Resolution: what is it?

When preparing images for print, one of the most important and probably the most difficult concept to grasp for the new designer is resolution.

Simply put, resolution is the amount of information that makes up an image, the more information the higher the quality of the image.

There are two kinds of resolution, screen and image. Let's start with screen resolution. Screen resolution is the number of pixels used to display an image on a computer monitor and is measured by the number of pixels per linear inch and is referred to as PPI or more commonly called dpi.

So, what is a pixel?

The term "pixel" is actually short for "Picture Element." They are tiny dots of individual color that make up what you see on your screen. The screen is divided up into a grid of thousands or even millions of pixels. Typically, you cannot see the individual pixels, because they are so small.

When talking about image resolution we are referring to a scanned image, a digital stock photo image, and a digital camera image. These are all raster-based images and their quality depends on resolution.

These raster images are bitmap images comprised of pixels in a grid. Each pixel or "bit" in the image contains information about the color to be displayed. Bitmap images are resolution dependent and cannot be resized without losing image quality.

Image "resolution" is simply the number of Pixels Per Inch in the bitmap grid. There are two aspects to every bitmap image - its size, width and height in inches, and resolution, the number of pixels per inch.

These two factors alone determine the total number of pixels in an image.

For example, a 2-inch by 3-inch image with a resolution of 300 pixels per inch contains 540,000 pixels.

The more pixels there are in an image, the more detail the image can be displayed with. The fewer pixels there are in an image, the less detail the image can be displayed with. So a higher resolution means that more pixels are used to create the image, resulting in a crisper, cleaner image. Also, the more resolution the larger the file size.

There are two ways to display an image, either on screen or in print.

When you are preparing images you need to know what the optimum resolution for each is and how to determine it.

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First let's talk about images to be displayed only on the screen, such as web page images. This is the easiest to determine. Scan or size them all to 72 PPI.

You may already know that a monitor on a Macintosh system displays at 72 PPI and a Windows system displays at 96 PPI.

Though there is a difference between the two, the standard for web-based images is 72 PPI.

This low resolution is good for quick transmission over the Internet, but is not acceptable for use in printing.

Do not save images or graphics from a website to use in your print project and think that just by adding resolution you will get a high quality image. Not so.

Increasing the resolution and/or enlarging the size of a web graphic in Photoshop to be used in your print layout will create fuzzy, jagged and blurry images that are unacceptable.