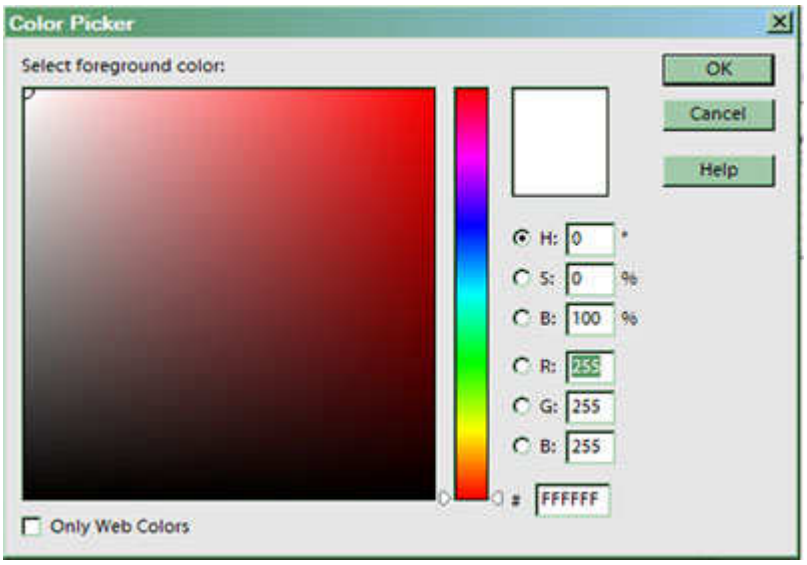
Hue, Saturation, and Value

By Hummie

There are three properties to color, that being hue, saturation, and brightness. Have you noticed on Photoshop Elements a place where you can change all three of these? This tutorial will help you understand these three properties and how to change them in PSE.

A FEW BASICS



This is a screenshot of the Color Picker in Photoshop Elements.

When you first call it up, it shows these defaults. Notice the row of figures to the right.

The first set of numbers refers to the three dimensions of color that we are learning about. The H stands for Hue, the S for Saturation, and the B for Brightness (also known as value and lightness in other places in the program). These are the three tools you will mainly use for digital scrapbooking. Sometimes you will see these listed as HSB scale or HSV scale.

The Hue numbers range from 1 to 360; the Saturation numbers range from 1 to 100; and the Brightness numbers range from 1 to 100.

The next set of number is for RGB color. R stands for Red, G for Green, and B for Blue. Basically, this color model uses varying degrees of the three colors to create all other colors. Now, don't try to make sense of this because I've always learned that all colors are made from the primary colors of red, yellow, and blue…go figure that. On our Color Picker, we see them in their own fields. Sometimes you will see them written in respective order in parenthesis. You will note on the above example that white is represented by (255, 255, 255). Black is (0, 0, 0); that is no red, no green, and no blue. Since the first respective number represents red, that pure color would be (255, 0, 0). And the like for Green (0, 255, 0) and Blue (0, 0, 255).

The last field on the Color Picker (our example shows white as #FFFFFF) is another code for RGB colors. These codes are web safe colors limited to 216 combinations of red, green, and blue. This code is called hexadecimal.

We do not need to learn all about the details of RGB color codes. They are not easily, logically helpful when choosing colors by eye for a layout. You would most likely use these two codes if you were using a program to choose your color scheme. The program would give you these codes and you could enter them in on the color picker to get the same color.

HUE

Back to Art Class 101 we go! I'm sure you, like me, are noticing all these color terms in your scrapbooking software program. What do they all mean?!! If you are like me, you haven't taken the time to learn what they mean, but instead just play with the tools to see what they do. Let's study some of the terms so that we can use our programs more effectively.

Now, I don't know about you, but whenever I see the word "hue," I think of some complicated variation of color that I probably will never understand. Goodness was I wrong! Hue is one of the most basic words in color; it is the foundation of color.

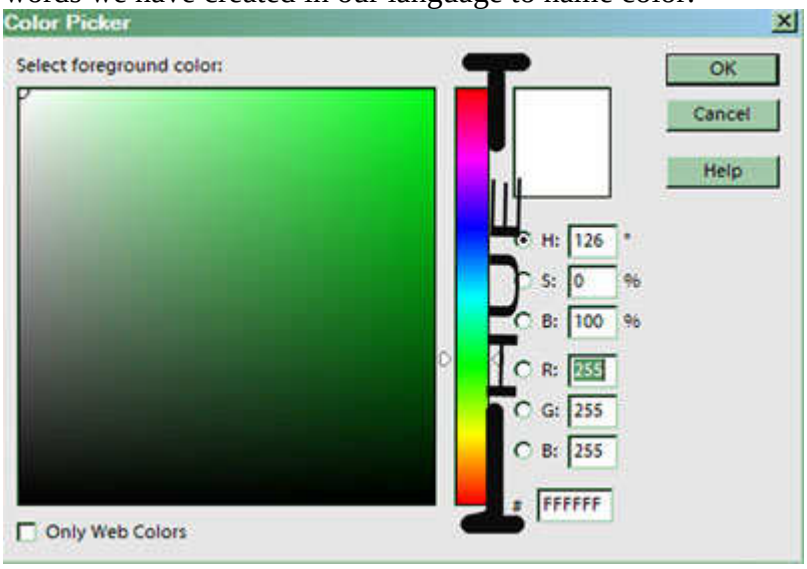
Here are some definitions excerpts from dictionary.com for you to mull over (listed from easiest to understand to hardest):

> A. Hue corresponds to the common definition of color, e.g. "red", "orange", "violet" etc.
>
> B. Color: all the hues of the rainbow.
>
> C. Take on color or become colored
>
> D. The quality of a color as determined by its dominant wavelength
>
> E. The property of colors by which they can be perceived as ranging from red through yellow, green, and blue, as determined by the dominant wavelength of the light.
>
> F. The coordinate that determines the frequency of light or the position in the spectrum or the relative amounts of red, green and blue. The other coordinates are saturation and brightness.
>
> G. The one of the three psychological dimensions of color perception that permits them to be classified as red, yellow, green, blue, or an intermediate between any contiguous pair of these colors and that is correlated with the wavelength or the combination of wavelengths comprising the stimulus. (the other two dimensions being saturation and brightness).

So, basically, to make things easiest to understand, the word "hue" could actually be interchanged with the word "color." When you change the hue in your layout, you

change the color. For instance, you may change the hue from green to blue. So, I guess I could say to you, "hey, I do not like that hue for your border, why don't you change it to green."

In other words, it's where the color lands on the spectrum of the rainbow defined by these words we have created in our language to name color.



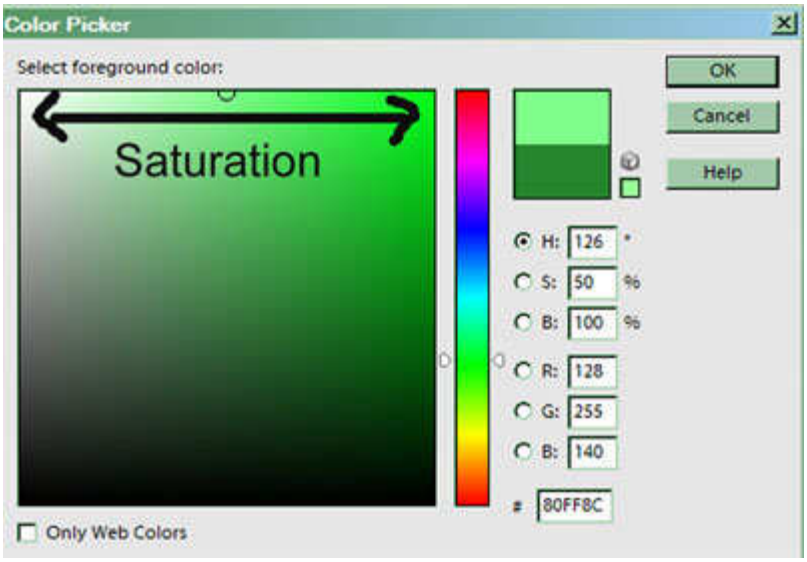
To choose a hue, move the slider in the rainbow spectrum or click directly on it.

SATURATION

The second dimension or property of color is saturation. Saturation is the degree of purity of a color. It is thought of as the intensity of a color. A highly saturated color is very intense and vivid. A low saturated color is muted and grey. With no saturation at all, the color is a shade of grey. Therefore, to change the saturation of a color, you add or subtract grey from it. The grayscale (the running from white to black) of a color changes the color's saturation.

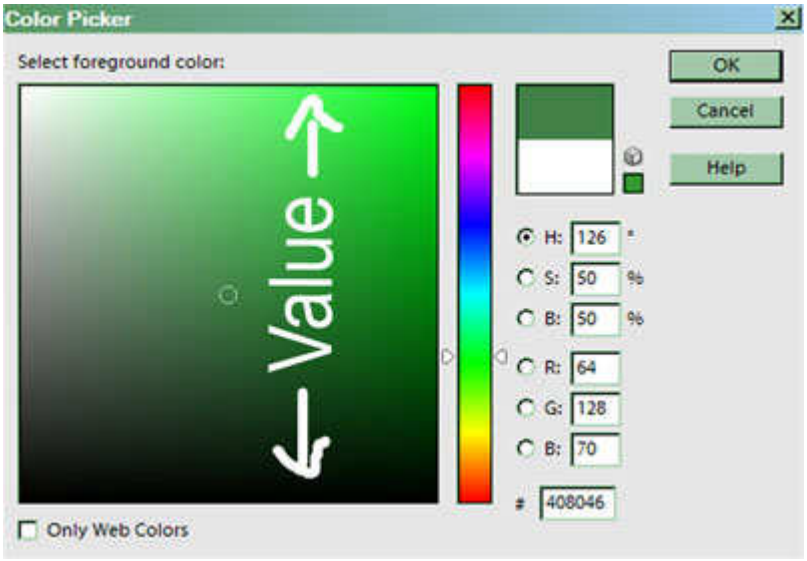
Saturation is often confused with chroma which is the degree of brightness or dullness of a color. A chromatic color is a hue that is spectrally pure (a fully saturated color). An achromatic or monochromatic color has other colors in it that wash it out and makes it dull. Saturation is very similar in that a fully saturated color has very little grey in it (no color washing it out). Make sense? Yeah, right! Just think of them like siblings—related very closely.

Observe the screen shot above for hue. Note that the hue is now #126 which is a lovely green hue. The color in the box which shows the color I have actually chosen has not changed yet as it is still white. The color in that box is the active foreground color. If you will remember from above, all fields have a range beginning at 1 and, therefore, the white box will not change to my chosen color until I choose a saturation level.



Saturation numbers are between 1 and 100. You will note that I chose the middle number of 50 and that the circle representing where on the grid my color is sets in the middle horizontally. If I were to choose a higher number, the circle would move to the right; a lower number, the circle would move to the left. A purely saturated color with a saturation of 100 would be in the far right corner.

VALUE



The value (aka lightness or brightness) is vertical on the Color picker. Value numbers are also between 1 and 100.

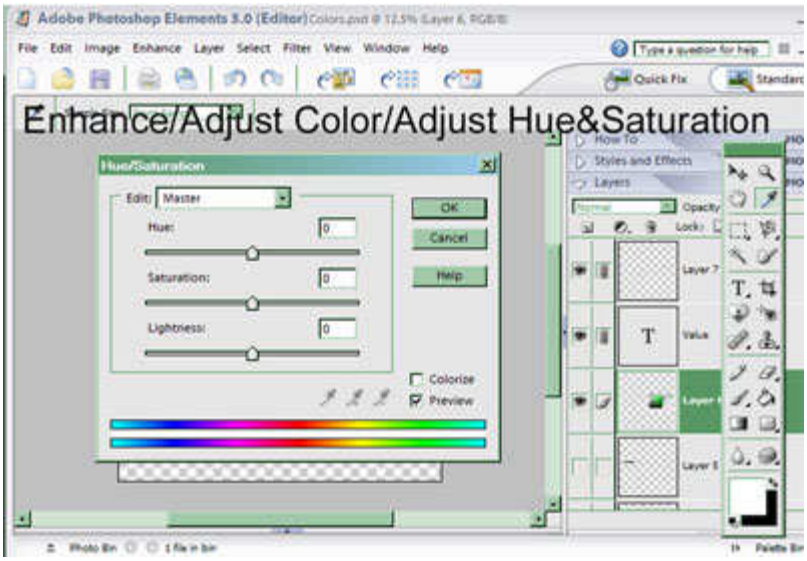
Lighter colors are at the top of the vertical spectrum. Lighter colors are sometimes called "pale colors." The lightest colors are the "pastels."

Light colors are made by adding light or white. Adding white to a pure color is called "tinting." Therefore, the colors on the top half of the Color Picker would also be called "tints."

Darker colors are at the bottom of the vertical spectrum. These colors are often referred to as "deep" or "dark" colors.

Dark colors are made by adding black or removing light from the color. Adding black to a pure color is called “shading.” Therefore, the colors on the bottom half of the Color Picker would also be called “shades.”

Somewhere in the middle of all that are “tones.” Adding gray to a pure color will result in various tones.



Although the Color Picker uses a “B” for brightness, the Hue and Saturation tool utilizes “lightness.”

However, you will note that knowledge of the same three properties of color is helpful when using this tool, as well as many other areas of PSE.