues

Radiation transfers energy by electromagnetic waves and does not require direct contact or moving matter between source and receiver. Sunlight reaches Earth this way.

2. How the clues connect

Surfaces absorb and reflect different amounts. Shade can reduce incoming sunlight; conditions and material properties affect warming.

3. Our evidence record

Our equal-surface record compares one panel in sunlight with one shaded. The exposed panel warms more. The record supports a difference in incoming radiation, not contact with the Sun.

Keep the science accurate

Convection and radiation are descriptive models, not fluid/thermal equations. No hot-material experiments are required.

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/4-ps3-energy>

Talk through the evidence

1. How does sunlight bring energy to Earth?

Expected answer: Radiation

Reasoning: Radiation transfers energy by electromagnetic waves and does not require direct contact or moving matter between source and receiver. Sunlight reaches Earth this way.

2. Which panel warms more in our record?

Expected answer: The exposed panel

Reasoning: Our equal-surface record compares one panel in sunlight with one shaded. The exposed panel warms more. The record supports a difference in incoming radiation, not contact with the Sun.

3. What does shade reduce here?

Expected answer: Incoming sunlight

Reasoning: Surfaces absorb and reflect different amounts. Shade can reduce incoming sunlight; conditions and material properties affect warming.

4. Does radiation need air between source and receiver?

Expected answer: No

Reasoning: Radiation transfers energy by electromagnetic waves and does not require direct contact or moving matter between source and receiver. Sunlight reaches Earth this way.

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.