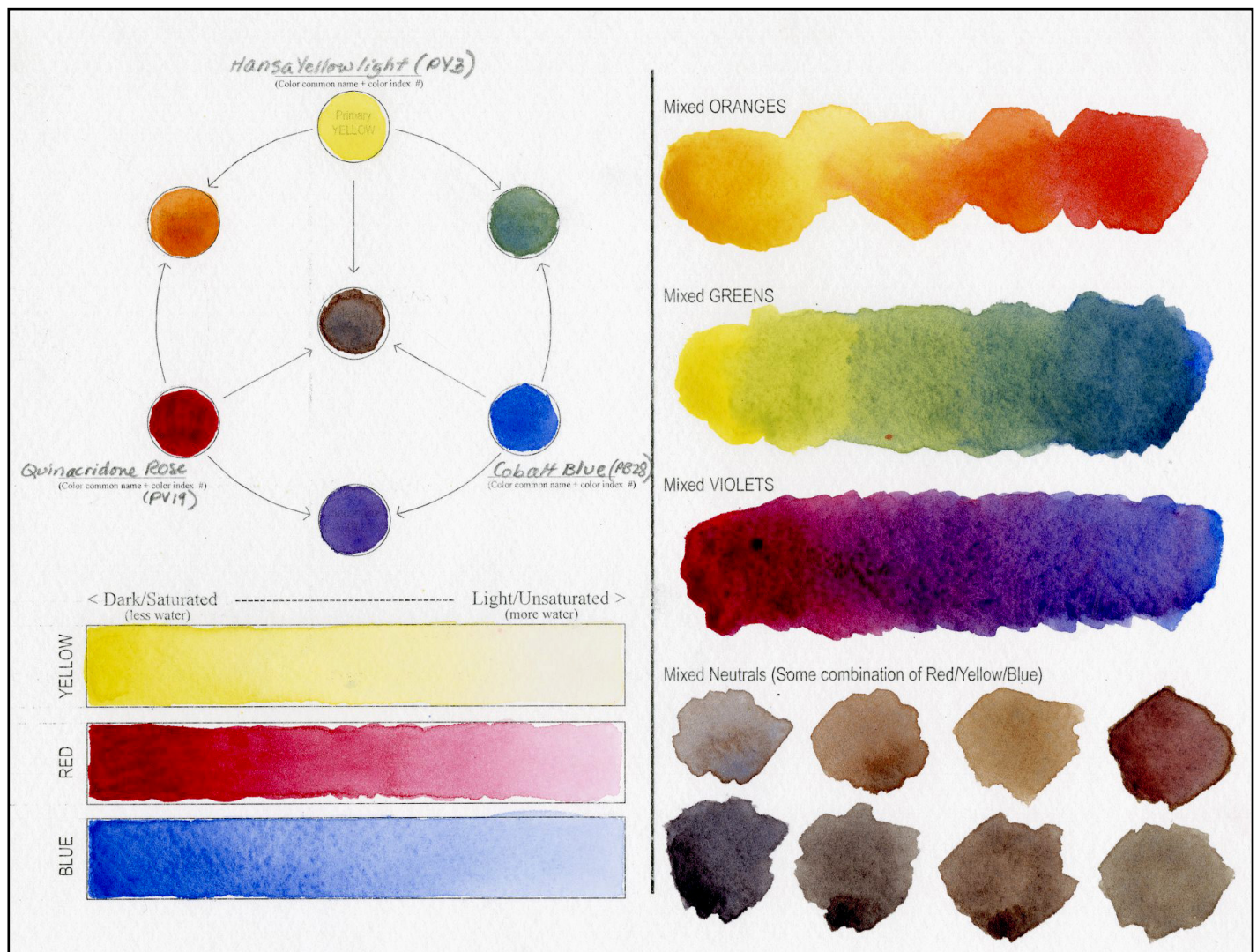
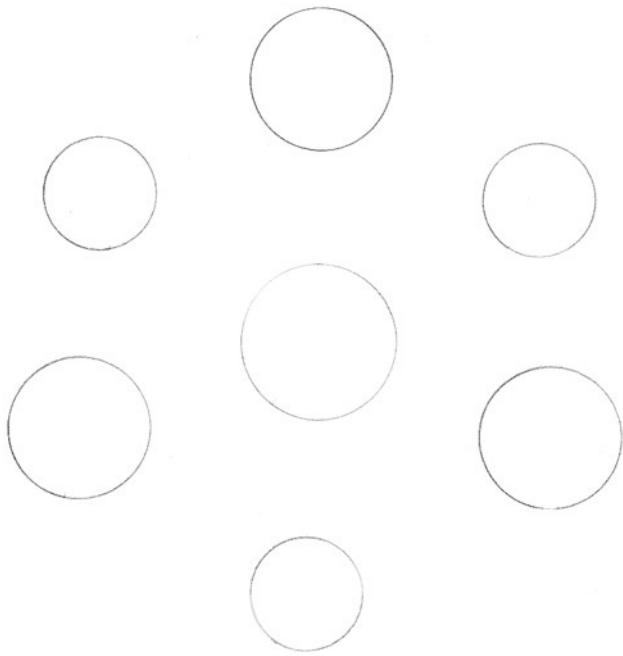


Primary Hue Color Wheels

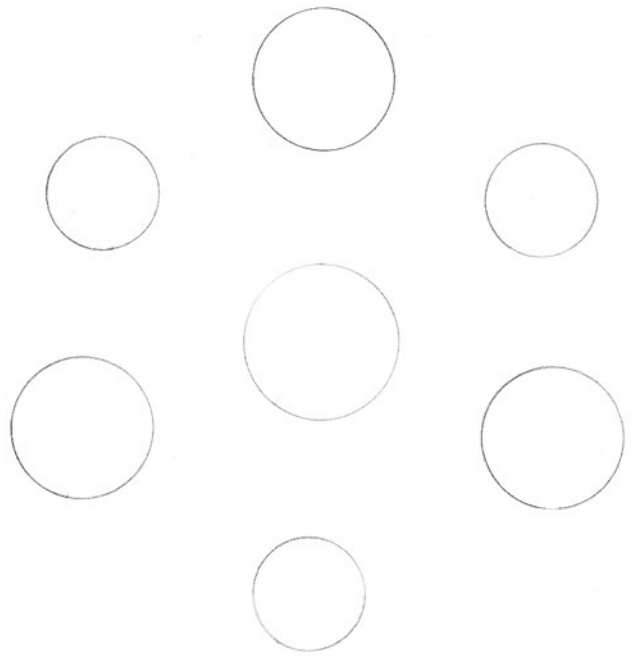
You can make your own basic six color wheels using different combinations of your primary colors, and then mixing the secondaries from your choices. This will give you a quick feel for what color mixtures are possible with all six basic hues. The blank wheels on the next page can be taken to a copy service along with light-weight watercolor paper cut to letter size (8.5x11), and the blank wheels copied onto the watercolor paper. You can then do your color mixing on paper that you will be painting on, which is the most accurate way to test your colors.

When you've made color wheels with your "basic six" hues, you can also use these blank color wheels to try out other "primary" palettes - using any red, yellow or blue, and then mixing your secondary oranges, greens and violets plus neutrals (mixtures of all three primary hues). A sample I did is shown below - it used Hansa Yellow Light, Quinacridone Rose and Cobalt Blue. The choice of cobalt blue is what adds a bit of granulation to the mixes shown on the right side - you can see the granulation in the pure cobalt blue stripe at the lower left where the mixture is graduated from saturated to unsaturated.

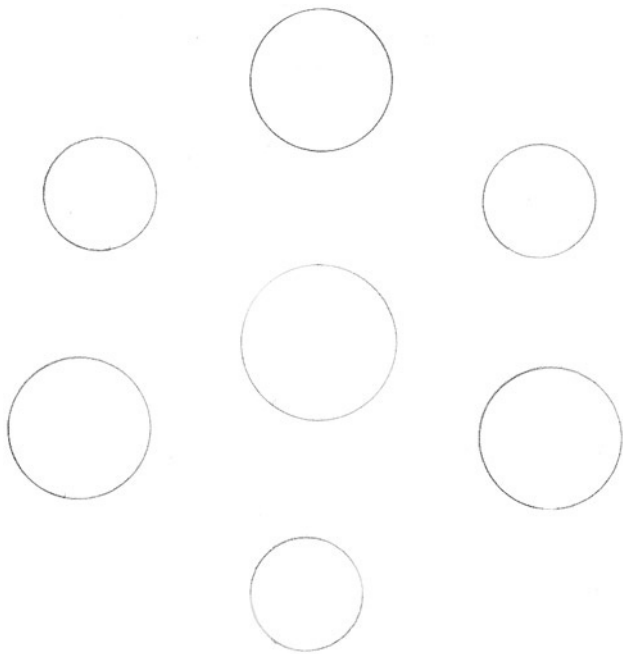




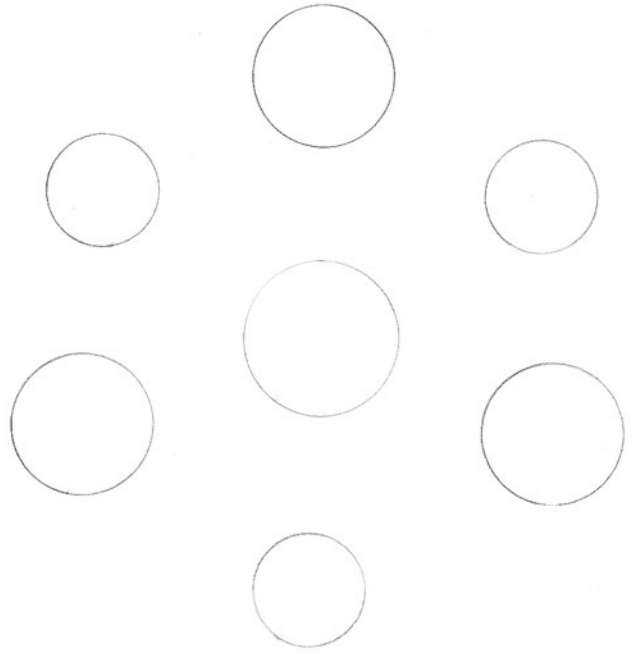
green-biased yellow _____
green-biased blue _____
purple-biased red _____



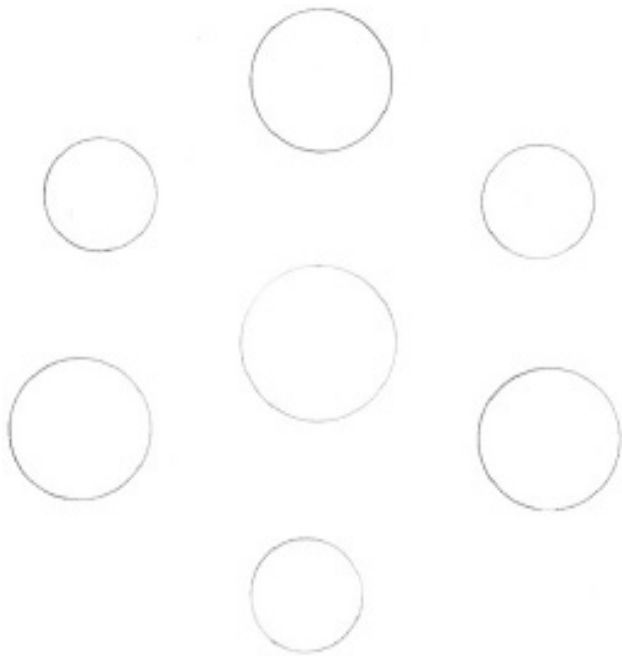
green-biased yellow _____
purple-biased blue _____
purple-biased red _____



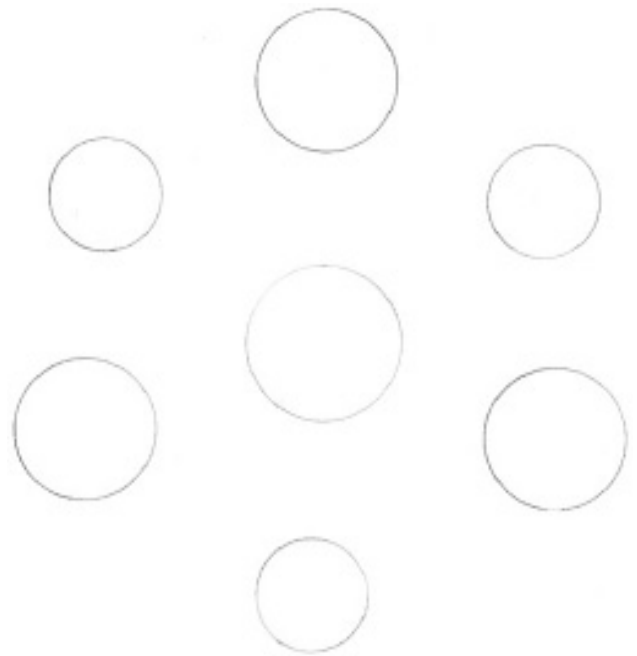
orange-biased yellow _____
green-biased blue _____
purple-biased red _____



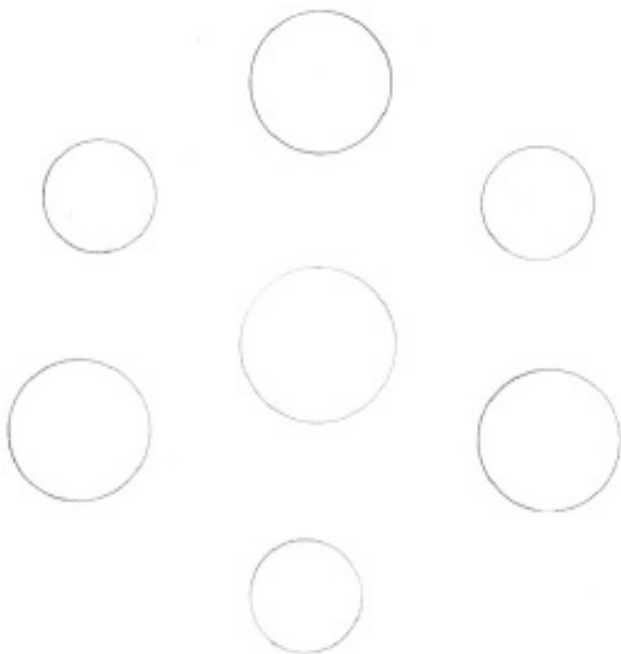
orange-biased yellow _____
green-biased blue _____
orange-biased red _____



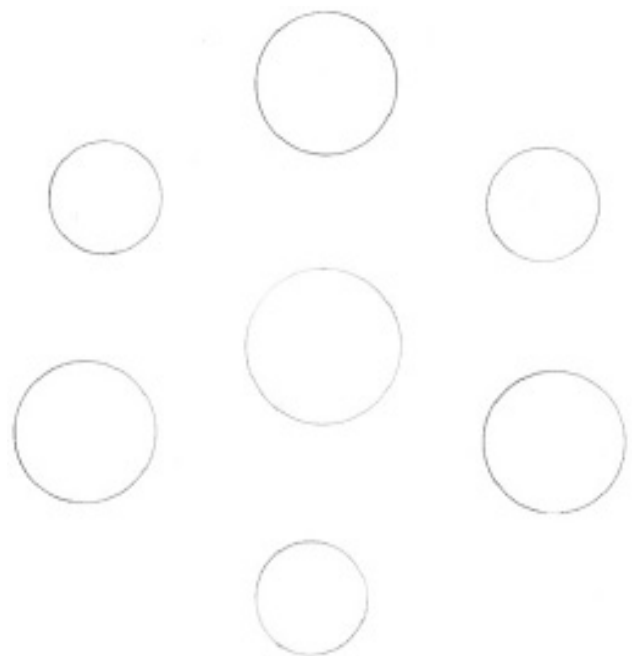
green-biased yellow _____
green-biased blue _____
orange-biased red _____



green-biased yellow _____
purple-biased blue _____
orange-biased red _____



orange-biased yellow _____
purple-biased blue _____
purple-biased red _____



orange-biased yellow _____
purple-biased blue _____
orange-biased red _____

Color Characteristics

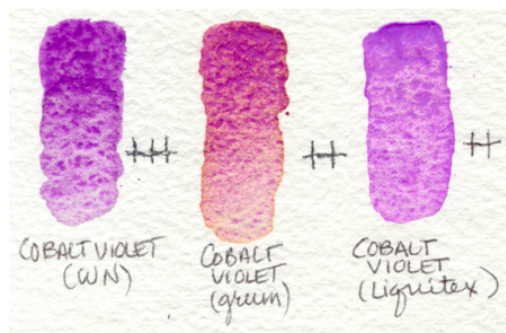
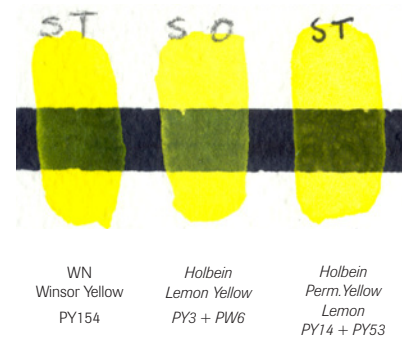
Exercise 1: Testing for transparency

Using a permanent waterproof black wide marker or permanent waterproof black india ink, draw a 1/2" wide line horizontally across the wide width of a piece of watercolor paper, about 3" down from the top of the paper. Make a second line about 3" below the first, and repeat as space allows.

When the line is dry, begin to paint a saturated swatch of each of your colors across this line. Do all your yellows first, then oranges, then reds, purples, blues, greens, browns and other "neutrals". Rinse your brush completely between color swatches, and LABEL each swatch as you paint it with: manufacturer, common color name, color index (PB28).

When your swatches are dry, examine the part that goes over the black line. If you see a residue of paint, that pigment is semi-transparent or semi-opaque. If the color "disappears" as it crosses the black line, then that pigment is transparent.

Why this matters: If you want to glaze or layer colors one over another dried color, TRANSPARENT COLORS are the ones to use. If you are a direct, start-to-finish painter, and do not care about building up color slowly, or glazing many layers of color, then you can use more OPAQUE pigments.



Exercise 2: Testing for granulation

Make a small vertical patch of clean water on your watercolor paper - about 1/2 inch wide by about 1 1/2" tall. Put a loaded brushful of paint into the top portion of this patch of clean water. Now rock your paper to let the paint run down into the rest of the clean water patch, then back up to the top. Repeat several times, then let the paper dry in a flat position. Examine the result - if the paint is granulating, you will see a mottled or speckled look in the patch instead of a flat even tone. Some pigments granulate just a little and some a lot. You can mark your samples with a +, ++ or - to indicate the difference in granulation. Do this for each color you have.

Why this matters: Sedimentary or granulating pigments do not glaze well unless they also are one of the transparent pigments. These granulating pigments DO however add interest to larger, less saturated (less pigment-rich) passages, and can create "duotone" washes when combined with a non-sedimentary or non-granulating pigment. Transparent, non-granulating pigments are the best ones to use for multiple layers of glazing.

Exercise 3: Testing for staining

This test is almost pointless any more, as most of the new, lightfast synthetic organic watercolor paints now being manufactured are also staining - it's simply a matter of HOW staining they are. The exceptions are some of the genuine mineral pigments (like lapis lazuli, turquoise, malachite, etc.) being made by Daniel Smith. Some of these pigments are non-staining. To test how staining a pigment is, and to compare it equally to other colors, do this test on the same paper, using the same brush and the same number of brushstrokes each time. Also allow the same amount of drying time. This test will tell you how well a DRY paint will lift. Any wet passage of paint can be blotted away successfully (if you're paying attention and remember to do it in time!)

To test for staining, make a vertical patch of color about 1/2" wide and 1 1/2" tall. Let it dry completely. Using a damp brush, make 18 to 20 back and forth strokes in the middle of the paint patch, then blot with a paper towel. Your brush should not be dripping wet, but with enough moisture in it to re-wet and soften the pigment. A non-staining pigment can be successfully lifted to nearly white paper. A highly staining pigment will barely lift at all.

Why this matters: Staining pigments not only stain your paper, but tend to stain every color beneath them as well. The use of highly staining pigments makes glazing color more challenging, as you have to know how each new layer will affect the color already on the paper.

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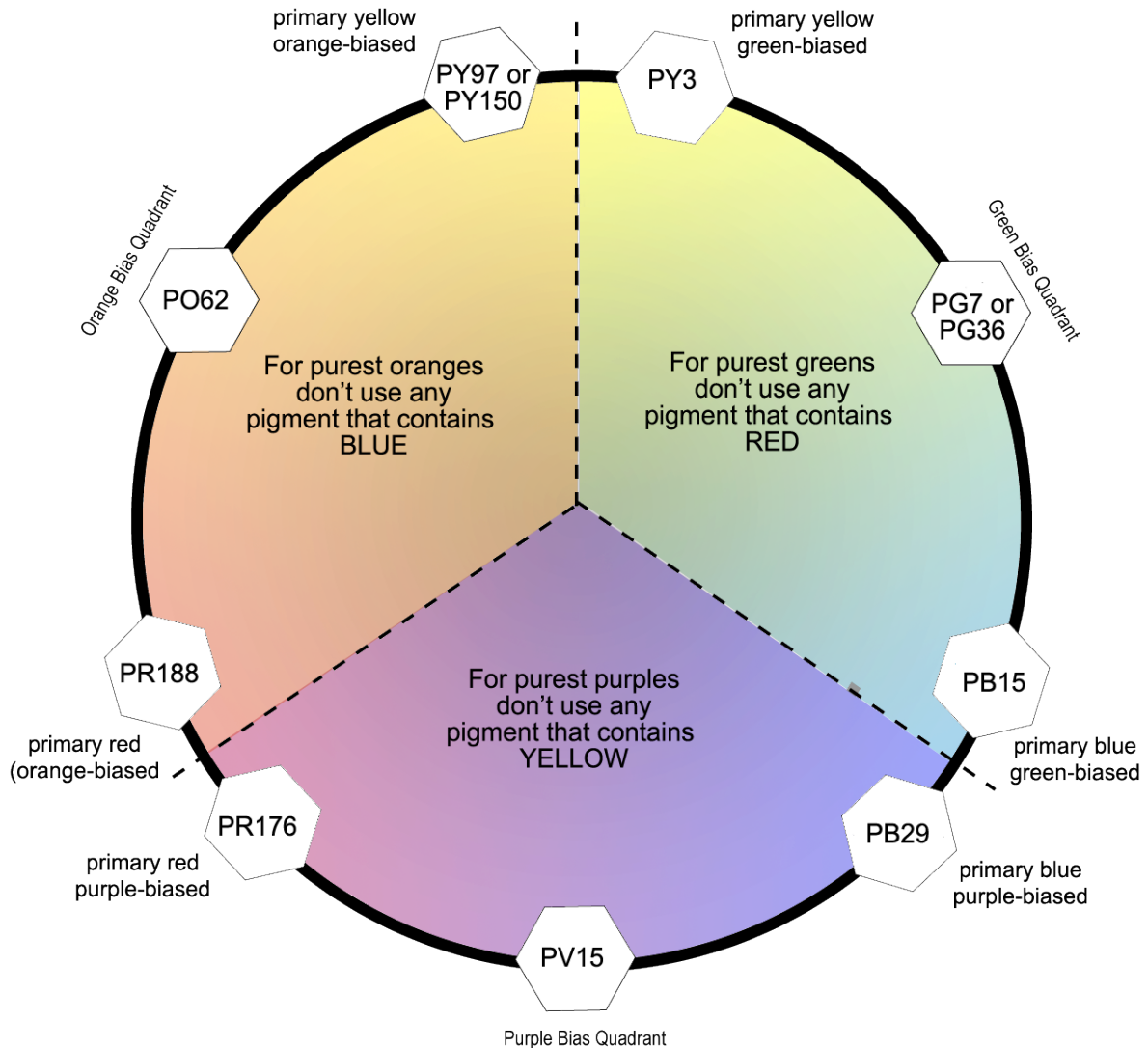


Color Properties: Hue/Value/Intensity

Hue

Hue refers to the general color - like red - that we use to describe what color we are seeing. We are using a split primary color palette of six hues: two yellows, two reds and two blues. The bias of each of these primary hues allows us to mix a wider range of other hues that vary in both value and intensity.

The SPLIT PRIMARY COLOR WHEEL for Watercolor



THE PUREST MOST INTENSE COLORS ARE OBTAINED BY MIXING COLORS CHOSEN FROM WITHIN A SINGLE QUADRANT

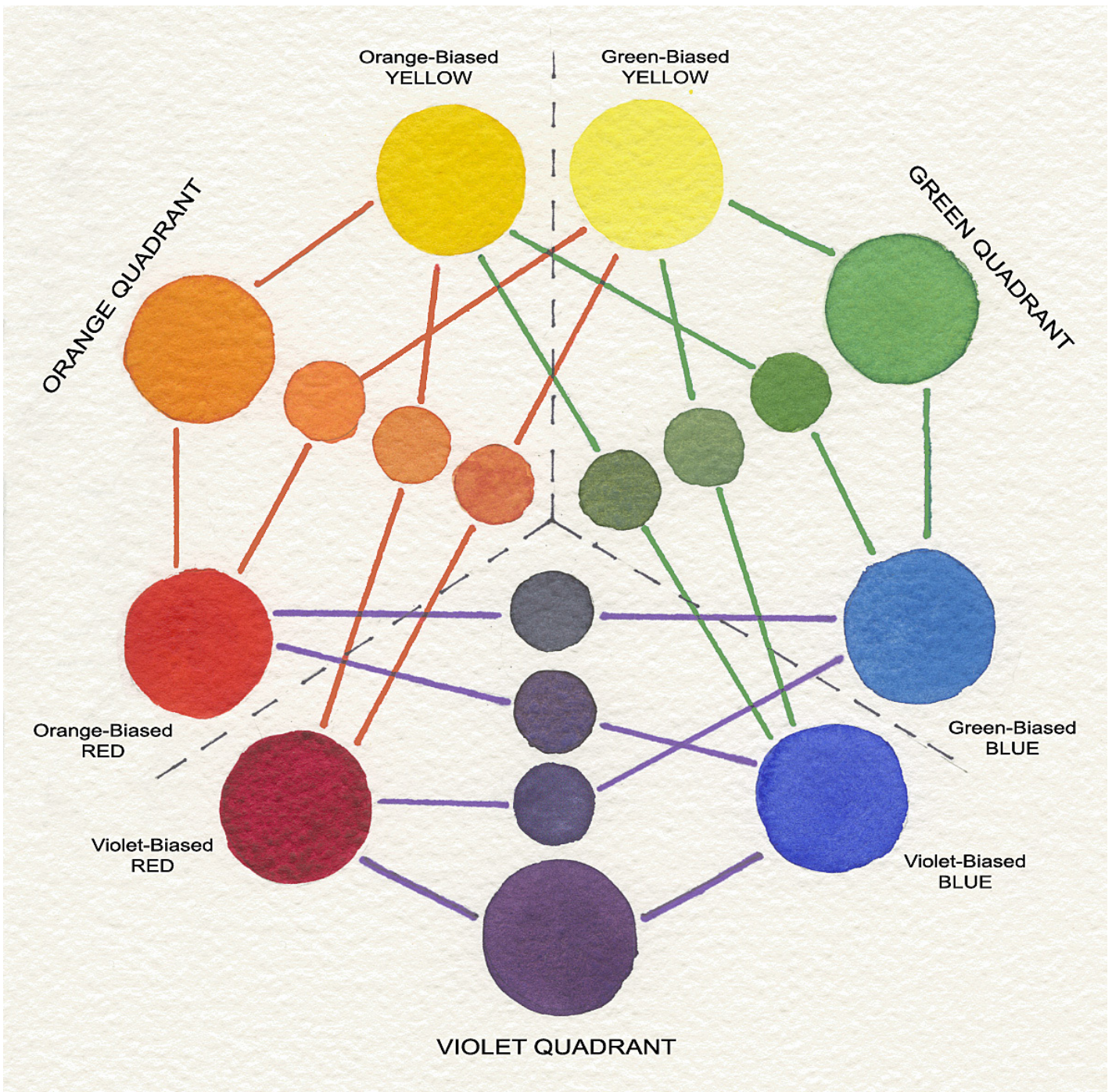
TO LOWER INTENSITY OF A HUE, MIX WITH THE COLOR OPPOSITE IT

red + green	orange + blue	yellow + violet
red orange + blue green	yellow orange + blue violet	yellow green + red violet

NEUTRALS (Grays/browns) can be mixed by combining yellow+red+blue. Changing the proportion of each primary will alter the neutral from gray to brown, and from warm to cool.

Color Properties: Hue/Value/Intensity

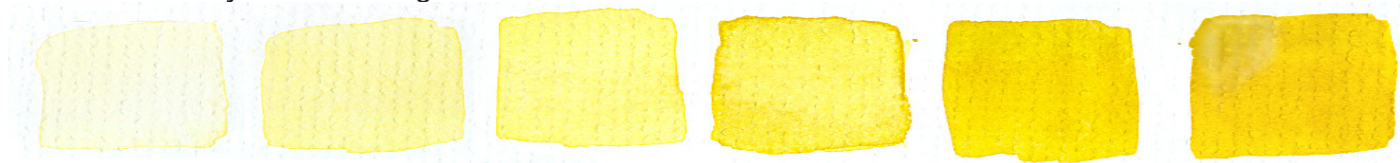
Here's another way of looking at the split primary palette. The lines show which two colors have been mixed together, with the smaller circles intersecting the lines showing the approximate mixture that resulted. Notice that the mixtures get duller whenever you mix two pigments from two different quadrants (for example, a green biased yellow with a violet or purple-biased red). That's because the yellow has a little green in it, and the red has a little violet in it, so you are essentially mixing FOUR hues - yellow, red, green and violet. Thus a "duller" more neutralized orange is the result you can expect.



Color Properties: Hue/Value/Intensity

Color value: light to dark

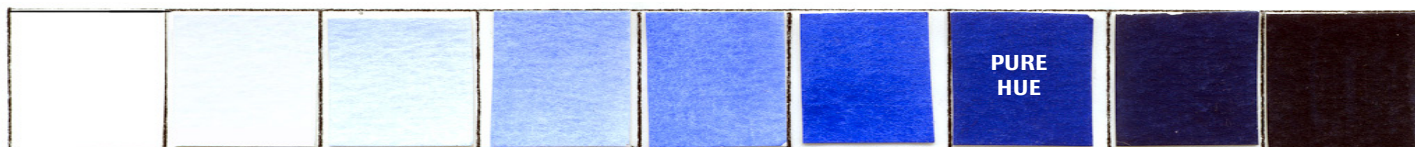
In transparent watercolor you control the lightness of a color by how much water you add to the paint. The more water you add, the lighter the value of the color will become.



You control the darkness of a color by adding another hue to it. You can add another color in the same color family that is an inherently darker pigment (like darkening hansa yellow light with burnt umber for example).



You can also darken some colors with black. This works with hues that contain little or no yellow or orange.



EXERCISE (do at home):

Make a value scale for EACH COLOR on your palette, beginning with the pure hue in the location you think it belongs in relation to the black and white value scale below. Then either use water to make lighter steps in the scale or another hue to make darker steps.



Complements (hues opposite each other on the color wheel) can be used to darken some colors when black is not an option (like with yellows and oranges), and when there is no darker color in the same color family. Proportion is critical here - too much of the complement, and the color you are trying to darken ceases to be a darker value of that color and either becomes too neutral or too biased toward the complement you are adding.

Understand that value (light/dark) and intensity (brilliance/chroma) are related. You cannot change a color's value without also affecting its intensity. *Anything* added to a pure hue (water or another color) will make it less brilliant/intense.

Color Properties: Hue/Value/Intensity

Manipulating a Color's Intensity

There are times when a pure, unadulterated color is what you want, and there are times when that intensity is overpowering. Making a successful painting involves orchestrating the whole so that some parts are intense, pure, highly contrasting color, and the remainder of the colors are subdued - either a little or a lot. When we knock down the intensity or purity of a color, we call that neutralizing or graying it. You neutralize a color by adding some of its complementary color (the one opposite it on the color wheel). The more of the complement you add, the more neutral the color becomes until it is either a grayish or brownish hue.



Complementary colors are opposite (straight across from) each other on the color wheel (like red & green)

These are the basic color complements:

- Red & Green Blue & Orange Yellow & Violet
- Red Orange & Blue Green Blue Violet & Yellow Orange Yellow Green & Red Violet

Exercise:

Make a color complement chart for each of the colors on your palette. Start with the basic hues on both the left and right, then make three mixtures, or “steps” between the basic hues, aiming for a true neutral in the center position. It will look something like the chart below, which shows just some of the “basic six” color mixtures you can make.

	Basic Hue	Mixtures of Basic Hues on either end of row			Basic Hue	
Winsor Lemon						French Ultramarine + Permanent Alizarin Crimson
Transparent Yellow						French Ultramarine + Permanent Alizarin Crimson
Permanent Alizarin Crimson						Winsor Green (BS) OR Winsor Blue + Winsor Lemon
Scarlet Lake						Cerulean Blue OR Winsor Blue (light saturation)
Scarlet Lake						Winsor Blue

Exercise: Basic Color Mixing

Either use my “basic six” recommended colors or take a look at the swatches you did in Exercise 1 and from them, choose:

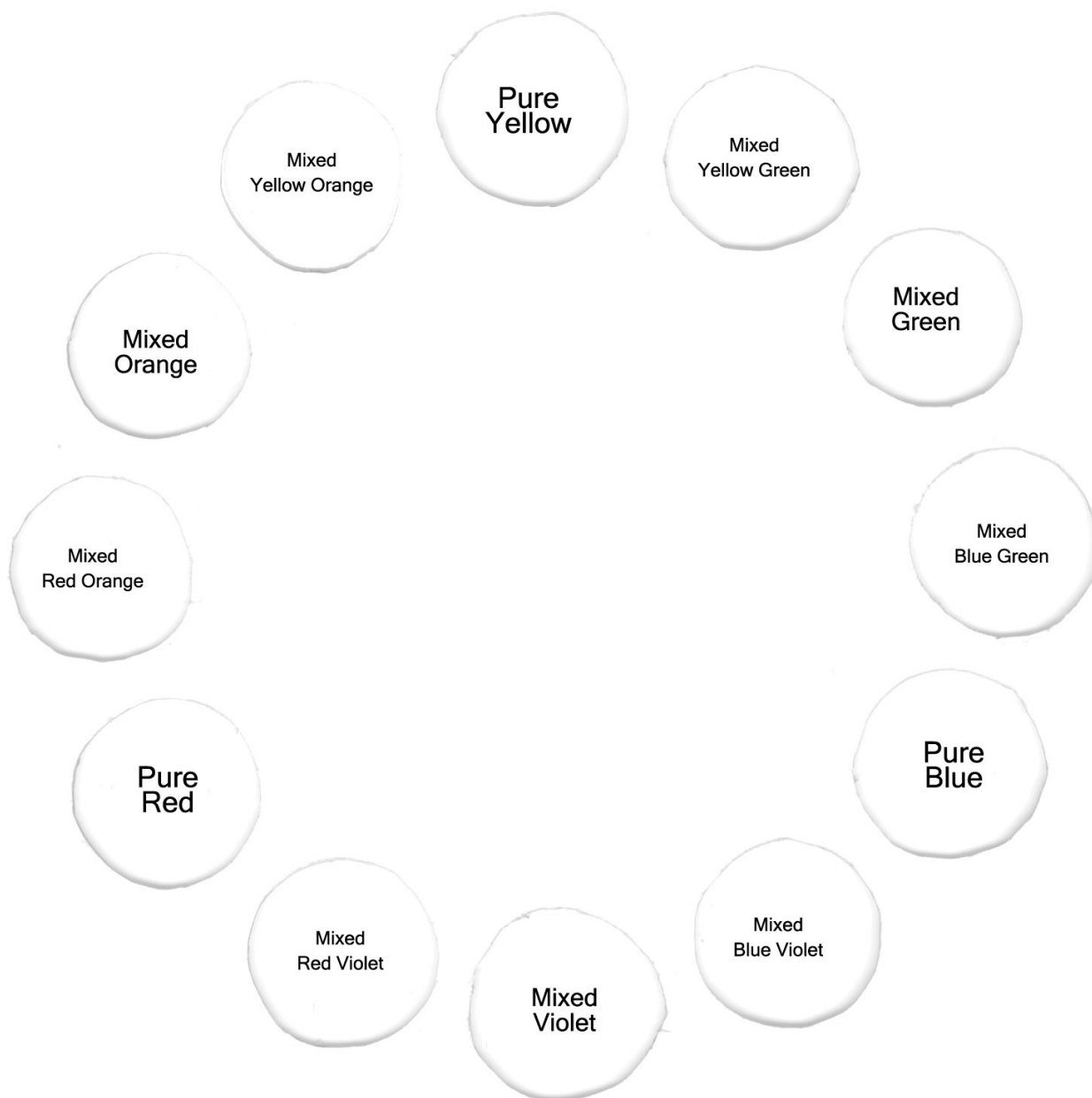
ONE yellow (orange-biased or green-biased)

ONE blue (green-biased or violet-biased)

ONE red (violet-biased or orange-biased)

Use these three primary colors to fill in the simple color wheel. Place your primaries (red/yellow/blue) where indicated, then mix two primaries to get the intermediate colors in the orange, green and purple positions. When mixing, start with the lightest of the two colors, and add the darker one to it, a little at a time until you get the color you want. Finally, mix the tertiary hues (red-violet, red-orange, yellow-orange, yellow-green, blue-green and blue-violet).

You can make many variations of this triadic color palette by changing the three primaries.



In-Class Practice:

Choose a subject that will allow you to use some pure, intense colors in the focal area, and one that has a good range of values from white (which you will leave as unpainted paper) to nearly black. This exercise will let you practice varying the pigment to water ratio of your mixtures in order to control the value and intensity of your color mixtures.

Out-of-Class Assignment: Color Mixing: Warm and Cool Neutrals

Choose a subject that has a predominance of muted, grayed colors for this assignment. Paint it by using your basic six colors only, and intermixing them as needed to create slightly or completely neutralized hues. Your painting should look as if it were created with the hues you see in the center three columns of the color mixing chart on page 5.



"Come to Rest", Watercolor by Ellen Fountain . In the left image, the color has been altered to primarily "warm" neutrals, giving it a different mood than the original which is the painting on the right.