

Image File Types

Digital image formats for both Mac and PC platforms are accepted.

Preferred file types: *These file types work best and typically encounter few problems.*

- tif (TIFF)
- jpg (JPEG)
- psd (Adobe Photoshop document)
- eps (Encapsulated PostScript)
- ai (Adobe Illustrator)
- pdf (Portable Document Format)

Accepted file types: *These file types are acceptable, although application versions and operating systems can introduce problems. A hardcopy, for cross-referencing, will ensure a more accurate outcome.*

- doc, docx (Word)
- xls, xlsx (Excel)
- ppt, pptx (PowerPoint)
- fh (Freehand)
- cdr (Corel Draw)
- cvs (Canvas)

Image sizing specifications should be discussed with the Editorial Office prior to digital file submission. Digital images should be submitted in the final size desired. White space around the image should be removed.

Image Resolution

The minimum acceptable resolution is 200 dpi at the desired final size in the paged article. To ensure the highest-quality published image, follow these optimum resolutions:

- *Line* = 1200 dpi. Contains only black and white; no shades of gray. These images are typically ink drawings or charts. Other common terms used are monochrome or 1-bit.
- *Grayscale* or *Color* = 300 dpi. Contains no text. A photograph or a painting is an example of this type of image.
- *Combination* = 600 dpi. Grayscale or color image combined with a line image. An example is a photograph with letter labels, arrows, or text added outside the image area. Anytime a picture is combined with type outside the image area, the resolution must be high enough to maintain smooth, readable text. The resolution for combinations is not set to 1200 dpi because the file size would be too large for timely processing, downloading, printing, etc. 600 dpi is a middle ground between the two other image type qualifications.

On occasion, low-quality images that appear to be line images are processed as combinations. When anti-aliasing happens around text, it becomes jagged and pixilated. Maintaining the gray “dots” around the text helps to smooth the edges.

Resolution will decrease when an image is enlarged; conversely, resolution will increase when an image’s size is reduced. This process is known as resampling, and it balances the size/dpi ratio proportionally.

Vector files do not have a resolution and are preferred if available. Altering of size and text can be done without loss of integrity to the visual quality of the image. (File formats eps, ai, and pdf are the most common. It does not mean that just because the file type is one of these formats it will be vector.)

The images at the end of this guide demonstrate the difference in resolution.

Pixels

A pixel is the smallest element of a raster image. It is these pixels that make up digital images; the number of them defines the visual quality both on screen and in print.

Pixels are measured as dots per inch (dpi) or as pixels per inch (ppi). These terms are often used interchangeably, although the actual meanings of the two are very different. The term dpi refers to a printer’s dot density, and ppi is the dot display of digital devices such as monitors or digital cameras.

Resolution is a common term used to describe dpi. It is the result of the pixel width in combination with the desired print width.

Digital Photography

When using a digital camera to capture images, use the highest resolution setting option with the least amount of compression. Digital camera manufacturers use many different terms and file formats when capturing high-resolution images, so please refer to your camera’s manual for more information.

As a general guide, a setting of 2048 × 1536 pixels will produce a 300 dpi image at approximately 7 × 5 inches. This can be calculated by either of the following equations:

pixel width ÷ desired resolution = width in inches **OR** pixel width ÷ width in inches = final resolution

Color Mode

The two most common color modes are CMYK and RGB.

CMYK stands for Cyan, Magenta, Yellow, black. These four represent the colors of inks used on our press. (Pantone colors are separate from CMYK.)

RGB stands for Red, Green, Blue. These colors are made up of light and are used in the displays of computer monitors, digital cameras, TVs, etc.

All color modes are accepted, but all printed images are converted to CMYK. A color shift is typical when converted because the range of colors in RGB mode is larger than that in CMYK mode. That is why Green appears more pure and vibrant on a computer monitor than a printed combination of the Cyan and Yellow inks.

Fonts

Fonts should be embedded in the document to avoid incorrect font conversion. Symbols and Greek characters do not transfer well if not protected. Embedding the fonts ensures that what is seen on the

monitor will translate throughout the process all the way to press or online. Similar to embedding, some vector applications may allow Creating Outlines or Converting Type to Curves. If using Acrobat Distiller to create PDFs, use a Press setting.

If embedding fonts is not an option, the screen and printer fonts should be sent along with the image files in a Stuffit or WinZip compressed file. Indicate if the fonts are Mac or PC fonts. If a common font is used (examples would be Helvetica or Times New Roman), the images will go through production. Allen Press has a version of these fonts that could be substituted in.

Image Resolution

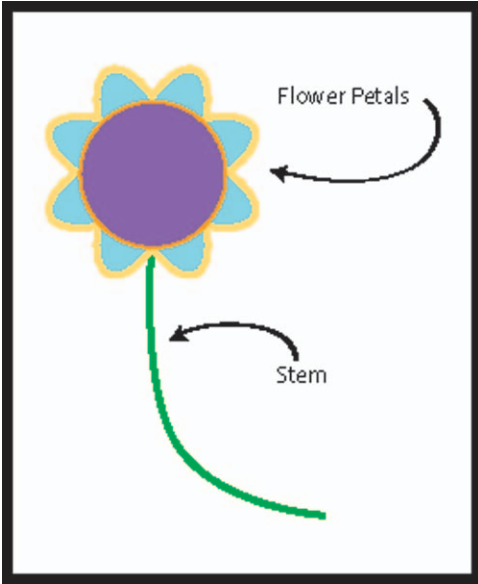
The image displays four panels, each showing a stylized flower with a purple center, blue petals, and a green stem. The panels are arranged in a 2x2 grid. Each panel is labeled with a number in a black circle in the bottom-left corner. Arrows point from the text labels 'Flower Petals' and 'Stem' to the corresponding parts of the flower. Panel 1 (top-left) shows a smooth, high-quality illustration. Panel 2 (top-right) shows a slightly less smooth illustration. Panel 3 (bottom-left) shows a significant stair-step effect on the curved edges. Panel 4 (bottom-right) shows a very poor quality illustration with heavy stair-stepping and illegible text.

1 600 dpi - optimal quality (smooth curves, text very legible)

2 300 dpi - good quality (looks OK, less smooth)

3 200 dpi - minimum acceptable quality (curved edges are getting a stair-step appearance, text still legible)

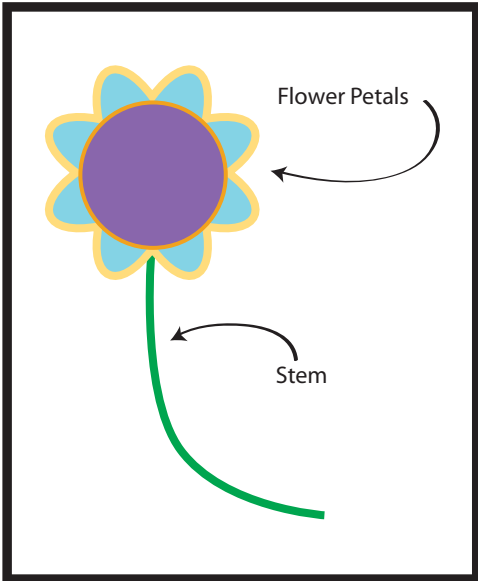
4 72 dpi - poor quality (stair-stepping is prevalent, text begins to become illegible – especially if it is small)



Resampling Images

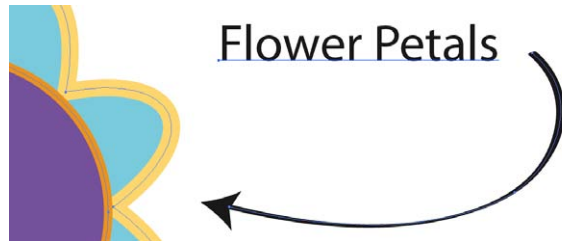
When the resolution of an image is forced to be a higher resolution than it was originally assigned, it does not fix the problem. The figure in this example was 72 dpi. It was forced to be 600 dpi. That does not make it a 600 dpi quality image. Now it has 72 dpi characteristics with fuzzy edges.

The proper way to resize an image is to let the resolution change proportionally with the physical size. (In Photoshop there is a Resample Image box at the bottom of the Image Size window that must be UNchecked.)



Vector Images = No Resolution

The blue outlines and underlines (as seen in the screen capture below) indicate the elements of this figure that are vector and indefinitely editable. We can reduce and enlarge this over and over without any loss of quality. There is no stair-step appearance because a resolution has not been assigned to it. Resolution is determined by the density of dots or pixels per square inch required to render the details of an image.



Vector line art vs 1200 dpi line art

