

RAFT IDEAS

Topics: Reflection, Prisms, Infinity, Symmetry

Materials List

- ✓ 3 pieces of Mylar, 45 cm x 65 cm (18" x 24")
- ✓ 3 pieces of matte board or cardboard 45 cm x 65 cm (18" x 24")
- ✓ Double-stick tape
- ✓ Duct tape

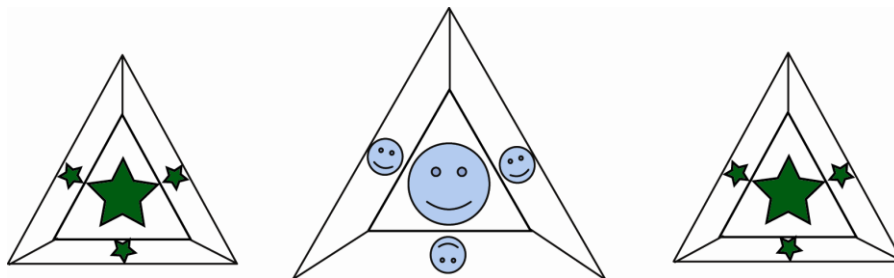
This activity can be used to teach:

- Symmetry (Common Core Math: Grade 4, Geometry, 3)
- Reflection (Next Generation Science Standards: Grade 4, Physical Science 4-2)
- Waves are reflected, absorbed, or transmitted (Next Generation Science Standards: Middle School, Physical Science 4-2)



REALLY BIG KALEIDOSCOPE

Persona ad infinitum



A giant kaleidoscope enables students to see themselves an infinite number of times.

Assembly

1. Using double-stick tape, attach a piece of Mylar to one side of each piece of matte board.
2. On the side that has no Mylar, use duct tape to tape the three pieces of matte board together, leaving a slight gap between the sections. The gap should be approximately the thickness of the matte board (see diagram 1).
3. Fold the two outer sections up to make a triangular prism with the reflective surfaces facing inward. Tape the first and last sections together.

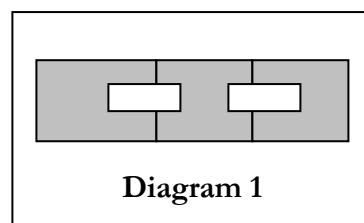


Diagram 1

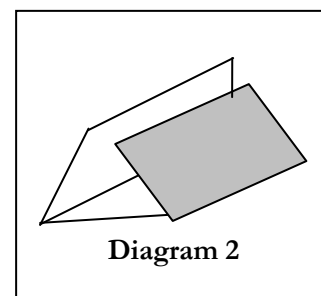


Diagram 2

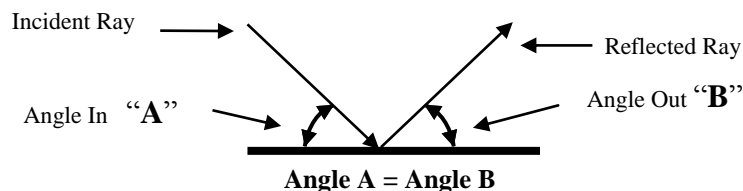
To Do and Notice

1. Put the kaleidoscope over your head.
2. See yourself an infinite number of times!
3. Place the kaleidoscope around an object. Observe the object and its reflections from various angles.

The Content Behind the Activity

Since their invention by Scottish scientist Sir David Brewster in 1816, kaleidoscopes have been amazing and entertaining young and old alike. Images from flat mirrors appear as the real objects, except they are reversed. A mirrored prism creates a series of reflections yielding beautiful, symmetric patterns.

The general rule for reflection is “angle in = angle out”: (see below)



Taking it Further

- Create a variety of kaleidoscope shapes: square, rectangle, circle, and/or hexagon.
- See RAFT Idea Sheets: *Color Wheel Kaleidoscopes*, *Quickie Kaleidoscope*, and *Hinged Mirror Kaleidoscope* for more Kaleidoscope explorations.

Web Resources (Visit www.raft.net/raft-idea?isid=350 for more resources!)

- Activities with reflections: www.exploratorium.edu/snacks/iconreflection.html