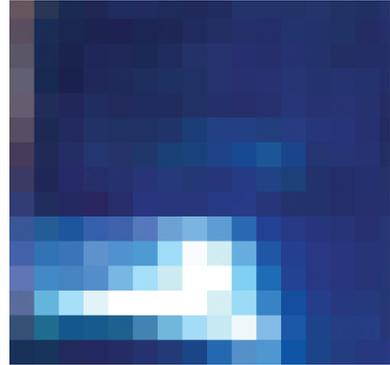


# Pixels and Resolution

## Pixels

A pixel is the smallest element in a bitmap image captured by a digital camera or scanner. Pixel is short for “picture element”. Zoom in on an image in Photoshop, and you will start to see the individual pixels – the fundamental building blocks – that make up the image. When working in Photoshop, you are moving, copying and editing pixels, changing their color, shade, and brightness to achieve a hugely varied set of changes to the image.



## Resolution

A key factor, when working on bitmap images, is resolution. This is measured in pixels per inch (ppi).

Pixels can vary in size. If you have an image with a resolution of 100 ppi, each pixel would be  $1/100^{\text{th}}$  of an inch square. In an image with a resolution of 300 ppi, each pixel would be  $1/300^{\text{th}}$  of an inch square – giving a much finer, less blocky, result.

When working on images that will eventually be printed on a printing press, you need to work on high-resolution images. These are images whose resolution is twice the halftone screen frequency (measured in lines per inch – lpi) that will be used for final output – that is when you output to film or directly to plate.

For example, for a final output screen frequency of 150 lpi – a typical screen frequency used for glossy magazines – you need to capture or prepare your image at a resolution of 300 ppi.

Resolutions of double the screen frequency are important for images with fine lines, repeating patterns, or textures. You can achieve acceptable results, especially when printing at screen frequencies greater than 133 lpi, by using resolutions of  $1\frac{1}{2}$  times the final screen frequency.

To work with images for positional purposes only, as long as you can get accurate enough on-screen results and laser proofs, you can work with much lower resolutions.

### Hot tip



Images intended for multimedia presentations, or the World Wide Web, need only be 72 ppi, which is effectively the screen resolution.