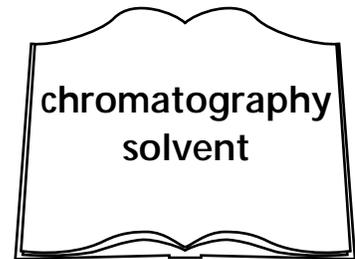


# Chromatography



Is black ink really black? In this activity, you will use chromatography to determine if black ink is made up of only 1 color.

**Chromatography** is a method of separating a mixture into its parts and identifying those parts. There are many methods of chromatography. One, called paper chromatography, uses paper as the material on which the separation occurs. First the scientist applies the mixture to the paper and allows the paper to dry. She then dips the paper into a liquid, called a **solvent**, to dissolve and separate the mixture into its parts. The parts of the mixture separate because some parts are heavier than others. They are not carried as far. Chromatography can help scientists determine what some chemical samples are made of.



## Words to Know



## Safety Precautions

Please click on the whistle to view the safety guidelines. Do not drink the liquid.

## WHAT YOU NEED

- basket type coffee filter
- water
- water soluble black marker
- clear plastic cup
- paper towel

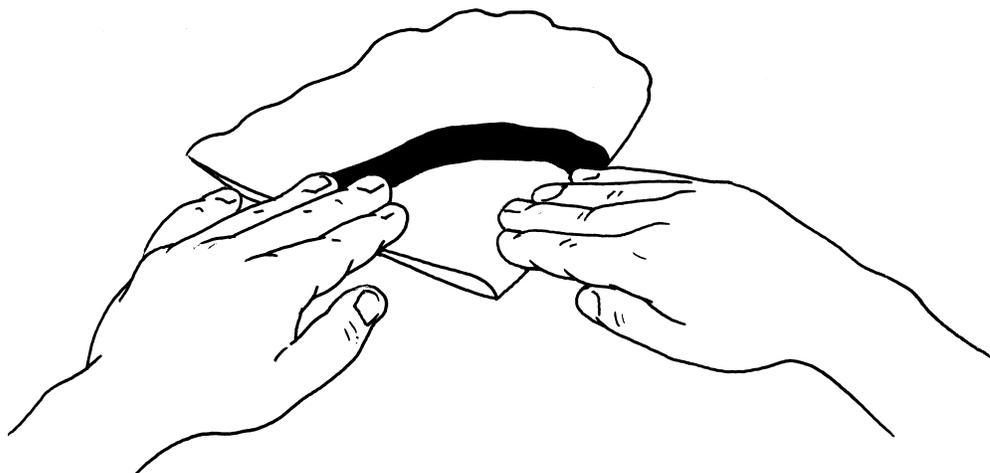
## WHAT YOU DO

Predict whether black ink is made up of only one color.

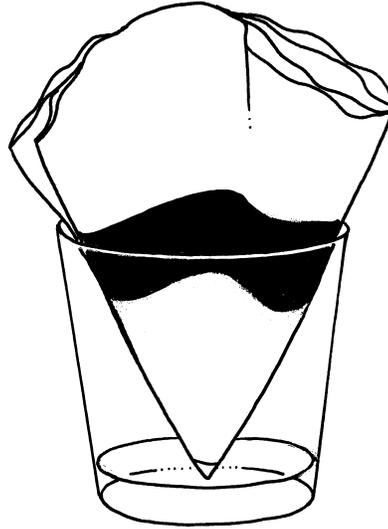
1. Lay the coffee filter flat on your table top.
2. Draw a thick circle around the flat part of the filter using the marker. You may have to go around the circle several times to make it thick.



3. Fold the filter in half. Fold it in half again to create a pie shape.



4. Fill the cup with 1/2 inch of water.
5. Gently place just the tip of the pie shape filter into the water. Let go.



6. Watch the liquid as it moves up the fibers of the paper.
7. Remove the filter when the paper is completely wet.
8. Unfold the coffee filter onto a dry paper towel. Observe.

## OBSERVATIONS

1. Is black ink black? Describe what you see.

## OUR FINDINGS

Click on the above link to see what we found.

# Our Findings

## 4. PHYSICAL SCIENCES

### **4.2 CHROMATOGRAPHY**

1. No. It is made up of many colors.

# SAFETY GUIDELINES

## Special Safety Note To Experimenters

Some activities in this book have special safety rules to follow. The special rules are on the page with that activity. But even if every safety rule in the world is included with an experiment, you have to know how to be safe when doing it. So it's very important that you read, copy, and follow the Everyday Safety Rules that follow.

Sometimes science experiments can be dangerous. Things can spill, break, or even catch fire. You have to know what to do. . . fast. So be prepared. Read the directions for each experiment carefully, and follow any special safety rules listed with it, then be careful.

Always follow common-sense safety rules like NEVER RUN WITH SCISSORS IN YOUR HAND or BE CAREFUL WITH HOT THINGS! You already know a lot of common-sense safety rules. . . so remember to follow them, and have fun!

## Everyday Safety Rules

### PREPARE

- Clear off your work space.
- Read all directions.
- Know what problems might happen, and be prepared.

### PROTECT YOURSELF

- Follow directions step-by-step.
- Do just one experiment at a time.
- Locate exits, fire extinguisher, eye wash, and first-aid kit before you start. Ask an adult to show you how to use a fire extinguisher.
- Be sure there's fresh air in the room.
- Wear an apron and safety goggles.
- Don't wear contact lenses, have bare feet, or wear very loose clothing.
- Keep work space and floor clean.
- Clean up spills immediately,

- Don't drink or eat around the experiment work space.
- Don't eat or drink any stuff tested, unless a grown-up says it's OK.

### **USE EQUIPMENT CAREFULLY**

- Don't set up equipment too near the edge of your work space.
- Be cautious when using pointed or sharp instruments, like scissors, screwdrivers, or knives.
- Unplug any electric device by pulling out the plug, not pulling on the cord.
- Use only low-voltage batteries, like those used in flashlights or smaller.
- Be careful when using chairs or step-stools.

### **USING CHEMICALS**

- Have an adult help you with all experiments requiring chemicals.
- Don't inhale or taste chemicals.
- Read all labels carefully.
- Label all chemicals.
- Wear goggles, apron, and gloves so chemicals don't touch your skin.
- Wash hands before and after using solutions.
- Wipe up spills thoroughly.

### **HEATING THINGS**

- Wear goggles, apron, and gloves when boiling water.
- Use safety tongs and heat-resistant mitten or hot pads.
- Never leave heated things unattended.
- Turn off hot plates and oven burners when you're finished.
- Keep flammable things away from heat and flames.
- Have a fire extinguisher ready.

### **IN THE FIELD**

- Never go on a field trip alone: follow the Buddy System.
- Tell a responsible grown-up where you're going.
- Know the area and be aware of dangers, like poisonous plants and deep water
- Dress for the weather conditions.