Digital Photography
Ian Cummings
Buying A Digital Camera

Resolution: What size prints can I make? (As resolution goes down, so does quality)

Largest Print Size at various resolutions (in Inches):

Resolution	Pixels	100 PPI	150 PPI	200 PPI	300 PPI
2 megapixel	1600 x 1200	16 x 12"	10.66 x 8.00"	8 x 6"	5.3 x 4.0"
3 megapixel	2032 x 1524	20.3 x15.3"	13.5 x 10"	10.2 x 7.6"	6.8 x 5.1"
4 megapixel	2309 x1732	23x17"	15.4 x 11.5"	11.5 x 8.7"	7.5 x 5.8
5 megapixel	2582 x 1936	25.8 x 19.4"	17.2 x 13"	12.9 x 9.7"	8.6 x 6.5"
6 megapixel	3008 x 2000"	30.1 x 20"	20.1 x 13.3"	15 x 10"	10 x 6.7"

- 72 PPI (not shown) is typical screen resolution for internet images.
- 100 PPI is pushing the resolution envelope. Jaggies may become noticeable, and quality marginal.
- 150 PPI will give reasonably good results on an inkjet printer, without noticeable jaggies.
- 200 PPI is often enough resolution for most print work.
- 300 PPI is generally the optimum resolution for high quality color prints and most lithography on coated stock.

Zoom Lens? "Optical zoom" is the key feature when it comes to zoom. Ignore "digital zoom", which is nothing more than cropping in Photoshop. Resolution is lost if you use the digital zoom feature. A zoom ratio refers to the difference between the widest setting and longest setting, i.e. 35mm to 105mm would be a typical 1:3 or 3X zoom ratio on a 35mm camera.

Built in flash? Most digital cameras offer a built in flash, but is there a control feature that allows you to manually turn the flash on or off? I consider this to be an important feature. There will be times when you want to shoot in a low light situation without flash, and other times in brightly lit situations where you want to add flash fill.

Hot Shoe or Flash Sync Terminal? If you think you will want to use an external flash or studio strobe lighting, you will need one or the other.

Storage media? What type of storage media does the camera write to and what does it cost? The three most popular types are Compact Flash, Smart Media, and Memory Stick. Compact flash is emerging as the most popular storage media. Make sure the camera includes storage media in the purchase price. Some manufactures make their cameras appear to be less expensive by leaving out "accessories" such as storage media and cables. In reality, the camera is useless without these items which you will ultimately need to buy.

Connections? Firewire, USB, USB-2, Serial? Make sure you will be able to connect the camera or storage media for uploading to your computer. Firewire and USB-2 are the fastest camera-to-computer connections, then comes USB, followed by serial connection. USB-2 is gaining in popularity. Although not offered on all computers, it is close to the speed of firewire. Probably the most practical way to transfer data from camera to computer is to buy a separate card reader that plugs into your computer. These usually cost between $30 and $50 and can read one or more card types. Lexar makes a "USB enabled" CF card and gives you the card reader free.

Batteries? Digital cameras burn through batteries very fast, especially if you are viewing images on the LCD. You should consider buying rechargeable batteries and a charger as a part of your budget when buying a digital camera. Get either Nickel-metal Hydride (NimH), or better yet, the greater capacity Lithium Ion (Li-Ion) Some cameras come with a rechargeable battery and charger as a standard feature. In any case you should consider buying backup batteries as well. That way, when your batteries die, you can swap them with a fresh set and continue shooting. Cameras that use standard AA batteries, rather than proprietary batteries, have the advantage of being able to run on disposables. This is helpful if you plan to be away from a charger (or electricity) for extended periods of time.

Auto exposure override? Virtually all consumer level digital cameras provide automatic exposure metering. At the very least, you should be able to add or subtract exposure value to compensate for the camera being fooled by an overly light or dark subject (exposure compensation.). A camera that allows for manual exposure settings is ideal. Once again, it is important that you are able to force the built in flash off as well for more creative picture making. Aperture priority auto-exposure (A setting) is a desirable feature to look for. This allows you to have some control over aperture selection (thus shutter speed selection) while taking advantage of auto-exposure control.

Viewfinder? Most point and shoot cameras have an "optical viewfinder," which means you can view and compose your image looking through focused glass. Some cameras have an "electronic viewfinder" which means you are looking at an LCD, even when you look through the viewfinder. Single lens reflex (SLR) cameras allow you to view through the same lens that you take the picture with. This is the best, and most expensive, option.

Variable ISO settings? Some cameras allow you to change the ISO (sensitivity) rating of the "digital film", allowing for existing light photos in lower light conditions, or higher shutter speed settings for action photography.

Macro settings? Some cameras have an added macro feature which allows for close-up photos from as little as an inch or closer. This is a rather cool feature to have.

Flexible white balance settings? Most digital cameras have variable "white balance" settings which allow for existing light photography under different light colors (i.e. daylight, cloudy, shade, tungsten, florescent). In addition some allow you to create a custom white balance based on a sample exposure taken from a white or gray card. If you are going to be photographing color-critical subjects under anything but daylight, this is a valuable feature.

Histogram Some, but not all digital cameras offer a feature called "histogram." A histogram is a graphic readout showing the exposure values of a digital image. This is a very useful feature, and worth consideration when buying a digital camera. Due to varying ambient light amounts, you can never rely on your camera's LCD as a good representation of proper exposure. The histogram gives you a clear indication if your image is too dark, too light, too contrasty, or too flat.

Clipped Highlight Indicator Some cameras offer a feature that flashes in areas of an image with clipped highlights (overexposed areas that will be rendered as pure white with no detail.) This is a useful alternative or supplement to the histogram.

Format Options? Having a choice of both JPG and TIF formats is useful. Tiff Images take up a lot of space, but for critical work, they are better than JPG because there is no compression. Manufacturers are beginning to offer RAW format in high-end consumer cameras. RAW format offers a great deal of post production control over your images, and is a great feature to have. It is analogous to having a digital negative. If you plan to use Adobe Photoshop to open and process your images, check out Adobe's current list of cameras that are supported by the Camera RAW plug-in:
<http://www.adobe.com/products/photoshop/cameraraw.html>

Ratings? Last, but not least, see how the camera stacks up in the ratings. There is a wealth of information on the web and in consumer magazines. Consider a trip to the library periodicals section to read magazine reviews. Make sure any reviews are current, as the cameras and their features are changing rapidly. Check out the following web sites for reviews and camera comparisons:
Digital Photography Review <http://www.dpreview.com>
Steve's Digicams <http://www.steves-digicams.com>