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*To send light into the darkness of men's hearts
- such is the duty of the artist. Schumann*

Photoshop Basics for Artists

January 2021

I consider the camera & editing tools like Photoshop & Lightroom to be very valuable tools for the artist.

As long as we don't become slaves to copying mechanically what is in front of us. Why would we NOT use such helpful tools?

For years there was only one book for the artist and now there's tons of info out there. It can be very confusing and hard to navigate. I will begin with basics and show you what I use on a regular basis for my art.

- Jan 5 The basics: All about FILES, TOOLS & basic navigation
- Jan 12 Using history & layers, editing basics
- Jan 19 Using clone, quick selection & skew tools
- Jan 26 Using artistic filters & preparing artwork for print. (creating collage canvases, & adding text to your artwork for giclée prints, cards etc.)

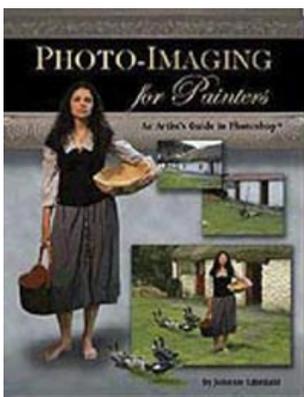


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Files are like people you can measure them 2 ways:

HOW HEAVY Storing & Sending
(6 MB megabytes)

HOW WIDE Viewing & Printing
(1080x1920 px pixels)

They also have **NAMES** or extensions.

- .jpg
- .psd
- .cr2
- .pdf



FILE TYPES

See page 13 for TERMS and definitions. Most common image is JPEG.

File/Image Size –There are 2 ways to measure an image like people...

Height - feet/inches **ppi/dpi** paper or screen dimensions for viewing and printing

Weight – pounds and **File Size** -how much space it will take on your hard drive) 13.9 MB or 149 Kb (below)

File size is proportional to the pixel dimensions of an image, is partially determined by the file format, and it specifically refers to how much disk space your file occupies, either on the hard drive, CD, DVD, Jump drive or other storage medium. Image files normally range in sizes measured in Kilobytes (KB or K) and Megabytes (MB or M); extremely large files may be measure in Gigabytes (GB). Images for print - larger file sizes, since higher resolution = more data stored in the file. Images for Web or computer display - smaller file sizes. As a general rule Web images should fall between 10 and 200K; images with larger file sizes will load more slowly, and generally be too cumbersome Saving your images in. JPG or. GIF format will automatically compress and reduce your file sizes significantly, so that you can fit more files onto a disk or attach more to an email message,

Inserting images into presentations or other documents:

Resizing images on the screen after inserting them into your PowerPoint presentation or Word document does *not* reduce the file size of that image; this only changes the dimensional display size of the image in that document. Presentations and other documents that contain numerous images can become very large in total cumulative file size. In order to keep such presentation and document files at a reasonable size, you should appropriately resize your image files in an image editor before inserting them into your final document.

Best Practices

Start Big: When in doubt about how you might end up using your images, opt for the highest resolution possible. It is always better to start out with the most information possible, and then scale down as necessary. If you start out with low resolution, you cannot get a higher resolution without scanning or taking the picture again with higher resolution settings, and you may not get that chance.

How do you know how big your file is? This is what you need to know before you print, send in email or post on website.

Printing and display of images-

For Printing: 150dpi, preferably 300dpi. Remember, dpi is “dots per inch”, and the more dots per inch, the sharper and crisper your images will look on the printed page.

Computer Screen: Images intended primarily for display on a computer monitor (such as email attachments or images on a Web page) really only need a 72ppi to 96ppi resolution, as that is what computer monitors are capable of displaying. A higher resolution will not make your image appear any better on the screen

THE IMAGE - Resolution & File Size

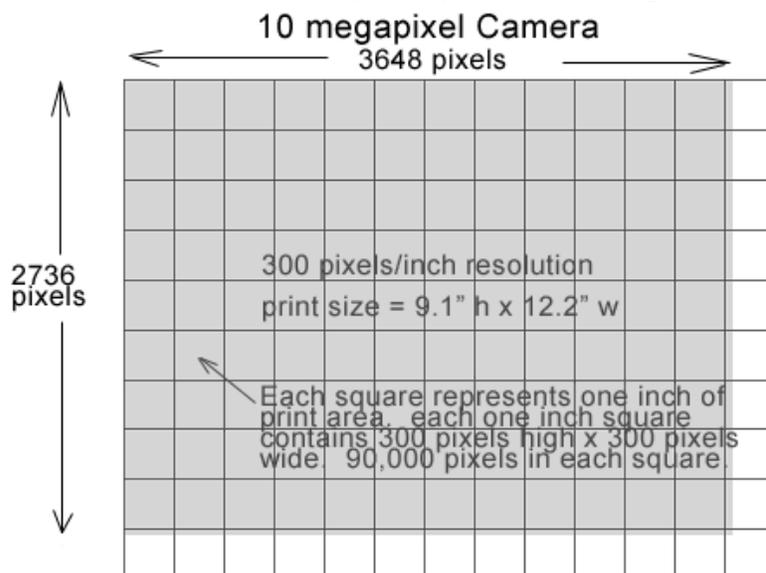
Units of Data Storage Computers (pc, laptop, netbook, tablet pc etc) store information in the form of 1 and 0's in different types of storages such as memory (ram), hard disks, usb drives, etc, to be processed by software. The most common unit of data storage is expressed as byte which is 8 bits.

Data Measurement Chart

Data Measurement	Size
Bit	Single Binary Digit (1 or 0)
Byte	8 bits
Kilobyte (KB)	1,024 Bytes
Megabyte (MB)	1,024 Kilobytes
Gigabyte (GB)	1,024 Megabytes
Terabyte (TB)	1,024 Gigabytes
Petabyte (PB)	1,024 Terabytes
Exabyte (EB)	1,024 Petabytes

Resolution

Resolution of a digital image is related to how many of those little pixels (dots) you can cram into one square inch of an image. Digital images are recorded as little square “pixels” of a single value **A Mega**



Pixel is about ONE MILLION PIXELS

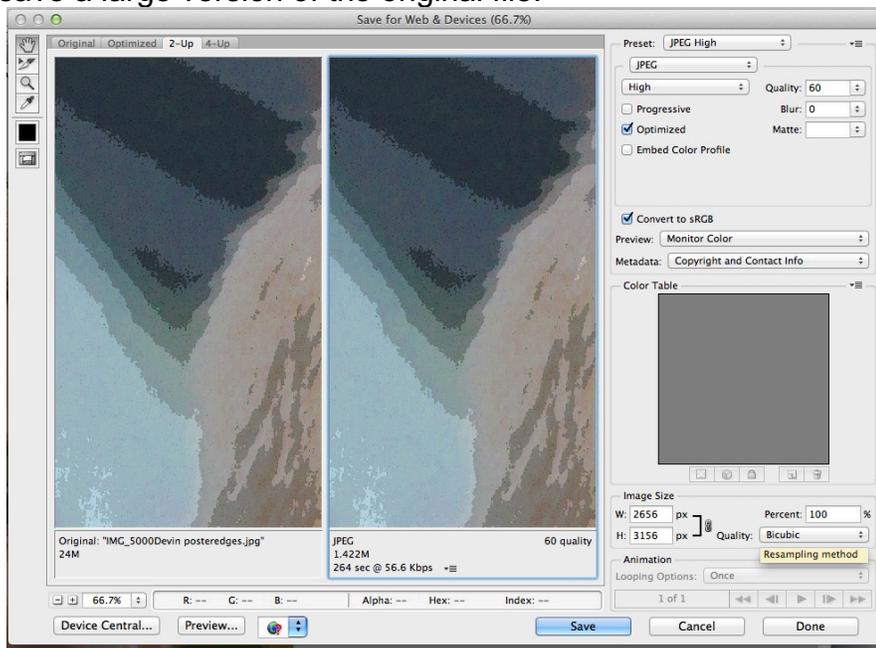
Each square above represents one square inch of print space. I've selected a resolution of 300 px/inch. How many inches wide will my print be? It will be 3648 divided by 300 = 12.2 inches wide. How high will the print be? It will be 2736 divided by 300 = 9.1 inches high. Each square will contain 300 pixels high by 300 pixels wide, or 90,000 little pixels in each square inch of the print (300 x 300). The photo printer will spray one little squirt of ink for each pixel. If you made the image resolution 72 pix/inch, you'd only get 72 little spray squirts per inch. Not quite good enough for printed material. 300 pix/inch resolution is.

What if I wanted a print 5” wide and still keep it at 300 pixels per inch resolution. You’d simply set the width in pixels to $300 \times 5 = 1,500$ pixels wide, keeping the resolution at 300 px/inch. The height will adjust accordingly if you **constrain proportions**.

Compression: Your camera can take images in several “compressions”. It’s usually called “Super Fine”, “Fine” and “normal”. What that does is save the picture with various jpg compressions (described earlier). Super Fine has minimal compression but the kilobyte size of the image is high. Your memory card will hold fewer images on your camera, but the quality will be the highest obtainable. **Make sure your camera is set to Super Fine.** Get a bigger memory card if you need to store more pictures on your camera.

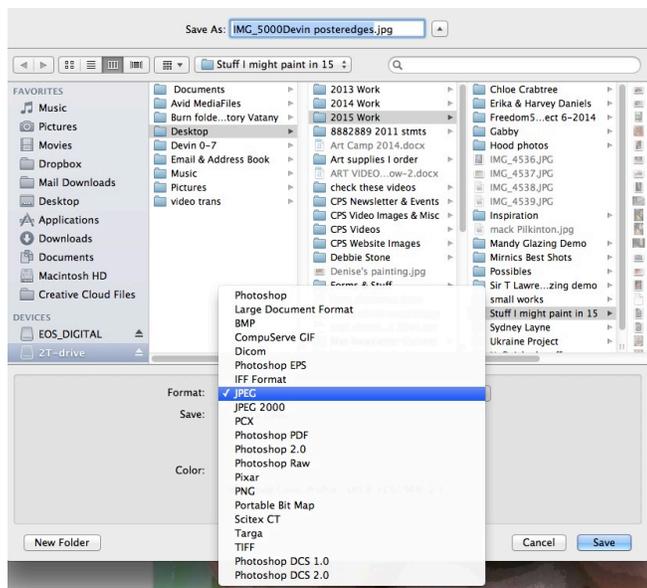
Raw Images: Some cameras can be set to take images in Raw format. A raw image has no pre-defined settings applied to it. You can set white balance, file type (tiff or Jpg) and many other settings AFTER you take the picture. You need special software to handle raw images (like the full blown photoshop CS2 or greater). Raw images are the best when printing highest quality digital images is paramount, but most midrange cameras cannot take Raw images. If your camera doesn’t have Raw capabilities, that’s ok. Raw is generally used by professional photographers

How to RESIZE an image Open image in PS. **Click FILE** on top toolbar, then **Save for WEB**, then under **IMAGE SIZE** at bottom, set pixel width (800 W is good for websites and average screen size, larger sizes for printing) Then click **SAVE**. Is usually preset to save as a Jpeg. I always save a large version of the original file.



HOW to save in a different FORMAT

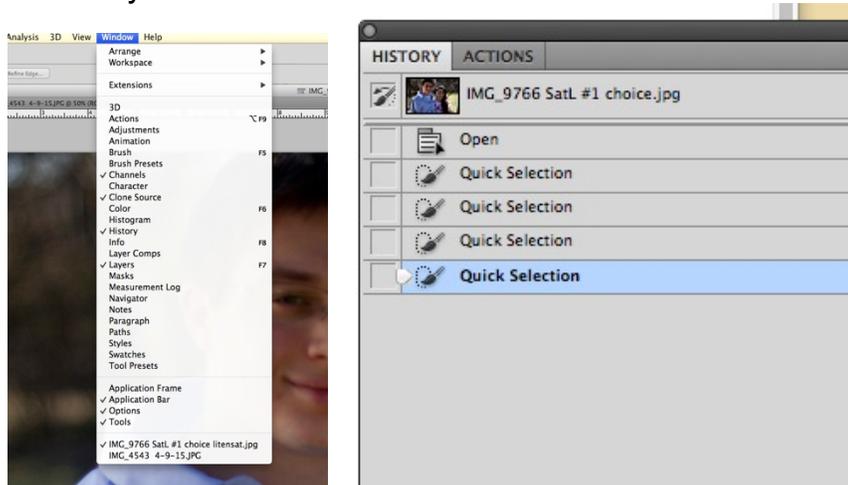
CLICK ON FILE, then SAVE AS. This will open your files, Choose type of file under **FORMAT (Jpg, Photoshop file or PDF)** Name the File (I recommend adding clues if you have altered it in any way such as 'crop' liten, sat, filter name and a name that makes it easy to find.) Choose a folder you want to save it in and **CLICK SAVE**



Menu Bar (hover over tools for more options)

History & Layers

Be sure you have these 2 windows selected from the WINDOW dropdown.



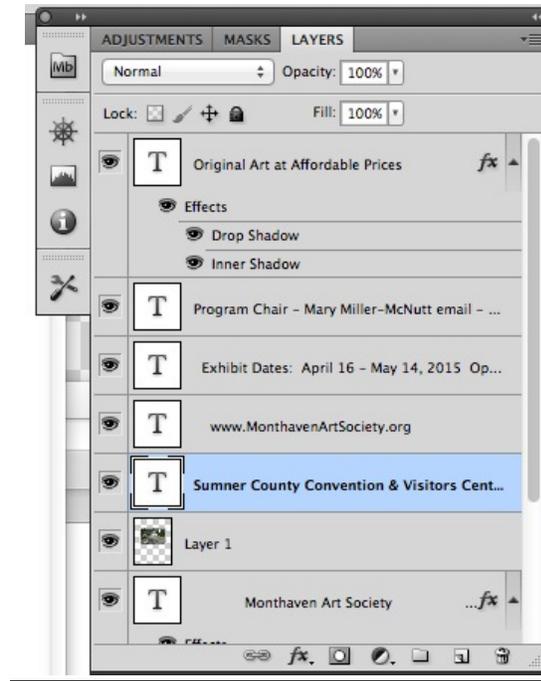
History will hold your last 20 steps so that you can UNDO or REDO. You can select the step you want to return to.

LAYERS

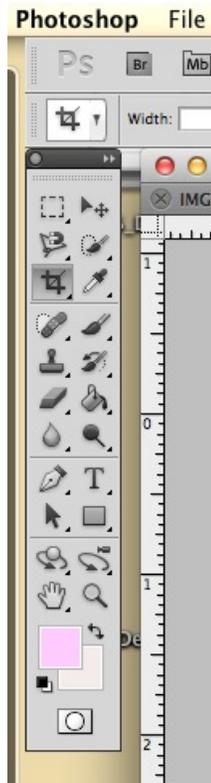
One of the most important keys to learning and mastering Photoshop is using **layers**.

Why work on layers at all?

- They do not destroy your original photo.
- You are working on top of or on copies of that photo.
- You will have more control.
- You can use blending modes to change the way layers interact.
- You can change the opacity of any effects.
- You will have or can add layer masks so that you can work selectively on your photo with any adjustments you make.
- You can drag a layer into the trash (bottom right)
- You can turn layers on and off by clicking the eye on left side of each layer.
- Be sure you are on the layer you wish to adjust. I'm always clicking and can't figure out why it's not working and realize I am not on the right layer.
- Double click on middle of the T (text layer) for an additional option box to add effects to your text. Be sure to Click on selection tool or T text depending on whether you want to type or move the text box.



EDITING TOOLS



Marquee (hold to choose different)

CROP

CLONE

ERASER

MOVE

Quick Selection

Eye Dropper

Typing

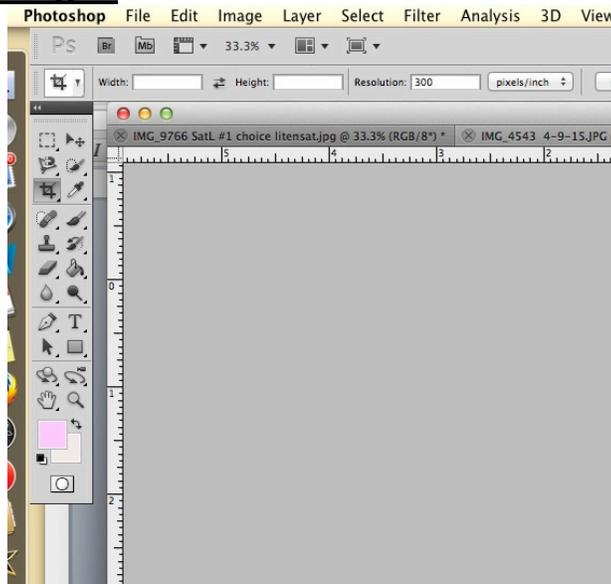
Shapes

ZOOM (ctrl + or -)

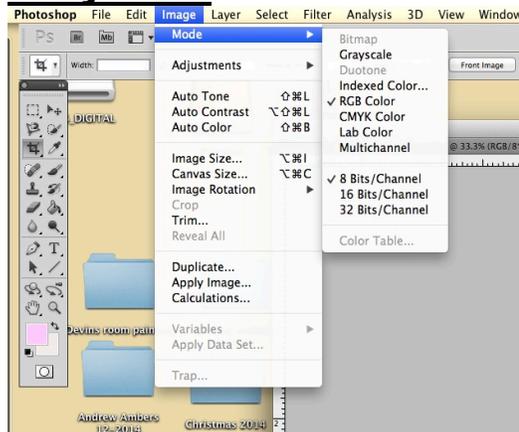
CROPPING Images

Crop Tool
Click and
drag marquee
to area to
crop. Hover
over corner
for rotate tool.
Click and
rotate then
ENTER

Hit Escape to
cancel CROP



Grayscale



Click on **IMAGE, Mode & Grayscale**

RGB Color is correct color match for Monitor

CMYK is correct color match for Printing

There are three basic types of color schemes:

- CMYK
- RGB
- PMS

CMYK, a four-color printing process that uses only cyan, magenta, yellow & black inks, is primarily used for printing brochures, business cards, posters & other paper-based products.

RGB, which uses mixtures of red, green & blue, is the preferred color profile for digital devices and computer screens & appears much brighter than CMYK colors.

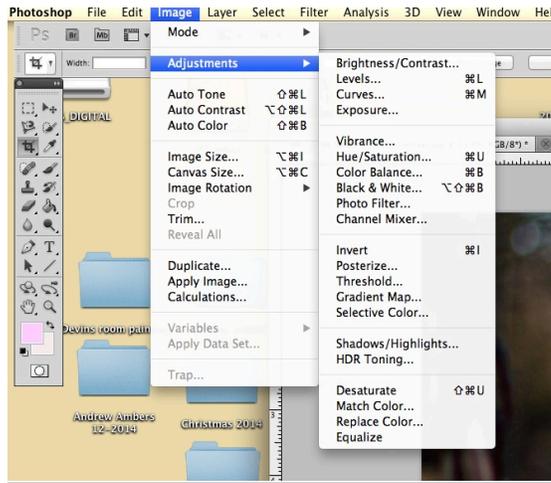
Pantone Matching System (PMS) is often used to match colors in fabrics like for t-shirts and other painted materials.

Adjusting the Image

Sepia, Hue, Saturation

The Hue/Saturation control allows us to change colors (hue), enrich or dull colors (saturation), lighten or darken colors (lightness). The Levels or Curves controls are used more often for tonal

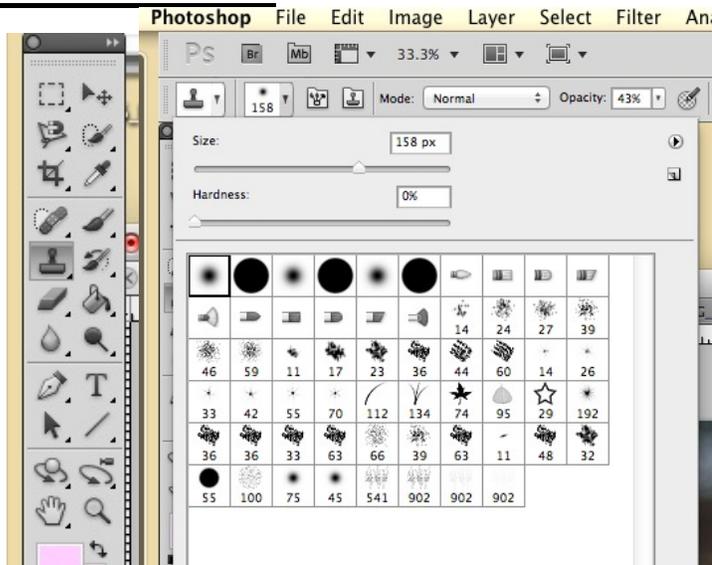
Hue is what most people call color. For example, a green car has the hue green. **Saturation** is how pure hue is. **Lightness** refers to how bright, or not bright, something is. A light green car and a dark green car have two different lightness values even though the hue is the same. In this example, both cars have the hue green, one has a lightness value we call light and the other car has a lightness value we call dark.



Sepia – Click **Image, Mode & Hue/Saturation** then slide saturation to desired level. If you want to change the overall color of the Sepia you can select **Color Balance & adjust Saturation** – I bump up the color in my images before painting sometimes using the Saturation tool.

Exposure – Use to adjust your photo in case of over or under exposure (not enough or too much light) Brightness & Contrast also works. Try both to see which gives better results.

CLONE TOOL



Select the **clone tool**.

Choose a **brush & size**. Also choose **Opacity %**

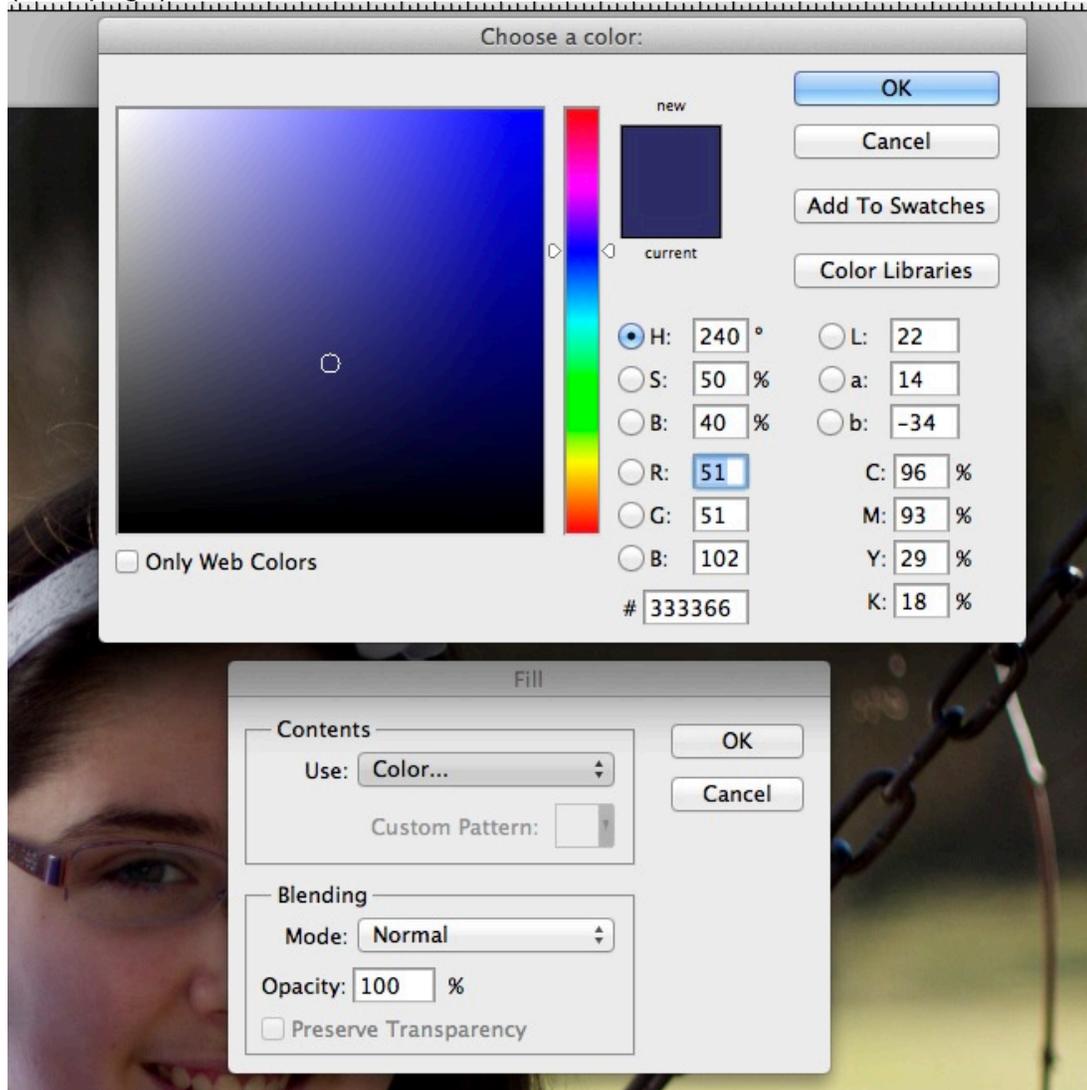
Hold **OPTION** Key down and **click on an area** you want to CLONE. Let go of Option key and **Click over area you want to paste the clone image** into. (It will also take a photo of the area around the clone so there is a limit)

You can drag the clone tool to 'color' the area. A great way to cut out unwanted background or fix damaged old photos.

FUN to play with!

QUICK SELECTION TOOL

Great for trying different backgrounds. Simply **drag around inside the area** you want to select and let go of mouse. You may have to try several times as it is not a fine tuned way of cutting out around heads or objects. Area will be selected, then **Click EDIT & Fill**. The FILL box at bottom will appear. **Click on color** (or black,white,gray) and the top box will appear. You can use the little circle to select a color, drag the bar up and down to choose a new color family. Click inside the large box to **select a color** or your **eye dropper tool** will appear when you move off the box so you can hover around your current photo and select a color off the photo. **Click to select**. You can also use the BLUR TOOL (next page) to fill this area.

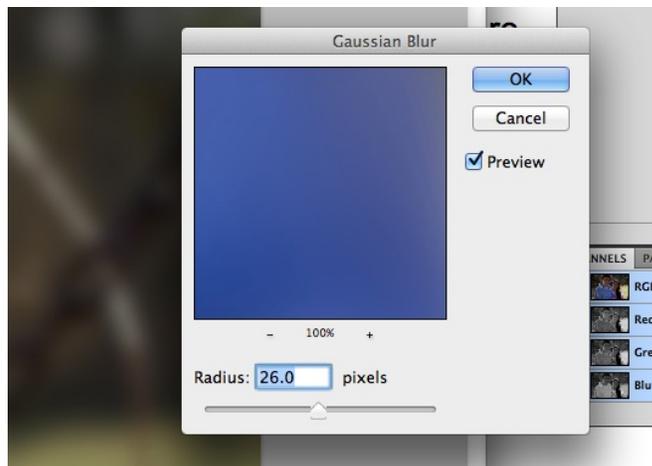
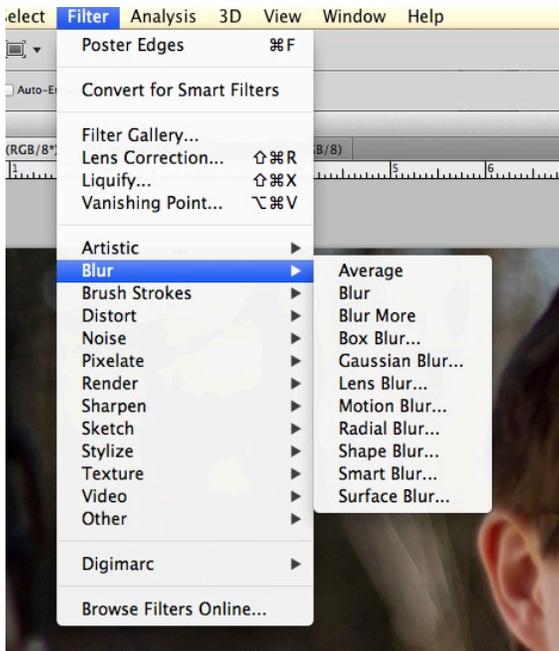


Blur & Gaussian Blur

Great for background in creating depth of field in photos taken with point and shoot, where everything is crisp and in focus.

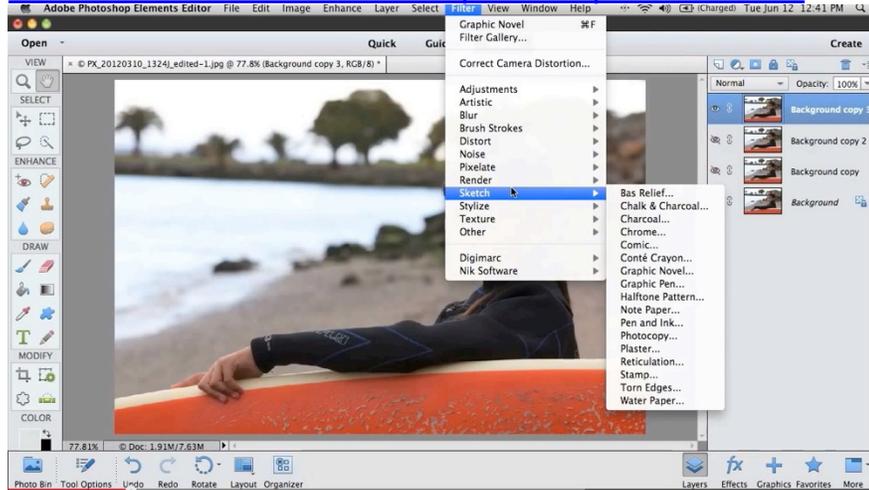
The central difference blur and G blur, depending on algorithm, is that Gaussian blur takes a weighted average around the pixel, while "normal" blur just averages all the pixels in the radius of the single pixel together. I think this latter "normal" blur is called box blur. <http://blenderartists.org> and http://en.wikipedia.org/wiki/Gaussian_blur

Click on **Filter** (top) Choose **Blur** and **Gaussian**. Box on right will appear. **Slide radius** to determine amount of blur. **Click OK**. You can select this option after selecting an area with the quick selection tool.

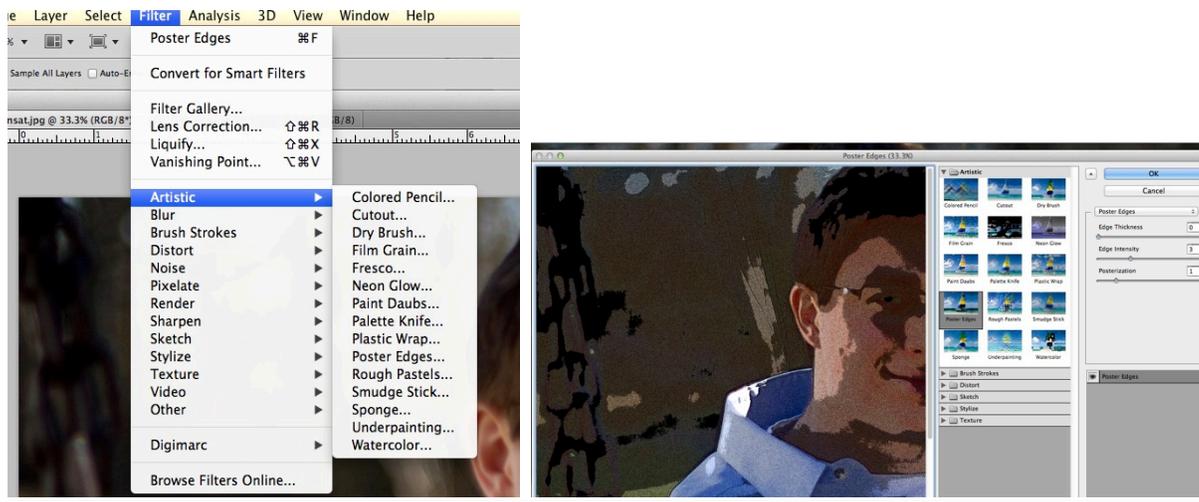


ARTISTIC FILTERS

After you select a filter (bottom left) the box on right will appear. You can select other filters in the middle and each has slider adjustments to vary edges and other details. I use poster edges & watercolor. But its' fun to experiment. Check out <http://tv.adobe.com/watch/photoshop-elements-12-feature-tour/new-filter-effects-in-photoshop-elements-12/>



Elements 12



Photoshop CS5

TERMS:

- 2560 x 1920 pixels = 5 Megapixels ... and so on
- 1280 x 960 pixels = 1 Megapixel
- 1600 x 1200 pixels = 2 Megapixels
- 2048 x 1536 pixels = 3 Megapixels
- 2272 x 1704 pixels = 4 Megapixels

Bit - The smallest unit of memory; a contraction from 'binary' and 'digit'. Binary digits are 0 and 1, also known as ons and offs.

BMP - Bit Mapped graphic file format popular with Windows computers. This is an uncompressed file format like TIFF.

by Megapixels. You multiply the horizontal resolution by the vertical resolution to get the total pixel count:

CMYK - Cyan, Magenta, Yellow, black; These are the printer colors used to create color prints.

Codec - Compresses information so that it can be sent across a network faster, and decompresses information received via the network.

DPI - Dots per Inch. A measurement value used to describe either the resolution of a display screen or the output resolution of a printer.

Full Bleed - Printing term used when an image or inked area extends to the edge of all four sides of the printed piece. Better known as "borderless" in today's world of inkjet photo printers.

JPEG - Joint Photographic Experts Group - The name of the committee that designed the standard image compression algorithm. JPEG is designed for compressing either full-color or grey-scale digital images of "natural", real-world scenes.

MB - Megabyte, memory term meaning 1024 Kilobytes. Formatting memory cards

Megapixel - CCD resolution of one million pixels. Digital cameras are commonly rated

MPEG - Motion JPEG movie file. "Movie clip"

PDF is also an abbreviation for the Network Printer **Definition File**. **PDF** (Portable Document Format) is a file format that has captured all the elements of a printed document as an electronic **image** that you can view, navigate, print, or forward to someone else.

Pixels These are the tiny color units that comprise a digital image. They are also used to measure sharpness of a digital picture in a term known as mega-pixels. The higher the mega-pixel rating the camera has the sharper the images it will take.

RAW – unprocessed, NO compression, large file must have program to open it. **Reference Links:**

<http://www.zuberphotographics.com/content/photoshop>

Resize - Usually means to take a large image and downsize it to a smaller one. Most graphic viewing and editing programs offer a Resize option for this purpose.

RGB This refers to the way computers create colors using differing amounts of three colors; red, green, blue. The digital video compression standard agreed upon by the Motion Picture Expert Group

TIFF - Tagged Image File Format - An uncompressed image file format that is lossless and produces no artifacts as is common with other image formats such as JPG.

Underexposure - A picture that appears too dark because insufficient light was delivered to the imaging system. Opposite of overexposure.

URL - Abbreviation of **Uniform Resource Locator (URL)** it is the global address of documents and other resources on the World Wide Web

USB - Universal Serial Bus - the data I/O port on most digicams and found on modern PC and Mac computers. Faster than the serial port. Up to 12Mb/s with v1.1 interfaces.

RASTER vs VECTOR

Raster vs. Vector images – what's the difference?

Stickermule.com.

Posted by [Jeremy Wick](#)

Raster images are made up of a bunch of tiny pixels, while [vector images](#) are made from mathematical paths.

What is a raster image?

A raster image is a term in computer graphics and digital photography. A raster, also called a bitmap image, represents a rectangular grid of pixels.

They are viewable using a bitmapped display or another medium.

How do you increase the size of a raster image?

Let's pretend you have a raster image that is 300 x 300.

While it's easy to make an image smaller, increasing the size usually means decreasing the resolution. Although with AI tools, it is possible to increase your artwork resolution.

What is a vector image?

A vector image or graphic is a type of image defined on a plane, connected by lines and curves. They form shapes based on mathematical equations. And because of this, if you zoom in or out, the lines, curves, or points always remain smooth.

What are the uses of vector graphics?

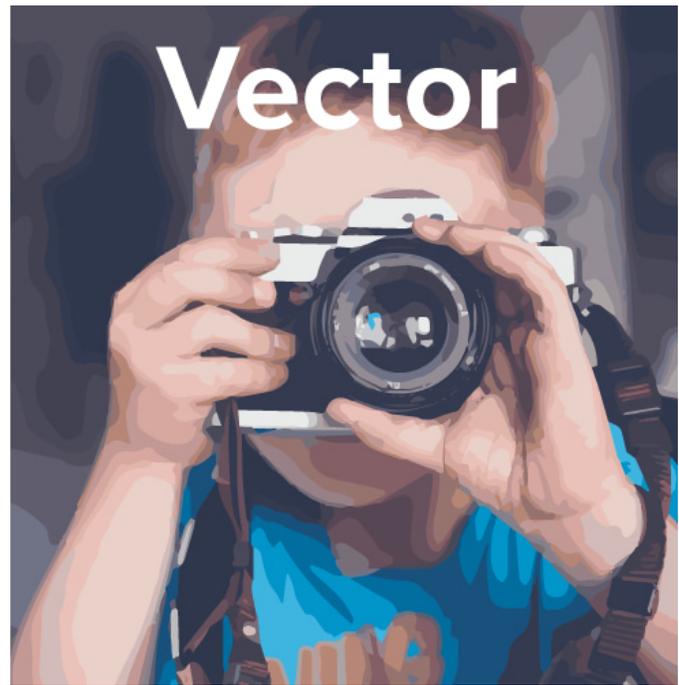
Vector graphics are used by artists who are creating illustrations, logos, and other designs that are going to be printed on big surfaces. This is why a lot of designers prefer to [convert their images to vector](#) before printing them out.

How do you increase the size of a vector image?

Now let's pretend you have a vector image that is 300 x 300.

Because a vector image is made up of mathematical paths, you can increase the size of the image as much as you want and it would never decrease in quality. You could literally increase the size to 3 million x 3 million and all the details would still look sharp (assuming your computer could handle a file that big).

This difference usually makes vector images a superior option, especially when it comes to print. However, there are times when using raster images might be your best option. For example, photographs are always raster images. Converting a photograph to a vector image is possible, but will usually result in a drop in detail.



If you plan on using a logo, text, or illustration for print, we recommend tracking down a vector version of the artwork if possible. Otherwise, try to get the highest resolution version of the artwork possible.

What are the common raster file types?

- [.png](#)
- .jpg or .jpeg
- .gif
- .tif
- .psd

What are the popular raster-based image editors?

- Adobe Photoshop
- GIMP
- Photo-paint

What are the common vector file types?

- .eps
- .ai
- .pdf
- [.svg](#)
- .sketch

What are the popular vector-based image editors?

- [Adobe Illustrator](#)
- Sketch

[What is a bitmap?](#) Figma.com

A bitmap describes a type of image that web-users encounter all the time without realizing it. Basically, it's a grid where each individual square is a pixel that contains color information. The key characteristics are the number of pixels (or squares in the grid), and the amount of information in each grid square (pixel). Bitmaps and [raster images](#) are interchangeable terms that refer to the same concept: a grid full of pixels that—when arranged densely enough—form a clear image.

Like raster graphics, bitmaps are made up of individual, tiny points that blend together to form a unified image. Unlike [vector graphics](#), which are infinitely scalable, you can't stretch or enlarge them without compromising the quality.

How It's Created and Stored

When you break down an image into a grid made of thousands of squares, you get a bitmap. Each square in that grid holds a little bit of color data and displays (or doesn't display) a color based on that data. Like a color-by-numbers sheet, a key correlates each point's data assignment with a color. In the end, it provides the literal map that tells you what that image should look like once it's put together.



the simple guide to FILE TYPES

PHOTOSHOP FILE

Uncompressed, layered master file that can be modified in Photoshop. Typically contains raster graphics, but supports vectors too.



ILLUSTRATOR FILE

Scalable, vector-based master file that can be modified in Illustrator. Can be imported into Photoshop with limited functionality.



UNIVERSAL GRAPHICS FILE

Typically contains scalable vector graphics and can be modified in Illustrator. Can be imported into Photoshop with limited functionality.



RASTER GRAPHICS FILE

Uncompressed raster graphics format that supports transparent backgrounds. Can be used in any software.



RASTER GRAPHICS FILE

Compressed image format for reduced file size while maintaining high image quality. Transparency is not supported.



OPENTYPE FONT FILE

Font format supporting features like stylistic and contextual alternates, ligatures, swashes, and much more.



TRUETYPE FONT FILE

Font format with basic character support. Some programs, like those used for vinyl cutting, only support TrueType fonts.



COMPRESSED ARCHIVE

Contains files/folders in a compressed format for quicker downloads. Can be extracted using default operating system software.

