



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:

Explain what science is and how it affects our daily life, and identify the steps of the scientific method.

Supplies Required:

- Graphic organizer
- 1 cup water
- 1 cup rubbing alcohol
- Different color markers and Sharpies
- Several coffee filters
- 2 pie pans

Video

Learn about the nature of science: <https://tinyurl.com/y6gur35e>

Overview

Science is the study of the world. Scientists use facts, by making observations and doing experiments that help us answer questions and solve problems. Scientists are known for their problem solving and critical thinking skills. Their thought process is what makes them STEM professionals. In order to become a scientist, you need to approach problems methodically, and follow a process. We refer to the process as the scientific method, which is a series of steps used to solve problems.

Problem: What do you want to solve? What will happen to the colors when they are dipped in water and rubbing alcohol?

Hypothesis: Make a prediction! What do you think the rubbing alcohol and water will do to the markers?

Experiment: Test it out and make observations!

Analysis: Based on your observations what do you/we now know?

Conclusion: Was your hypothesis correct or incorrect?

There's a big science fair downtown, and you and your partner from PE have been invited and asked to show your skills. You've decided to show others what you've learned about solubility, using rubbing alcohol and markers.

Instructions

1. Walk through the graphic organizer as you complete the activity
2. STEP 1: What will happen to the colors when they are dipped in water and rubbing alcohol?
3. STEP 2. What do you think the rubbing alcohol and water will do to the markers?
4. STEP 3. Test it out and make observations.
5. Put a dot of a marker onto the coffee filter, about 1/2 inch from the edge.
6. Add more dots to that same spot with the same marker.
7. 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!
8. Do the same to another coffee filter.
9. Pour water into one pie pan (enough to cover the bottom but not too much).
10. Pour the same amount of rubbing alcohol into the other pie pan. Put the small plastic cups in each pie pan.
11. Turn the coffee filters upside down in each pie pan, watch the liquid works its way up to the top. After the colors have been pulled apart, take the filters out and let them dry.
12. STEP 4. What happened to each marker in each liquid? Why do you think that happened?
13. STEP 5. Was your hypothesis correct?

Additional Resources

1. Sharpie pen science: <https://tinyurl.com/y4fnxthg>
2. Fun facts! Find out here what is contained in a permanent marker: <https://tinyurl.com/y3ezztpt>

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

Share via PE's website: Students who complete STEM@home activities and share what they learned with the PE team via our website will earn points which can be traded in for cash prizes at the Explore Store. Your project number is 301. Learn more at www.projectexploration.org/explore-store



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