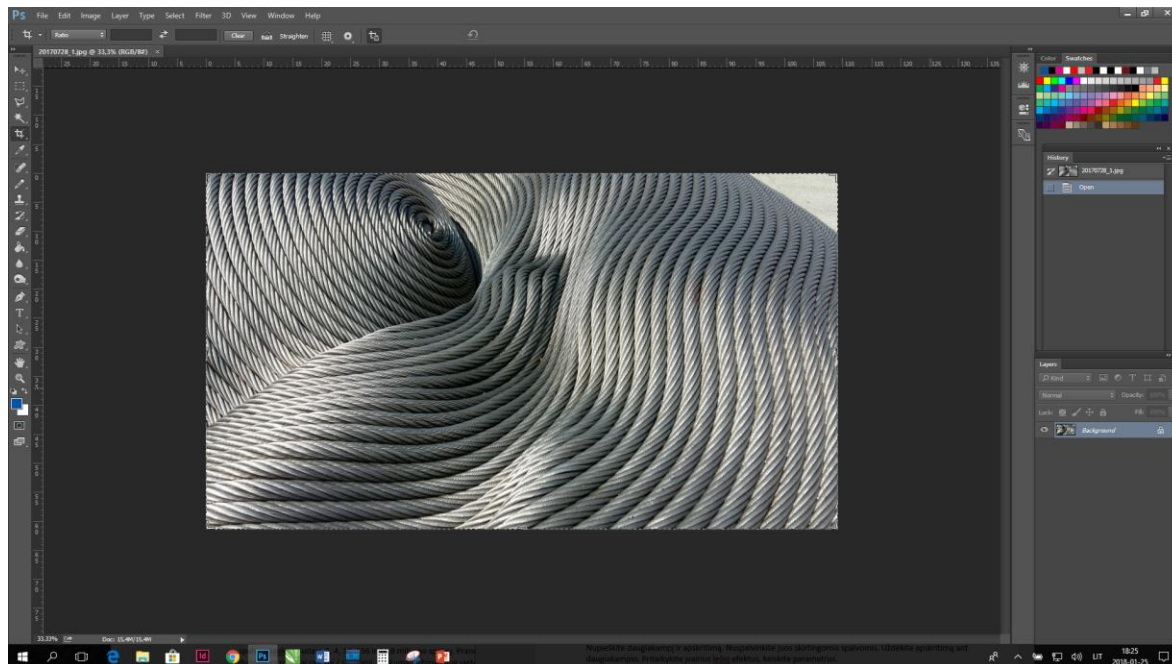


Photoshop files and color modes

Adobe Photoshop is a graphic editing program developed and published by Adobe Systems Incorporated.

In 1987, brothers Thomas and John Knoll began writing a program on Macintosh Plus to display grayscale images on a monochrome display. This program, first called Display, then ImagePro. Later, in 1989, renamed to Photoshop 1.0.

Adobe Systems Incorporated get interested in this project and in 1990 published first version of Photoshop. This time program took only



Photoshop

- Digital painting, layout.
- Creating of photorealistic views, work with color views, retouch, adjustment of color, resolution, etc.
- Have a large choice of digital effects – “filters”.
- Program is not complicated – easily can work professionals and beginners.

Files

- Photoshop program use variety graphic format files.
- **Image file formats** are standardized means of organizing and storing digital images.
- File format – information storing mode. And it depend on where the picture will be used – in slides, for printing, in internet, etc.
You could see a file format by suffix of file name in *Windows* sistem.

Example

- picture.gif (gif– file format).
- The **.PSD** (Photoshop Document), Photoshop's native format, stores an image with support for most imaging options available in Photoshop. These include layers with masks, color spaces, ICC profiles, transparency, text, alpha channels and spot colors, clipping paths, and duotone settings.

Mostly used file formats:

BMP / GIF / JPEG / TIFF / PICT / PNG

BMP (bitmap)

- The BMP file format is a raster graphics image file format used to store bitmap digital images, independently of the display device (such as a graphics adapter), especially on *Microsoft Windows* and *OS/2* operating systems.
- The BMP file format is capable of storing two-dimensional digital images both monochrome and color, in various color depths, and optionally with data compression, alpha channels, and color profiles.
- The format does not support any elements or transparency.
- BMP format does not use compression data.

GIF (Graphic Interchange Format)

- The Graphics Interchange Format is a bitmap image format that was developed by a team at the bulletin board service (BBS) provider 1987. It has since come into widespread usage on the World Wide Web due to its wide support and portability.
- The format supports up to 8 bits per pixel for each image, allowing a single image to reference its own palette of up to 256 different colors chosen from the 24-bit RGB color space.
- It also supports animations and allows a separate palette of up to 256 colors for each frame. These palette limitations make GIF less suitable for reproducing color photographs and other images with color gradients, but it is well-suited for simpler images such as graphics or logos with solid areas of color.

JPEG

(Joint Photographic Experts Group Standard)

- The format supports CMYK, RGB and GRAYSCALE color modes.
- JPEG is a commonly used method of lossy compression for digital images, particularly for images produced by digital photography.
- JPEG is the most common image format used by digital cameras and other photographic image capture devices; it is the most common format for storing and transmitting photographic images on the World Wide Web.
- The jpeg format does not support any more elements (layers, additional channels) and areas that are not transparent.
This format reduces the file size very tightly (ten times), but the quality of the illustration suffers. The eye may not notice changes, but quality is always lost.

JPEG vs GIF

- The three most popular image formats for the web are JPG, GIF, and PNG. These formats represent very different approaches to the problem of delivering an image with minimum file size and download time.
- While GIF is great for computer generated images with limited palettes, JPG is far better for photographs. It gives better quality images for the same file size. Below is a comparison. The GIF file is 2.4 times bigger than the JPG, but is clearly of lower quality.

JPEG



GIF



TIFF (Tag Image File Format)

- The TIFF format best fits the standard format. Its color range is up to 4.3 billion colors.
- **Advantages:** most commonly used in printing, popular, packaging without loss.
- **Disadvantages:** A complex structure, therefore, not all programs recognize it, few programs can use all the possibilities, for example, to guard several different points.

EPS (Encapsulated PostScript)

- Used in publishing high quality work and in a variety of prints Used in In Design, QuarkXpress laser printers and Linotronic typographic machines.
- Requires 3 times more memory than .tiff

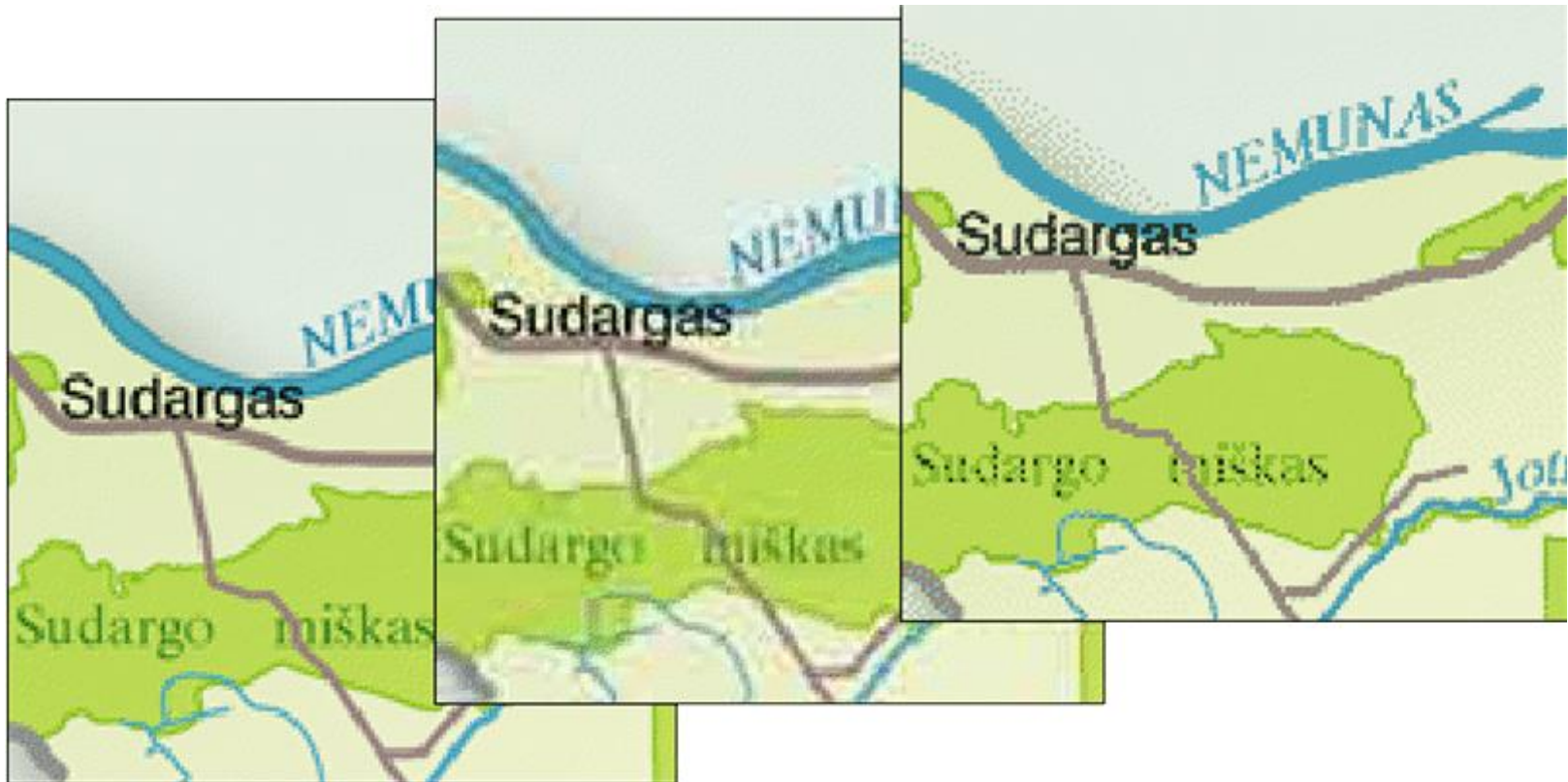
PNG

- As all recent browsers now support the **PNG** format, it is time to abandon GIF for most purposes.
- The PNG of the above image is smaller than the GIF, and **PNG** is not limited to 256 colors as is GIF. The only reason to use GIF is for images with transparency. **PNG** has superior transparency, but unfortunately Microsoft refuses to fix a bug in Internet Explorer's treatment of **PNG** transparency. So to reach the widest audience, use **PNG** only for images without transparency.

What format to use and when?

- If the images are destined for the Web or mobile, use JPEG, PNG, or GIF.
- If the images are for printing material, use TIFF.
- If you want to keep a version that remains editable, choose your software's native file format. such as .PSD for Photoshop,
- JPEG is best for photos when you need to keep the file size small and don't mind giving up some quality for a significant reduction in size.

EXAMPLE



BMP / 66 KB

JPG / 19 KB

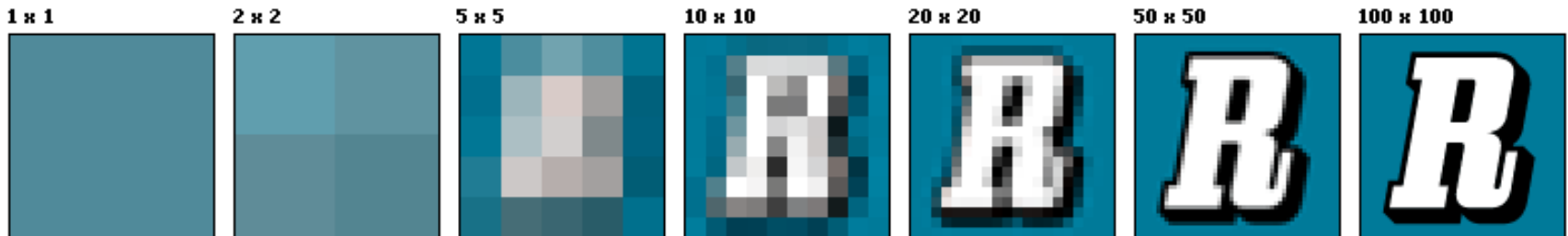
GIF / 4 KB

Raster images

- Photoshop software creates and edits raster (dotted) drawings.
- The size of a raster image is based on the size of the drawing, and the size of the raster image depends on the number of images, and the quality of the drawing - the number of images in the drawing, the more points - the more precisely visible the drawing details.
- The size of the file is influenced by: the dimensions of the image and the file format, depending on the variety of compression methods, the faces of the faces of the original GIF, JPEG, PNG, etc.
- When viewing various file formats, its size will change, but the dimensions of the image will not change.

Resolution

- An important point-to-point parameter. It is expressed in units of length, usually in inches (inch), and is denoted by ppi (ppi = pixels per inch) or dpi (dpi = dot per inch).
- Rastro point in English: scanner and monitor-pixel, printer-dot.
- The screen resolution is from 72 to 120 ppi, with 300, 600, 1200 dpi for printers.
- Image resolution and size related settings. When printing low-resolution images, pixelation appears.

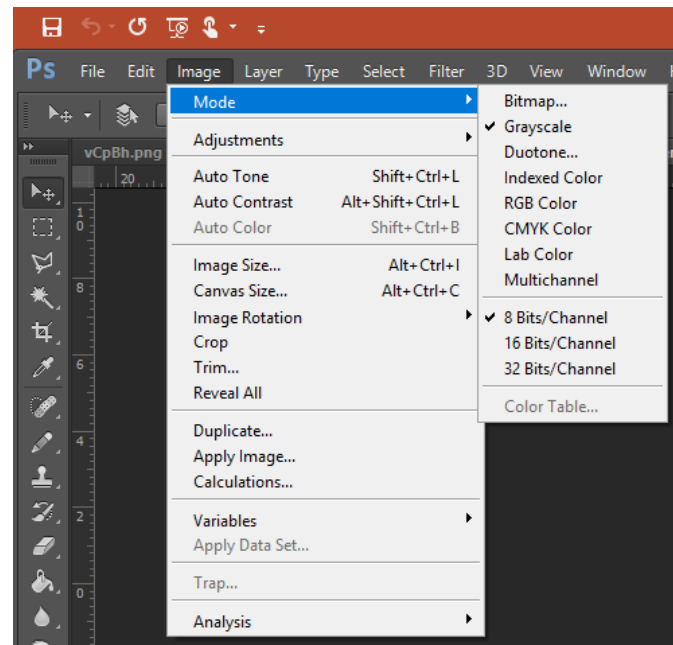


Color Modes

- Color Mode (Color Mode) - Color Targeting Methods Used in Photoshop.
- Most of them are based on well-known examples: RGB, CMYK, Lab. However, the program also uses special color schemes: Indexed color, Duotone etc.

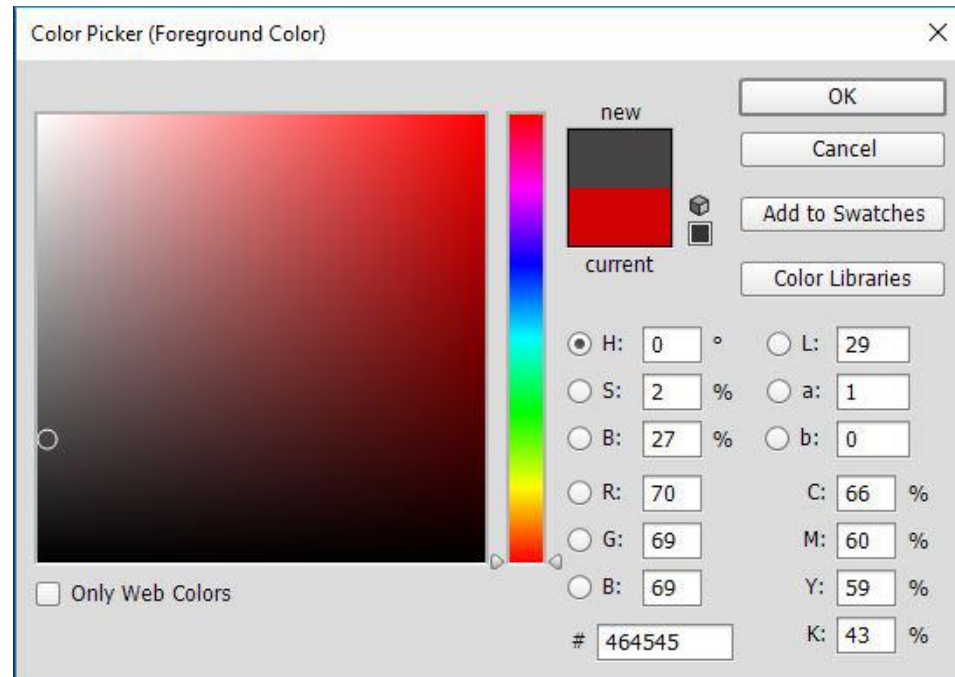
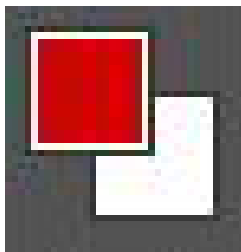
The Image Mode menu allows you to select the following color modes:

- **Bitmap;**
- **Grayscale;**
- **Duotone;**
- **Indexed Color;**
- **RGB (RGB Color);**
- **CMYK (CMYK Color);**
- **Lab (Lab Color);**
- **Multichannel.**



Color Picker

Double-click



Bitmap mode

- Its color spectrum is 2 (black / white), 4, 16, 256 and 16.8 million colors.
- A raster graphics format used by *Windows* and *OS / 2* operating systems.
- It is useful for printing low resolution pictures and can provide some interesting effects.

Bitmap size change



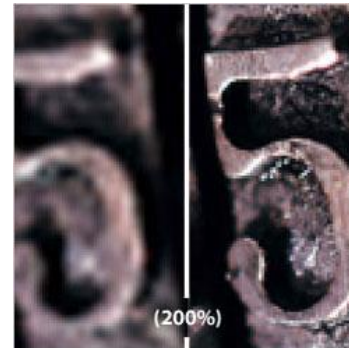
1. Original size 400x400



2. Reduced till 100x100



3. When – change back to 400x400



4. Zoom in for 200 %
1 and 3 photos

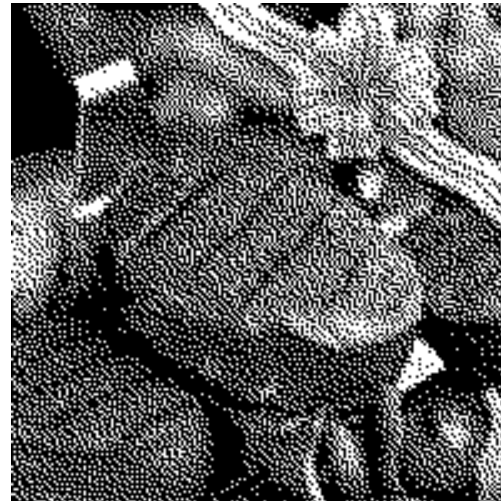
Grayscale mode

Grayscale (black-and-white) mode have a 256 gray tone shades

Grayscale



Bitmap



Grayscale režimas

Original image

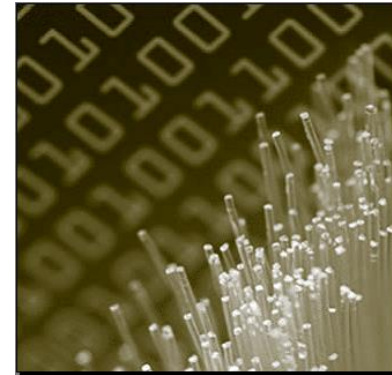
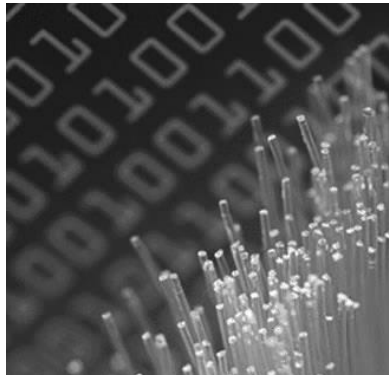


Grayscale



Duotone

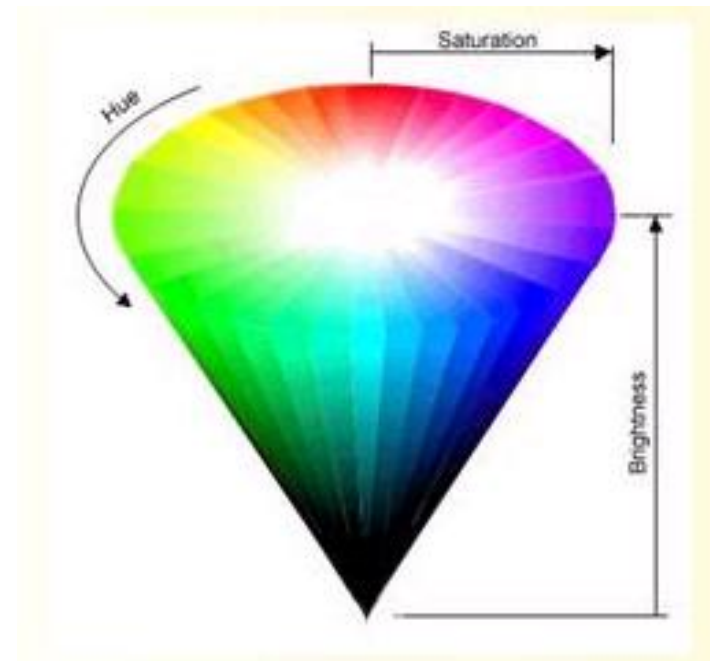
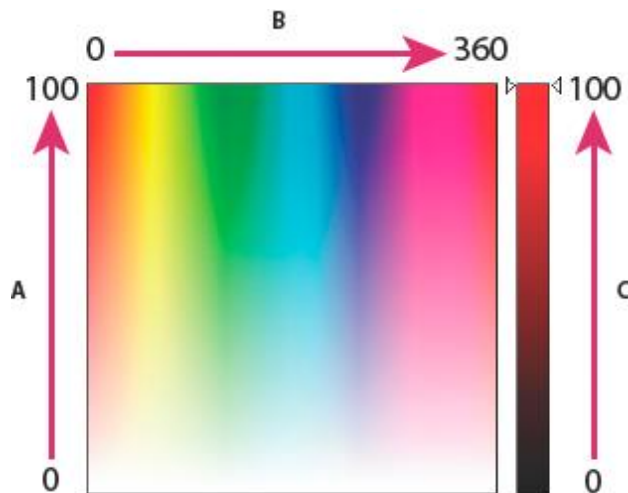
- Duotone is a halftone reproduction of an image using the superimposition of one contrasting color halftone over another color halftone.
- This is most often used to bring out middle tones and highlights of an image. Traditionally the superimposed contrasting halftone color is black and the most commonly implemented colors are blue, yellow, brown, and red, however there are many varieties of color combinations used.



HSB

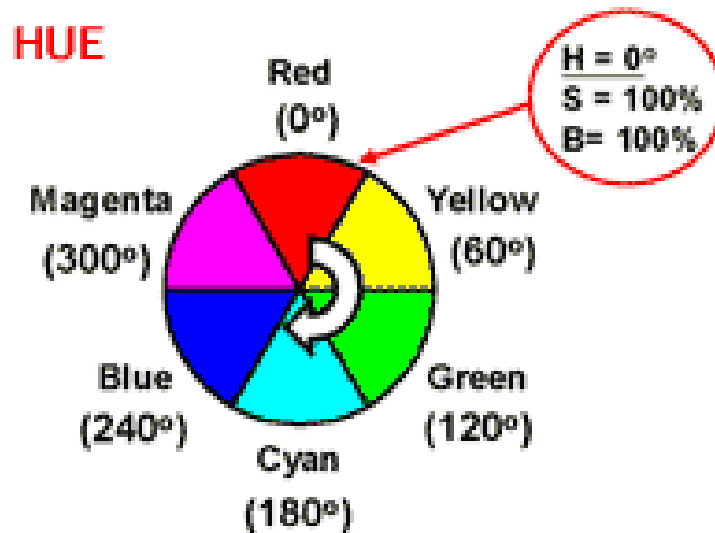
This model is based on human perception of color and is described by three characteristics: Hue, Saturation, Brightness.

- A. Saturation
- B. Hue
- C. Brightness



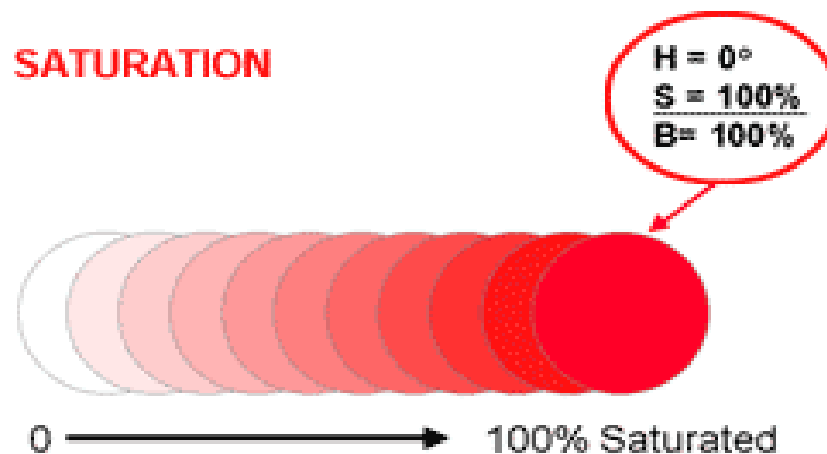
Hue

Sets the color space to the spectrum rate. The value varies from 0 to 360: for example, 0- red, 60- yellow, 240- blue, etc.



Saturation

Sometimes called chroma, indicates the degree of purity of the color. The value varies from 0% to 100%: 0 corresponds to a gray color, 100 is the maximum saturated color.



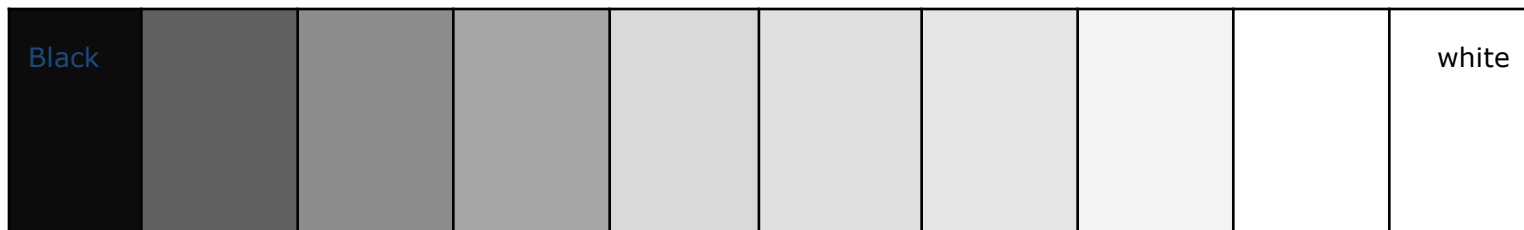
Brightness

Color brightness or darkness. Brightness value 0 matches the black color. Maximum intensity is 100 white.

0%

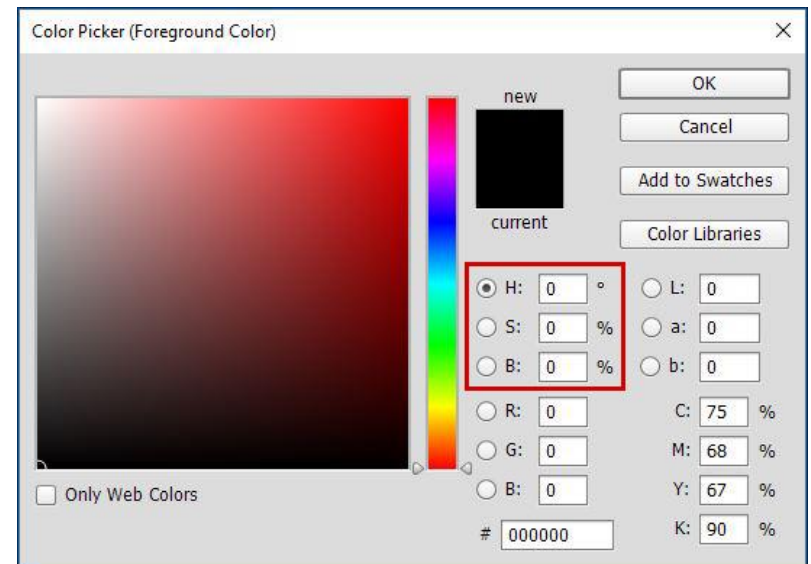
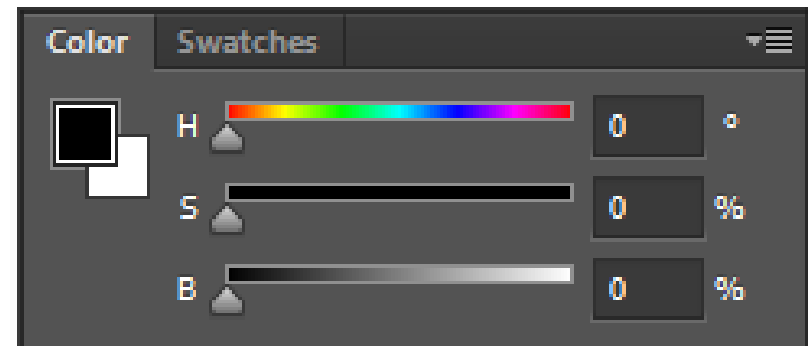
50%

100%



HSB modelis

The Photoshop application can use the **HSB** model for color selection. Choose color using Color Picker and Color palettes. However, the program does not have HSB mode that would be used to create and edit the image.

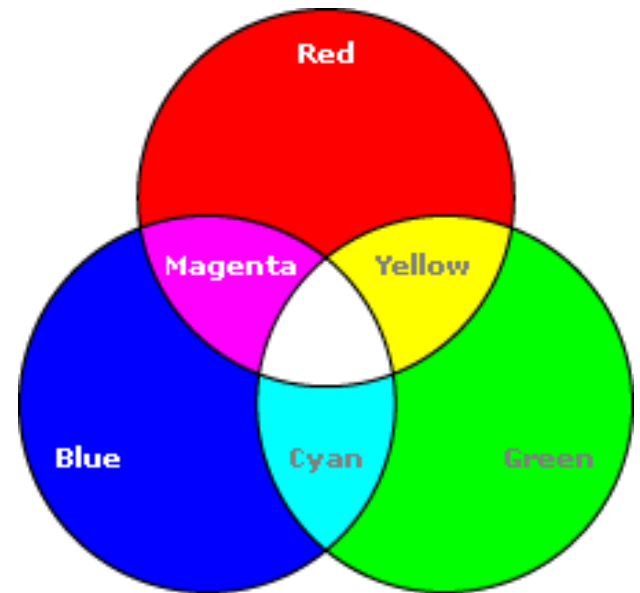


RGB / CMYK



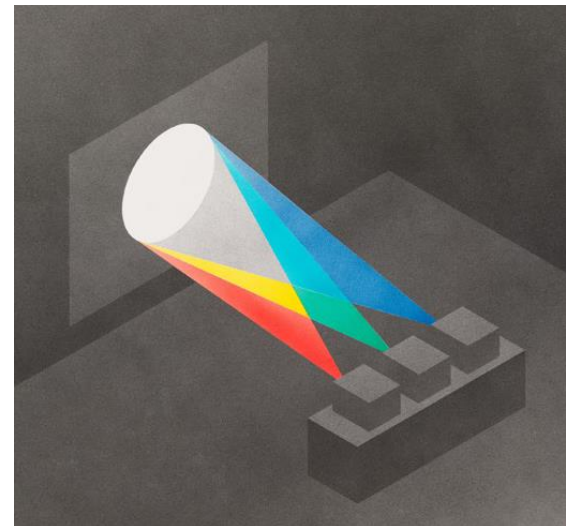
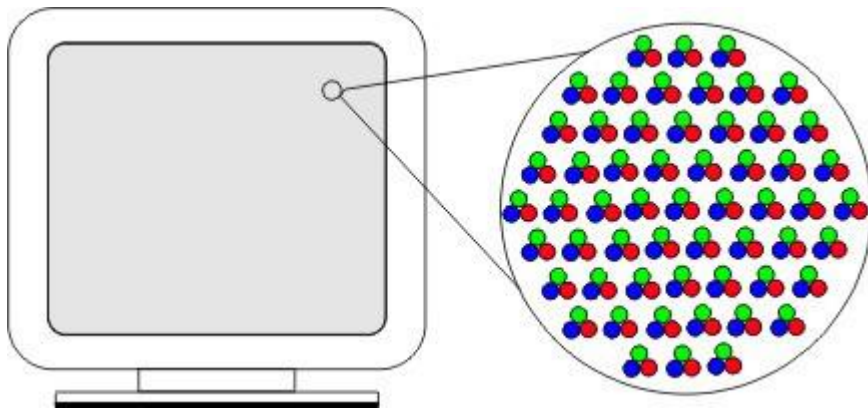
RGB mode

- A large part of the visible spectrum of colors can be represented by mixing three colors: Red (Red), Green (Green) and Blue (Blue).
- Where two colors overlap, the result is blue (Cyan), purple (Magenta), yellow (Yellow).
- The one where all three colors are blended, comes in white, so these colors are called additive.



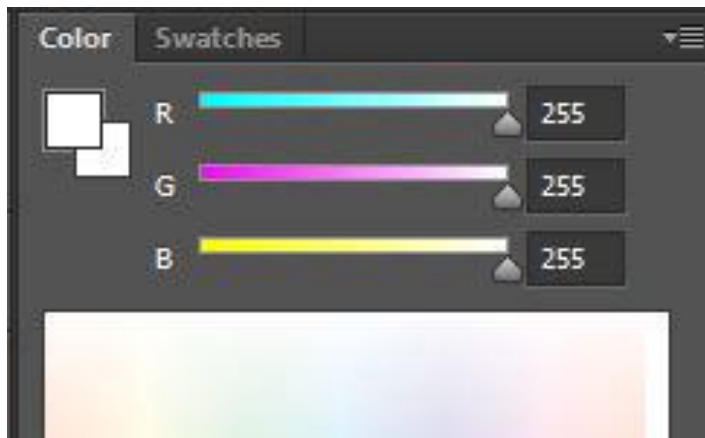
Additive colors

- The main purpose of the **RGB color** model is for the sensing, representation and display of images in electronic systems, such as televisions and computers, though it has also been used in conventional photography.
- Before the electronic age, the **RGB color** model already had a solid theory behind it, based in human perception of colors.



RGB mode

- Used by default when creating new Photoshop images.
- Uses the RGB color model by assigning to each color values from 0 to 255.
- When the numeric values of all the colors are equal, a gray color is obtained, with numerals of all colors equal to 255 - white, with all numeric values equal to 0 - black.



- **(256 x 256 x 256)**
- **(R0, G0, B0)**
- **(R255, G255, B255)**



Color mode

- Disadvantage - RGB images are not suitable for release. The **CMYK** model is used to prepare press releases.
- In Photoshop, **RGB** colors are set in Color Picker and Color palettes.

CMYK color mode

- It is based on the characteristic to absorb light. When white light penetrates through the paint, part of the spectrum is absorbed and the part is reflected back in the eye.
- Theoretically, mixing pure Cyan, Magenta, and Yellow should be used to absorb the whole spectrum of light and create black. For this reason, colors are called **subtractive**.





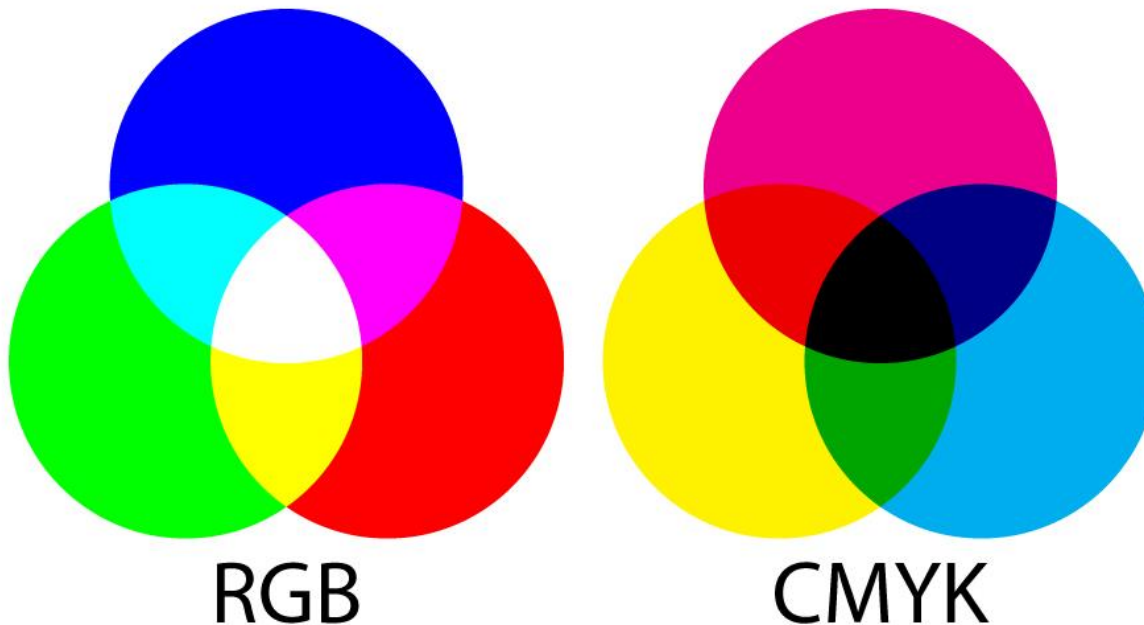
mode

- The printing ink has impurities, so mixing these colors does not affect the pure black color.
- To compensate for this defect, the CMYK model uses a black color. Therefore, the name of the model is four-letter: Cyan (Blue), Magenta (Purple), Yellow (Yellow) and Black (Black).



Complementary colors

Subtractive (CMYK) and additive (RGB) colors are complementary. Each pair of subtractive colors creates an additive color and vice versa.



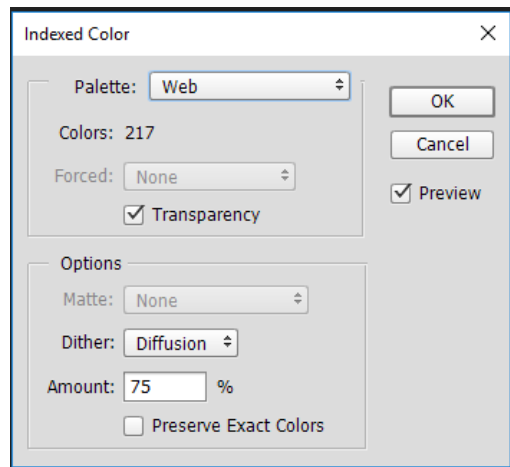


CMYK

- CMYK is a color model used in the press and in many color printers.
- CMYK mode is used to print images. If you are working with an RGB image, it's best to complete the correction in this mode and then convert it to CMYK.

Indexed colors

The Indexed Color mode has seven palettes of 256 colors and uses in Photoshop to create images for web pages.



- 1: RGB mode (millions of colors);
- 2: Index Color mode (256 colors)

Color palette (Indexed)

The color palette is selected in the menu: Image Mode - Indexed Color in the Indexed Color dialog. The following options for choices are available:

Exact - the palette, when the image retains all the shades of RGB.

System Macintosh - Mac OS system color palette.

System Windows - Windows system color palette.

The Web - 256 colors most commonly used in Internet browsers.

Uniform - tone shades are evenly distributed in the spectrum. The palette is created using the color selection from the RGB colors.

Adaptive - Adaptive palette. The palette is created by choosing from the spectrum of predominates colors of image.

Custom - Custom palette.



Indexed colors

- Indexed Color allows limited editing of images.
- To have the ability to completely edit the drawing, temporarily convert to RGB mode.

COLOR THEORY

QUICK REFERENCE GUIDE

DESIGN BY CANDACE WILSON

CMYK
CYAN, MAGENTA, YELLOW, BLACK



SUBTRACTIVE

CREATED WITH INK. PRINTER COLORS.
STARTING WITH WHITE > ADD COLOR.

RGB
RED, GREEN, BLUE



ADDITIVE

CREATED WITH LIGHT. MONITOR COLORS.
STARTING WITH BLACK > ADD COLOR.



STRONG, LOVE, FIRE,
INTENSE, PASSIONATE



NOBLE, WEALTH, POWER,
ROYALTY, AMBITIOUS



TRUST, SKY, TRANQUIL,
SEA, STABILITY



MONEY, GROWTH, SAFE,
NATURE, FRESH



JOY, ENERGY, SUNSHINE,
CHEERFUL, BRIGHT



AUTUMN, CREATIVE, WARM
ENTHUSIASTIC, HAPPY



MEANINGS

ANALOGOUS

COLORS ADJACENT TO EACH OTHER

EXAMPLES:



COMPLEMENTARY

COLORS OPPOSITE OF EACH OTHER



TRIADIC

THREE COLORS SPACED
EQUALLY APART



SPLIT COMPLEMENTARY

A COLOR AND THE TWO COLORS
NEXT TO IT'S COMPLEMENT.



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Thank You!