

Make a Prism

What colors of light come from the Sun?

Description

Make your own prism to separate sunlight into different colors. You'll need a bright sunny day.

Age Level: 10 and up



Materials

- drinking glass (or glass or plastic prism)
- large piece of cardboard, approximately 0.4 m x 0.4 m
- scissors
- white sheet of paper
- pencil
- book
- tape
- water

It will be helpful if you tape the white sheet of paper to the book to make a flat surface. You'll need a sunny day for this activity.



Time

Preparation: 5 minutes
Activity: 5 minutes
Cleanup: 5 minutes

Safety

Don't stare at the Sun!

Step 1

Fill the glass half full of water. Cut a small hole in the middle of the cardboard, big enough for a pencil to fit through.

Tip

Be careful when using sharp scissors.



Step 2

Lay a piece of white paper on the ground. Hold the glass of water in one hand, while holding the piece of cardboard in the other hand.

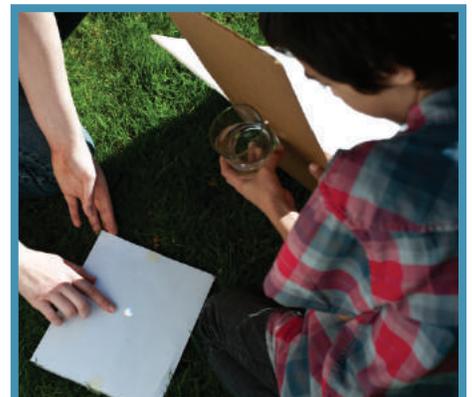
Tip

You might need a partner to help you!



Step 3

Move the piece of cardboard and glass of water so that sunlight shines through the hole, then through the glass of water, and lands on the white paper



Step 4

You may need to adjust the position of the cardboard and the glass. If you look closely at the light shining on the white piece of paper, you should see a rainbow of colors!

Tip

Don't see a rainbow? Try changing the distance between the glass and paper, and between the glass and cardboard.



What's Going on?

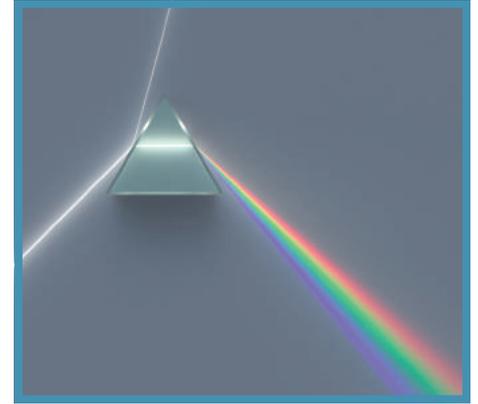
The prism you just made—from the glass of water—is clear. Light can pass through it without being blocked. However, materials that look clear, like glass, plastic, and water, can actually slow light down when it's passing through. Glass slows down the speed of light by about 66% (but the light's speed is still about 200,000 kilometers per second).

This slowing down of the light can cause its direction to change, depending on the angle at which light enters the material. This property is known as refraction. If you have ever put a straw into a cup of water, you may have noticed that the part of the straw underwater looks bent.



The Sun emits light that appears white to us, but sunlight is actually composed of various colors. When white sunlight enters a prism, the various colors slow down to different speeds and are bent at different angles. This process spreads out white light into a rainbow. We can see that white light is made up of red, orange, yellow, green, blue, indigo, and violet light. These colors are sometimes called “ROYGBIV” (roy-G-biv).

Rainbows are formed when sunlight is spread out by droplets of water in Earth’s atmosphere. That’s why you see rainbows when it rains—there must be enough water droplets in the air to act as miniature prisms.



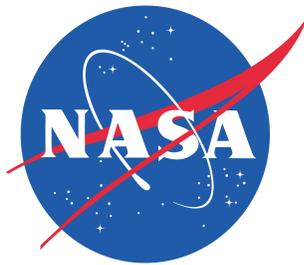
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Credits



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The DIY Sun Science app allows families and educators to investigate and learn about the Sun at home, at school, or anywhere you go! The app features thirteen hands-on investigations, as well as images and videos.

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