Colors in White

Read Newton's test results and use them as evidence.

P.4.6B.1 "Construct scientific evidence to support the claim that white light is made up of different colors. Include the work of Sir Isaac Newton to communicate results."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline the claim about white sunlight, then number three results from Newton's tests that support it.

What Was in the Beam?

1. Imagine a thin beam of sunlight entering a dark room through a small hole. When it passes through a glass prism, a strip of colors appears on a white wall. Red, orange, yellow, green, blue, and violet can be seen. The prism bends light, but it bends each color by a different amount. This separates colors that traveled together in the white beam.

2. Long ago, Sir Isaac Newton made a dark room and let sunlight enter through a small hole. He sent the beam through a prism and saw colors spread out. Some people thought the glass made the colors. Newton tested this idea by sending just one color through another prism. That color bent, but it did not split into new colors.

3. Newton then used a lens to bring the spread-out colors back together. The light looked white again. His tests gave two clues: a single color did not split into new colors in another prism, and the separated colors could join to look white. These results support the claim that white sunlight contains different colors. A prism separates colors already in the beam.

2 ANSWER WITH EVIDENCE

Use the passage

1. How does the strip of colors on the wall support a claim about white sunlight?

2. How did Newton's second prism test challenge the idea that glass makes colors?

3. What did the lens test show about the colors and white light?

4. Use two different results from Newton's tests to explain why a prism separates colors instead of making them.

3 YOUR TURN

Your own words

A friend says a prism makes colors that were not in the light. Plan a test with a white flashlight, a prism, a lens, and a white wall. In four sentences, predict what you would see before and after the lens, state what this shows about white light, and connect your result to Newton's work.

ANSWER KEY

Colors in White

GRADE 4 · P.4.6B.1

PART 1 · READ AND MARK

Underline the claim about white sunlight, then number three results from Newton's tests that support it. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	How does the strip of colors on the wall support a claim about white sunlight?	**The colors appeared when a prism separated the sunlight, supporting the claim that the white beam contained different colors.**
2	How did Newton's second prism test challenge the idea that glass makes colors?	**A single color bent in the second prism but did not split into new colors.**
3	What did the lens test show about the colors and white light?	**When the separated colors came back together, the light looked white again.**
4	Use two different results from Newton's tests to explain why a prism separates colors instead of making them.	**One color did not split into new colors in a second prism, and the separated colors looked white when brought together. Both results support the claim that the colors were already in the white light.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

I would shine a white flashlight through a prism and expect to see colors on the wall. I would use a lens to bring the colors together and expect the light to look white again. This would support the claim that white light contains different colors instead of the prism making them. Newton also brought separated colors together with a lens and saw white light.

Accept answers that use the observed results as evidence that white light contains different colors. For Part 3, the prediction should connect the flashlight test to Newton's lens test, not claim that the prism creates colors.