

About Digital Cameras

If you're new to using digital cameras, several camera features might seem foreign to you. Some of these features, such as digital zoom and compression, do not exist with film cameras. But it's important to understand what these features do and when it's appropriate to use them.

Photo Quality

A digital photograph is composed of tiny colored squares called *pixels* (short for *picture elements*). Like a mosaic, the pixels blend together to form a picture. Each digital picture consists of a set number of pixels, ranging from a few thousand to millions. When a digital camera takes a photo, it creates a digital file that includes some number of pixels, each with a precise color.

Pixels are not a set size, so they can shrink or enlarge depending on the size at which the picture is printed or displayed. When a photo is enlarged too much, the individual pixels become visible, making a jagged looking, poor-quality photo.



The original photo on the left was saved at high resolution, and you can see sharp detail. The photo on the right has been saved at such low resolution that you can see the individual pixels.

The number of pixels that make up a picture is the *resolution*. Resolution and *compression* are key factors in determining the quality of a digital photo. The following sections explain resolution and compression.

Resolution

Resolution is one of the main factors that determine picture quality since it is a measure of the total number of pixels that make up a photograph. Resolution is sometimes expressed as the total number of pixels, such as 3 megapixels (3 million pixels), or in pixel dimensions, such as 1600 by 1200 pixels (which equals 1,920,000 total pixels, or 1.9 megapixels).

Resolution is important primarily because it determines how much you can enlarge a picture. Everything else being equal, a 3-megapixel picture and a 320 pixel x 240 pixel picture look the same in a wallet-size print. But if you enlarge those two pictures to 5" x 7" prints, the quality of the 320 x 240 picture is very low: you can see the individual pixels. The 3-megapixel picture still looks sharp at the larger size, since its pixels are still too small to be seen.

Resolution is also important because it determines file size. High-resolution pictures contain color information for many more pixels than low-resolution pictures, so the files for high-resolution pictures can be significantly larger. File size becomes an issue if you have limited storage on your camera or hard disk, or if you need to send the picture through e-mail.

The following chart gives an estimate of file size and maximum print size for various resolutions. The chart lists file sizes for JPEG format, which is a common (but not the only) format for pictures. This is just a general guide to file sizes—you might produce good printing results by using larger or smaller files.

Dimensions	Total pixels	Approx. JPEG file size (with slight compression*)	Maximum print size
320 x 240	76,800	23 KB	Web and e-mail
640 x 480	307,200	91 KB	Web and e-mail
1280 x 960	1,228,800 (1.2 megapixels)	363 KB	4" x 6"
1600 x 1200	1,920,000 (1.9 megapixels)	576 KB	5" x 7"
2,048 x 1,536	3,145,728 (3.1 megapixels)	970 KB	8" x 10"
3008 x 2000	6,016,000 (6 megapixels)	1.5 MB	11" x 14"

* Compression, which is explained in the following section, varies by camera, so you might find different file size results.