

COLOR

RYB color wheel and CMY Color Star

The use of color provides much pleasure in our world. We are drawn to different colors and different combinations of color. Color is a function of light, so without light there is no color. Various studies have demonstrated that color affects a wide range of psychological and physiological responses.

In 1666, Sir Isaac Newton passed a ray of sunlight through a prism which broke up or refracted into different colors, which were arranged in the order of the colors of a rainbow. A second prism recombined the range of colors back into light. So in theory, all colors are white or the reflection of light and black absorbs all colors, not reflecting light.

Different theorists have constructed different color wheels. Traditionally the three-primary color wheel, based on Newton's theory, has been the most standard - **Red, Yellow & Blue (RYB)**. This system is easy to understand by theory, however, it does not work well to mix all of the colors of the spectrum with these three primaries. Other theories, such as Albert Munsell's is based on five primaries, which adds purple and green to red, yellow & blue (RYBGP).

A **CMY** color wheel is used in most color printing systems and with so many people printing their own artwork on computer printers it is becoming increasingly important to understand this color system. In the **CMY color system** the primary colors are **Yellow, Magenta** and **Cyan**. These are the colors of ink (along with black -**CMYK**) that are used in color printers. The secondary colors are **red, green** and **blue (rgb)**, the colors on the computer screen. By understanding combinations of colors, one can create interesting effects.

Value refers to relative lightness and darkness. A lighter color than the normal hue is known as a **tint** (adding white). A **tone** is a medium value of the color and/or the color mixed with gray. A darker value is known as a **shade** (adding black) to a color.

Intensity refers to the relative purity of the color. Intensity is also known as **chroma**. Pure colors have a high intensity and tend to be bright; grayer colors a lower intensity or dullness. Adding white, black, gray or its complementary color will lower the intensity of a hue and **saturates** the color. Bright to dull is another way to clarify intensity and saturation. If you mix two complementary colors you can achieve a range from bright to dull with a neutral value of brown, gray or green, depending on the colors selected and from which color wheel - RYB or CMY.

A color harmony or color scheme is the selection of one or more colors in a single composition. Color harmonies are wide-ranging and are based on understanding the set up of a color wheel system.

Color schemes can be

achromatic monochromatic complementary split-complementary analogous triadic tetrad

Different harmonies can also assist in creating emotional effects with color. The combination of colors can play tricks on our eye and is an optical phenomenon known as simultaneous contrast. The artist and teacher, Josef Albers demonstrates this phenomenon in his book *The Interaction of Color*.

RVB or CMY Colors

RVB Colors

Primary colors

Yellow - no mixing as the primary yellow on your wheel.

Red - no mixing or mix yellow and magenta. Aim to mix a similar medium value or tone to your yellow tone by adding water.

Blue - no mixing or mix cyan and magenta OR ultramarine blue and cyan blue. Aim for a medium tone as well.

Secondary colors are the combination of two primary colors.

Orange is made by mixing yellow and red.

Green - mix cyan and yellow OR ultramarine blue & yellow.

Violet - mix blue and red.

Tertiary colors are the combination of one primary and one secondary color, so mix and save enough of the above color tones to make your tertiary colors. **Yellow-Orange** (Yg), **Red-Orange** (Ro), **Red-Violet** (Rv),

Blue-Violet (Bv), **Blue-Green** (Bg) and **Yellow-Green** (Yg).

CMY Colors

Primary colors

Yellow is the only hue requiring no mixing and will be the primary yellow on your color wheel.

Magenta or red-violet and is the second primary color.

Cyan come from phthalocyanine blue (green shade) as the third primary color.

Secondary colors are the combination of two primary colors, which will be red, green and blue.

Red - mix yellow and magenta.

Green - the combination of cyan and yellow.

Blue - mix cyan and magenta.

Tertiary colors are the combination of one primary and one secondary color, so mix and saved enough of the above color tones to make your tertiary colors. **Orange** (Yellow-red Yr), **Lime** (Yellow-green, Yg), **Salmon** (Magenta-red, Mr),

Purple (Magenta-blue, Mb), **Indigo** (Cyan-blue, Cb), **Teal** (Cyan-green, Cg).

You may add white to lighten any color to match the medium tones of your primaries and black to darken each color.

Assignment:

In this color assignment, you will be measuring and drawing a color wheel and a color star to demonstrate accuracy and to explore the mixing of primary, secondary and tertiary colors and their values from light to dark. Complete a twelve-step RYB color wheel with color pencils and paint with watercolors a twelve-step CMY color star in 3 various values within its color range.

RYB Color Wheel

1. Draw a color wheel on multi-media paper with a 2.5" radius for outer circle and 1.5" radius for the inner circle of the wheel.
Use your protractor to make the wedges - 0° 15° 45° 75° 90° and a ruler to complete the triangles and polygons at 30°.
2. Use color pencils. Color the primaries first in the center three polygons Yellow, Red & Blue and three coordinating outer wedges.
3. Secondary Colors: Two primaries make a secondary color for the three outer triangles and its coordinating outer wedge.
The color pencil set may have secondary colors of Green, Orange and Violet. Otherwise, you'll have to mix two primaries together to make the secondary color by layering both colors.
4. Tertiary colors are achieved by mixing one primary color and one secondary color for each of the six remaining wedges by layering.
5. Aim for unified values in polygons, triangles and wedges.
6. Covered areas should be opaque, not transparent, which may need more than one coat, even of color pencil in the white areas.
7. Put yellow at the top of the color wheel, since it is the lightest of the colors and so that the darker colors are in the bottom area.
8. Cut the color wheel out and glue on a separate piece of gray or black paper.
9. Color wheel will be graded on the accuracy of each color, application of medium and final presentation.

CMY Color Star

1. Draw a color star on multi-media paper with a 4.25" radius for outside circle and points and 0.5" radius center for the interior circle; 0.75" spacing between 5 concentric circles and one circle at 2.5" radius for the interior/lower point of star.
Protractor degrees: 0° 15° 30° 45° 60° 75° 90°. Cut each star point to paint each color leaving the center area attached to hold when painting, later you may cut that portion off. Cut a white paper 0.75" radius circle for the center.
2. Start with yellow. Paint the center area of the star with a medium value; two lighter values by adding white and/or water for the two inner areas and add black to make two darker values for the two outer areas.
3. Aim for unified values in the tints, tones and shades from each color to the next color within the concentric circle bands.
4. Painted areas of values should be close to opaque, not too transparent, which may need more than one coat. Watercolor paint acts like washes, since it is diluted with water.
5. Put yellow at the top of the color star, since it is the lightest of the colors and so that the darker colors are in the bottom area.
6. Glue the color star on a separate piece of gray or black paper with white paper circle in the center.
7. Color star will be graded on the accuracy of hues with range of values in tints, tones and shades; your painting technique and in its final presentation.

Due Wednesday, 9/13 at the beginning of class – RYB Color Wheel & CMY Color Star

Turn in all prep work and unused paint swatches

Tools for this assignment: multi-media paper, ruler, compass, protractor, scissors, cutting knife, color pencil set or watercolor pencil set, watercolor paint set, brush, palette, water cups, gray or black paper, glue stick

