Project Exploration creates transformative learning opportunities for youth underrepresented in the sciences --particularly students of color and girls -- by equipping them with the skills, practices, and mindset needed for a lifelong pursuit of learning. STEM@Home makes activities around science, technology, engineering, and math accessible and fun to do at home. This STEMbook activity, resources, and more are available at www.projectexploration.org/stemathome.

In this activity, you will:

Make observations about the markers and draw conclusions about they're behavior in different liquids, using the scientific method.

Supplies Required:

Graphic organizer (page in your STEMkit)
1c water
1c rubbing alcohol
5 different colored markers--regular AND Sharpies
5 coffee filters
2 pie pans
2 small cups

Video

How are we able to see color? https://tinyurl.com/y43v6lxf

Overview

What happens when you combine blue and yellow? You make green!
When you mix red and blue, you get purple!
Red and yellow mixed together make orange!

Sometimes, one color is actually made of multiple colors. In order to see all of the colors that make up one, we need to break the colors apart. The reason that we are able to see all of the colors in a rainbow, is because rain drops in the air help to break up the sunlight, so we can see red, orange, yellow, greeen, blue, indigo, and violet.

In this experiment, you will use the scientific method to test if there are more than one hidden color in each marker color!

Instructions

1. Use your graphic organizer as you complete the activity.
2. **STEP 1 - Problem:** What do we want to solve? What will happen to the colors when they are dipped in water and rubbing alcohol?
3. **STEP 2 - Hypothesis:** Make a prediction! What do you think the rubbing alcohol and water will do to the markers?
4. **STEP 3 - Experiment:** Test it out and make observations!
5. Put a dot of a marker onto the coffee filter, about ½ inch from the edge.
6. Add more dots to that spot with the same marker (ensures a good color amount). Don't flatten the filter! Add more colors around the edge in the same fashion as listed in steps 1 and 2. Make sure to use lots of different colors and types of markers (black is the best to try). Do this to multiple filters. Try different colors!
7. Pour water into one pie pan (enough to cover the bottom, but not too much).
8. Pour the same amount of rubbing alcohol into the other pie pan.
9. Put the small plastic cups in each pie pan (these will stop the coffee filter from falling into the liquid).
10. Turn the coffee filters upside down and into each pie pan (the flat part of the filter should be pointing up).
11. Watch the liquid wick its way up to the top, possibly dissolving the colors and carrying them upwards.
12. **STEP 4 - Analysis:** Based on your observations what do we now know? What happened to each marker in each liquid? Why do you think that happened?
13. **STEP 5 - Conclusion:** Was your hypothesis correct or incorrect?

Additional Resources

1. Learn how Crayola markers are made: https://tinyurl.com/y623zfsw
2. How do things get mixed up or separate? https://tinyurl.com/q8h2osx

Share It Out

Share on social media: Share the results of your experiment with your friends and family on social media! Explain the steps of the scientific method in a video! Use the hashtags:

#ScientificMethod
#ProjectExploration
#StemAtHome

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