



STEM Challenge: Color Mixing Story Book Science at Home Activity

What you need

- Color wheel, included in the activity guide
- Paint containers containing red, yellow, and blue paint
- Brush
- Paper towels
- Cup containing water
- Activity guide worksheet, included in the final pages of this activity guide
- Additional paper

Preparation

In art, a color wheel is used to study different colors. Some colors are known as primary colors. These colors are red, yellow, and blue. When two different primary colors are mixed together, they can form new colors: secondary colors! The secondary colors are orange, green, and purple. Tertiary colors are formed when the primary and secondary colors next to one another on a color wheel are mixed together.

What to do

Follow the instructions on and use the activity guide worksheet, included in this guide, to explore color mixing!

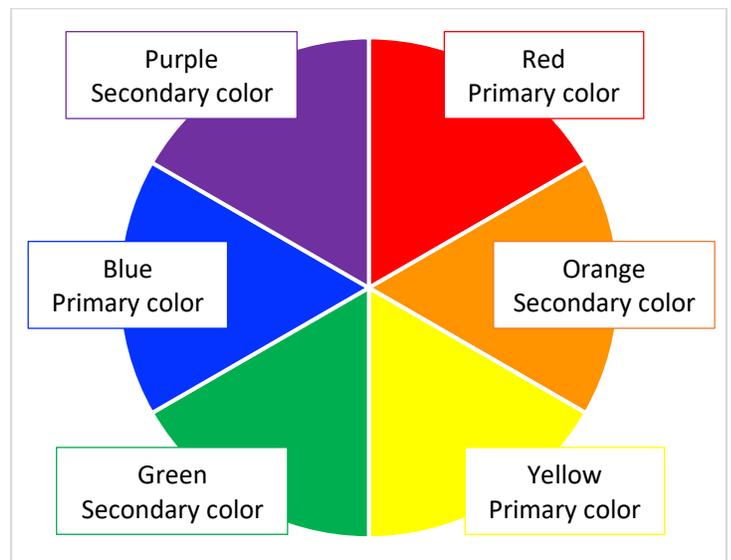
Activity modified from *In the Art Room: A Color Mixing Unit* by Cassie Stephens

What is happening?

The visible light spectrum is illustrated on the electromagnetic spectrum, which illustrates different forms of electromagnetic radiation and their wavelengths. The visible light spectrum is the only form of electromagnetic radiation that can be seen by the human eye. Special structures called cones allow humans to see the different colors that make up the visible light spectrum: red, orange, yellow, green, blue, indigo, and violet. These colors are also referred to as ROYGBIV.

Understanding the visible light spectrum explains how human eyes can see color. This has many applications in both science and art, especially when mixing colors! Color mixing can be subtractive or additive. Subtractive color mixing is based on how objects reflect light as color. The primary subtractive colors are red, yellow, and blue, and create black when equally mixed. Additive color mixing can be understood by mixing colored lights. The primary additive colors are red, blue, and green, and create a white light when equally mixed.

Information from *The Electromagnetic Spectrum Video Series & Companion Book* from NASA Science and “The Science of Color” from Smithsonian Libraries





**STEM Challenge: Color Mixing
Activity Guide Worksheet**

Part 1.

In Part 1, you will mix different combinations of the primary colors red, yellow, and blue and create secondary colors. You'll need several materials: red, yellow, and blue paints; a brush; and water in a cup and paper towels to clean your brush between uses.

1. Mix the primary colors yellow and blue to create the secondary color green in the space below.

First, dip your brush into the yellow paint. You only need a little paint! Paint yellow in the empty rectangle below. Then, clean your brush in the water cup and dry it using a paper towel. Next, dip the clean brush into the blue paint. Again, you only need a little paint. Now, use your brush with the blue paint and mix it with the yellow paint in the rectangle below. Notice the green color that forms!

A diagram showing a yellow square, a plus sign, a blue square, an equals sign, and an empty rectangular box. Below the yellow square is the word "Yellow", below the blue square is "Blue", and below the empty box is "Green".

2. Mix the primary colors yellow and red to create the secondary color orange in the rectangle below. Follow the instructions from Step 1 but use the paint colors yellow and red.

A diagram showing a yellow square, a plus sign, a red square, an equals sign, and an empty rectangular box. Below the yellow square is the word "Yellow", below the red square is "Red", and below the empty box is "Orange".

3. Mix the primary colors red and blue to create the secondary color purple in the rectangle below. Follow the instructions from Step 1 but use the paint colors red and blue.

A diagram showing a red square, a plus sign, a blue square, an equals sign, and an empty rectangular box. Below the red square is the word "Red", below the blue square is "Blue", and below the empty box is "Purple".

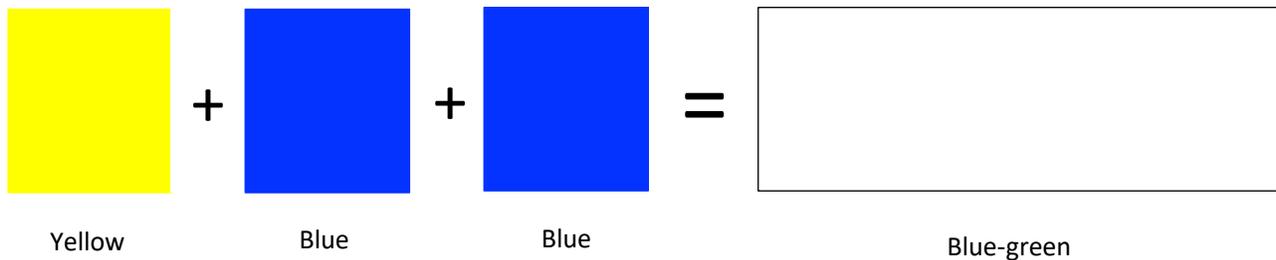
Part 2.

If a primary color and a secondary color are next to one another on the color wheel, they can be mixed together and create a tertiary color.

1. Mix the primary color blue with the secondary color green to create the tertiary color blue-green in the space below.

First, mix the primary colors yellow and blue and create green. Dip your brush into the yellow paint. You only need a little paint! Paint yellow in the empty rectangle below. Then, clean your brush in the water cup and dry it using a paper towel. Next, dip the clean brush into the blue paint. Again, you only need a little paint. Now, use your brush with the blue paint and mix it with the yellow paint in the rectangle below. Notice the green color that forms!

Now, mix more blue paint with the green paint you created in the rectangle below until you create blue-green.



Following these instructions, what other tertiary colors can you create? Use the space below, or if you need more space, use an additional sheet of paper, to mix paint and create tertiary colors.

Part 3.

Some colors on the color wheel are opposite one another. These colors are complementary colors. On a color wheel containing six colors, the complementary colors are red and green, yellow and purple, and blue and orange. When an equal amount of complementary colors are mixed together, like red and green, the color that is created is black.



What happens when you mix a small amount of one color with a large amount of its complementary color? What colors can you create? Use an additional sheet of paper to mix complementary colors.

Information and activity modified for Part 3 from *Let's Make Mud – Understanding & Mixing Complementary Colors* by Carol McIntyre from Munsell Color

Complementary Colors

1.  
Red Green
Red and green
2.  
Yellow Purple
Yellow and purple
3.  
Blue Orange
Blue and orange