



FOR AGES 5-10

Working with Color & Tie Dye

Explore color in a scientific way! Learn about why we see the colors the way we do, how color mixes, and about primary & secondary colors.



What is Color?

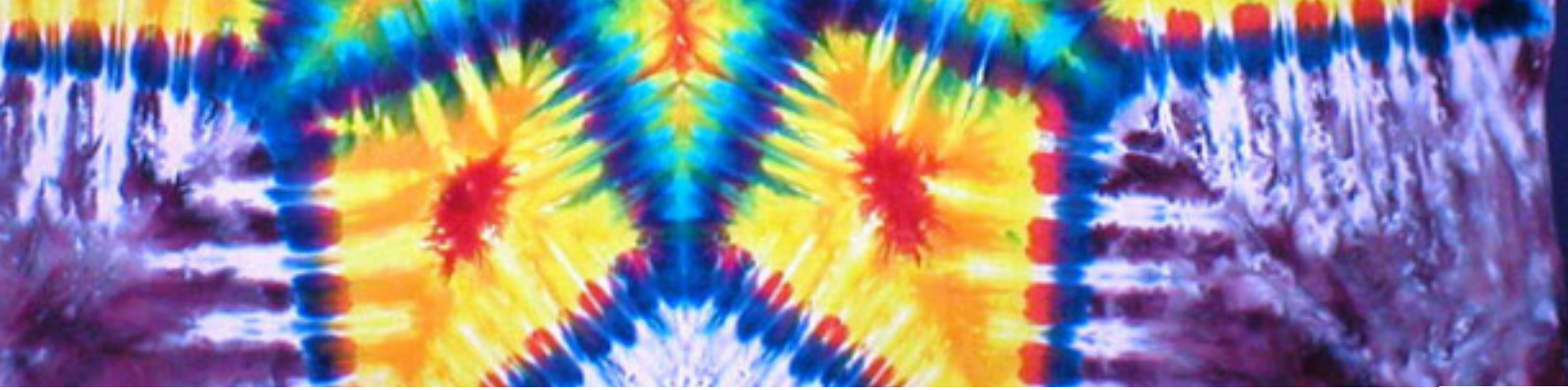


Types of Color



Color Mixing





Learning Objectives

Elementary school students will ...

- Learn about the basic properties of light
- Learn the basics of color theory
- Learn color mixing through tie-dye

Material List

- Dharma Tie-Dye Big or Little Group Kit
- 100% Cotton Clothing / Fabric
- Markers
- Household items as recommended in our tie-dye instructions (zip lock bags, etc)
- CMY Color Wheel

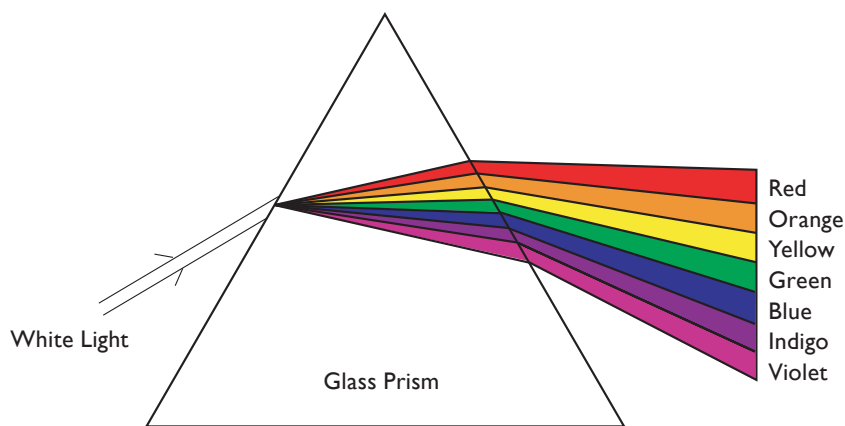


Words to know

- Light
- Wavelengths
- Primary Colors
- Secondary Colors



What is Color?



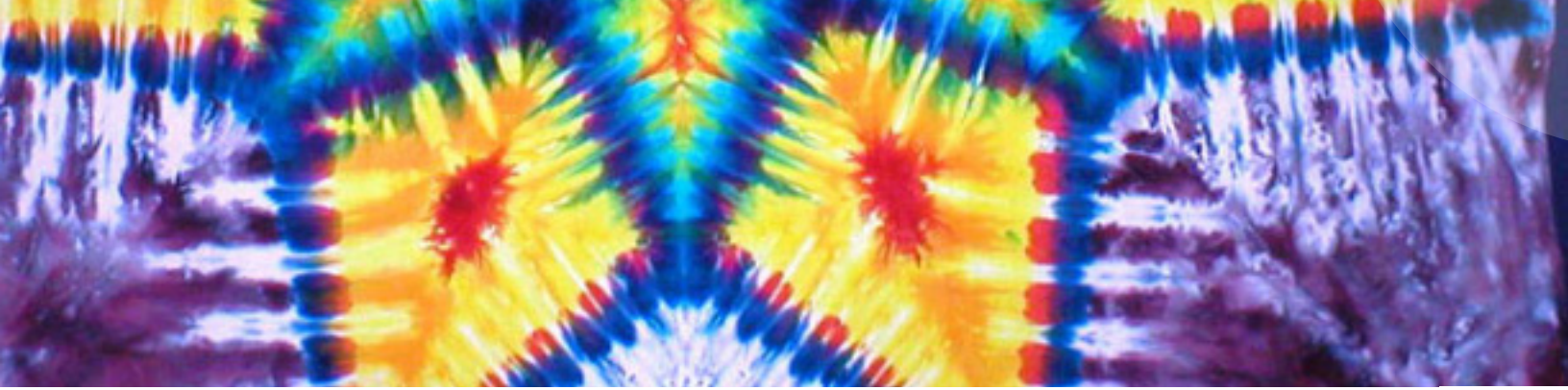
Color comes from light. When light hits an object some of it bounces off and is reflected at certain wavelengths. This light interacts in the eye with special light receptors that talk to your brain and tell you what you are seeing.

Different colors are made by different **WAVELENGTHS** of light, as humans we only see a small part of the spectrum, insects and other animals see different parts that may not show them color but will let them see things in the dark.

Light from the sun includes light that travels at all wavelengths in the visible spectrum, when the full spectrum of light is reflected back we see white. When the full is absorbed or soaks in, we see black. When the spectrum is split into its different wavelengths then we can see colors,

this is what happens when you see rainbows. Water droplets in the clouds break up sunlight into different wavelengths and then we can see a rainbow. Glass prisms (like on a chandelier) also break light into rainbows.

There are two basic ways by which we can see colors. Either an object can directly emit light waves in the frequency of the observed color, or an object can absorb all other frequencies, reflecting back to your eye only the light wave, or combination of light waves, that appears as the observed color. For example, to see a yellow object, either the object is directly emitting light waves in the yellow frequency, or it is absorbing the blue part of the spectrum and reflecting the red and green parts back to your eye, which perceives the combined frequencies as yellow.



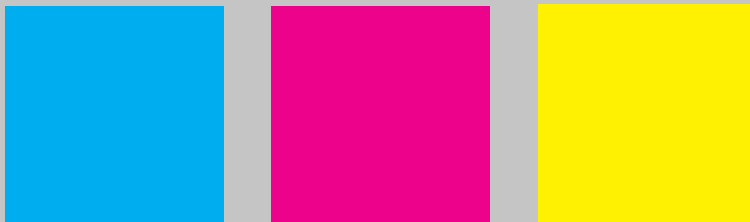
Types of Color

The following is written with the Dharma Fiber Reactive Dyes, the dyes we use for Tie-Dye, in mind. Dyes are transparent, so you use a Cyan-Magenta-Yellow (CMY) color system when mixing colors. When mixing more opaque pigmented products, like our fabric paints, you would want to use the traditional Red-Yellow-Blue color mixing theories and color wheels.

Primary Colors are the colors that mix together to make all the Secondary Colors. When using dyes these colors are **Fuschia**, **Turquoise**, and **Lemon Yellow**.

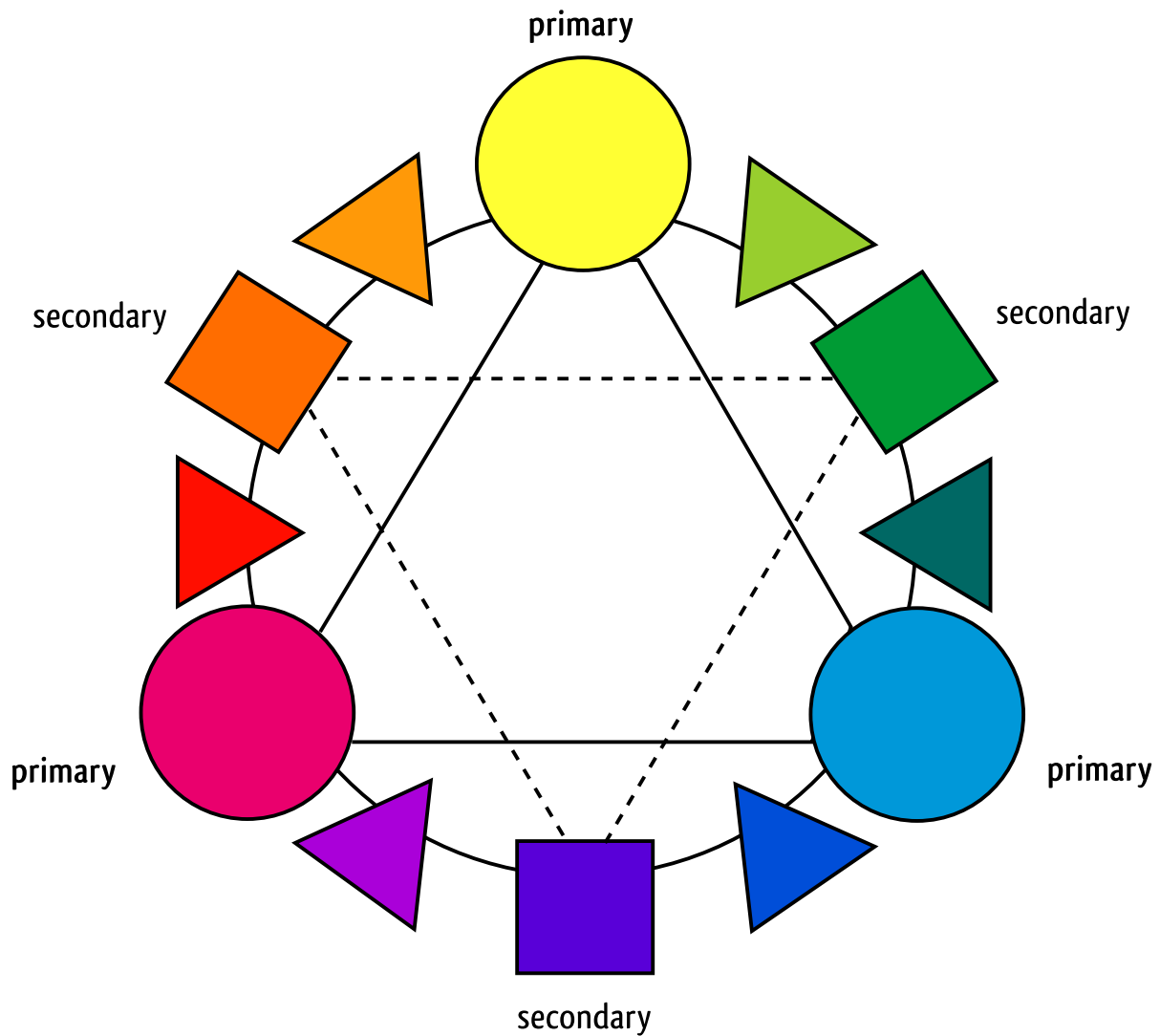
Secondary Colors are the colors you get when you mix Primary Colors: **ORANGE**, **GREEN** and **PURPLE**.

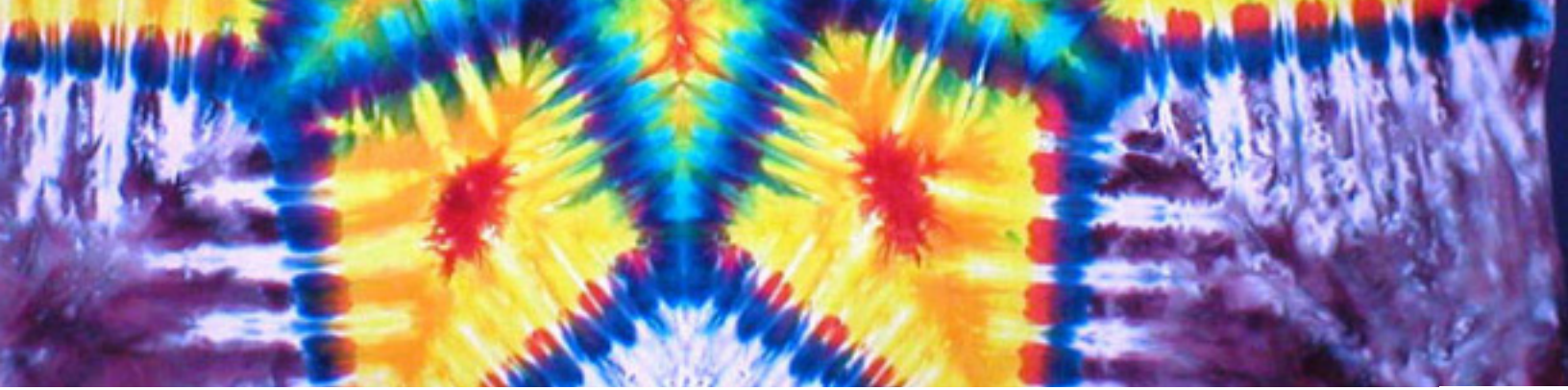
Get involved! What is your favorite color? Why? Can you think of items that are your favorite color?



Something Cool! Using only primary colors (flourescent markers work best for this), color the blank t-shirt below how you want your shirt to look. How will the colors mix on the shirt? (please see last page for printout)

CMY Color Wheel



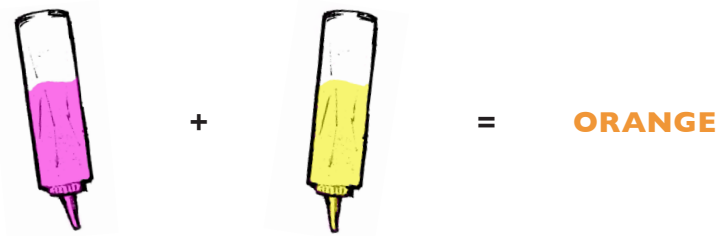


Color Mixing

You can get any color you want by mixing and changing the amounts of each **primary color** you mix together.

When using Dharma Fiber Reactive Dyes the primary colors are: **PRI3- FUSCHIA**, **PPR25-TURQUOISE** and **PRI-YELLOW**.

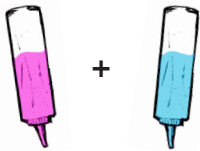
How Primary Colors Mix :



Color Mixing

You can get any color you want by mixing and changing the amounts of each **primary color** you mix together.

To make **secondary colors** on your project you can mix up the dyes in the bottle or just apply the two **primary color** dyes on the same spot like this:



Did you know? only use two **primary colors** at a time because: **YELLOW** + **FUSCHIA** + **TURQUOISE** = **BROWN**

Be careful when putting a **primary color** next to a **secondary color** because:

PURPLE + **YELLOW** = **BROWN**

TURQUOISE + **ORANGE** = **BROWN**

FUSCHIA + **GREEN** = **BROWN**

PRINT NOW



Using only primary colors (fluorescent markers work best for this), color the blank t-shirt below how you want your shirt to look. How will the colors mix on the shirt?