

Light's Four Paths

Trace how light travels and changes when it meets materials.

5.8.C “demonstrate and explain how light travels in a straight line and can be reflected, refracted, or absorbed.”

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline each sentence that tells what light does. In the margin, number the evidence 1 for straight travel, 2 for reflection, 3 for refraction, and 4 for absorption.

Maya's Flashlight Investigation

- ① During a darkened-room investigation, Maya points a flashlight through three holes in pieces of cardboard. The holes make a straight path, so a bright spot reaches a screen. When she slides one piece sideways, the spot disappears. Light from the flashlight travels in straight lines until it meets an object or material. This is why a shadow forms behind a book that blocks the light.
- ② Next, Maya aims the flashlight at a smooth mirror. The beam bounces off the mirror and reaches a paper target beside her. This change in direction is reflection. Light reflects from many surfaces, but a smooth, shiny surface sends light in a more orderly direction than a rough surface. Mirrors can help people see light from objects around a corner.
- ③ Maya then shines the beam through a clear glass of water. At the air-water boundary, the light changes speed and bends. This bending is refraction, and it can make a straw in water look bent. Finally, a black cloth absorbs much of the light that hits it. The absorbed light energy can warm the cloth, so less light travels onward.

2 ANSWER WITH EVIDENCE Use the passage

1 What happened when Maya slid one cardboard piece sideways? What did this show about light?

2 How did the mirror change the flashlight beam, and what is this change called?

3 What happened to the light at the air-water boundary, and what object can look bent because of this?

4 What happens when the black cloth absorbs much of the light that hits it?

3 YOUR TURN Your own words

Draw three labeled panels that show your own examples of light. Panel 1 must show light traveling straight and then being absorbed, Panel 2 must show reflection, and Panel 3 must show refraction. Use arrows to show each light path and write a caption for each panel.

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PART 1 • READ AND MARK

Underline each sentence that tells what light does. In the margin, number the evidence 1 for straight travel, 2 for reflection, 3 for refraction, and 4 for absorption. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What happened when Maya slid one cardboard piece sideways? What did this show about light?	The bright spot disappeared. This showed that light travels in straight lines and could not pass through holes that were no longer lined up.
2	How did the mirror change the flashlight beam, and what is this change called?	The mirror bounced the beam toward the paper target. This change in direction is called reflection.
3	What happened to the light at the air-water boundary, and what object can look bent because of this?	The light changed speed and bent. A straw in water can look bent because of refraction.
4	What happens when the black cloth absorbs much of the light that hits it?	The cloth can warm because it absorbs light energy, and less light travels onward.

PART 3 • YOUR TURN (SAMPLE ANSWER)

Panel 1: Straight arrows show sunlight traveling to a dark sidewalk. Caption: The sidewalk absorbs some light and becomes warmer. Panel 2: Arrows show light from a lamp bouncing from a car mirror to a driver's eyes. Caption: The mirror reflects the light. Panel 3: Arrows show light from a coin bending as it leaves water and enters air. Caption: Refraction can make the coin appear in a different place.

Accept explanations that correctly connect straight travel, reflection, refraction, and absorption to the described evidence. In the panels, arrows should show a straight path in one material and a changed direction only for reflection or refraction.