

BARBARA LIBBY-STEINMANN

SESSION
6REFLECTING LIGHT: FUN
WITH MIRRORS

1. Draw half of various things! For example: half of a flower, half of a heart, half a.....
Experiment using a single mirror to complete your drawings.
2. Draw whole things! For example a smiley face, a teddy bear, a butterfly, a.....
Experiment using a single mirror to duplicate your drawings.
3. Can you use your mirror to make your drawing disappear?
4. On a blank sheet of paper, draw a straight line. Use a corner reflector (the two mirrors taped together) to produce geometric shapes. What kinds of shapes can you make with one straight line? Challenge: Can you use the corner reflector to turn the straight line into a circle?
5. On the back of your paper, draw a dot in the center. Use a corner reflector and explore. What do you notice? Challenge: Can you turn the dot into a circle?
6. Use a blank sheet of paper, choose 3-4 different color markers, and draw a design of your choice in the center of your paper. Use the corner reflector to create geometric shapes and artistic expressions of symmetrical patterns and designs.
7. If your parents have a phone handy, have them take pictures of your beautiful creations before moving onto the kaleidoscope station.

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The Science behind the Experiment

A **mirror** is a very smooth surface. **Light** bounces off the smooth surface of a mirror in an organized way and presents a reflection. The key factor is a **smooth surface**, because **rough surfaces scatter light** instead of reflecting it.

When photons — rays of light — coming from an object (your smiling face, for example) strike the smooth surface of a mirror, they bounce back at the same angle. Your eyes see these reflected photons as a mirror image.

Can you think of reflective surfaces in nature?

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Make a Kaleidoscope:

1. Place rectangle mylar foil horizontally in front of you on the table. Fold the rectangle mylar piece into half horizontally. Use the edge of a popsicle stick to make a sharp crease.
2. Open up your mylar piece again to see center fold. Fold the bottom edge to center fold, crease well. Fold top edge to center fold, crease well. Make sure folds do not overlap.
3. Open up your mylar piece once again. You should now have three folds running parallel to the long side of the rectangle, and 4 equal sections.
4. Overlap two sides and shape your mylar foil into a triangular prism.
5. Use masking tape to fasten your triangular prism in place.
6. Hold your triangular prism close to one eye, close your other eye and explore your surroundings. Look at your hand, clothing, objects. What do you notice? What do you see?
7. On a translucent piece of white tissue paper draw a simple design of your choice with markers. Make sure your design is in the center of the small tissue paper.
8. Look at your design through your reflective prism. What do you see? Why do you see what you see?
9. Use masking tape adhere your tissue paper design to one end of your prism. Look through the other end and enjoy!
10. Congratulations you have just created a simple kaleidoscope.

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The Science behind the Experiment

How does a kaleidoscope work?

A kaleidoscope's beautiful forms and designs, are created by two or more mirrors, or reflective surfaces positioned at an angle to each other, usually forming a V-shape or a triangle.

What you see when you look through that eyehole will amaze you!

Your design you drew on tissue paper is duplicated by the triangular, reflective surfaces at such an angle that you are seeing numerous reflections of your design.