COLOR BASICS

Color is the perceptual characteristic of light described by a color name. Specifically, color is light, and light is composed of many colors—those we see are the colors of the visual spectrum: red, orange, yellow, green, blue, and violet. Objects absorb certain wavelengths and reflect others back to the viewer. We perceive these wavelengths as color.

DESCRIBING COLORS

A color is described in three ways: by its name, how pure or desaturated it is, and its value or lightness. Although pink, crimson, and brick are all variations of the color red, each hue is distinct and differentiated by its chroma, saturation, intensity, and value.

Chroma, intensity, saturation and luminance/value are inter-related terms and have to do with the description of a color.

Chroma: How pure a hue is in relation to gray

Saturation: The degree of purity of a hue.

Intensity: The brightness or dullness of a hue. One may lower the intensity by adding white or black.

Luminance / Value: A measure of the amount of light reflected from a hue. Those hues with a high content of white have a higher luminance or value.

Subtractive Color.
When we mix colors using paint, or through the printing process, we are using the subtractive color method. Subtractive color mixing means that one begins with white and ends with black; as one adds color, the result gets darker and tends to black.

The CMYK color system is the color system used for printing.
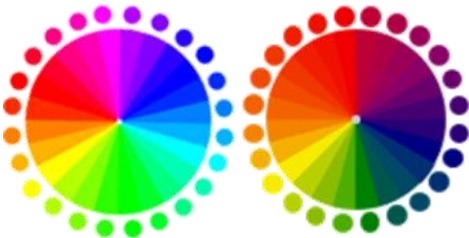
Those colors used in painting—an example of the subtractive color method.

Additive Color.
If we are working on a computer, the colors we see on the screen are created with light using the additive color method. Additive color mixing begins with black and ends with white; as more color is added, the result is lighter and tends to white.
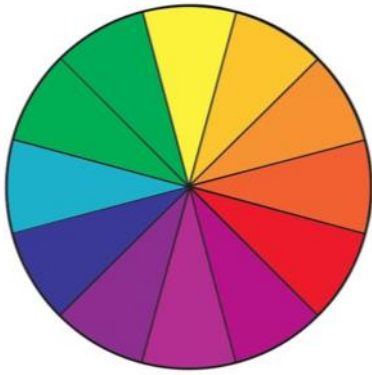
Color Wheel

A color wheel (also referred to as a color circle) is a visual representation of colors arranged according to their chromatic relationship. Begin a color wheel by positioning primary hues equidistant from one another, then create a bridge between primaries using secondary and tertiary colors.

Color Terminology

Primary Colors: Colors at their basic essence; those colors that cannot be created by mixing others.

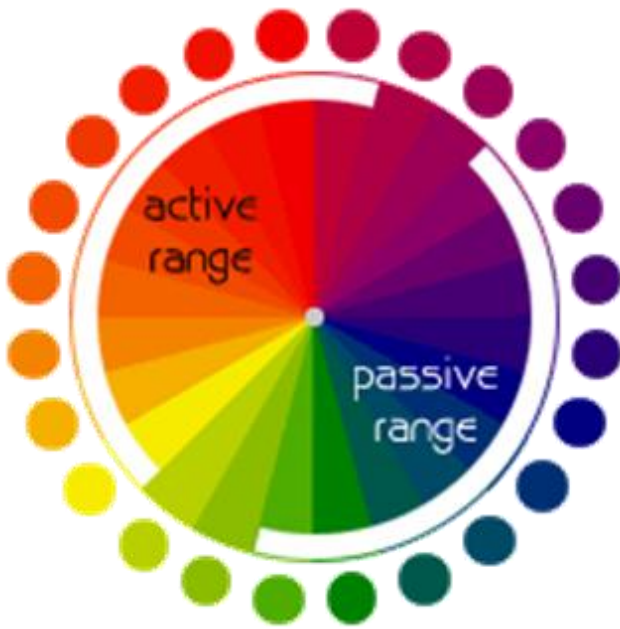**Secondary Colors:** Those colors achieved by a mixture of two primaries.

Tertiary Colors: Those colors achieved by a mixture of primary and secondary hues.

Complementary Colors: Those colors located opposite each other on a color wheel.

Analogous Colors: Those colors located close together on a color wheel.

Active & Passive Colors

The color wheel can be divided into ranges that are visually active or passive. Active colors will appear to advance when placed against passive hues. Passive colors appear to recede when positioned against active hues.

- Advancing hues are most often thought to have less visual weight than the receding hues.
- Most often warm, saturated, light value hues are "active" and visually advance.
- Cool, low saturated, dark value hues are "passive" and visually recede.
- Tints or hues with a low saturation appear lighter than shades or highly saturated colors.
- Some colors remain visually neutral or indifferent.

Color Harmony

Harmony can be defined as a pleasing arrangement of parts, whether it be music, poetry, color, or even an ice cream sundae.

In visual experiences, harmony is something that is pleasing to the eye. It engages the viewer and it creates an inner sense of order, a balance in the visual experience. When something is not harmonious, it's either boring or chaotic. At one extreme is a visual experience that is so bland that the viewer is not engaged. The human brain will reject under-stimulating information. At the other extreme is a visual experience that is so overdone, so chaotic that the viewer can't stand to look at it. The human brain rejects what it can not organize, what it can not understand. The visual task requires that we present a logical structure. Color harmony delivers visual interest and a sense of order.

In summary, extreme unity leads to under-stimulation, extreme complexity leads to over-stimulation. Harmony is a dynamic equilibrium.
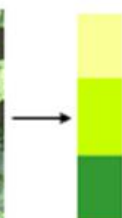
Some Formulas for Color Harmony

There are many theories for harmony. The following illustrations and descriptions present some basic formulas.
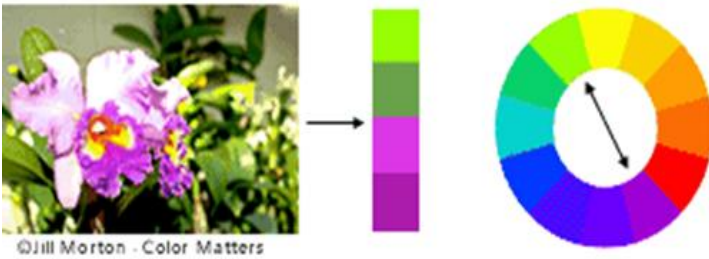
A color scheme based on analogous colors

©Jill Morton - Color Matters

Analogous colors are any three colors which are side by side on a 12 part color wheel, such as yellow-green, yellow, and yellow-orange. Usually one of the three colors predominates.

A color scheme based on complementary colors

Complementary colors are any two colors which are directly opposite each other, such as red and green and red-purple and yellow-green. In the illustration above, there are several variations of yellow-green in the leaves and several variations of red-purple in the orchid. These opposing colors create maximum contrast and maximum stability.

A color scheme based on nature
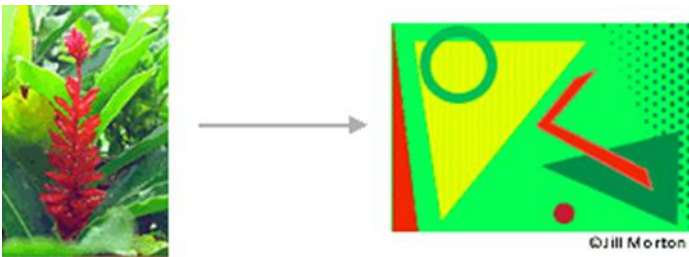
Color Context

How color behaves in relation to other colors and shapes is a complex area of color theory. Compare the contrast effects of different color backgrounds for the same red square.

Different readings of the same color