

SCIENCE FESTIVAL FACILITATOR'S GUIDE



Cool Colors

1. Make sure you have the materials you need.

- Non-permanent, washable ink markers: black, green, orange and/or brown (We have had the most success with RoseArt and Mr. Sketch markers)
- Green, orange, black and/or brown construction paper
- Coffee filters (one per student-adult pair)
- Scissors (one set per student-adult pair at your station; these can be reused)
- Plastic cups (one per student-adult pair at your station; these can be reused)
- Pitcher of warm tap water
- Plastic table cover or tablecloth

2. Watch this video on your smartphone:

<https://www.youtube.com/watch?v=coWFL5Dhd5U>

3. Prepare your station.

- Cover table
- Distribute cups, coffee filters, markers and scissors around the table.

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Questions to ask participants before they start:

- Hold up one piece of green, orange, brown or black paper.
- How many colors do you see?
- Are you sure?
- Any stripes or other colors? Let's find out!
- Try to wait for at least one answer, even if it is a wild guess.

Instructions:

Please read each set of instructions out loud. Make sure that you direct the correct person to complete each assigned task.

- **Adult:** Cut your coffee filter into four strips, each approximately 4 inches long and 1 inch wide. Pass two strips over to your student.
- **Student:**
 - Fill your cup with at least an inch of water.
 - Pick a colored marker. Draw a horizontal line one inch from the bottom of your filter strip with a marker. (Parents may need to help younger children find the right place.)
 - Drape the strip over the edge of the cup so that the bottom of the strip is touching the water, and the marker line is above the water level.
- **Together:** As the water soaks up along the filter, what happens? Look at the color. Is green ink really green? What combinations of colors actually make up orange, brown or black?

Repeat the experiment with the other color markers.

How It Works:

The water dissolves the ink and carries it along the paper, causing the different chemicals that make up the ink to be left at different places on the paper. The color black isn't really black, but a combination of colors. This is also true of green, orange, brown and many other colors.

Vocabulary:

Chromatography ("color writing"): A way of separating the different-colored chemicals that make up a substance.

Real-World Application:

Scientists can help police departments solve crimes by using chromatography to determine which chemicals started a fire or whether blood samples contain high concentrations of alcohol or other drugs.

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