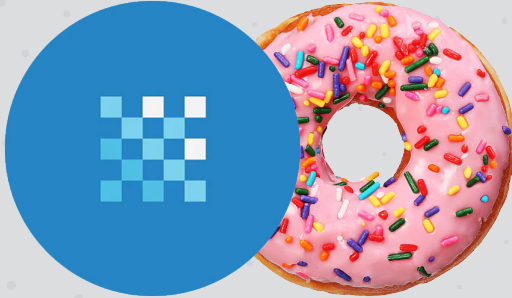


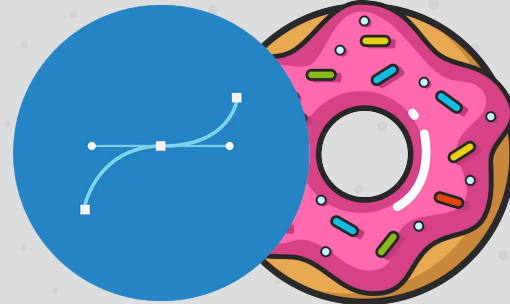


Digital Printing Guide

Raster Images (pixel based)



Vector Images (formula based)



Overview

Raster files are images built from pixels — tiny color squares that, in great quantity, can form highly detailed images such as photographs. The more pixels an image has, the higher quality it will be, and vice versa.

Vector files use mathematical equations, lines, and curves with fixed points on a grid to produce an image. There are no pixels in a vector file. A vector file's mathematical formulas capture shape, border, and fill color to build an image.

Uses

Digital photos & scans
Digital Illustrations

Logos
Digital Illustrations

Scaling

The resolution of a raster file is referred to in DPI (dots per inch) or PPI (pixels per inch). If you zoom in or expand the size of a raster image, you start to see the individual pixels. DPI is a linear measurement where the number of pixels is divided by the number of inches they have to cover.

Because the mathematical formula recalibrates to any size, you can scale a vector image up or down without impacting its quality. Note that vector images that have been converted to raster no longer scale in this way.

Filetypes

Extension Filetype

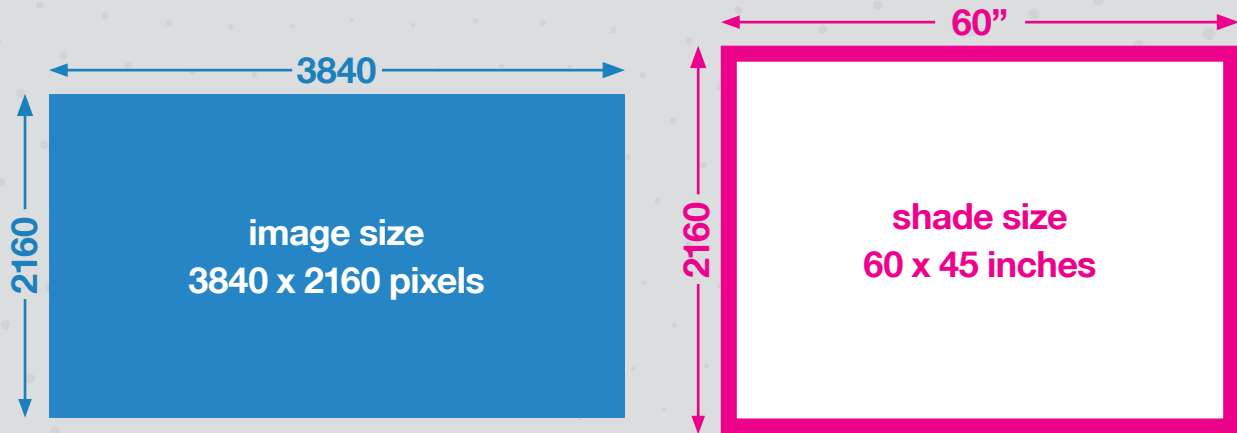
.jpg	Joint Photographic Experts Group (JPEG)
.png	Portable Network Graphics (PNG)
.gif	Graphics Interchange Format (GIF)
.bmp	Bitmap Image File (BMP)
.tiff	Tagged Image File Format (TIFF)
.psd	Adobe Photoshop File (PSD)
.pdf	Portable Document Format (PDF)

Extension Filetype

.svg	Scalable Vector Graphics (SVG)
.eps	Encapsulated PostScript File (EPS)
.ai	Adobe Illustrator File (AI)
.dae	Collaborative Design Activity (COLLADA)
.ps	PostScript (PS)
.emf	Enhanced MetaFile (EMF)
.pdf	Portable Document Format (PDF)

Calculating DPI for Raster Based Images

The below boxes show how to calculate DPI from a hypothetical image and shade.



Compare aspect ratios



The image is clearly wider and shorter than the shade in terms of aspect ratio. In order to cover the whole shade we will have to expand the image to cover the full height. This also means we will have to crop off part of the side(s) of the image.



Now to calculate the DPI, we divide the vertical pixel measurement (2160) by the vertical shade dimension (45). This provides a DPI of 48.

If the aspect ratio of the image was taller rather than wider than the shade, we would use the horizontal measurements to calculate DPI.

In the next step, we will interpret this number as it applies to our project.

DPI: How much is enough?

We have now calculated our DPI. What kind of DPI do is required for a given project? The answer depends on viewing distance. Higher DPI is always crisper, but it is not always possible to find an image that matches client needs at high DPI.

Hand held brochures are often printed at 300 DPI because the print is very close to the observer. Large format printing that requires fine details to be sharp up close should aim for no less than 150 DPI. But really the answer is that it depends on the expectations of the client.

We have had several clients that were very happy with shades printed at 50 DPI. This is why we often recommend getting a 12" x 12" proof of the printing to ensure the quality meets client expectations.

