

Prism Light Dispersion Simulator

Classroom worksheet · Interactive simulation: <https://lkforge.com/tools/physics/prism/>

Name: _____ Date: _____

Learning objectives

- Explain dispersion of white light.
- Relate refraction to wavelength.
- Order the visible colors by how much they bend.

Variables to change

- Incidence angle
- Prism material
- Wavelength composition

Procedure

1. Send white light into the prism and observe the spectrum that emerges.
2. Note the order of the colors from least to most bent.
3. Change the incidence angle and observe the spread.

Observations

Record the color order in the emerging spectrum and how the spread changes with angle.

Questions

1. Why does a prism split white light into colors?
2. Which color bends the most? The least?
3. What is white light made of?

4. Would a prism disperse light of a single color?
5. How is a rainbow related to this?

Answer key (instructors)

- **1.** The refractive index depends on wavelength (dispersion), so each color bends by a different amount.
- **2.** Violet bends the most (higher index), red the least.
- **3.** A mixture of all visible wavelengths (colors).
- **4.** No — a single wavelength refracts by one amount and stays one color, just deviated.
- **5.** Water droplets refract and disperse sunlight the same way a prism does, separating it into colors.

A prism bends light by refraction, and because the refractive index varies with wavelength (dispersion), each color bends differently — violet most, red least — spreading white light into a spectrum, the same physics behind rainbows.