

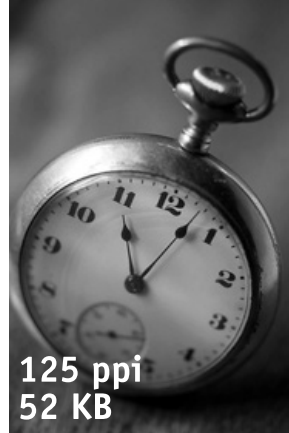
Understanding Resolution

Every bitmap image has several attributes. The two most important ones are resolution and bit depth.

Resolution is a measure of the number of pixels in a particular unit of measurement. A small number of pixels in a given unit of measurement is a low-resolution image; a large number of pixels in a given unit of measurement is a high-resolution image. The higher the resolution, the better the quality of the image. There are limits, however, to

how high a resolution is useful. At a certain point, increasing the resolution of a bitmap image will not increase the quality of the displayed image, and will slow down image manipulations and printing.

The most common way of measuring resolution is dots per inch, often written as dpi. While pixels per inch (ppi) is a more accurate way of describing the resolution of a bit-mapped image, dpi is the most widespread term.



Scanning at too high a resolution slows down printing, takes up more disk space, and slows down Photoshop without increasing quality. Scan at the resolution you need, and no higher.



Another attribute of bitmap images is **bit depth**. This is a measure of how many possible values exist for each pixel. In a 1-bit image (which Photoshop calls bitmap mode) each pixel can be either black or white. Only one bit is used to represent each pixel. Greyscale images (like the watch photo above) are usually 8-bit. Each pixel is one of 256 different shades of grey.

Full colour RGB images are usually 24 bit. Each pixel is represented by an 8-bit value for the red, green and blue channels. (8 bits per colour x 3 colours=24). Many scanners and cameras more than 8 bits per channel, up to 32 bits per channel, for a total of 96 bits for pixel.

One-bit images need higher resolution — usually 600-800 ppi. An 8x10 inch 24-bit colour image at 4800 ppi would be

over 5 gigabytes, or big enough to fill a small flash drive.

Suggested Resolutions

Laser printer output	120-150 ppi
Newspaper/Magazine	200-300 ppi
Inkjet printer (using photo paper)	240-400 ppi
Offset printing press	200-400 ppi
One-bit images	up to 1200 ppi
Notional resolution for on-screen presentation	72 ppi

Common screen resolutions (in pixels)

Average laptop (varies greatly)	1366 wide x 768 tall
iPhone X	2436 wide x 1125 tall
iPhone SE	1136 wide x 640 tall
High definition TV	1920 wide x 1080 tall