

Mixing Colors

Overview: There are two different sets of primary colors. The three primary colors of light are red, green, and blue. However, the three colors that artists use are red, *yellow*, and blue. What happens if you mix red, green, and blue paint?

What to Learn: The three primary colors of light are red, blue, and green. Red and green light mixed together make yellow light.

Materials

- scissors
- crayons OR markers
- sharpened wood pencil OR skewer
- index cards
- cup
- drill (optional)

Experiment

1. Stack the index cards
2. Use the cup to trace a circle on the top card.
3. Keep the cards stacked while you cut out the circles. They don't have to be perfect, but make sure all the sharp corners are cut off.
4. Using different color markers, make different colored slices (or pie pieces) on each circle. These are the colors that will blur together in your experiment.
5. Poke a hole through the center of the now-colorful circle with your pencil or skewer. Make sure the colored side is facing up toward you, not down toward the table.
6. To spin this like a top, make the "okay" symbol with your index finger and thumb. Put the skewer inside the circle your fingers make and spin it. Your hand will help to keep the top upright so that you are able to see how the colors blend together.
7. Optionally, an adult can help you use a drill, handheld mixer, or electric screwdriver to spin the circle much faster for a more noticeable effect.

Mixing Colors Data Table

| Color and Percentage | Color and Percentage | Color and Percentage | Result |
|-----------------------------|----------------------------|--|---------------------------|
| <i>Example:</i> blue 50% | <i>Example:</i> red 50% | <i>Example:</i> (nothing here - some cells may be blank) | <i>Example:</i> purple |
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Reading

Most kids understand how yellow paint and blue paint make green paint, but are totally stumped when red light and green light mix to make yellow light. The difference is that we're mixing *light*, not paint.

Lots of science textbooks still have this experiment listed under how to mix light: "*Stir together one of red water and one glass of green water (dyed with food coloring) to get a glass of yellow water.*" Hmmm... the result I get is a yucky greenish-brown color. What happened? The reason you can't mix green and red water to get yellow is that you're essentially still mixing paint, not light. But don't take our word for it – test it out for yourself with this super-fast light experiment on mixing colors.

Exercises

1. What happens when blue and red are mixed on the spinner?
2. What happens when red and green are mixed on the spinner?
3. What colors would you mix to get orange?
4. What are the primary colors of light, and how do they differ from the primary colors we learn in art class?

Answers to Exercises: Mixing Colors

1. What do you see when blue and red are mixed on the spinner? (purple)
2. What do you see red and green are mixed on the spinner? (yellow)
3. What colors would you mix to get orange? (red and yellow)
4. What are the primary colors of light, and how do they differ from the primary colors we learn in art class? (Red, blue, and green are the primary colors of light – in art, the primary colors are red, yellow, and blue.)