

Suncatchers

Activity Summary

Students make suncatchers using CDs or DVDs. When the suncatchers are placed in direct sunlight, they throw beautiful rainbows throughout the room.

- Class time: 30 minutes
- Grade level: 3-5. To modify this plan for grades PreK or K-2: cut out the triangles ahead of time, say *rainbow* instead of *spectrum*, and omit discussion of *waves* and *interference*.

Learning Objectives

- White light (sunlight) is made of all the colors of the rainbow: a *spectrum*.
- Light travels in *waves*.
- Different colors have different *wavelengths*.
- *Interference* is the phenomenon in which the different colors of the spectrum can be seen individually.

Materials Needed

- Old CDs or DVDs (two per student, post on www.freecycle.org for free CDs)
- Yellow and orange yarn cut to 2" long and some 6" long
- Yellow and orange construction paper
- Glue sticks
- Hole punch
- Scissors
- Flashlight

Activity

Show a sample of a suncatcher. Shine a flashlight on the shiny side of a CD or DVD and ask the students: *What do you notice? What is happening?* They will see the spectrum of light or a rainbow on the shiny surface of a CD or DVD. Explain that when direct sunlight hits the CD or DVD, it will throw rainbows around the room. If the room has direct sunlight, demonstrate this.

Explain that the light we see, visible light, is made up of a spectrum of light colors made of different wavelengths. The surface of the CD or DVD allows us to see all the colors of the light because of a phenomenon known as interference in which the different colors of the spectrum can be seen.

To make a suncatcher:

1. Cut out several triangles from the yellow and orange construction paper for the suncatcher's rays.
2. Put one CD on the table, shiny side down. Rub a glue stick around the edge of the CD. Attach the triangles to the glued portion of the CD with one of the points facing away from the center of the CD, hanging off the edge.
3. Put the other CD shiny side down and rub glue around the outer edge.
4. Press the glued side of the second CD to the first CD.
5. Use a hole punch to make holes in two or three of the triangles. Tie pieces of yarn to the triangles through the holes.
6. Tie a long piece of yarn to the suncatcher to make a hanger.
7. Hold up your suncatcher to the sunlight or flashlight. What do you notice?

Explanation/Significance

CDs and DVDs separate white light into all the colors that make it up. The colors you see reflecting from a CD are interference colors, like the shifting colors you see on a soap bubble or an oil slick.

You can think of light as being made up of waves, like the waves in the ocean. The distance from one wave to the next one is the wavelength. Each color represents a different wavelength. When light waves reflect off the ridges in the CD, they overlap and interfere with each other. Sometimes the waves add together, making certain colors brighter. Sometimes they cancel each other out, taking certain colors away.

This explanation was adapted from the Exploratorium website below:

http://www.exploratorium.edu/science_explorer/reflecting_rainbows.html