Name: _____ **Date:** _____

Answer Key: Solve Your Mystery Mirror Mission: 2nd Grade Optics Challenge

Analyze how light behaves when it hits different surfaces and evaluate why certain tools help us see things that are hidden or far away.

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1. Imagine you are building a 'Spy Periscope' to see over a tall wall. Which property of light are you using to make the light bounce into your eyes?

Answer: B) Reflection

Reflection happens when light hits a surface like a mirror and bounces off, allowing us to see things from a different angle.

2. A scientist looks through a magnifying glass to make a tiny bug look huge. This happens because the glass causes the light to _____.

Answer: C) Bend (Refract)

Refraction is the bending of light as it passes through a lens, which can make objects appear larger than they really are.

3. If you shine a flashlight at a piece of clear plastic wrap, most of the light will pass through because the material is transparent.

Answer: A) True

Transparent materials allow light to pass through them completely, allowing us to see clearly to the other side.

4. Why does a spoon in a glass of milk look 'broken' at the surface of the liquid?

Answer: C) Light slows down and bends in the liquid

Light travels at different speeds through air and liquids. This change in speed causes the light to bend, creating a 'broken' visual effect.

5. A lighthouse uses a special curved _____ to gather light and send a powerful beam far out into the ocean.

Answer: C) Lens

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Lenses are used to focus or concentrate light into a specific direction, which is how lighthouses signal ships far away.

6. A piece of black construction paper is a great tool for reflecting light to brighten a dark room.

Answer: B) False

Dark, rough surfaces like black paper absorb most of the light that hits them rather than reflecting it.

7. You are designing a pair of glasses for a giant. If the lenses are curved outward like a bowl turned upside down, what will happen to the light?

Answer: C) The light will spread out or come together

The shape of a lens determines how light bends. Curved lenses are designed to either converge (bring together) or diverge (spread) light.

8. If you want to see a very tiny speck of dust on your desk, you should use a tool that _____ the image.

Answer: C) Magnifies

Magnification uses lenses to bend light in a way that makes small objects appear much larger to our eyes.

9. When you look into a flat bathroom mirror, the light bounces off the mirror at the same angle it hit the mirror.

Answer: A) True

This is a law of physics: light reflects off a flat surface at the same angle it arrived.

10. Which of these scenarios shows light being refracted (bent)?

Answer: B) Sunlight passing through a glass prism

A prism slows down and bends light, which often separates it into the colors of the rainbow.