

Name: _____ Date: _____

Answer Key: Secrets of the Invisible Path: A 3rd Grade Optics Challenge

Young scientists investigate how light rays bounce off periscopes and bend through magnifying jars during this hands-on station assessment.

1. If you are playing hide-and-seek and use a shiny metal spoon to see around a corner, what is the light doing when it hits the spoon?

Answer: B) Reflecting off the surface

Reflection happens when light hits a smooth, shiny surface like a spoon and bounces back, allowing us to see an image.

2. True or False: Light travels in a straight line until it hits an object or moves into a different material.

Answer: A) True

Light rays naturally move in straight paths unless something like a mirror or water gets in their way.

3. When you look through a glass of water, a pencil inside might look broken because the light rays are ____.

Answer: C) Refracting

Refraction is the scientific word for light bending when it moves from one thing (like air) into another (like water).

4. Why does a periscope help a person in a submarine see things above the water's surface?

Answer: B) It uses mirrors to bounce light down a tube

Periscopes use two mirrors set at angles to reflect light from the top of the tube down to the person's eyes at the bottom.

5. A magnifying glass is a special tool that uses a _____ to make small bugs look much larger.

Answer: C) Lens

A lens is a curved piece of glass or plastic that bends light to change how an object looks to our eyes.

6. True or False: Smooth, white paper reflects light the exact same way a silver mirror does.

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Answer: B) False

While both reflect light, a mirror is much smoother, allowing it to bounce light back in a clear image, whereas paper scatters the light.

7. Imagine you are wearing a pair of eyeglasses. How do the glasses help you see more clearly?

Answer: C) They bend light so it hits your eye correctly

Eyeglasses use lenses to refract (bend) light, which helps focus the image properly on the back of your eye.

8. If you shine a flashlight onto a still pond at night, you might see the moon in the water. This is an example of ____.

Answer: A) Reflection

The calm surface of the water acts like a mirror, reflecting the light from the moon back to your eyes.

9. True or False: A glass prism can split white sunlight into all the colors of the rainbow.

Answer: A) True

A prism refracts each color of light at a slightly different angle, causing the white light to spread out into a rainbow.

10. Which of these objects is designed specifically to bend light to help scientists see tiny bacteria?

Answer: B) A microscope lens

Microscopes use powerful lenses to refract light in a way that makes microscopic objects appear large enough to study.