



Black Magic!

Discover the secret colors hidden in a black marker!



Materials:

Paper Strips | black marker | water | plastic cup

Procedure:

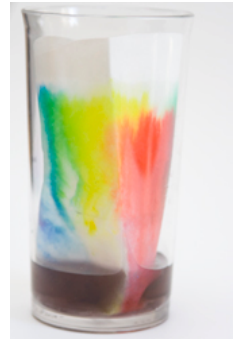
- 1.) Set Up: Place a green tray at each of the tables. In each tray is plastic beaker, Strips of Paper, Black Marker.
- 2.) Each student is to take out their own Paper Strip and put their name on one end.
- 3.) Using the BLACK Marker, have each student put a black stripe about 3 cm from the bottom of the other end of the strip. (see example...show example)
- 4.) Have one student fill the beaker with about 50 mL....(about $\frac{1}{2}$ inch on the bottom)
- 5.) Students then lower the end of the strip with the Black mark into the water and HOOK the top portion of the paper strip over the edge of the beaker to hold it in place. Leave the beaker in the center of the table. CAUTION: DO NOT LET THE BLACK MARK COME IN CONTACT WITH THE WATER.

You will need about 25 minutes to get the best results

Observations and Questions:

1. List the colors that appeared. _____
 - a. What color appeared first?(bottom) _____
 - b. What color appeared last?(top) _____
2. Look at another student's results at your table. Did you get the same or similar results?
3. Why do you think the colors appeared?
4. Using the word **“Molecules”**compare the colors and speed of the colored molecules.
5. What does this tell you about the color black?

What's Going On?



How does a black magic marker separate into many colors?

Most nonpermanent markers use inks that are made of colored pigments and water. The water in the ink carries the pigment up the paper strip. When the ink dries, the pigment remains on the paper.

Why do the colors separate?

As the water travels out on the coffee filter, the pigments get carried along. Different-colored pigments move at different rates. Some travel farther and faster. The reason is that it depends on the **SIZE** of the molecule and how **STRONGLY** it is attracted to the paper.

Why are some markers different than others in their colors?

Since different ingredients in a mixture are carried along at different rates, they end up in different places.

What is this called in Science?

CHROMATOGRAPHY...a technique used for separating mixtures. It can be used to determine the ingredients that make up a flavor or scent, pollutants, blood proteins, and traces of drugs.

Developed in 1910 by Russian scientists. The word comes from the Greek word Chroma Graph, which means “color writing”

Why do we see different colors?

Ahhhh..good question...WAIT until we get to our Light and Sound unit later this year!