

DIG3118

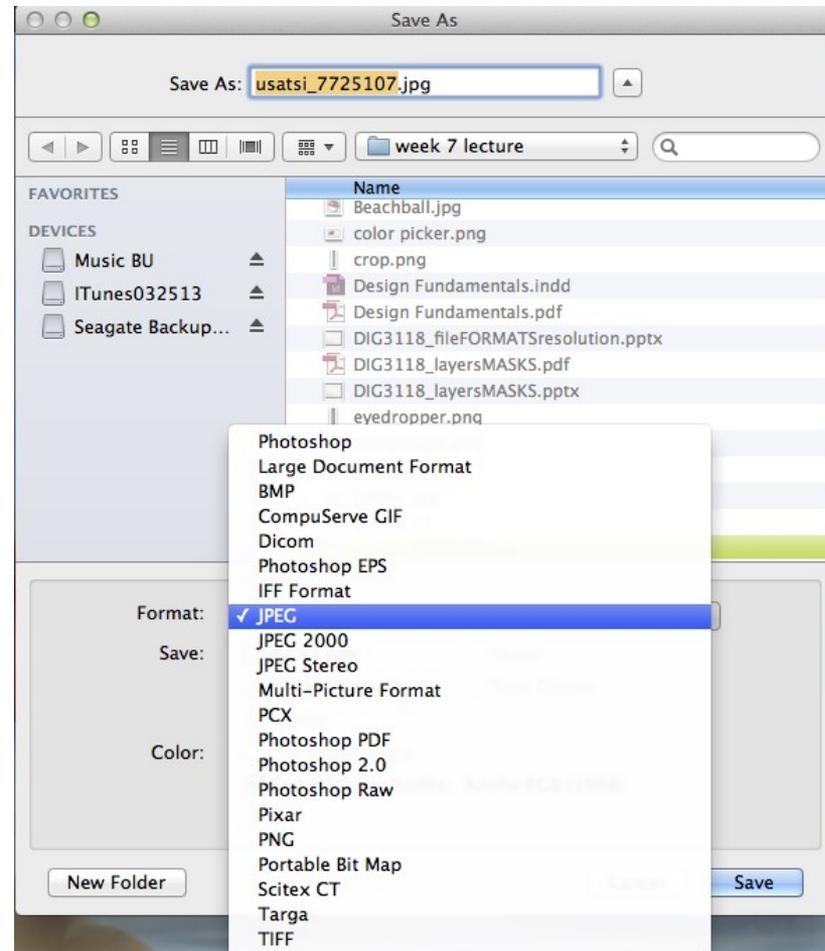
Digital Graphic Design

Objectives

- File formats saved from Photoshop
- Understanding resolution and Pixels Per Inch (PPI)
- Comparing resolution used for web vs print
- Common web file formats
- Common print file formats
- Using transparency in Photoshop file formats
- Understanding compressed file formats

File formats in Photoshop

In the SAVE or SAVE AS file menu, there are a variety of bitmap file formats available. Some may look familiar to you.



File formats in Photoshop

The native file format for Photoshop is a .psd, found @ the top of the list.

Others that we will be discussing are CompuServe GIF (.gif), Photoshop EPS (.eps), JPEG (.jpg), Photoshop PDF (.pdf)., PNG (.png), and TIFF (.tif).

Each of the above has specific attributes and functions which we will review.

Resolution of Files

Pixels Per Inch (PPI)

PPI stands for pixels per inch. PPI is a measurement of image resolution that defines the size an image will print. An image that is 1600 by 1200 pixels at 300ppi will print at a size of 5.3 by 4 inches. Or it could be printed at 180 ppi for a printed size of 8.89 by 6.67 inches. The higher the ppi value, the better quality print you will get--but only up to a point. 300ppi is generally considered the point of diminishing returns when it comes to ink jet printing of digital photos.

The term DPI is often used interchangeably with PPI, causing a lot of confusion, however, DPI refers to the resolution of a printing device.

By setting the resolution in Photoshop, we tell the printer, not the screen, how many of the pixels in the image to squeeze into an inch of paper. The more pixels you're squeezing into every inch of paper, the smaller the image will appear when printed. And generally speaking, the more pixels you're printing per inch, the higher the print quality.

Resolution of Files

To review the PPI of a file

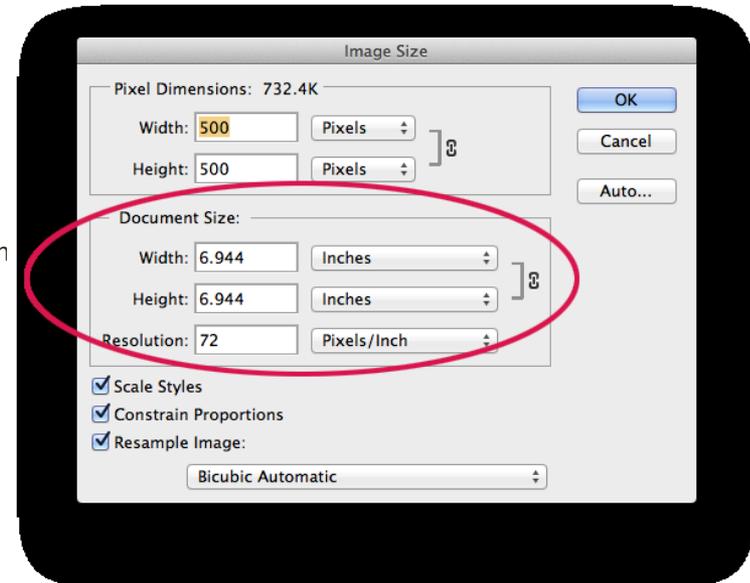
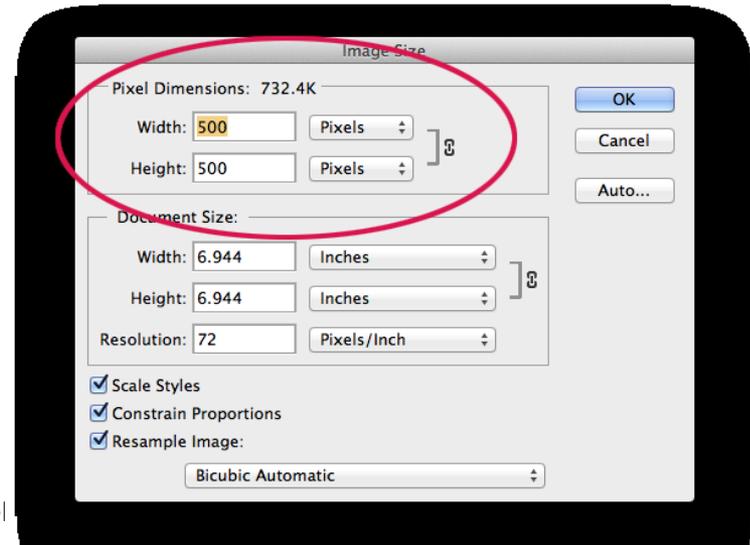
Open Photoshop's Image Size dialog box by going up to the Image menu in the Menu Bar along the top of the screen and choosing Image Size:

At the top of the Image Size dialog box is the **Pixel Dimensions section** which tells us the width and height of the image in pixels. Here we can see that my photo has both a width and height of 500 pixels, making it a decent size for display on the web. This is the only part of the Image Size dialog box that your computer screen cares about – the actual pixel dimensions of the image:

The Pixel Dimensions section shows us the width and height in pixel

Below the pixel dimensions is **the Document Size section** which tells us how large the image would currently appear on paper if we were to print it. This section deals exclusively with print size and has no effect at all on how the image appears on screen. It also happens to be home to the all-important Resolution option (the reason we're all here!), which makes sense because resolution affects print size, not screen size. As we can see, Photoshop has gone ahead and set the resolution of my photo to 72 pixels per inch, and directly above the Resolution option, in the Width and Height boxes, we can see that at 72 ppi, my 500 x 500 pixel photo would print at 6.944 x 6.944 inches (500 ÷ 72 = 6.944):

The Document Size section shows us the print size based on the current resolution. It has no effect on screen size.

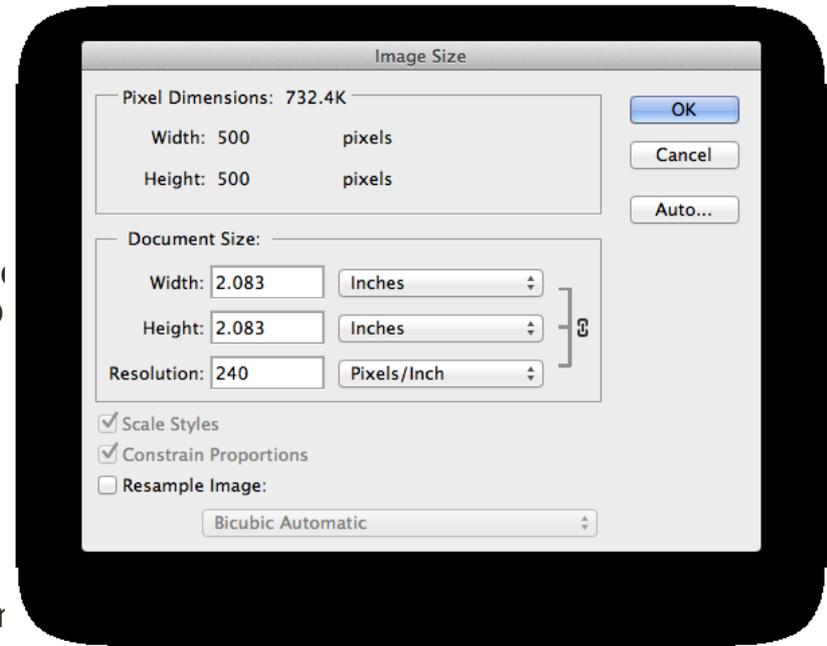
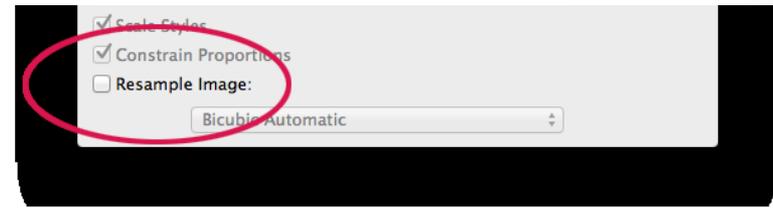


Resolution of Files

Let's see what happens if I increase the image resolution. Before I do that, though, I'm going to quickly uncheck the Resample Image option near the bottom of the dialog box so that the image keeps its original pixel dimensions when I change the resolution:

Unchecking the Resample Image option. Notice that Width, Height and Resolution are now linked.

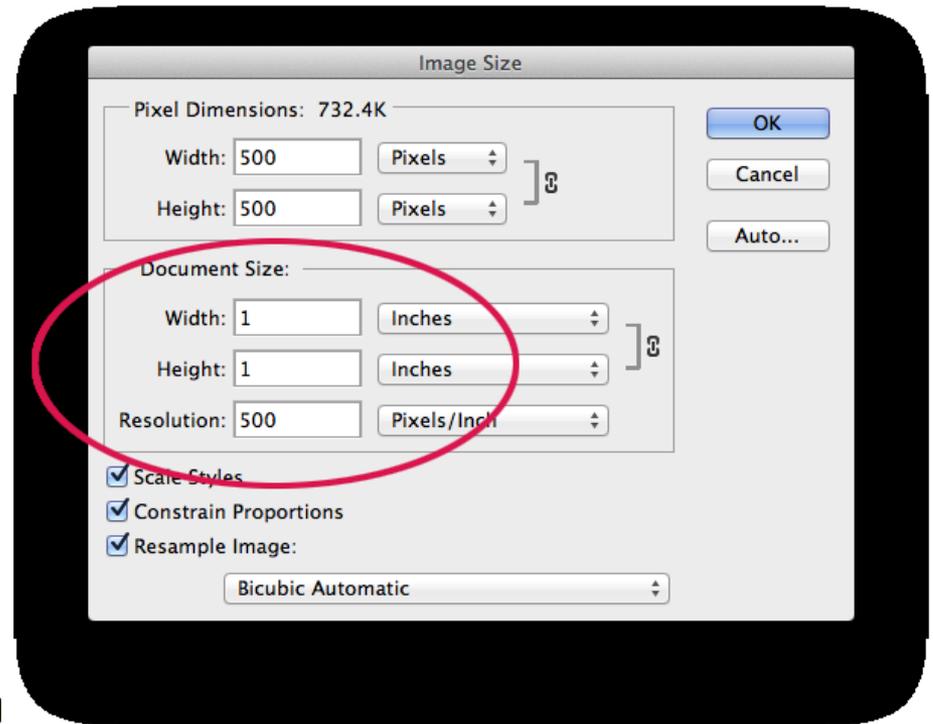
With Resample Image unchecked, I'll increase the resolution from 72 pixels per inch to 240 pixels per inch. We can see in the Pixel Dimensions section at the top that increasing the resolution has not changed the actual pixel dimensions. It's still 500 x 500 pixels, which means it would still take up a 500 x 500 pixel area on the screen. But at 240 ppi, it would now print on paper at a size of only 2.083 x 2.083 inches ($500 \div 240 = 2.083$). Changing the resolution changed the photo's print



The image would now print smaller but would remain the exact same 500 x 500 pixel size on screen.

Resolution of Files

I'll again increase the image resolution, this time to something crazy like 500 pixels per inch, just to make the math really easy. A 500 x 500 pixel image, set to a resolution of 500 pixels per inch, would print as a 1 x 1 inch image on paper ($500 \div 500 = 1$). Once again, the actual pixel dimensions of the image have not changed. Even at 500 ppi, my image would appear no larger or smaller on screen that it would at 72 ppi, or 240 ppi, or at any resolution because it's still a 500 resolution setting, and its pixel dimensions are all your computer screen cares about:



At 500 ppi, the image would print very small indeed but would still appear as a 500 x 500 pixel image on screen.

Resolution of Web vs Print

Typically it is recommended to save files for web or multimedia @ **72PPI**.

High resolution typically needed for quality commercial print is **300PPI**.

As we just saw, these are adjusted in the menu **IMAGE>IMAGE SIZE** dialog box in Photoshop.

Common File Formats

Images for web, on-screen delivery

- GIF

Use GIF files for images that have a small, fixed number of colors. GIF files are always reduced to no more than 256 unique colors. The compression algorithm for GIF files is less complex than for JPG files, but when used on flat color images and text it produces very small file sizes.

The GIF format is not suitable for photographic images or images with gradient colors. Because the GIF format has a limited number of colors, gradients and photographs will end up with banding and pixelation when saved as a GIF file.

The GIF file format can support transparency. It is only lossless for images with 256 colors or less. A true color image may lose 99% of its colors.

Common File Formats

Images for web, on-screen delivery

- JPG

Use JPG images for photographs and other images that have millions of colors. It uses a complex compression algorithm that allows you to create smaller graphics by losing some of the quality of the image. This is called a "**lossy**" **compression** because some of the image information is lost when the image is compressed.

The JPG format is not suited to images with text, large blocks of solid color, and simple shapes with crisp edges. This is because when the image is compressed the text, color, or lines may blur resulting in an image that is not as sharp as it would be saved in another format.

Each time a JPG is saved, data is lost. **It is highly recommended to NOT to .jpg a .jpg.**

The JPG file format does NOT support transparency.

Common File Formats

Images for web, on-screen delivery

- PNG

The PNG format was developed as a replacement for the GIF format when it appeared that GIF images would be subject to a royalty fee. PNG graphics have a better compression rate than GIF images which result in smaller images than the same file saved as a GIF.

PNG images, like GIFs, are not well suited to photographs. It is possible to get around the banding issue that affects photographs saved as GIF files using true colors, but this can result in very large images. PNG images are also not well supported on older cell phones and feature phones.

The PNG file format can support transparency. Lossless compression, as well as animation.

Common File Formats

Images for print (high quality commercial print)

- TIF

A TIFF is a bitmap image format. If the image has been created using a paint program such as Adobe Photoshop, or if it is a scanned photograph, it is a bitmap image and is resolution-dependent. In this case the image must be supplied high-resolution - at a minimum of 300 DPI (dots per square inch), actual size. This means that the original file must be at least 300 DPI from the outset. Scaling up a lower resolution file will result in a loss of quality.

All bitmap images must be provided in either “greyscale” or “CMYK” (Cyan Magenta Yellow Keyline) color formats.

The TIF file format can support transparency and layers and uses loss-less compression.

Common File Formats

Images for print (high quality commercial print)

- PSD

If the image has been created using a paint program such as Adobe Photoshop, or if it is a scanned photograph, it is a bitmap image and is resolution-dependent. In this case the image must be supplied high-resolution - at a minimum of 300 PPI, actual size. This means that the original file must be at least 300 PPI from the outset. **Scaling up a lower resolution file will result in a loss of quality.**

All bitmap images must be provided in either “greyscale” or “CMYK” (Cyan Magenta Yellow Keyline) color formats.

The PSD file format can support transparency and layers and uses loss-less compression.