Purchasing a Camera and Accessories

Keeping up with technology is a never-ending story. Just when you think you have a decent handle on it, a new and improved product hits the streets. No worries: Really, the best way to determine which kind of camera you should buy is to first determine your needs. Ask yourself the vital questions listed in the first section of this chapter. What's your budget? How often will you use the camera? What kind of photos will you mostly be taking? And so on. After you determine your needs, take your time researching and then shopping for the right choice. Talk to people, read reviews, and even take a couple models for a test drive. You want to make sure that the investment you make yields the camera that best suits your needs.

Obviously, if you're already a proud and satisfied camera owner, you can skip this chapter and dive right into the topic of your interest.

Get ready to . . .

Check Out Camera Features

Feature	Description
Size	Your options range from a small (compact) model with limited features and low cost to a large DSLR with professional photography features and a four-figure cost.
Image processor	This type of camera electronics helps color fidelity and overall image quality.
DSLR	The high-quality digital single-lens reflex camera migrated from SLR film cameras. It has detachable lenses and full manual features, as shown in Figure 1-1.
LCD	The liquid crystal display uses, on consumer cameras and some DSLR cameras, a 2 ½- to 3-inch display to frame the subject. Most DSLR cameras use the optical viewfinder to shoot an image.
Sensor cleaning	This higher-end feature vibrates the sensor to remove dust.

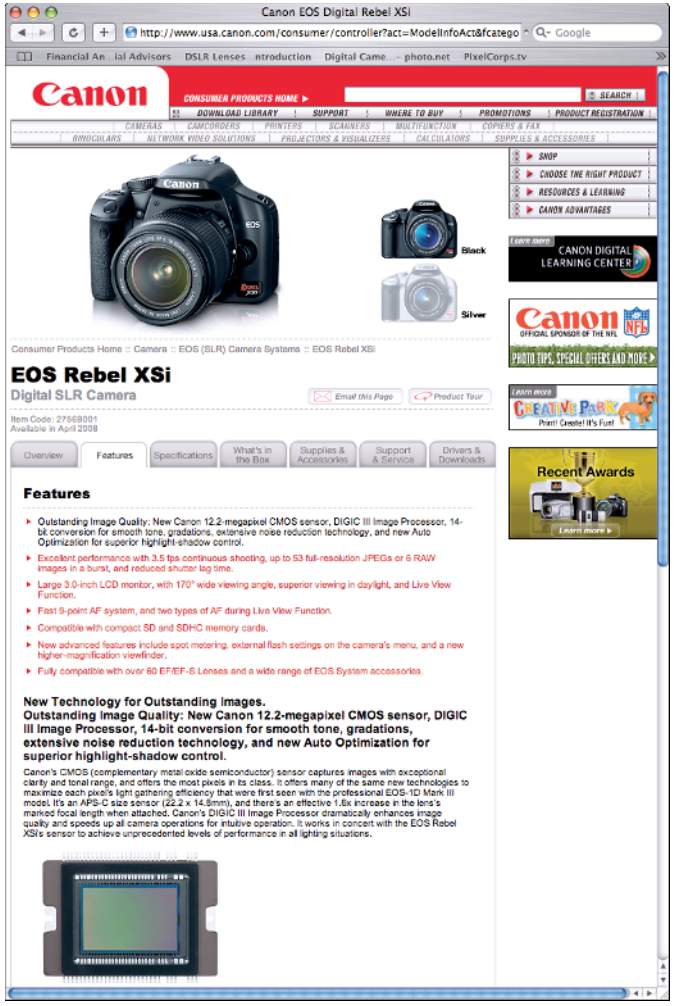

Figure 1-1: A digital SLR camera

Feature	*Description*
Output formats	**JPEG:** This lossy, compressed format is the most common format.
	RAW: This higher-end feature saves data directly (unprocessed) from the sensor. It has a significantly larger file size than other formats and is used by professional photographers and graphic designers for maximum image quality and editing flexibility.
	RAW+JPEG: This DSLR feature simultaneously saves an image in both file formats. See Figure 1-2.
	AVI: Most consumer cameras can shoot low-resolution half- or full-VGA, short-duration movies. Not applicable in DSLR cameras.
Power options	**Lithium ion battery pack:** Proprietary, rechargeable, high-performance, costly batteries. **AA alkaline batteries:** Common, easily obtainable battery. **AA NiMh batteries:** Rechargeable, higher-performance AA batteries. **AC adapter**: Optional AC power adapter.
Camera technology	**Exif 2.1:** Stores camera-specific information in addition to JPEG image info. **Exif 2.2:** Adds header with printer info to Exif 2.1 data. **PictBridge:** Uses USB cable to connect camera directly to a supported printer. **PIM:** Uses Proprietary Epson technology equivalent to Exif 2.2.

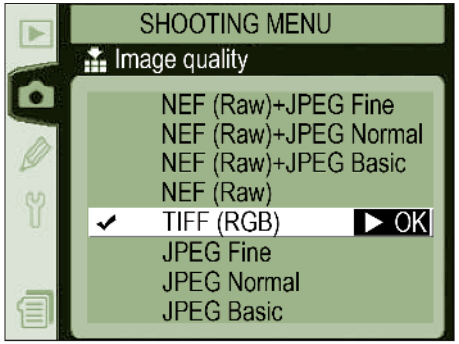

Figure 1-2: Output formats on the image quality menu.

Another feature to investigate is the camera-to-computer image transfer, which performs transfers using a supplied cable. Older cameras may use slow-speed USB 1. High-speed USB is the transfer method on on newer models. A few models also support WiFi.

Examine Image-Capture Features

Feature	Description
Resolution	Ranges from 6 to 14 megapixels (and climbing) and is based on CCD/CMOS sensor capabilities. The bigger-is-better concept lets you create larger prints without observable pixilation. A 14.2MP camera is shown in Figure 1-3.
Image stabilization	Compensates for camera shake. Very useful when not using a tripod.
Frames per second	The speed at which a camera can shoot an image. DSLR cameras are significantly faster than consumer cameras. Important when capturing a moving subject.
Modes	A popular feature for fixed, automatic camera operations. Modes include Macro, Burst, Portrait, Landscape, Sports, Stitch Assist, and Special Scenes. Select Manual mode to focus manually and set the shutter speed, aperture, ISO, and white balance.
Face detection	A type of camera electronics that automatically detects faces and corrects for face focus.
Red-eye reduction	Corrects red-eye by employing a preflash.

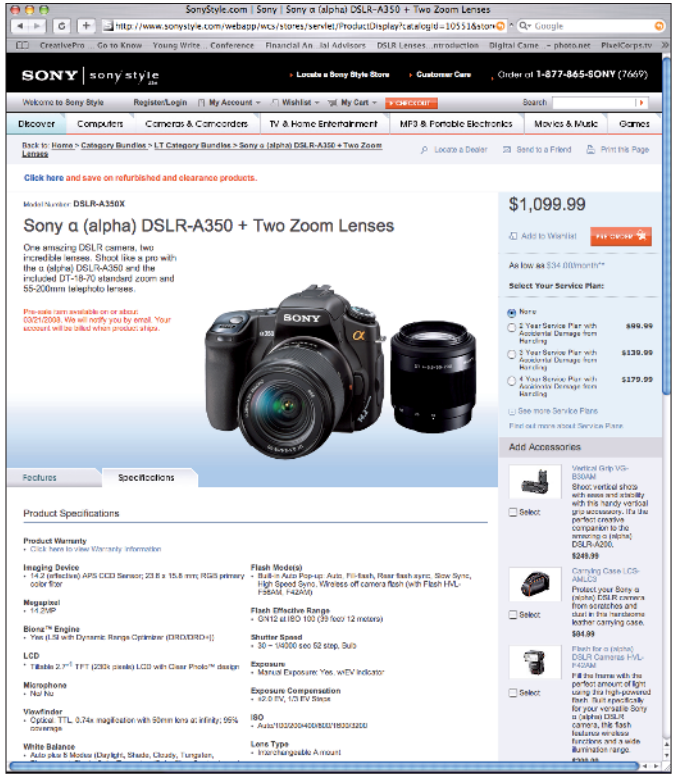

Figure 1-3: Product specs for a digital SLR camera

Determine Your Needs

Before you start looking at cameras, ask yourself these important questions to determine your needs:

1. How much money is in my budget?
2. How often will I use my camera? Will I take occasional family photos or become a proficient amateur photographer?
3. What kind of photography am I interested in? Will I shoot landscapes, portraits, my child's soccer games, and other fast-moving subjects?
4. What kind of lighting will I typically work with — outdoors, indoors, or both? What about weather conditions?
5. Which is the most critical criteria — portability (when you need it small, like the camera shown in Figure 1-4) or feature rich?
6. Will I print photos, and will I want to print large photos?
7. Can I use my existing equipment, which makes compatibility important?
8. Am I willing to learn a little about photography so that I can use a more manual mode?

If possible, test a camera before plunking down your hard-earned dollars. Some camera stores rent cameras for a daily fee. If you happen to have a friend or family member with a digital camera you're interested in, that's all the better. Also, make sure to talk to people who have digital cameras and read reviews in magazines and on Web sites like `www.dpreview.com`.

Figure 1-4: Portability is an important consideration

Understand Resolution

Number of Megapixels	Image Size in Pixel Dimensions*	Approximate Print Size at 300 dpi
2	1600 x 1200	4 x 6
3	2048 x 1536	5 x 7
4	2464 x 1632	5 x 8
6	3008 x 2000	7 x 10
8	3264 x 2448	8 x 11
10	3872 x 2592	9 x 13
12	4290 x 2800	9 x 14
16	4920 x 3264	10 x 16

* Pixel dimensions may vary depending on the camera model.

A megapixel is one million pixels and is the unit measurement for the number of pixels a digital camera can capture. Pixel is short for picture element, the smallest element in a digital image. The more pixels in an image, the bigger you can print the image, as shown in Figure 1-5.

Figure 1-5: Differences in resolution affect the size of good-quality prints
Purestocke

Choose the Right Camera

Style	Cost	Description
Compact	$125 to $300	Easily slips into shirt pocket or small purse. Uses fixed lens and internal flash. Strict auto-functionality. Some models have image stabilization. Good ultracompact cameras are now entering the market.
Point and shoot	$200 to $400	Provides better performance than compact style, but larger. Uses fixed lens and internal flash. Most models have powerful image processors and image stabilization.
Prosumer	$300 to $600	Has the power of a DSLR with the convenience of a point-and-shoot model. Usually has a fixed, high-range zoom lens with some lens attachment or external flash interchangeability options. Select manual or multiple auto modes. Can shoot images as RAW files.
DSLR	$600 to $5000	Aimed for serious hobbyists and professional photographers looking for a mid-level camera, as shown in Figure 1-6. Purchase as a camera system. Extensive interchangeable lens and external flash options. Shoots both RAW and JPEG file formats simultaneously.

Some newer DSLR models allow the image to be framed in the LCD display. If this is a desirable feature for you, look for it in the camera specifications.

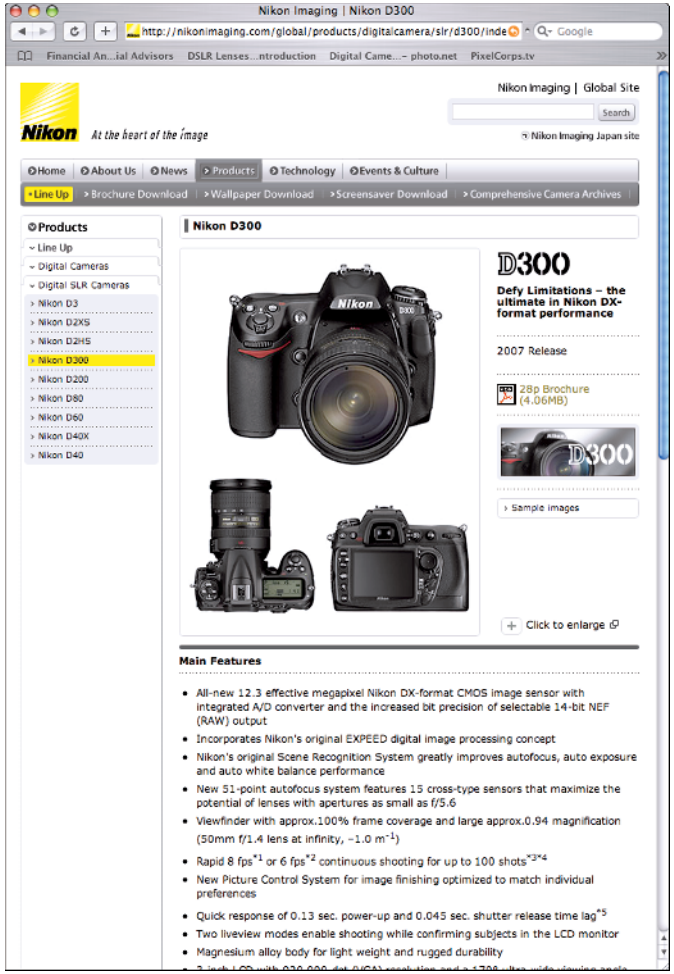

Figure 1-6: Choose a camera according to your needs and your budget

Evaluate Lenses

Feature	Focal Length	Comments
Focal length	N/A	The distance between the optical center of the lens and the CCD/CMOS chip. Determines the area of image coverage. Expressed in millimeters. Various lenses are shown in Figure 1-7.
Wide angle	14 to 35mm	A prosumer/DSLR lens that shoots a wide area in a tight space. May produce distortion.
Normal	28 to 50mm	A DSLR lens; for full-frame sensor cameras, 50mm is considered normal. For a small-sensor cameras, like Canon EOS or Nikon D series, 28 to 35mm is normal.
Telephoto	100 to 400mm	A prosumer/DSLR lens that shoot subjects at a distance.
Macro	N/A	A prosumer/DSLR lens that shoots subjects up close. On consumer cameras, select a mode for close-up shots.
Zoom	N/A	Variable optical focal length, from wide angle to normal to telephoto. Non-DSLR cameras also zoom digitally; avoid digital zoom to preserve image quality.

Figure 1-7: Lenses are valuable accessories
istockphoto.com

Filters screw to the end of prosumer/DSLR lenses to protect the lens, filter out UV light (UV), reduce water or glass reflections (polarizing), or obtain a wider dynamic range (graduated neutral density). For details on using filters, see Chapter 3.

In any discussion about using lenses with DSLR cameras you must consider the complex concept of the crop factor. *Crop factor* is a ratio used to compensate for the fact that digital image sensors are smaller than the 35mm film frame. Therefore, if you take a photo with the same lens on a digital camera and a film camera, the digital camera shows a smaller area of the image. And, when you use a lens on a camera with a smaller sensor, the lens has a larger equivalent size. For example, a 50mm lens on a camera with a crop factor of 1.6 creates an equivalent lens of 80mm.

Look at Zooms

Type	Factor	Comments
Optical	3x to 18x	Uses the lens mechanism to change the focal length of the lens, allowing you to zoom closer to or farther away from the subject. Non-DSLR camera specs express zoom as a value of X. A 10X zoom is roughly equivalent to a zoom factor of 28 to 200mm.
		Compact and point-and-shoot camera lenses typically cannot be replaced. Prosumer cameras have limited lens interchangeability options, but usually have a built-in lens that can't be replaced. DSLR cameras have a wide variety of zoom lens options. A DSLR with a zoom lens is shown in Figure 1-8.
Digital	3x to 6x	Not applicable to DSLR cameras. Uses camera electronics to zoom closer to or farther away from the subject, after reaching your camera's optical zoom limits. Selects a portion of your digital image and magnifies it while reducing image resolution and adding noise. Easily observable in your LCD display while zooming. Avoid using digital zoom to preserve image quality. Move closer to your subject, if possible. Consider purchasing a telephoto zoom lens.

Figure 1-8: A DSLR with zoom lens
www.sxc.hu

Choose Flash Features

Feature	Description
Internal	Flash type built into camera body and found on non-DSLR cameras.
Pop-up flash	On DSLR cameras, automatically pops up under low light conditions with greater flash than internal flash.
Hot shoe connector	Requires connection on top of camera to connect an external flash.
External flash	A prosumer/DSLR option that offers greater flash range and control (see Figure 1-9). Attaches to a hot shoe.
Range	Reflects the maximum effective range of the flash.
Auto mode	Turns on flash when low light levels exist
Fill or Force mode	Flash always fires. Useful for portraits, especially in harsh sunlight.
Red-eye reduction	Flash fires initially to close subject's iris before main flash fires and image is captured.

Figure 1-9: A DSLR with an external flash
istockphoto.com

Look at Storage Media

Media	Gigabytes	Description
Compact Flash (CF) card	1, 2, 4, 8, 16	Largest and oldest card type still in widespread use, and shown in Figure 1-10.
Secure Digital (SD) card	1, 2, 4, 8	Smaller than CF; most common mini and micro sizes used in other, smaller devices.
Secure Digital High Capacity	4, 8, 16	Newer version of SD (SDHC) Card.
XD picture	1, 2	Newest and smallest card type.
Memory Stick Pro card	1, 2, 4, 8	Used with Sony cameras and Sony devices. Duo version also in use.

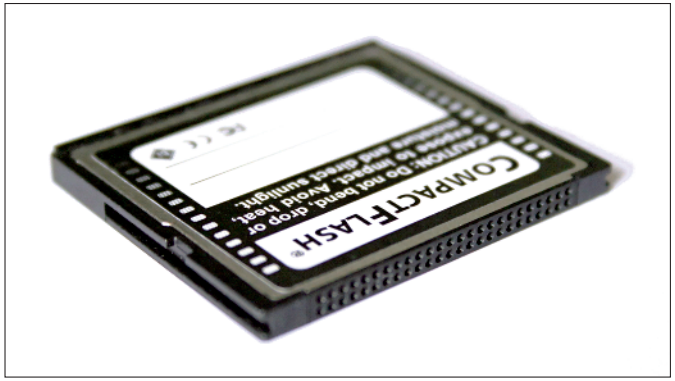

Figure 1-10: Compact flash is a common type of storage card
www.sxc.hu

The media in this section is available in various speeds. Slower-speed media cards are substantially less expensive than newer, faster cards, but can affect camera performance. The slower the card, the longer it takes the camera to read and write to the card. Slower cards can potentially affect the frames per second (FPS) performance of your digital camera.

Pick and Choose Accessories

Accessory	Comments
Extra battery	A critical accessory, shown in Figure 1-11.
Battery charger	Provided with camera.
Extra media cards	Always good to carry.
Tripod mount	Common on higher-end cameras.
Camera bag	Needed to carry and protect camera and accessories.
Image editing software	Typically bundled by manufacturers. Other popular programs available include Adobe Photoshop, Adobe Photoshop Elements, Lightroom, and Aperture.
External multiformat card reader	USB device that connects to your computer and reads multiple card-reader types. Remove card from camera and insert into reader, and then access the files on the card media.
Photo printer	Inkjet printer specifically designed for printing camera images.

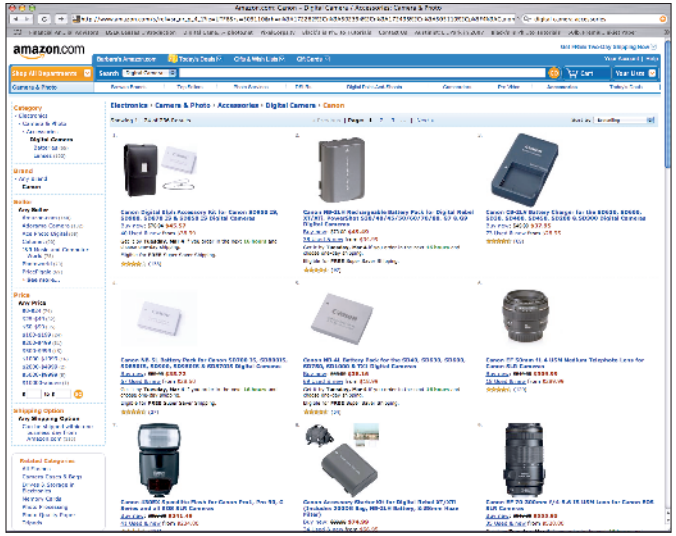

Figure 1-11: Important accessories: extra batteries, extra storage card, and tripod

For more information on lenses, see the section "Evaluate Lenses," earlier in this chapter. For details on using filters, tripods, and reflectors, see Chapter 3.