



LASER CLASSROOM

Bringing STEM to light®

BIG IDEAS

- You can make new colors with light.
- White light is made up of many colors.

WHAT YOU'LL NEED

- Activity Sheet 3
- Set of 3 Light Blox
- A diffraction grating

LIGHT & COLOR

Many students begin with the misconception that the light they experience every day is “clear” and that things create color. In reality, everyday light is composed of many colors, and the colors they see are the result of the interaction between light and matter.

The next activity familiarizes students with light and color. It exposes students to the fact that white light is composed of many colors of light. Students will see white light “broken” into a spectrum of colors by a diffraction grating, and they will combine three colors of light to make white light.

The focus of these activities is on providing materials and guidance to enable exploration

and observation. Students record their observations and begin to make sense of their investigations by looking beyond the obvious and forming their own conclusions.

BACKGROUND FOR THE TEACHER

Light can be thought of as either a wave or as a particle. There are many types of light, each with a different wavelength. Only a very small number of wavelengths are visible to the human eye. Microwaves and radio waves, for example, are light waves that are not detected by the human eye.

Each of the wavelengths that are visible to the human eye is defined and experienced by us as a color. Red has the longest wavelength, and blue or violet has the shortest wavelength. When waves of light combine with each other, they “change” color! When the three primary colors of light (red, green and blue) are combined, they create white light.

ACTIVITY SHEET 3: LIGHT & COLOR

1. Hold the diffraction grating up to your eye and look through it toward the lights in the room (DO NOT LOOK AT THE SUN). Look to the edge of the slide - what do you see?

2. Remove the line caps from all three Light Blox; turn them on and set them on a piece of plain white paper so that you can see the colors.
3. Move the Light Blox so that two colors overlap to make a new color. What colors did you use to make a new color? What new color did you make?

4. How many new colors can you make? List the colors you used and the new color for each combination.

EXAMPLE: RED + GREEN = YELLOW

5. What happens when you combine all three colors? Can you make "white" light?
