



How does light work? Making a water prism

How do we see color? In this activity students release the colors in the rainbow through the action of bending light in a water prism.

Time

- 5 minutes prep time
- 10 minutes class time for activity
- More if you are using the Lab Sheet

Grade

- 1-4

Next Generation Science Standards

- 1-PS4-3. Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of light.
- 4-PS4-1. Develop a model of waves to describe patterns in terms of amplitude and wavelength.
- 4- PS3-2. Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat and electric currents.

Materials

- ◇ You will need to do this outside or with the sunlight streaming through a window
- ◇ A bowl full of water
- ◇ A mirror
- ◇ A sheet of white paper
- ◇ Science notebook or lab sheet

Utah Science Core Standards

- K-2 Standard 2– Earth and Space Science
- 3.1.1b Explain the sun is the source of light that lights the moon

Directions

- You may want to view this video ahead of time which shows how to move the paper to find the rainbow

How to make a water prism <https://www.youtube.com/watch?v=D8g4l8mSonM>

- You may want to introduce your class to color and light with this video

Light and Color (Bill Nye) <https://www.youtube.com/watch?v=dH1YH0zEAik&t=10s>

GBO suggestion - Do this activity as a station in a rotation with several other light activities.

Suggested activities to create stations are:

- How does light work? Angles of reflection
- Making sense of color

Explanation

This experiment demonstrates light being refracted. Refraction is caused to the light waves when they enter a different substance, with a different density, causing the light waves to slow down or speed up.

When natural light enters the water, the wavelengths slow down and bend. Since white light is made up of different wavelengths, each wavelength bends at a different angle. Red light bends the least, while violet light bends the most.

The mirror amplifies the bending effect, which allow one to capture the rainbow on the sheet of white paper.

Directions

- Set up your bowl of water where the light will hit it.
- Place the mirror in the water facing the light.
- Hold the piece of white paper in the reflected light to capture the rainbow. You may have to draw your paper outwards to find your rainbow.
- We advise you test your location before having students perform the activity.
- Have students complete the age appropriate Lab Sheet.



Capturing your rainbow on paper