

Lesson Plan - 7

Subject: Physics

Topic: Mirror Prism

Sub – Topic: How Prism reflects white light

Grade: 8

Duration: 45 mins

Aim:

- To show that white light disperses into different colors.

Concepts and Objectives:

1. Students will observe light being dispersed to form the visible spectrum.
2. Students will write personal reflections about how the prism can reflect white light.

Background Information:

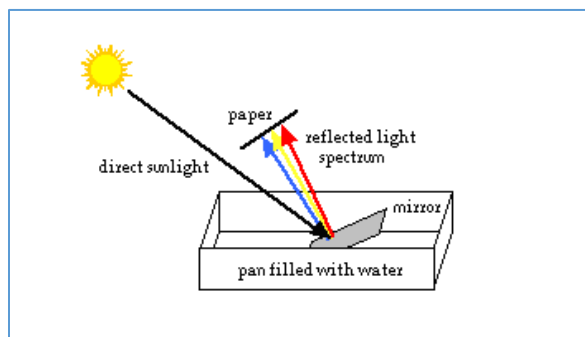
Light is energy that travels in waves.

- Light travels in straight paths until it hits an object.
- If light hits the surface of a medium that is smooth and polished, the wave will bounce back or be reflected.
- A wave that strikes the surface of an object is called the incoming or incident ray and the one that bounces back is the reflected ray.
- The reflected ray will be reflected back at the same angle as the incoming / incident ray. This is known as the Law of Reflection.

Material Required:

- A small mirror
- A small bowl
- Modeling clay
- Paper
- Sunlight

Procedure:



- Use a small ball of modeling clay to make support the mirror in the bowl at about a 45 ° angle as shown. Fill the bowl with water and place it in the window sill with the mirror facing the sunlight. Look on the ceiling or paper for the visible spectrum. If we don't see it right away, adjust the angle of the mirror until we get a good spectrum.

- The light that hits the mirror is called “incident light.” The light that bounces off the mirror is called “reflected light.” When the reflected light hits your eye, you see the image in the mirror.

Conclusion:

When the light reflects back out of the water by the mirror, it is reflecting the white light that has been broken up (from refraction) into the full rainbow of colors and a rainbow appears.

Concept used in daily life:

When a rainbow forms in the sky, the same principle applies. Many little water droplets refract the sun’s light. The angle at which we view these water droplets determines which color we see from them.

Motivation and development:

1. Make a rainbow in your classroom by perching a glass filled with water on a windowsill in bright sunlight. Be sure to let the glass extend over the edge of the windowsill just a bit.
2. Place a white piece of paper on the floor beneath the window. The glass, acting as a prism, will refract the sunlight and the component colors of the sunlight will appear on the paper.

Assessment:

1. Light moves very differently depending on the material (or medium) through which it travels. Imagine trying to walk through air, water, and through quicksand. How would your movement differ?

When light travels through water, it moves much slower than it does in air. We call the differences in speed “refraction.” We say that light is refracted when it travels through water.

Even though we sometimes think light is “white,” it is actually made up of all the colors in the rainbow. We may have heard the acronym ROY G. BIV to represent the colors from which light is comprised. Write the colors which ROY G. BIV represents below: R- O- Y- GB- I- V.

Sometimes when light travels through a different medium, light splits up and its colors are more visible. When it rains, light has to travel through rain drops before it reaches your eyes. The light is refracted, and you see the different colors as a rainbow.

2. Examine the bubble solutions. What evidence do you see that light is being refracted?
www.wonderworksonline.com WWMB LESSON PLAN Light, Reflection & Refraction.

Use one of the large bubble wands and slowly try to cover someone with a bubble. As you do so, carefully observe how the person looks from behind the bubble solution. What do you see? How does this differ from the image you saw in the fun house mirrors?

3. The colors you see on the bubble actually show the thickness or thinness of the bubble wall. Compare bubbles you make with a large wand to bubbles you make with a smaller wand. How do the colors differ?
4. What color is the bubble just before it bursts?