# Follow the Beam

Read, mark, and model what happens to light.

**P.4.6B.3** "Develop and use models to communicate how light travels and behaves when it strikes an object, including reflection, refraction, and absorption."

NAME _____ DATE _____

## 1 READ AND MARK

Read it twice

**YOUR JOB** Underline each material the flashlight beam strikes. Circle the words that tell what happens to the light at each material.

### Maya Tests the Light

1. At a school play, Maya tests a flashlight before the curtain opens. She points it across a dark room. The beam moves in a straight path until it reaches an object. Maya draws a simple model in her notebook: a dot for the flashlight and an arrow for the light moving away from it. She plans to add more arrows to show what happens next.

2. First, Maya aims the beam at a sheet of shiny foil. Light bounces off the foil and reaches the wall. She adds an arrow pointing away from the foil to model reflection. Next, she aims the beam at a piece of black cloth. The cloth absorbs much of the light, changing its energy into heat. Much less light reaches the wall from the cloth.

3. Last, Maya shines the beam at an angle into a clear bowl of water. Some light passes from air into water and changes direction at the surface. This bending is called refraction. Maya adds an arrow that bends where the light enters the water. She knows that a model cannot show every bit of light, but its arrows can show the path she is studying.

## 2 ANSWER WITH EVIDENCE

Use the passage

1. How would you draw an arrow to show the light traveling from Maya's flashlight to the foil?

2. How would you show the light's path after it strikes the foil? What does that arrow model?

3. How would your model show what happens when light strikes the black cloth?

4. Where would you bend an arrow to model the light entering the water? What does the bend show?

## 3 YOUR TURN

Your own words

Draw a model of light from a flashlight bouncing off a mirror, entering a clear tank of water at an angle, and reaching a dark rock in the water. Use arrows to show the path, label reflection, refraction, and absorption, and write one sentence explaining what happens at the rock.

ANSWER KEY

# Follow the Beam

GRADE 4 · P.4.6B.3

## PART 1 · READ AND MARK

Underline each material the flashlight beam strikes. Circle the words that tell what happens to the light at each material. Accept any marking that follows this job and points at the right text.

## PART 2 · ANSWERS

| # | QUESTION | ANSWER |
|---|---|---|
| 1 | How would you draw an arrow to show the light traveling from Maya's flashlight to the foil? | **Draw a straight arrow from the flashlight to the foil.** |
| 2 | How would you show the light's path after it strikes the foil? What does that arrow model? | **Draw an arrow pointing away from the foil toward the wall. It models reflection.** |
| 3 | How would your model show what happens when light strikes the black cloth? | **Show much of the light being absorbed by the cloth, with much less light traveling toward the wall.** |
| 4 | Where would you bend an arrow to model the light entering the water? What does the bend show? | **Bend the arrow at the water's surface. The bend shows refraction as light passes from air into water.** |

## PART 3 · YOUR TURN (SAMPLE ANSWER)

Sketch: Arrows run from the flashlight to the mirror, then to the water surface, bend as they enter the water, and end at the dark rock. Labels mark reflection at the mirror, refraction at the water surface, and absorption at the rock. Sentence: The dark rock absorbs much of the light and changes its energy into heat.

Accept models with a straight incoming path, a change in direction at the mirror, and a bend where light enters the water. The arrow that ends at the rock can represent the light absorbed there.