

# Physics of Light Grade 1 Evaluation

## Teacher Section

**Overview:** Kids will demonstrate how well they understand important key concepts from this section. Some kids at this level are not reading quite yet, so you'll need to work together with them and observe them carefully as you go in order to understand what they know as they may not be able to tell you directly.

**Suggested Time:** 20-30 minutes

**Objectives:** Students will be tested on the key concepts:

- Light has a source and travels in a direction.
- Sunlight can be blocked to create shadows.
- Light is reflected from mirrors and other surfaces.
- We see objects when light traveling from an object enters our eye.
- Light can travel through a vacuum, like space.
- Prisms un-mix light into its colors or wavelengths.
- Light changes speeds when it passes through a different material.
- Lenses work to bend light in a certain direction, called refraction.

# Physics of Light Grade 1 Explorations

## Teacher's Outline with Answers

**Teacher/Parent:** This is not a quiz. This is a chance for you to explore the key concepts with your student to you can understand what they know and where they still need work. Read each question aloud and do the action and invite the students discuss their answers with you to help them answer the questions. Answers and/or experiment references given in parenthesis. If you've completed the lab experiments, then you should have no trouble answering these questions. Feel free to grab the materials you used in the lab experiments as you go through the questions together.

### Materials:

- Glass of water
- Pencil
- Pinch of flour or drops of milk
- Four flashlights (white, red, green, and blue)
- Two handheld magnifiers
- Dollar bill

### Questions to Explore Together:

1. What three colors of light make up white light? (Red, blue, and green.)
2. Demonstrate how water can be used as a prism. (Refer to *Liquid Prism* Experiment.)
3. Dip the pencil in the glass of water, and explain why the pencil appears broken depending on the way you look at it. (Refer to *Light Tricks* Experiment on refraction.)
4. Take a few drops of milk or a pinch of flour and add it to the glass of water. Now shine a strong flashlight on the jar (turn all other lights off) and use this to explain why the sky is blue and why sunsets are red. (Particles in the atmosphere determine the color we see for the sky. Look for a color tint as you angle the flashlight through the jar. The color of the sky of different planets depends on the color light the star gives off as well as what's in the atmosphere of the planet.)
5. Show an adult the own on the dollar bill by making a microscope for them to look through. (Refer to *Microscopes and Telescopes* Experiment.)

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## Student Worksheet

(Teacher: You'll need to go over the instructions with the kids and work with them on this part.)

**Overview:** You're going to show your teacher how much of this science stuff you already know. Choose one of the following activities:

- a. Make up a short story about light from the point of view of the rainbow or light wave. You can act it out if you want to with costumes and everything.
- b. Draw a poster that teaches the main concepts of light and how it works (reflection, refraction, etc.). When you're finished, you'll use it to teach your parent or teacher and demonstrate what you've learned.
- c. Invent a light show machine that displays different colors and shapes on the wall using flashlights, lenses, mirrors, and transparent objects (like water bottles, soap bubbles, plastic wrap, etc). Put on a show and describe how it works to your audience.