Follow the Light

Plan a fair test of how materials affect light

P.4.6B.4 "Plan and conduct scientific investigations to explain how light behaves when it strikes transparent, translucent, and opaque materials."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline what Maya kept the same in her test, and circle what she observed when light struck each material.

Maya Tests a Beam of Light

1. At the classroom window, Maya noticed that sunlight passed through a clear plastic sheet but not a piece of cardboard. She wondered how light would act when it hit different materials. Her question was, "How does the material between a flashlight and a wall change the light seen on the wall?" She chose a clear plastic sheet, wax paper, and cardboard to test.

2. Maya placed a flashlight on a desk and aimed it at a white wall. She held each material in the same spot, halfway between the light and the wall. Each piece was wide enough to cover the whole beam. She kept the flashlight, its brightness, and the distance to the wall the same each time. She turned off the room lights to see the results more clearly.

3. With clear plastic, Maya saw a bright patch of light on the wall. With wax paper, she saw a dim, blurry patch because some light passed through and spread out. With cardboard, she saw no patch because it blocked the light. Her observations showed that the clear sheet was transparent, the wax paper was translucent, and the cardboard was opaque.

2 ANSWER WITH EVIDENCE

Use the passage

1. What did Maya change from one test to the next? Name two things she kept the same.

2. Why did Maya make sure each piece covered the whole flashlight beam?

3. Which material let light pass through but spread it out? What did Maya see that supports your answer?

4. How do Maya's results show that cardboard and clear plastic affect light differently?

3 YOUR TURN

Your own words

Plan a new flashlight test with clear food wrap, tracing paper, and a book cover. In four sentences, tell how you will keep the test fair, predict what light will do with each material, and explain what you will look for to check your predictions.

ANSWER KEY

Follow the Light

GRADE 4 · P.4.6B.4

PART 1 · READ AND MARK

Underline what Maya kept the same in her test, and circle what she observed when light struck each material. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	What did Maya change from one test to the next? Name two things she kept the same.	**She changed the material. She kept the flashlight and its brightness the same. Also accept the material's position or the distance to the wall.**
2	Why did Maya make sure each piece covered the whole flashlight beam?	**So light could not pass around a piece and make the results harder to compare.**
3	Which material let light pass through but spread it out? What did Maya see that supports your answer?	**Wax paper. Maya saw a dim, blurry patch of light on the wall.**
4	How do Maya's results show that cardboard and clear plastic affect light differently?	**Cardboard blocked the light, leaving no patch on the wall. Clear plastic let light through, making a bright patch.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

I will hold each material in the same place between one flashlight and a wall, with the room lights off. I predict that food wrap will let most light through, so I will look for a bright patch. I predict that tracing paper will spread out some passing light, so I will look for a dim, blurry patch. I predict that the book cover will block light, so I will look for no patch behind it.

For Part 3, accept other fair plans that keep the light source and material position the same. Predictions should distinguish light passing through clearly, passing through while spreading out, and being blocked.