

Light Path Detectives

Trace how light travels, changes, and transfers energy.

5.6 "The student will investigate and understand that visible light has certain characteristics and behaves in predictable ways. Key ideas include visible light is radiant energy that moves in transverse waves..."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline the sentences that tell how matter changes light's path. Circle each phrase that names an energy transformation, then number the sentences that explain waves or wavelengths.

Maya's Light Fair

- ① At a school science fair, Maya shines a flashlight through a narrow slit in cardboard. Light travels from the flashlight as radiant energy. It moves in transverse waves, meaning the waves vibrate across the direction the light travels. The beam makes a bright line on a wall because much of the light continues in a straight path.
- ② Maya places a glass prism in the beam. The prism changes the light's path, spreading white light into a band of colors called the visible spectrum. Each color has a different wavelength. Red light has a longer wavelength than blue light. When light meets other matter, it may also reflect from a mirror, bend through water, or be blocked by a book.
- ③ At the fair, Maya aims a small solar panel toward sunlight. The panel changes radiant energy into electrical energy, which powers a buzzer. A dark metal cup in sunlight becomes warmer because it changes some radiant energy into thermal energy. A toy with a light-powered motor can change electrical energy from its panel into mechanical energy, making its wheels turn.

2 ANSWER WITH EVIDENCE Use the passage

1 How do transverse waves move according to the passage?

2 How are the wavelengths of red light and blue light different?

3 Name two ways matter can change the path of light.

4 What energy transformation powers the buzzer, and what energy transformation makes the toy's wheels turn?

3 YOUR TURN Your own words

Make a three-panel sketch of a new light investigation. In each panel, show a different idea about light from the reading and write a caption that explains what is happening.

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PART 1 • READ AND MARK

Underline the sentences that tell how matter changes light's path. Circle each phrase that names an energy transformation, then number the sentences that explain waves or wavelengths. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	How do transverse waves move according to the passage?	They vibrate across the direction the light travels.
2	How are the wavelengths of red light and blue light different?	Red light has a longer wavelength than blue light.
3	Name two ways matter can change the path of light.	Matter can reflect light from a mirror, bend it through water, block it with a book, or spread it with a prism.
4	What energy transformation powers the buzzer, and what energy transformation makes the toy's wheels turn?	The solar panel changes radiant energy into electrical energy to power the buzzer. The toy changes electrical energy into mechanical energy to turn its wheels.

PART 3 • YOUR TURN (SAMPLE ANSWER)

Panel 1: A flashlight beam passes through a clear glass block and bends. Caption: Glass changes the path of the radiant light. Panel 2: White light passes through a prism and separates into colors. Caption: The visible spectrum has colors with different wavelengths, and red has a longer wavelength than blue. Panel 3: Sunlight shines on a solar panel connected to a small fan. Caption: The panel changes radiant energy into electrical energy, and the fan changes electrical energy into mechanical energy.

Accept accurate sketches and captions that use three different ideas from the passage, such as transverse waves, wavelengths, matter changing a light path, or energy transformations. Captions should correctly identify the direction or type of energy change when an energy transformation is shown.