Exploring Light

Explore how light can be divided into various wavelengths

Image Credit: Generated with AI

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Exploring Light

Educators

Learning Objectives/Key Messages

- NASA uses remote sensing to make discoveries about other planets
- Light can be divided into various wavelengths.
- NASA measures the brightness of different wavelengths of light to learn what's on other planets by measuring the light reflected off the rocks on the surface.

Age/Ability:

- Independently 11 years - Adult
    - Adaptable for families of multiple ages

Materials Needed per Station:

- Old CD or DVD with non-transparent layer peeled off (see directions below)
    - Optional: 1 slide of diffraction grating
- Black tape (or color any tape black with a permanent marker)
- Small cardboard box (less than a foot along the longest edge)
- Light source:
    - NOTE: Noon sun is best, but a bright overhead light source is critical
- Electricity for light source(s) if necessary

Optional:

- Prism & Visible Light page
- *Exploring Light* Table Sign

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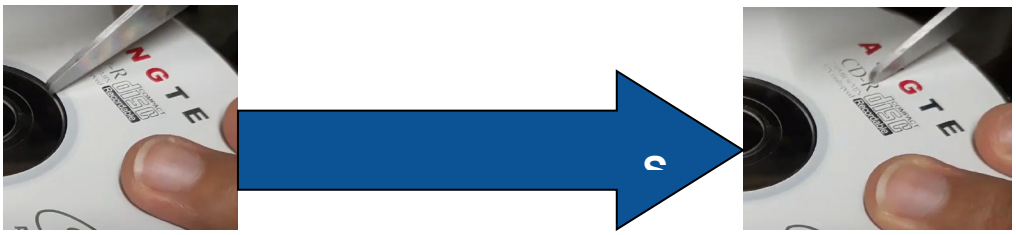
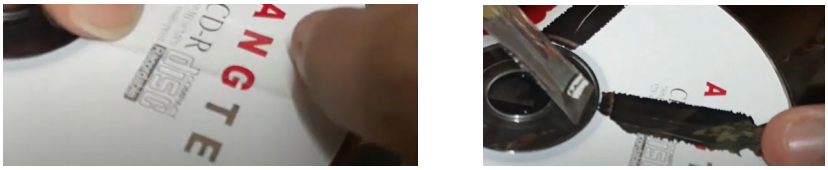
Preparing CDs or DVDs (educators only)

Directions for removing non-transparent (opaque) layer of CD:

- Make a cut on the opaque side of the CD



- Take a piece of tape and place it over where you made the cut.
- Pull the tape away, and the opaque layer will peel away with the tape.



(Image credits from “Using CD/DVD as a Diffraction Grating” video by The Physics Playground)

Directions for separating opaque and transparent layers of DVDs

- Cut DVD and peel layers apart.

- Keep and use the transparent layer to use as a diffraction grating.

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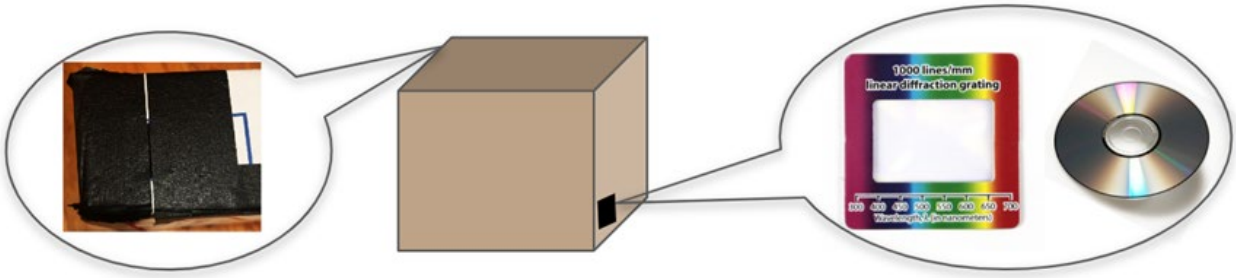
Make a Device that Detects Differences in Light!

(educators only)

1. Find a small box (<1 foot on the longest side)
2. On the shortest side, cut a small window near the corner for your prepared CD/DVD/diffraction grating.
3. Tape your diffraction grating to the window so you can look into the box.
4. On the opposite side, cut a small slit on the opposite corner
5. Use black tape (or tape colored black) to make your slit really small
6. Look into the box and tape up all other places where light is coming in.



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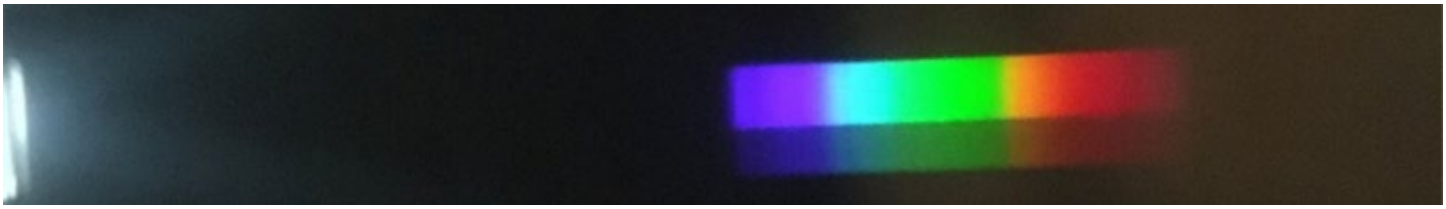
PLANETS

NASA Grantee

Exploring Light

Test the Device (for educators)

Look through the window and point the slit end at a bright light source or somewhere in bright sunlight (do not look directly at the sun!!!).



Is there a spectrum (rainbow) on the side?

If not, what can you change in your design to make the spectrum appear?

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