Where Energy Goes

Use observations to explain how materials interact with energy.

4.3.b "Construct an explanation with evidence supporting the claim that different objects can absorb, reflect, and/or conduct energy."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline the observations Nia made about each material. Circle the material named in each observation so you can use the evidence in your answers.

Nia Tests Materials

1. At the school science fair, Nia set up a lamp to stand for the Sun. Light from the lamp carried energy to the objects on her desk. An object can absorb light energy, taking some of it in. An object can reflect light energy, sending it away. Heat energy can also move through a solid object. This movement is called conduction.

2. Nia placed a square of black paper and a sheet of shiny foil the same distance from the lamp. After five minutes, the black paper felt warmer than the foil. She moved a white card near each surface. A bright patch of light appeared on the card when light hit the foil, but not when it hit the black paper.

3. Next, Nia put the bowls of two spoons into the same cup of warm water. One spoon was metal, and the other was wood. Their handles stayed out of the water. After a minute, the metal handle felt warm, but the wooden handle felt much cooler. Nia kept both spoons in the water for the same length of time so she could compare them fairly.

2 ANSWER WITH EVIDENCE

Use the passage

1. What evidence supports the claim that the black paper absorbed more light energy than the foil?

2. What evidence supports the claim that the foil reflected light?

3. How did Nia's test show that the metal spoon conducted heat?

4. Which spoon conducted less heat to its handle? Use evidence from the test to explain.

3 YOUR TURN

Your own words

Imagine you are making a lunch box that will sit in sunlight. Choose one material from the passage for its outside to help keep food cool and another for its handle to make it comfortable to hold. In three or four sentences, explain your choices using one observation from Nia's tests for each.

ANSWER KEY

Where Energy Goes

GRADE 4 · 4.3.b

PART 1 · READ AND MARK

Underline the observations Nia made about each material. Circle the material named in each observation so you can use the evidence in your answers. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	What evidence supports the claim that the black paper absorbed more light energy than the foil?	**After five minutes under the lamp, the black paper felt warmer than the foil.**
2	What evidence supports the claim that the foil reflected light?	**A bright patch appeared on the white card when light hit the foil.**
3	How did Nia's test show that the metal spoon conducted heat?	**The metal handle felt warm even though only the spoon's bowl was in the warm water.**
4	Which spoon conducted less heat to its handle? Use evidence from the test to explain.	**The wooden spoon conducted less heat to its handle. Its handle felt much cooler than the metal handle after both spoons spent the same time in the water.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

I would cover the outside with shiny foil to reflect some sunlight away from the food. Nia saw a bright patch on a card when light hit the foil. I would use wood for the handle because less heat traveled along it. In Nia's test, the wooden spoon's handle stayed much cooler than the metal spoon's handle.

Accept explanations that connect each claim to an observation in the passage. Students may say that wood conducts heat less readily than metal, rather than saying it does not conduct heat at all.