



# Creeping Colors

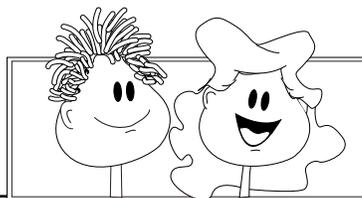
## Overview

"Creeping Colors" involves paper chromatography. The word "chromatography" comes from the Greek term for "color writing." It's used in analytical chemistry to separate and identify the components of mixtures. Using paper filters is the simplest form of chromatography, though this method is not commonly used in science today. Modern science uses a variety of other chromatography methods. After students experiment with coffee filters and colored makers, you may want them to research other chromatography techniques.



## Introducing the Activity

Before handing out the Science Buddies activity, assign the following question for a **Team Discussion**: *"What are some ways that you could separate and identify the parts of an unknown mixture?"* Use **Blackboard Share** to allow teams to present their ideas to the class. Give each team a piece of construction paper and a marker. Assign a Recorder to write down the team's ideas and a Reporter to present them to the class.



## Answers To Talk It Over

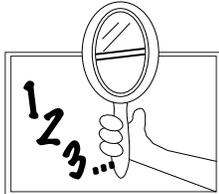
1. The water climbs up the paper because of *capillary action*, the attraction of water molecules to the tiny openings in the fibers of the coffee filter.
2. Water-soluble inks often contain several different colors which are blended to form the visible ink color. As the water moves through the ink mark, it dissolves the ink and separates the various colors. The lighter components are carried farther up the filter paper.
3. Dictionary definitions may vary. Chemists use chromatography to separate mixtures. Biologists use chromatography to analyze blood and tissue. Ecologists use such procedures to identify small amounts of pollutants in air, water and food.



## Cooperative Classroom Follow Up

On or after the due date, allow students to show each other their coffee filters. **RoundRobin** works well for this. Team members take turns standing for 30 seconds and showing their filters. They explain how they obtained their results, including colors and brands of markers used. Use **Numbered Heads Together** to discuss the Talk It Over questions.

# Creeping Colors



## Procedures

1. Smooth out one of the coffee filters. Cut a 1 inch wide strip from the edge of the filter to its center as shown.
2. With one of the markers, make a horizontal line across the edge of the strip about 1 inch from the bottom.
3. Half fill the glass with water.
4. Place the coffee filter on top of the glass so the strip hangs down into the water as shown. The mark should just **above** the water. You may have to adjust the water level.
5. Observe the water as it "climbs" up the paper.
6. After 10 minutes, remove the filter and let it dry.
7. Repeat steps 1-6 using clean coffee filters and at least two other markers. Try different brands of markers if you can.
8. Bring your dried coffee filters to class on the due date.

## Due Date

## Materials

- 3 or more clean white coffee filters
- Washable markers
- Clear drinking glass
- Water



## Talk It Over

1. What do you think makes the water "climb" up the paper?
2. What happened to the marker colors?
3. The scientific name for what you have done is "paper chromatography." Look up "chromatography" in the dictionary. What does it mean? When might scientists use chromatography?

