

Spin the Color Wheel

Simple STEM Activities You Can Do at Home

Purpose:	The purpose of this activity is to investigate how colors interact with each other as they more quickly in a circular motion.
Standard:	<p>S4P1. Obtain, evaluate, and communicate information about the nature of light and how light interacts with objects.</p> <p>a. Plan and carry out investigations to observe and record how light interacts with various materials to classify them as opaque, transparent, or translucent.</p> <p>b. Plan and carry out investigations to describe the path light travels from a light source to a mirror and how it is reflected by the mirror using different angles.</p> <p>S8P4. Obtain, evaluate, and communicate information to support the claim that electromagnetic (light) waves behave differently than mechanical waves.</p> <p>d. Develop and use a model to compare and contrast how light and sound waves are reflected, refracted, absorbed, diffracted or transmitted through various materials. (<i>Clarification statement:</i> Include echo and how color is seen)</p>
Materials:	Cardboard, string, pencil, colored pencils, markers, or crayons, scissors, glue, ruler, large cup.
Procedures:	<ol style="list-style-type: none"> 1. On a piece of paper, trace the mouth of the cup with a pen or pencil. 2. Use a ruler and pencil to divide the circle into 6 even sections. 3. Color each of the 6 sections red, orange, yellow, green, blue, and violet. 4. Cut out the circle and glue the colored circle and cardboard together. 5. Cut the circle out from the cardboard. 6. With adult help, poke two small holes through the wheel near the center of the circle. 7. Feed the string through both holes and tie the ends together like a necklace. 8. Wind the string by moving the wheel in a motion similar to a jump rope. 9. Pull the string tight to get the wheel spinning. 10. As the wheel spins, what do you notice about the colors?
Science Behind It:	<p>It seems counterintuitive that white light actually contains all the colors (wavelengths) of visible light. The spectrum of colors for visible light includes, in order of longer to shorter wavelengths, red, orange, yellow, green, blue, indigo, and violet. When the surface of an object reflects some colors and absorbs all the others, we perceive (see) only the reflected colors. A ball that we see as red reflects red light and absorbs all the other colors (wavelengths). A white ball reflects all the colors of the spectrum and a black ball absorbs them all.</p> <p>As the color wheel spins, the colors mix together and blend into each other. If the wheel spins fast enough, the blending of the colors creates almost white light – a reflection of all colors of light at nearly the same time. As the wheel slows, you can perceive the distinct color being reflected by each section.</p>
Questions to Ask:	<ol style="list-style-type: none"> 1. Explain why the spinning of the wheel causes the colors to blend.