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Digital Photography

4th Edition

The Fast and Easy Way to Learn

Chris Bucher

Teach Yourself VISUALLY™

Digital Photography, 4th Edition

by Chris Bucher

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Chris Bucher is an award-winning, Indianapolis-based commercial, editorial, and fine art photographer, and the author of *Lighting Photo Workshop*. His work is seen in publications throughout the country and his documentary fine art photography has been exhibited in many galleries in the United States and internationally. He has also been a technical editor for numerous Wiley titles and also has written for projects attached to his editorial photography. Chris is an avid mountain biker, and, along with his wife Jennifer, works with the foster care program of the Humane Society of Indianapolis.

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How to Use This Book

Who Needs This Book?

This book is for the reader who has never used this particular technology or software application. It is also for readers who want to expand their knowledge.

The Conventions in This Book

1 Steps

This book uses a step-by-step format to guide you easily through each task. Numbered steps are actions you must do; bulleted steps clarify a point, step, or optional feature; and indented steps give you the result.

2 Notes

Notes give additional information — special conditions that may occur during an operation, a situation that you want to avoid, or a cross reference to a related area of the book.

3 Icons and buttons

Icons and buttons show you exactly what you need to click to perform a step.

4 Tips

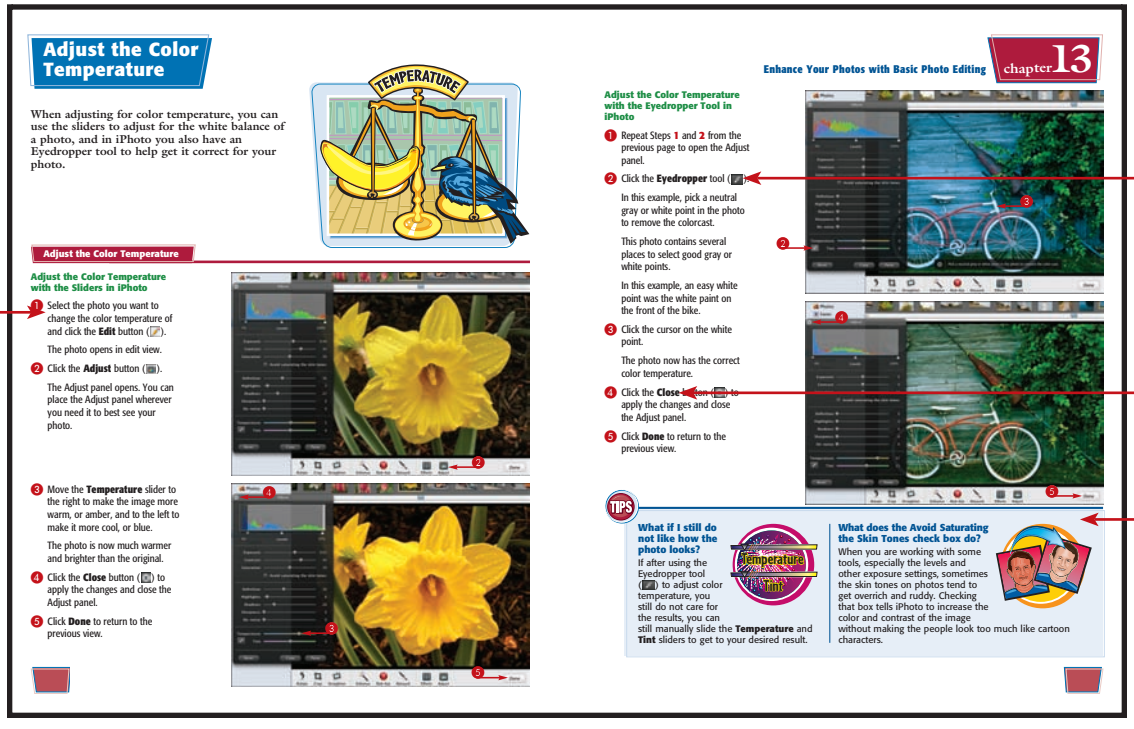
Tips offer additional information, including warnings and shortcuts.

5 Bold

Bold type shows command names, options, and text or numbers you must type.

6 Italics

Italic type introduces and defines a new term.



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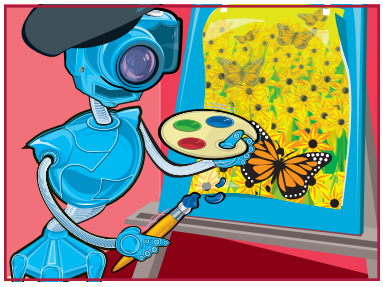

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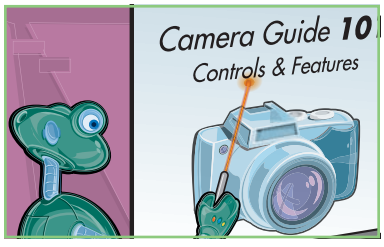

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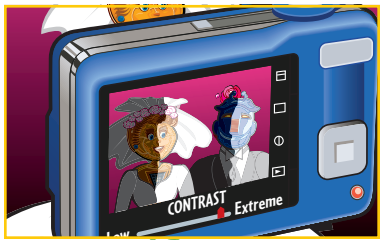

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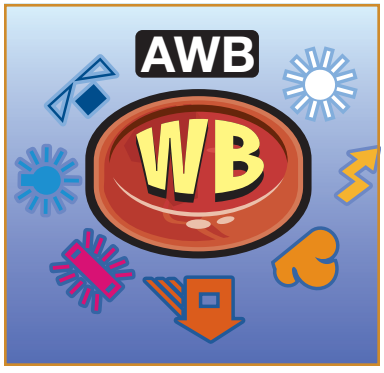

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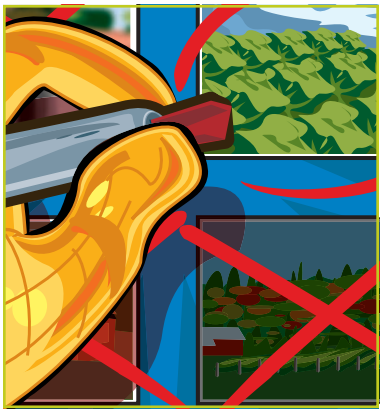

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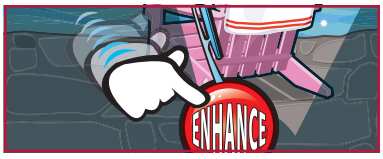

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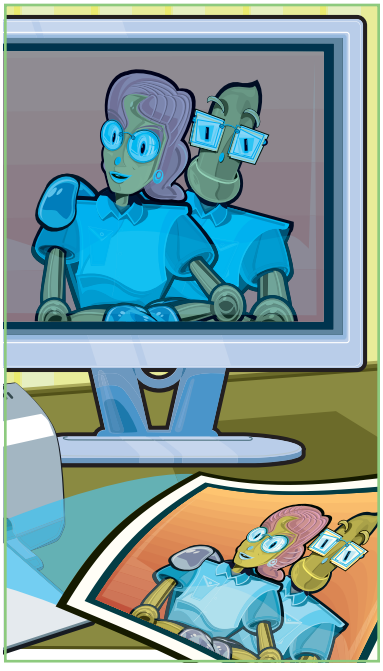

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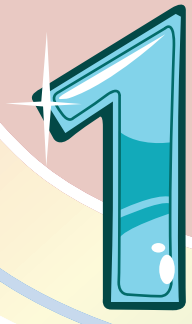


Understanding Digital Photography

Are you confused about how digital photography works? This chapter introduces you to the advantages of digital photography, the different types of digital, and how easy it is to work with and use digital pictures.

Why Go Digital?

With digital photography, you can do more than take snapshots for your family album. You can use a digital camera to quickly and significantly improve your photography skills. You can e-mail your digital pictures to family and friends, share your photos on social networking sites, or create interesting Web pages about your hobbies, family, or even home business. You can also simplify everyday tasks, or take part in documenting your family history with a digital scrapbook.

Improve Your Photography Skills

Because digital pictures do not require film and processing, you can experiment with lighting, composition, camera modes, and creative techniques at no cost. Because you see images immediately, you can modify your setting or approach, and try new things, then evaluate all your images when you get home. The best way to become a better photographer is to take many pictures.

Simplify Everyday Tasks

A digital camera allows you to share and convey information easily. For example, you can capture special moments such as birthdays and anniversaries and almost immediately send the pictures to your friends in an e-mail message, or share them on a Web site. You can also take digital pictures of club members for a visual directory. Other tasks include creating a home inventory for insurance records, and photographing items you are selling online.

Share Pictures Online and in E-mail

Within minutes of taking a picture, you can share it in an e-mail message, or upload it to an online photo site to share with family and friends. By doing it this way, those loved ones who want prints of the photos can buy them online and receive the prints in the mail. There are countless online options for sharing photos and having prints made quickly.

Create Photo Slide Shows on CDs or DVDs

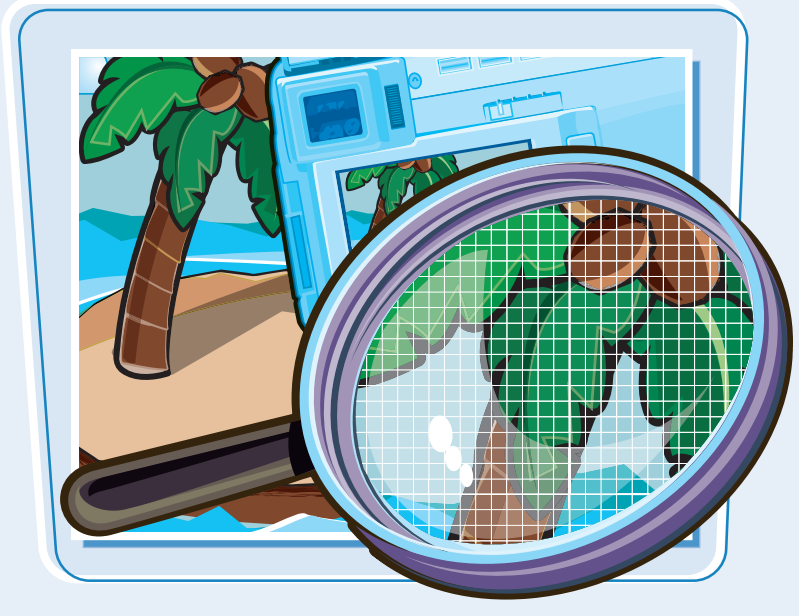
You can use programs such as iPhoto, Windows Live Photo Gallery, and Photoshop Elements to create digital image slide shows on recordable CDs and DVDs. Then you can add voice narration, captions, music, digital movie clips, and transitions to finish the slide show. Photoshop Elements and iPhoto also let you organize your digital images by assigning each photo a keyword. If you want, you can even add a rating, color, or flag to help select your favorites. You can use these keywords or ratings to find and select a particular photo for your slide show or just see all your best photos with a click of a button.

Discover Digital Cameras

When you understand how digital cameras work, you can take that knowledge and make an informed decision when it comes time to purchase your first digital camera or to upgrade your existing one. Knowing how digital cameras work also enables you to get better images from your camera.

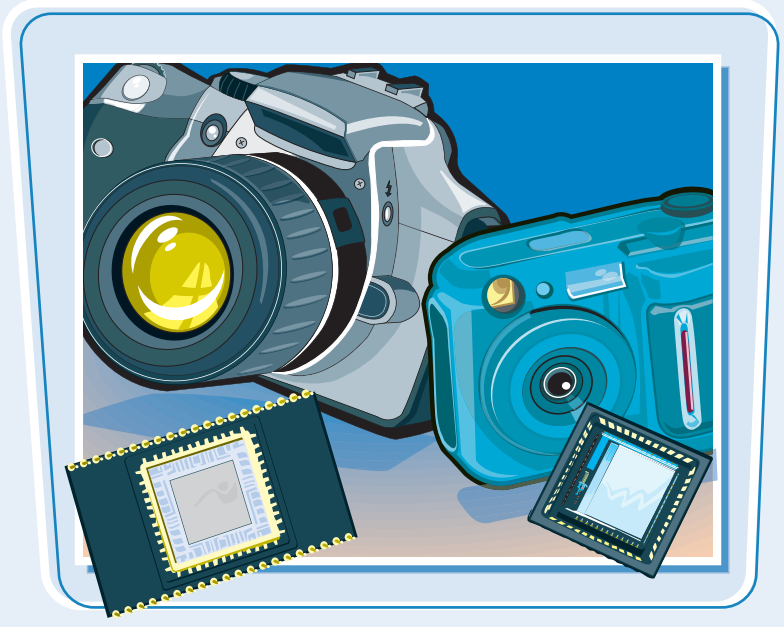
How Digital Cameras Record Pictures

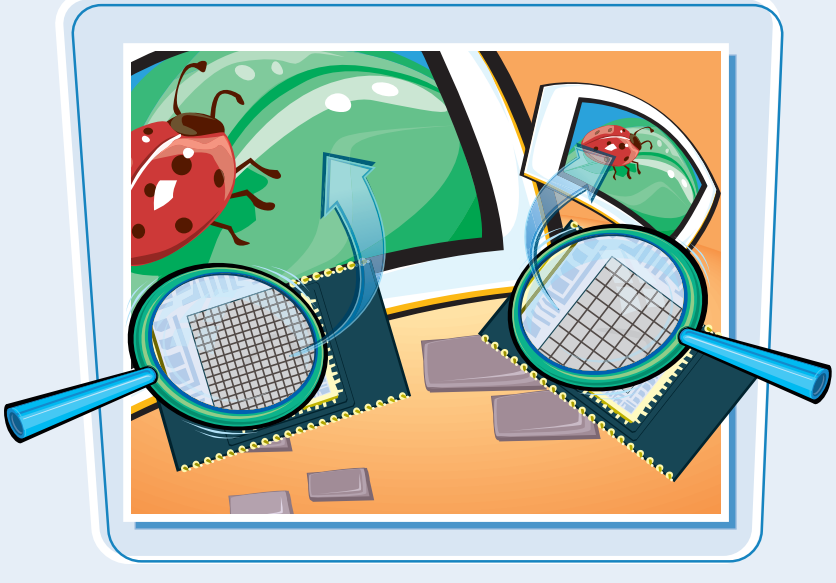
Digital cameras record pictures using an *image sensor array* — a grid composed of millions of light-sensitive pixels. The term *pixel* describes a picture element. The pixels are the building blocks of all digital images. A red, green, or blue filter covers each pixel on the sensor so that it responds to only one of the primary colors of light. Each pixel reads the brightness and color in a scene to produce an electrical signal. The signal is then converted to a digital number that represents the color and brightness of the pixel. The camera's onboard computer processes the information to build a final image before storing it in memory.



Types of Image Sensors

Most digital cameras use one of two types of image sensors: a charge-coupled device (CCD) or a complementary metal-oxide semiconductor (CMOS). Although each type of sensor has technical differences in how the light energy is transferred into electronic signals, both produce high-quality images.



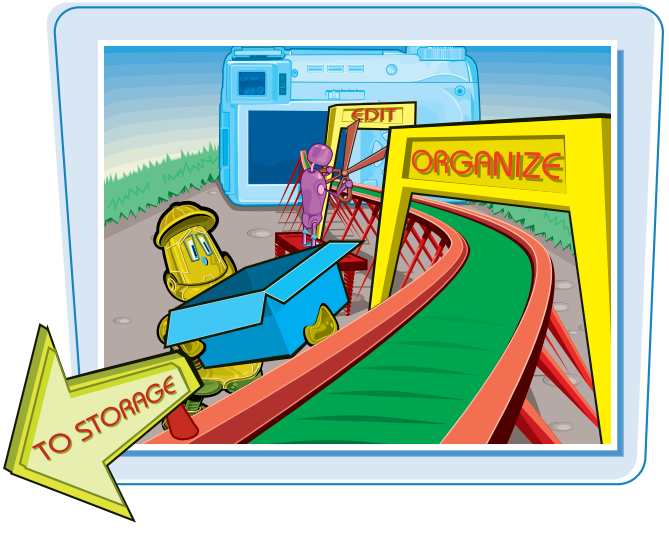


Resolution and Image Quality

Resolution is a measure of pixel density; higher-resolution images have more pixels per inch and the possibility of greater detail. On a digital camera, the greater the number of pixels on the image sensor, the larger you can print the photo. There are consumer cameras with sensor resolutions of up to 15 megapixels. Digital cameras with 6 to 8 megapixels offer excellent image quality for prints larger than 8×10 and can be very affordable. Cameras with higher resolution allow for more creative cropping and often come with more advanced features.

From Start to Finish: The Digital Workflow

A digital workflow is a step-by-step process that helps you get the best digital images and also manages your collection of images. The workflow includes taking, editing, sharing, organizing, and storing digital pictures. You can use the digital workflow described here as an introduction to and ongoing guide for working with your digital images.



Capture Images

The digital workflow begins by choosing camera settings that will produce the best photo. You can choose a preset scene mode (portrait, landscape, sunset, for example), use a fully automatic setting, or set the camera to operate in manual shooting mode. To learn more about exposure, see Chapter 3.

Confirm that the camera's white balance matches the light in the scene or is set to auto. For more information on white balance, see Chapter 8.

Then compose the image in the frame, adjust the zoom, ensure the autofocus has the subject in focus, and take the picture.

Verify Exposure and Composition

Next, review the picture on the camera's LCD screen to ensure that the exposure and composition are acceptable. As you review the image in your LCD, look for distracting background elements, closed eyes, and other elements that you can improve. If the picture is too light (overexposed), or too dark (underexposed), most cameras set to automatic allow you to easily correct that by adjusting the exposure using exposure compensation. When in doubt, retake the picture and try new things — as many times as you want.

Use the LCD

The LCD screens on today's cameras are getting ever bigger, brighter, and clearer, but it still may be difficult to determine how good the photo is. Learn how to zoom the LCD display to get a closer look at the details of your photo. Unless the picture is hopelessly flawed, do not delete it. Instead wait and evaluate it on your computer — you may be able to save the picture or use the information in the photo to help you learn.

Transfer Pictures to a Computer

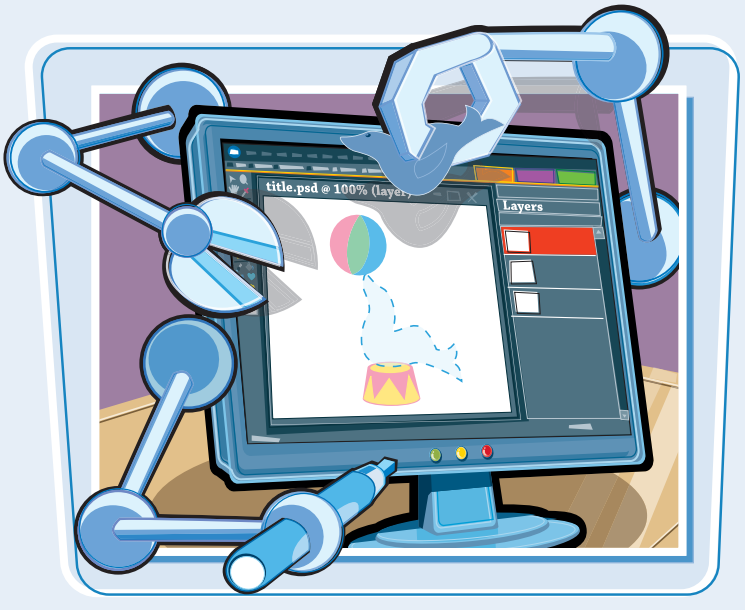
You can transfer pictures from your camera to your computer with a USB cable, a card reader, or a docking station. The fastest way to transfer pictures is by using a card reader. Card readers come in many forms, they are inexpensive, and they do not drain your camera battery — which happens when you hook your camera to the computer.

continued

From Start to Finish: The Digital Workflow *(continued)*

Edit Pictures

You can use image-editing software that comes with your camera or computer, or software that you purchase to edit pictures. Image-editing programs enable you to rotate, adjust color and saturation, correct red eye, remove unwanted elements (even people), crop, resize, sharpen, combine, and add text to digital pictures. There is no end to the things you can do to your digital photos. See Chapters 12 and 13 to learn more about working with image-editing software.



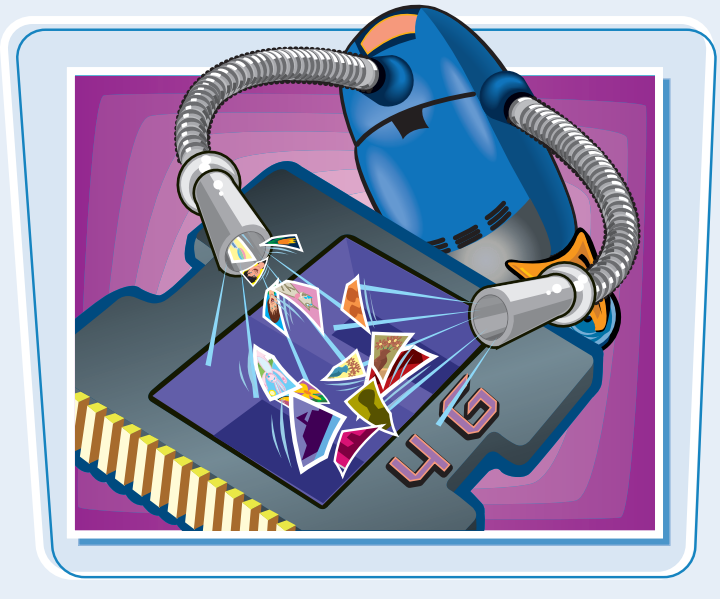
Print and Share Pictures

After you edit, crop, and sharpen your pictures, you can print them on a home photo-quality printer, or at a commercial printing service — either online or at your local photo lab and even grocery stores. In many ways it is just like dropping film off to be processed, but now you only have to print the photos you know that you like. You can also share them in e-mail messages, on social networking Web sites, or on a photo-sharing Web site. For more information about printing and sharing pictures, see Chapters 15 and 16.

Organize and Store Digital Negatives

You should not alter the original image, which is the equivalent of a film negative. If you need to make changes to an image, get in the habit of making changes to a copy and keeping the original file untouched. This is not as hard as it sounds. Some image editors automatically apply your changes to a copy rather than to the original.

It does not take long until your picture collection will become large, so take advantage of the photo organizer programs that are available. Even with a photo organizer program, take some time to come up with a smart way to label and organize the folders of photos — either by date or event, or whatever makes sense to you and you can stick with. You can always find a particular photo quickly without spending hours searching for it if you consistently assign keywords and descriptions to your photos using programs such as iPhoto, Windows Live Photo Gallery, Photo Organizer, or Photoshop Elements.



Clear the Memory Card

After your pictures are on your computer, you can safely delete pictures from your memory card. Many image editors offer to delete pictures after they have been transferred, but you should be sure that the images have been successfully placed on your hard drive because when the images are deleted from the card, you cannot get them back. The optimum choice is to delete all the photos in the camera by formatting the card using your camera after you have downloaded the photos. The card format option is typically found as a menu option accessed from the menu on the LCD screen of your camera. Using this method also helps to maintain the internal file structure of the memory card, which should keep it working smoothly.

CHAPTER

2

What You Need to Get Started

Knowing the basics about digital cameras, resolution, lenses, batteries, and accessories helps you choose the right camera for you. Having the right equipment for your digital darkroom enables you to edit and print your images faster and easier.

Choose a Digital Camera

When choosing a digital camera, consider the size of camera, the resolution, how much control you want to have over the camera settings, the quality and focal range of the lens, the shooting modes you use most often, the life of the battery, and the type of storage media available.

Compact

Compact, or point-and-shoot, digital cameras typically capture photos with image resolutions ranging from 10 to 14 megapixels. They include a built-in flash and zoom. Although compact cameras offer limited manual controls, they often provide a number of handy shooting presets that allow you to optimize the settings for better pictures more easily.

Advanced Non-SLR Cameras

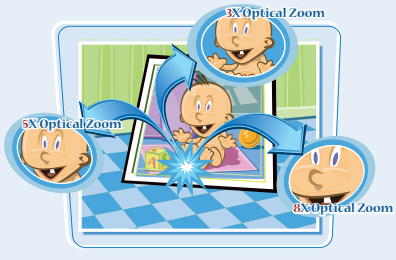
Advanced non-SLR (single lens reflex) digital camera resolution ranges from 8 to 15 megapixels. Also called *prosumer* (professional/consumer) cameras, they feature more exposure control and greater zoom ranges than compact cameras but are also larger, heavier, and more expensive. These cameras often have exotic features like extreme telephoto and wide-angle lenses, high-speed shutter, and high-definition video all built into one.

Digital SLR

Resolutions for digital SLR (dSLR) cameras range from 10 to 25 megapixels. These cameras offer all the features and controls found on film SLR cameras. The choice of professional photographers and serious hobbyists, dSLR cameras offer a wide variety of high-quality interchangeable lenses and flashes and nearly limitless control. Image quality on these cameras is noticeably better because of their larger sensor size.

Lens Considerations

Most compact cameras come with a 4× zoom lens with a 35 to 135mm range. Getting the largest *optical* (not digital) zoom factor allows you a lot of flexibility. The optical zoom factor is the amount of magnification produced by the internal lenses in the camera. The digital zoom is created by enlarging the pixels that make up the image, producing an image that appears slightly out of focus and grainy. Lenses that go wider are great for landscapes and groups; lenses that are more telephoto are used for sports and wildlife. The drawback of a large optical zoom is that it makes the camera physically larger. You can learn more about lenses in Chapter 3.



Evaluate Exposure and Scene Modes

A camera that has both automatic and semiautomatic exposure modes allows you more flexibility and creativity. Most compact cameras include scene modes that automatically set the camera's aperture, shutter speed, and flash based on the scene mode that you choose. The scene modes help take the guesswork out of setting your exposure, especially at the extremes — photos of the beach at noon are very different than a sunset party.

Batteries

At this point, most digital cameras use product-specific rechargeable batteries. These cameras' rechargeable batteries are very reliable and long-lasting. A few cameras still use disposable and rechargeable batteries interchangeably. This is convenient because you can use disposable batteries when you cannot recharge your batteries and use rechargeable batteries all other times. It is very important to buy the right type of battery, and get at least one extra set of batteries to ensure uninterrupted shooting.

Storage Media

Digital cameras store pictures on removable memory media called memory cards, of which the most used are SD (Secure Digital), SDHC (Secure Digital High Capacity), CF (CompactFlash), Memory Stick, and XD. These cards come in a variety of capacities and can be used in your camera as well as MP3 players, cell phones, and PDAs (Personal Data Assistants). If you currently have one of these, it is possible to share the cards between the devices and your camera. The size you need depends on how many images you want to get on a card and the resolution of your camera, and the type you need depends on the camera you buy. The cards are physically small, but can store a lot. It is preferable to have a larger-capacity card than trying to manage several smaller cards.

Consider Digital Camera Accessories

Although most digital cameras come with everything you need to take your first pictures, you can add helpful accessories. Accessories include higher-capacity memory cards, a card reader, extra or better batteries, an accessory flash, accessory lenses, and a tripod.

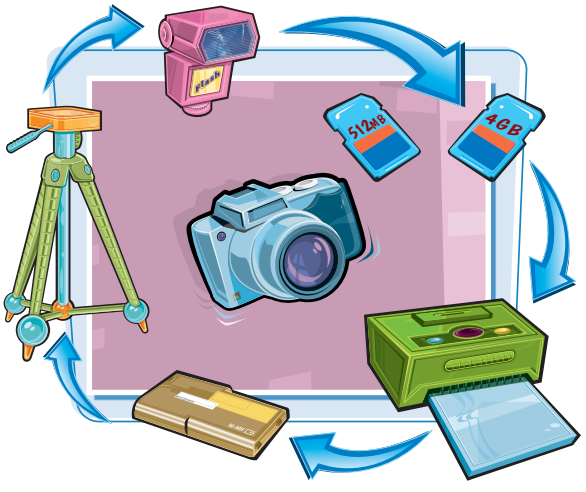


Photo Storage Devices

Laptop computers are great photo storage devices, and with all of the WiFi hot spots at schools, libraries, coffee shops, and public common areas, not only can you easily get your photos onto your computer, you can also quickly get them to your e-mail or Web site. If you are taking your camera with you but do not want to deal with a laptop, you may want to consider a photo storage device. These devices come in a variety of shapes and prices. Some are designed specifically to store and preview photos; others are MP3 players or even video players that provide the option of storing photos. These have large built-in hard drives but limited computing functions.

Memory Card Capacity

The number of images a memory card can hold depends on the resolution of the camera, and the file format and compression you set using the image-quality menu on the camera. Memory cards are relatively inexpensive. 1GB and 2GB cards are plentiful, and a 4GB card can hold nearly 600 highest-resolution JPEG photos from a 12-megapixel camera. To see how much it will hold on your camera, plug it in and format the card. Your camera's instruction manual should also have a listing of how many images you can get on a card at different resolutions.