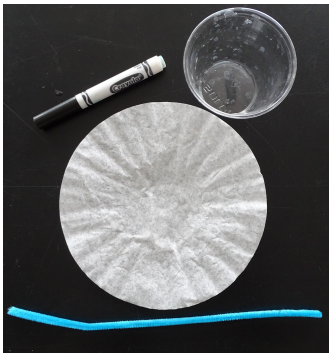
Chromatography

Butterfly

The Kit:
Materials:

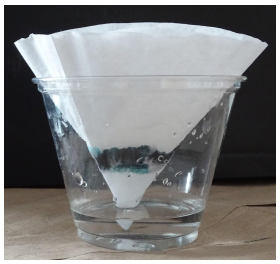
- 1 white coffee filter
- 1 pipe cleaner
- 1 plastic cup
- 1 black marker



First, lay out the coffee filter on a table with some newspaper underneath. Then Draw a thick circle around the center of the coffee filter where the ridged part meets the flat center.

Fold the coffee filter in half . . .

and in half again to make a cone shape.



Fill the cup with a small amount of water and place the coffee filter in so that the cone is in the water.
Pull apart the cone shaped coffee filter so it balances right on the cup with the tip of the cone just touching the water. (Be sure NOT to let the marker circle go in the water, just the uncolored tip of the coffee filter cone.)

Let it sit and watch what happens as the water begins to flow up the paper.

After the water has reached the outer edge of the coffee filter, place it on a newspaper to dry.

Once dry, scrunch up the coffee filter in the middle and wrap the pipe cleaner around the center.

Shape the ends to form an antennae. You now have a butterfly!

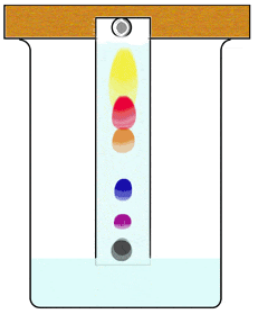
Take your chromatography one step further!

- Try drawing different designs on the coffee filter. What happens when you draw squares or a spiral?
- What colors do you find in the black marker? Make more butterflies with other colors!
- Use different kinds of markers! What are the results if you use a permanent marker?
- Experiment with different materials! Does chromatography work the same if you use a paper towel? What happens if you use a sheet of printer paper?

What's going on?

In paper chromatography, the water moves through the coffee filter, carrying the marker pigments and separating the different color molecules in each marker. Some color molecules are smaller than others so they travel faster and farther through the coffee filter. Black markers are made by mixing several colors together! Each company uses a different set of pigments to create their black markers. Compare different black markers with paper chromatography! Are the results the same?

Scientists use chromatography to separate and look at different parts of a mixture. Chromatography can also be used by law enforcement in crime scene investigations, by art experts to determine original paint pigments in restoration projects, and even when analyzing food!



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https://cornell.ca1.qualtrics.com/jfe/form/SV_ehXj6hCQQFNaL2K