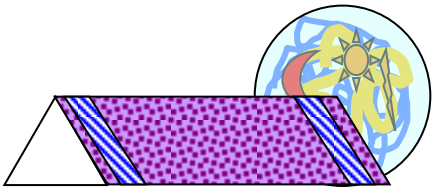
Color Wheel Kaleidoscope

A Simple Way to Make Beautiful Patterns



This simple-to-build kaleidoscope has a rotating disk with a colored pattern as the source of reflected images.

Topics: Properties of Light/Waves, Symmetry, Color

Materials List

- ✓ Mylar, reflective, thick preferred
- ✓ Cardboard
- ✓ Double-stick tape
- ✓ Clear tape
- ✓ Brad (paper fastener), ¾“ long
- ✓ Pony bead, small
- ✓ Plastic drink lid or translucent circle, 2-3 inch diameter
- ✓ Scissors
- ✓ Optional: Markers, stickers other decorations

Learning Standards

CCSS Math: Geometry, Symmetry

NGSS: Physical Science, Light and Vision, Wave Properties

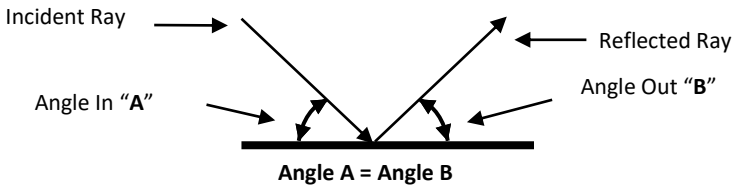
To Do and Notice

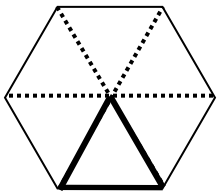
1. Cut Mylar into 3 equal size strips approximately 1½” x 6”.
2. Cut 3 cardboard strips the same size as the Mylar strips.
3. Place small pieces of double-stick tape at each end of Mylar strips. Lay a cardboard strip on top and press gently to attach. Make sure Mylar lays flat.
4. Place the 3 Mylar-cardboard strips side-by-side lengthwise, reflective sides down. Leave a small gap between the strips. Attach the pieces together with tape lengthwise – tape will act as a hinge.
5. Fold the 3 pieces to form a triangular prism with the reflective Mylar on the inside. Tape the 2 long edges together.
6. Create a “color wheel” large enough to cover the opening at the end of the prism. Decorate a drink lid or other translucent circle that is 2-3 inches wide with markers and/or stickers.
7. Push a brad through the center of the color wheel; place a bead on the brad, then tape the brad next to one vertex of the triangular prism (see image above).
8. Optional: Decorate the outside of the kaleidoscope.
9. Look through the kaleidoscope and spin the color wheel! Notice the symmetrical patterns created by the reflections and other visual effects.

The Content Behind the Activity

Invented by Scottish scientist Sir David Brewster in 1816, the kaleidoscope has amazed and entertained young and old alike. Images from flat mirrors appear as real objects, except left and right are reversed. A mirrored prism creates a series of reflections yielding beautiful, symmetric patterns. The reflections in this triangular prism combine to form a hexagonal shape.

The general rule for a reflected light ray is “angle in = angle out”:





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