Attractive

Purpose
To show how to separate a dye mixture.

Materials
Colored hard candies, such as M&Ms
Scissors
2 soda cans
2 round coffee filters
Large shallow cooking pan

Procedure
1. For each candy color, cut one 1-by-6-inch (2.5-by-15-cm) strip from the coffee filters.
2. Set the soda cans in the pan as far apart as possible so that the ends of the ruler rest on the can tops.
3. Fill the bowl half-full with water.
4. Place one candy in the bowl of water. When the candy starts to color the water, lift the candy and shake as much water as possible off of it.
5. On one strip of paper, rub the wet candy about 1 inch (2.5 cm) from one end of the paper.
6. Tape the uncolored end of the paper to the ruler. The free, colored end should touch the bottom of the pan.
7. Repeat steps 4 to 6 for each of the other candy colors.
8. Allow the paper strips to dry. This should take 5 to 10 minutes.
9. Pour just enough water into the pan so that the end of each paper strip touches the water.
10. Observe the paper strips for 20 minutes or more.
Attractive

Results
The colors move up the paper strip. Some of the colors separate into other colors.
Why? The method of using paper to separate the colors in a dye is called chromatography (a method of separating a mixture into its different substances). In this experiment, the candy colors are first dissolved in water to form a solution called a dye. The dye is used to stain the paper strips. After the strips dry, only the colorants (pigments) in the dye are left in the fibers of the paper. As the water moves through the hanging paper, the colorants dissolve in the water and move with it. The color that has the least attraction to the paper moves fastest and farthest up the paper. The other colors move slower and a shorter distance, and the one with the greatest attraction moves the slowest and the least. Some of the dyes have only one colorant and some have more. For example, green has blue and yellow colorants.