

Name: _____ Date: _____

Light Wave Wonders Quiz for 4th Graders

Challenge students beyond simple reflection by investigating how periscopes work and why light shifts speed in different materials.

1. A scientist is designing a periscope to see over a wall using two mirrors. In what position must the mirrors be placed to reflect light correctly to her eye?

- A. Parallel at a 45-degree angle
- B. Facing each other at a 90-degree angle
- C. Back-to-back at the bottom of the tube
- D. Perpendicular to the ground

2. If you look through a hand lens and the object appears larger and upside down, you are likely using a ____ lens at a specific distance.

- A. Concave
- B. Convex
- C. Flat
- D. Opaque

3. Light travels at the exact same speed whether it is moving through the air, deep ocean water, or a solid diamond.

- A. True
- B. False

4. Why does a white lab coat appear white when viewed under sunlight?

- A. It absorbs all colors of the spectrum
- B. It refracts light into a rainbow
- C. It reflects all colors of visible light
- D. It lets light pass straight through it

5. When light hits a rough, uneven surface like a crumpled piece of foil, the light bounces off in many directions. This is called ____ reflection.

- A. Specular
- B. Diffuse
- C. Opaque
- D. Transparent

6. A desert mirage, which looks like blue water on a hot road, is actually caused by the refraction of light through layers of air at different temperatures.

- A. True
- B. False

Name: _____ Date: _____

7. An astronomer uses a telescope with a large curved mirror that caves inward to gather light from distant stars. What type of mirror is this?

- A. Convex
- B. Plane
- C. Concave
- D. Prism

8. When using a prism to create a spectrum, the light bends because different ____ of light travel at different speeds through the glass.

- A. Weights
- B. Shadows
- C. Volumes
- D. Colors

9. If you are standing 3 feet in front of a flat (plane) mirror, how far away from you does your reflection appear to be?

- A. 3 feet
- B. 6 feet
- C. 0 feet
- D. 12 feet

10. Fiber optic cables can send information over long distances because light remains trapped inside the cable by constantly reflecting off the inner walls.

- A. True
- B. False