

MAKING A HOMEMADE SPECTROSCOPE

Explore the hidden colors in light!

Name: _____

Date: _____

Subject: _____

A spectroscope separates light into its spectrum (the colors of the rainbow).
You can use it to look at different light sources and see the unique patterns they make.

MATERIALS

- 1 piece of PVC pipe (1½ inch diameter, ~10 inches long)
- 2 PVC end caps (1½ inch)
- 1 DVD (old or scratched is fine)
- Black construction paper or electrical tape
- Utility knife or fine-tooth saw
- Glue or strong tape

TOOLS

- Ruler or measuring tape
- Pencil
- Scissors
- Sandpaper (optional)
- Glue gun or strong tape

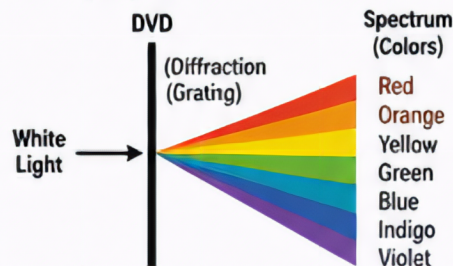


STEPS

- 1. Prepare the PVC Pipe**
Measure and cut the PVC pipe to about 10 inches long. Smooth the edges with sandpaper if needed.
- 2. Make the Slit (Light Entrance)**
In one end cap, cut a narrow vertical slit about 1 mm wide and 10–15 mm long. This is where light will enter.
- 3. Add the Diffraction Grating (DVD)**
Cut a piece of DVD about the size of the inside diameter of the pipe. Remove any labels or paper. Carefully slide the DVD piece into the pipe about 1–2 inches from the slit end. The shiny side (rainbow reflective side) should face the slit.
- 4. Make the Eyepiece**
In the other end cap, cut a circular hole about 5–8 mm in diameter. This is where you will look through.
- 5. Assemble**
Attach both end caps to the PVC pipe. Make sure they fit snugly. Seal any gaps with tape or glue to block stray light.
- 6. Light Block**
Wrap the pipe with black construction paper or electrical tape to block outside light.
- 7. Test Your Spectroscope!**
Point the slit toward a light source and look through the eyepiece. Adjust the angle slightly to see a clear spectrum.

HOW IT WORKS

The DVD acts like a diffraction grating. It spreads the light into its different wavelengths (colors). Each color bends at a slightly different angle, creating a spectrum.



TRY IT OUT!



Look at different light sources:

- Sunlight
- Incandescent bulb
- LED light
- Fluorescent light
- Candle flame

What do you notice? Do the spectrums look the same or different?

TIPS



- Use a dark room or shade your spectroscope for the best view.
- The narrower the slit, the clearer the spectrum.
- Handle the DVD piece by the edges to keep it clean and scratch-free.

OBSERVATIONS / NOTES
