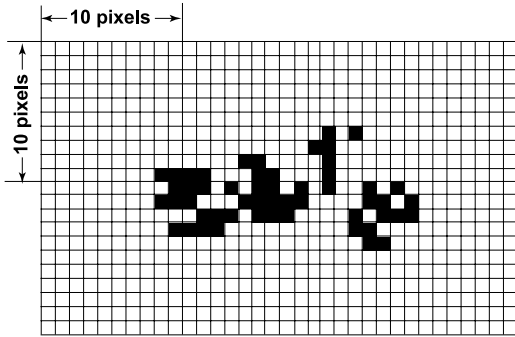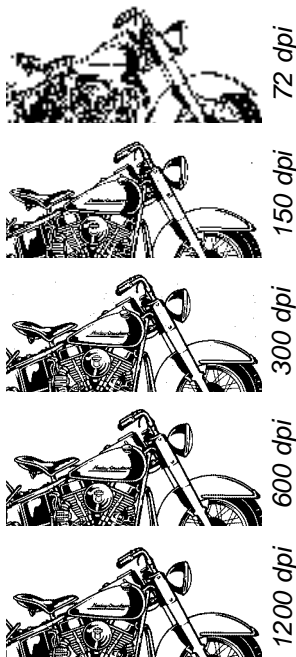# RESOLUTION

d.p.i. (dots per inch)

Resolution defines the amount of detail in a scanned image. It represents the number of pixels that are recorded per linear inch. The image below is shown through a 1/10th inch grid. It would be said to have a resolution of 10 pixels per inch (10 ppi) or 10 dots per inch (10 dpi):


When a scanner records an image, it must first divide the image up into a grid of pixels, then the computer looks at each pixel. It cannot fill in half-pixels, so if a pixel is half white and half black, the computer must assign one or the other. The larger the number of pixels in a grid, the better the image will appear. Study the examples below and compare the image quality of the low-to-high resolution scans. (Scans should be done at the target resolution and at the final size (percentage). Adding resolution to an existing scan will not increase the quality of the image, it will only increase the file size of the image. Downsampling is the process of reducing the size of the image and increasing the resolution at the same time. Remember, you can shrink a picture and gain resolution, but you cannot enlarge an image and "add" resolution.) Recommended resolution for line art at 100% is 1200 dpi.

l.p.i. (lines per inch)

lpi: 15   53   85   133   150
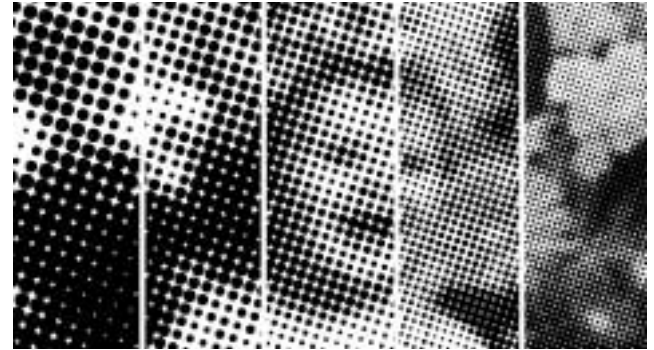
Line art is printed as solid black and white dots. Halftones (photos, tints, screens, etc.) are printed with dots of varying size measured in lines per inch (lpi).

Best printed results are determined by the resolution of the final output device. The higher the resolution, the higher the line screen should be. Study the following chart to determine optimum settings depending on the output device:

Printer Resolution	Recommended Lines Per Inch
300 (most desktop printers)	53-60
600 (laser printers)	71-85 *(used by most newspapers)*
1200 (imagesetters)	65-128
2400 (imagesetters)	90-150 *(used by most magazines and other high quality media)*

A halftone's dpi should be twice the projected lpi output. For example, if you are a creating an ad for a local newspaper, scan in the photo at 2 x 85lpi, which is 170dpi. If you are creating a poster for mass production on an offset press, scan and save the photo at 2 x 133lpi, which is 266dpi. Saving files at larger dpi settings then recommended only increases the file size and does not increase the quality when printed.

53 lpi (106 dpi)   85 lpi (170 dpi)   133 lpi (266 dpi)