



Read Less-Learn More®

# *Teach Yourself* **VISUALLY™**

## **Digital Photography**

**4th Edition**

*The Fast  
and Easy Way  
to Learn*

**Chris Bucher**





# *Teach Yourself*

---

# **VISUALLY™**

## **Digital Photography, 4th Edition**



by Chris Bucher



Wiley Publishing, Inc.

# Teach Yourself VISUALLY™ Digital Photography, 4th Edition

---

Published by  
Wiley Publishing, Inc.  
10475 Crosspoint Boulevard  
Indianapolis, IN 46256

[www.wiley.com](http://www.wiley.com)

Published simultaneously in Canada

Copyright © 2010 by Wiley Publishing, Inc., Indianapolis, Indiana

No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, scanning or otherwise, except as permitted under Sections 107 or 108 of the 1976 United States Copyright Act, without either the prior written permission of the Publisher, or authorization through payment of the appropriate per-copy fee to the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923, 978-750-8400, fax 978-646-8600. Requests to the Publisher for permission should be addressed to the Permissions Department, John Wiley & Sons, Inc., 111 River Street, Hoboken, NJ 07030, 201-748-6011, fax 201-748-6008, or online at [www.wiley.com/go/permissions](http://www.wiley.com/go/permissions).

Library of Congress Control Number: 2010932455

ISBN: 978-0-470-58946-5

## Trademark Acknowledgments

---

Wiley, the Wiley Publishing logo, Visual, the Visual logo, Teach Yourself VISUALLY, Read Less - Learn More and related trade dress are trademarks or registered trademarks of John Wiley & Sons, Inc. and/or its affiliates. All other trademarks are the property of their respective owners. Wiley Publishing, Inc. is not associated with any product or vendor mentioned in this book.

Manufactured in the United States of America

10 9 8 7 6 5 4 3 2 1

LIMIT OF LIABILITY/DISCLAIMER OF WARRANTY: THE PUBLISHER AND THE AUTHOR MAKE NO REPRESENTATIONS OR WARRANTIES WITH RESPECT TO THE ACCURACY OR COMPLETENESS OF THE CONTENTS OF THIS WORK AND SPECIFICALLY DISCLAIM ALL WARRANTIES, INCLUDING WITHOUT LIMITATION WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE. NO WARRANTY MAY BE CREATED OR EXTENDED BY SALES OR PROMOTIONAL MATERIALS. THE ADVICE AND STRATEGIES CONTAINED HEREIN MAY NOT BE SUITABLE FOR EVERY SITUATION. THIS WORK IS SOLD WITH THE UNDERSTANDING THAT THE PUBLISHER IS NOT ENGAGED IN RENDERING LEGAL, ACCOUNTING, OR OTHER PROFESSIONAL SERVICES. IF PROFESSIONAL ASSISTANCE IS REQUIRED, THE SERVICES OF A COMPETENT PROFESSIONAL PERSON SHOULD BE SOUGHT. NEITHER THE PUBLISHER NOR THE AUTHOR SHALL BE LIABLE FOR DAMAGES ARISING HEREFROM. THE FACT THAT AN ORGANIZATION OR WEBSITE IS REFERRED TO IN THIS WORK AS A CITATION AND/OR A POTENTIAL SOURCE OF FURTHER INFORMATION DOES NOT MEAN THAT THE AUTHOR OR THE PUBLISHER ENDORSES THE INFORMATION THE ORGANIZATION OR WEBSITE MAY PROVIDE OR RECOMMENDATIONS IT MAY MAKE. FURTHER, READERS SHOULD BE AWARE THAT INTERNET WEBSITES LISTED IN THIS WORK MAY HAVE CHANGED OR DISAPPEARED BETWEEN WHEN THIS WORK WAS WRITTEN AND WHEN IT IS READ.

FOR PURPOSES OF ILLUSTRATING THE CONCEPTS AND TECHNIQUES DESCRIBED IN THIS BOOK, THE AUTHOR HAS CREATED VARIOUS NAMES, COMPANY NAMES, MAILING, E-MAIL AND INTERNET ADDRESSES, PHONE AND FAX NUMBERS AND SIMILAR INFORMATION, ALL OF WHICH ARE FICTITIOUS. ANY RESEMBLANCE OF THESE FICTITIOUS NAMES, ADDRESSES, PHONE AND FAX NUMBERS AND SIMILAR INFORMATION TO ANY ACTUAL PERSON, COMPANY AND/OR ORGANIZATION IS UNINTENTIONAL AND PURELY COINCIDENTAL.

## Contact Us

---

For general information on our other products and services please contact our Customer Care Department within the U.S. at 877-762-2974, outside the U.S. at 317-572-3993 or fax 317-572-4002.

For technical support please visit [www.wiley.com/techsupport](http://www.wiley.com/techsupport).



WILEY

Wiley Publishing, Inc.

### Sales

---

Contact Wiley  
at (877) 762-2974 or  
fax (317) 572-4002.



# Credits

**Acquisitions Editor**

Aaron Black

**Sr. Project Editor**

Sarah Hellert

**Technical Editor**

Dennis R. Cohen

**Copy Editor**

Scott Tullis

**Editorial Director**

Robyn Siesky

**Editorial Manager**

Rosemarie Graham

**Business Manager**

Amy Knies

**Sr. Marketing Manager**

Sandy Smith

**Vice President and Executive  
Group Publisher**

Richard Swadley

**Vice President and Executive  
Publisher**

Barry Pruett

**Sr. Project Coordinator**

Kristie Rees

**Graphics and Production  
Specialists**

Andrea Hornberger

Jennifer Mayberry

**Quality Control Technician**

Jessica Kramer

**Proofreader**

Penny Stuart

**Indexer**

Christine Karpeles

**Screen Artist**

Jill A. Proll

**Illustrators**

Ronda David-Burroughs

Cheryl Grubbs

## About the Author

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.

## Author's Acknowledgments

Special thanks go to Aaron Black, Sarah Hellert, Scott Tullis, and Dennis Cohen for their work, guidance, and patience in working with me on this project. Without their help and suggestions this book would not have happened. I would also like to thank the Wiley graphics team for making my vague ideas into great illustrations explaining difficult concepts.

Extra special thanks to Enrique Lima for bailing me out of difficult, last minute, and panicked Windows problems and questions. He willingly went above and beyond what he needed to do, and always with a smile. Thanks EEL!

I also have to thank Kenneth Rhem and Nicole Fraga for their assistance. And I especially need to thank my wife Jennifer for always being helpful, patient, and supportive in all the projects that we enter together.

# 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

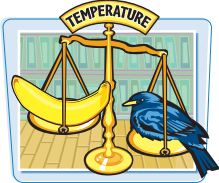
Bold type shows command names, options, and text or numbers you must type.

### 6 Italics

Italic type introduces and defines a new term.



### Adjust the Color Temperature

When adjusting for color temperature, you can use the sliders to adjust for the white balance of a photo, and in iPhoto you also have an Eyedropper tool to help get it correct for your photo.



**Adjust the Color Temperature with the Sliders in iPhoto**

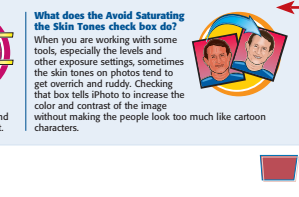
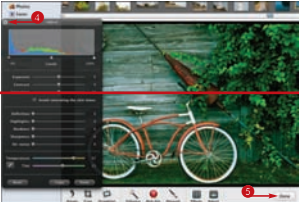
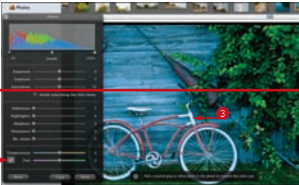
- 1 Select the photo you want to change the color temperature of and click the **Edit** button (⌘E). The photo opens in edit view.
- 2 Click the **Adjust** button (⌘A). The Adjust panel opens. You can place the Adjust panel wherever you need it to best see your photo.
- 3 Move the **Temperature** slider to the right to make the image more warm, or amber, and to the left to make it more cool, or blue. The photo is now much warmer and brighter than the original.
- 4 Click the **Close** button (⌘W) to apply the changes and close the Adjust panel.
- 5 Click **Done** to return to the previous view.



### Enhance Your Photos with Basic Photo Editing **chapter 13**


#### Adjust the Color Temperature with the Eyedropper Tool in iPhoto

- 1 Repeat Steps 1 and 2 from the previous page to open the Adjust panel.
- 2 Click the **Eyedropper** tool (⌘I). In this example, pick a neutral gray or white point in the photo to remove the colorcast. This photo contains several places to select good gray or white points. In this example, an easy white point was the white paint on the front of the bike.
- 3 Click the cursor on the white point. The photo now has the correct color temperature.
- 4 Click the **Close** button (⌘W) to apply the changes and close the Adjust panel.
- 5 Click **Done** to return to the previous view.




#### TIPS

**What if I still do not like how the photo looks?**  
If after using the Eyedropper tool (⌘I) to adjust color temperature, you still do not care for the results, you can still manually slide the **Temperature** and **Tint** sliders to get to your desired result.



**What does the Avoid Saturating the Skin Tones check box do?**  
When you are working with some tools, especially the levels and other exposure settings, sometimes the skin tones on photos tend to get overrich and ruddy. Checking that box tells iPhoto to increase the color and contrast of the image without making the people look too much like cartoon characters.



# Table of Contents

chapter

1

## Understanding Digital Photography

Why Go Digital? .....	4
Discover Digital Cameras .....	6
From Start to Finish: The Digital Workflow .....	8



chapter

2

## What You Need to Get Started

Choose a Digital Camera .....	14
Consider Digital Camera Accessories .....	16
Build a Digital Darkroom .....	20
Choose a Photo Printer .....	22



chapter

3

## Controlling Exposure and Focal Length

Learn About ISO .....	26
Learn About Aperture .....	27
Control Depth of Field .....	28
Understanding Shutter Speed .....	29
Discover Exposure Modes .....	30
Learn About Focal Length .....	32
Use a Wide-Angle Lens .....	33
Use a Telephoto Lens .....	34
Use a Zoom Lens .....	35
Learn About Digital Camera Lenses .....	36



## chapter 4 Understanding Light

Learn About the Color of Light .....	42
Measure and Correct Light for Color .....	44
Learn About Light Quality .....	46
Use a Flash .....	50



## chapter 5 Learning About Focus

Understanding Focus Systems .....	54
Focus on an Off-Center Subject .....	56
Use Focus Modes .....	58
Discover Focus Techniques .....	59



## chapter 6 Composing Pictures like a Pro

Visualize Composition .....	62
Consider Design Principles .....	64
Discover Rules of Composition .....	66
Learn to Control Composition .....	68





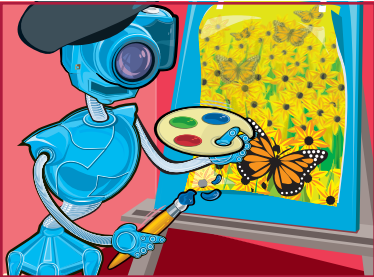
# Table of Contents

chapter

7

## Putting It All Together

Experiment with Depth of Field	72
Mix and Match Settings	74
Change Shutter Speed for Effect	76
Focus Selectively	77
Compose Creatively	78
Explore Different Lighting Options	80
Try Creative Techniques	82

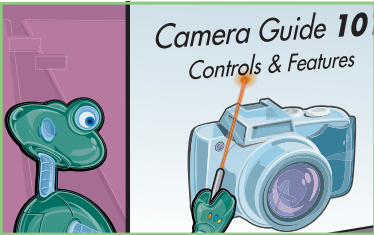


chapter

8

## Taking Your First Digital Photos

Set Up a Digital Camera	86
Take Test Pictures	88
Troubleshoot Problems	90
Transfer Pictures to Your Computer	92
Evaluate Your Photos	94
Fine-Tune Camera Settings	96



chapter

9

## Taking Advantage of Your Camera's Settings

Match the Scene to the Setting	100
Be Aware of In-Camera Settings	101
How Do the Scene Settings Change the Images?	102
Use the Settings Creatively	104
Evaluate Your Photos	106
Better to Change Things Later?	107



chapter 10

Avoiding Digital Photography Pitfalls

Avoid Taking Unfixable Pictures ..... 110

What Is a Histogram?..... 111

Use a Histogram as You Take Pictures ..... 112

Compensate for Shutter Lag ..... 114

Avoid Blowouts. .... 115

Keep Your Camera Steady..... 116

Avoid Undesirable Colorcasts ..... 117

Never Use Digital Zoom..... 118

Reduce Digital Noise ..... 119



chapter 11

Capturing Unique Photo Opportunities

Photograph Products to Sell on eBay ..... 122

Take Great Close-Up Photos ..... 124

Take Photos at Night without a Flash ..... 126

Capture Firework Displays..... 127



# Table of Contents

chapter12

Organizing Your Photos

Why Use Image Editing Programs?	130
What Is a Digital Editing Workflow?	132
Photo Editing Options	134
Understanding Metadata in Your Photos	136
What Are RAW Digital Photos?	137
Import Photos to Your Browser	138
Review, Sort, and Tag Your Photos	140
Tag Photos	142
Find Images Using Tags	146
Use Tags to Sort	148



chapter13

Enhance Your Photos with Basic Photo Editing

Learn about Global and Local Changes	152
Zoom In with the Zoom Tool	154
Rotate an Image	156
Straighten an Image	160
Crop an Image	164
Adjust the Exposure	166
Adjust the Color Temperature	170
Adjust the Tint	174
Adjust the Saturation	178
Adjust Noise and Sharpness	182
Remove Red Eye	186



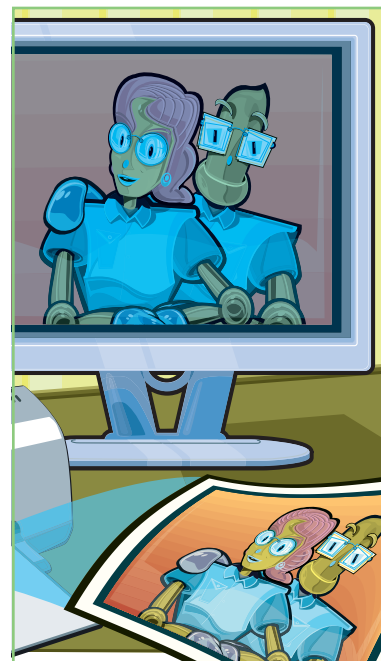
Retouch Spots on Your Photos .....	190
Retouch Spots on Your Subjects .....	192
Apply Photo Effects .....	194
Use the Auto Enhance Button .....	198



## chapter 14

## Advanced Photo Editing with Photoshop Elements

Why Calibrate and Profile Your Monitor? .....	204
Open the Photoshop Elements Quick Fix Workspace .....	206
Get Familiar with the Quick Fix Workspace .....	207
Open a Photo to Fix in the Quick Fix Workspace .....	208
Open a RAW Photo File .....	210
Zoom In and Out .....	212
Move Around the Image .....	213
Rotate an Image .....	214
Select a Comparative View .....	215
Improve Composition by Cropping .....	216
Use the Quick Fix Auto Buttons .....	218
Try an Auto Fix for a Quick Improvement .....	219
Remove Red Eye with One Click .....	220
Undo Changes .....	221
Convert a Color Photo to Black and White .....	222
Add a Colored Filter Effect to Any Photo .....	223



# Table of Contents

chapter

15

## Printing Photos and Other Projects

Archive Your Photos to CD or DVD Media . . . . .	226
Create a Contact Sheet . . . . .	228
Understanding Resolution . . . . .	230
Digital Photo Printing Options. . . . .	232
Get the Best Prints . . . . .	234
Choose a Photo Printer . . . . .	236
Match Prints to Monitor Display . . . . .	238
Optimize Printer Settings and Print a Photo. . . . .	240
Print One Photo as a Traditional Picture Package . . . . .	244
Use the Create Tab for Fun Photo Options . . . . .	246
Create a Greeting Card . . . . .	248
Print to an Online Photo Service . . . . .	250



chapter

16

## Sharing Photos Electronically

Add a Personal Copyright to Protect a Photo. . . . .	254
Save a JPEG for the Web . . . . .	256
Preview an Image in a Web Browser . . . . .	258
Create a Web Photo Gallery . . . . .	260
Send an Image with E-mail . . . . .	264





# chapter 17

## Special Projects for Photoshop Elements

Customize the Panel View .....	268
What Are Layers and Why Use Them? .....	272
Find Your Way Around the Layers Panel .....	274
Straighten a Crooked Photo .....	276
Make a Creative Crop .....	280
Select an Area of a Photo .....	282
Whiten Teeth Digitally .....	284
Duplicate the Background Layer .....	286
What Are Photoshop Elements Filters? .....	287
What Is the Filter Gallery? .....	288
Understanding Styles and Effects .....	290
Colorize a Black-and-White Photo .....	292
Create a Sepia-Toned Photo .....	294
Remove Blemishes with One Click .....	296
Fix Skin Tone .....	297
Adjust a Photo before Applying Filters .....	298
Convert a Photo into a Sketch .....	300
Convert a Photo into a Painting .....	302
Create a Digital Photo Collage .....	304
Create a Digital Panorama .....	308
Understanding Type Layers .....	310
Add and Edit Text .....	312
Move and Resize Type to Fit a Photo .....	313
Add Text and Match the Color to the Photo .....	314
Rotate Text .....	316
Warp Text .....	317
Stylize Text .....	318



# CHAPTER

# 1

## 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.



<b>Why Go Digital? .....</b>	<b>4</b>
<b>Discover Digital Cameras .....</b>	<b>6</b>
<b>From Start to Finish: The Digital Workflow .....</b>	<b>8</b>

# 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.



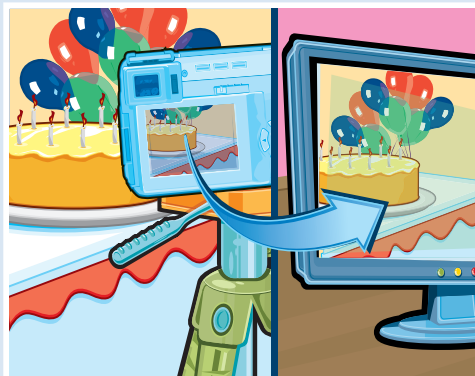
## Improve Your Photography Skills

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.



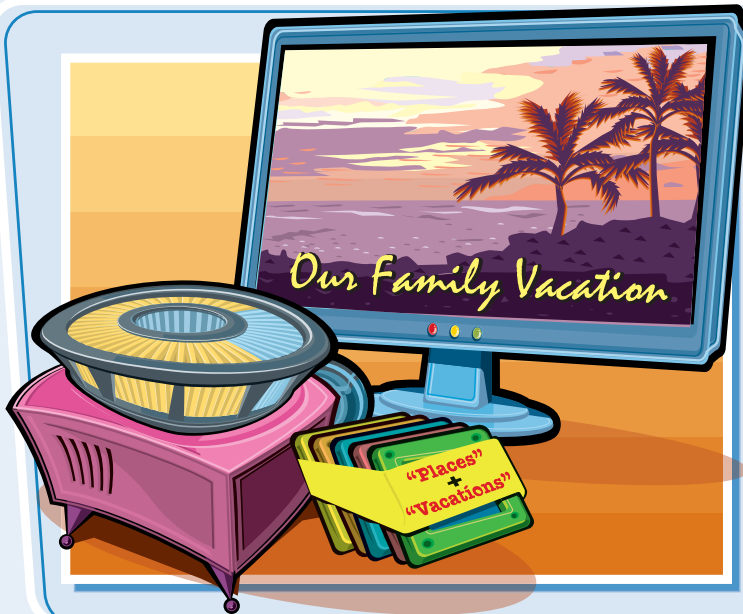
### Share Pictures Online and in E-mail

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.





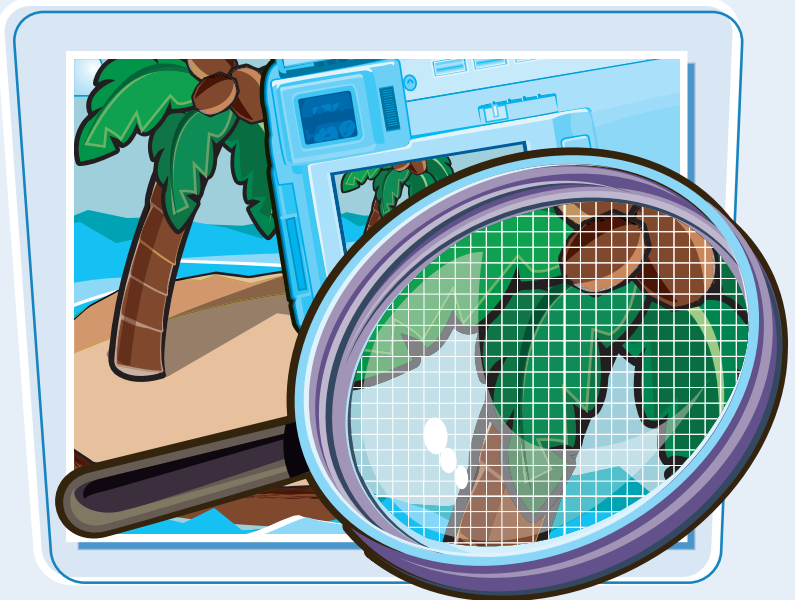
# Discover Digital Cameras

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.



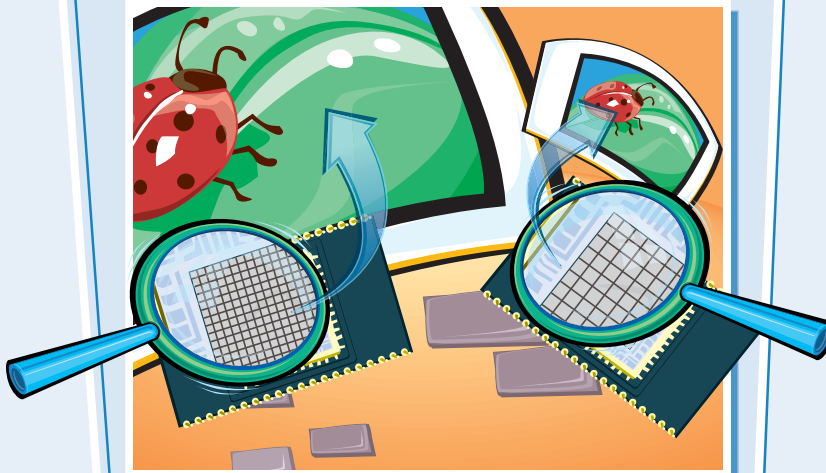
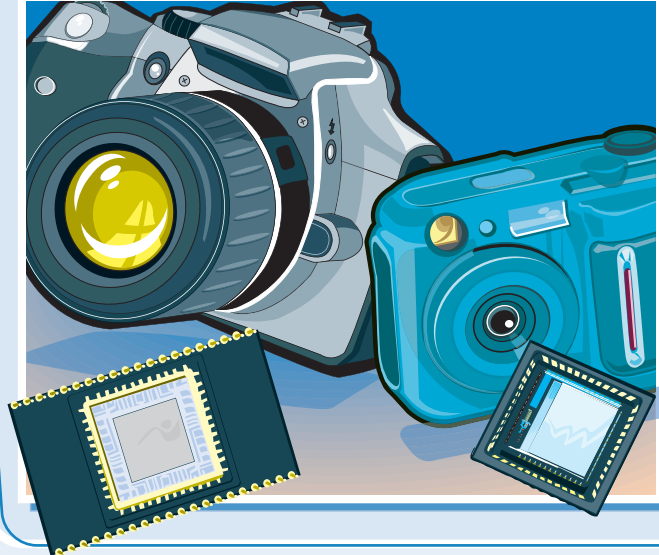
## How Digital Cameras Record Pictures

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.

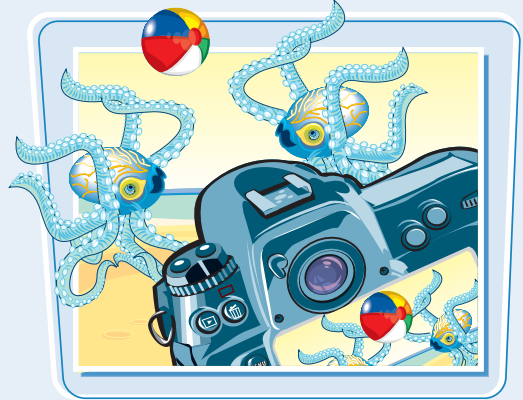
Confirm that the camera's white balance matches the light in the scene or is set to auto. For more information on white balance, see Chapter 8.

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

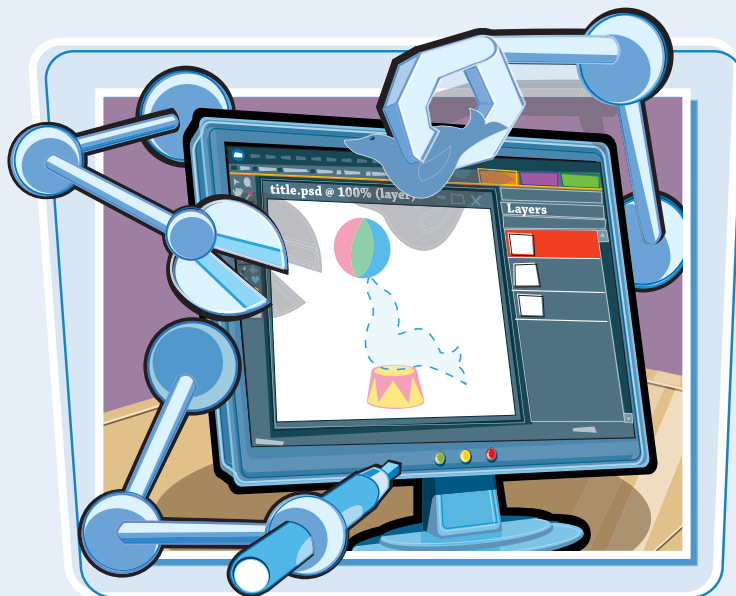
You can transfer pictures from your camera to your computer with a USB cable, a card reader, or a docking station. The fastest way to transfer pictures is by using a card reader. Card readers come in many forms, they are inexpensive, and they do not drain your camera battery — which happens when you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



# 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.

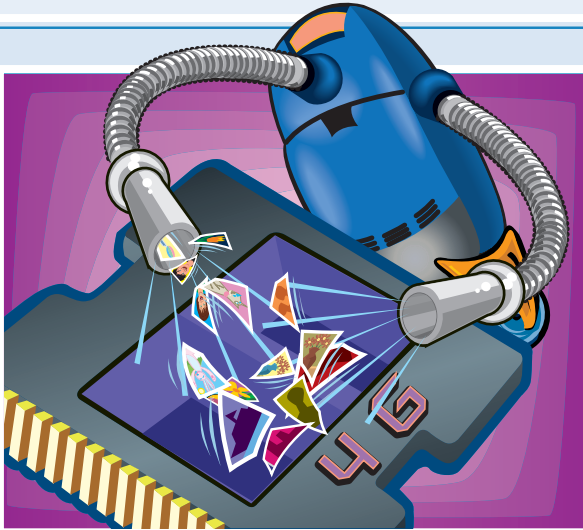




### Organize and Store Digital Negatives

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.



<b>Choose a Digital Camera .....</b>	<b>14</b>
<b>Consider Digital Camera Accessories .....</b>	<b>16</b>
<b>Build a Digital Darkroom .....</b>	<b>20</b>
<b>Choose a Photo Printer .....</b>	<b>22</b>

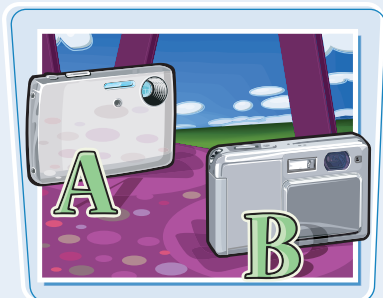
## Choose a Digital Camera

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.



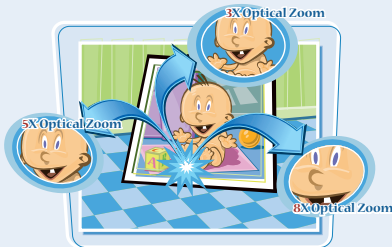
### Digital SLR

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.



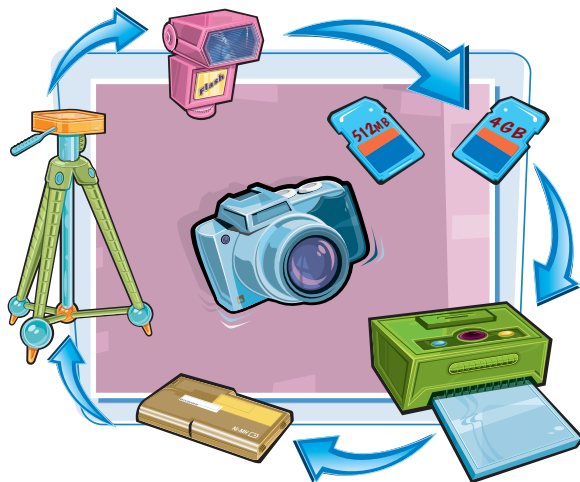
### Storage Media

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.





### Card Readers

You can easily transfer pictures from your camera to your computer using a USB cable or camera dock. However, a memory card reader provides a faster and inexpensive way to transfer images. Most card readers connect to the computer using a USB cable, and some card readers accept multiple types of memory cards. Virtually all new card readers use a USB 2.0 connection, which is currently very common and very fast. Many cameras are now able to use the high-capacity SDHC cards. If those are the cards you are using, make certain that your card reader has that capability. For owners of a notebook computer, memory media-specific PCMCIA (PC Card) readers are available.



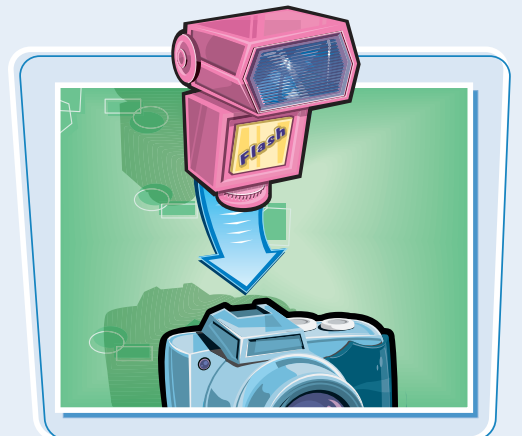
### Accessory Lenses

If your camera accepts accessory lenses, the lenses offer you additional photographic flexibility and are typically wide-angle or telephoto lenses. Look for accessory lenses from the manufacturer of your camera and from aftermarket suppliers. For compact digital cameras, accessory lenses may require step-up or step-down rings. The ring attaches to the camera's lens, and then the accessory lens attaches to the other side of the ring. For DSLR cameras, make sure that the lenses you buy will work with your camera; after that the sky is the limit! Each brand of camera has many different lenses designed to work optimally with your camera. Aftermarket lenses also do a good job and may save you a little money.



### Accessory Flash Unit

If your camera has a flash mount, or *hot shoe*, you can add an external flash unit. The advantage of an external flash is that it has more power, offering greater distances for flash shots. Because it is higher above the camera, it dramatically reduces red eye in the photos you take. Using your camera-branded flash will maximize all the automatic flash technology in today's digital cameras. For some cameras this even allows multiple flashes to communicate wirelessly for creative lighting in your photographs. To learn more about lighting and flash photography, see Chapter 4.





# Consider Digital Camera Accessories *(continued)*

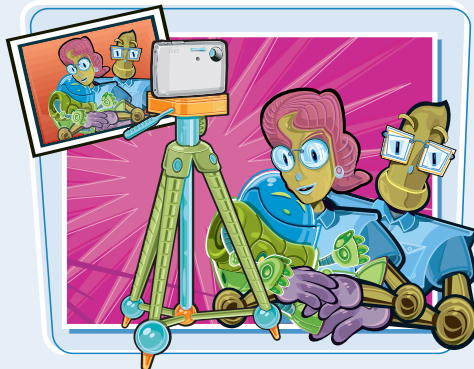
## Travel Accessories

If you are traveling to another country, check what power and power connectors are used in that country. If you are sure your battery charger works with that power, check for the proper adapter. Voltage is rarely a problem but frequency is. A charger that works only on 60 Hz will burn out in a few minutes if plugged into a 50 Hz power outlet. So it is best to have one that works on 50/60 Hz plus have the proper power connection for the country you are visiting.



## Tripods

You can take sharp pictures in lower-light conditions if your camera is absolutely stable, and if the subject does not move. You can stabilize your camera by using a tripod. Tripods range from small tabletop versions, which are suitable for small digital cameras, to full-size tripods suitable for large digital cameras. It is great to use a small tripod for your compact digital camera for parties and family get-togethers, so you can be in the photos by using the timer or a remote control.

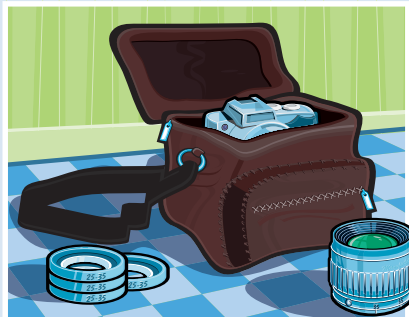


## Camera and Accessory Bag

There are many brands and styles of camera bags, which range from backpacks to sling bags and even ones that look like purses. Bags range in size from small pouches to full-size bags with compartments for flash units, lenses, and spare batteries. Remember that a camera bag is there to: keep your stuff together, keep it organized, and keep it protected.

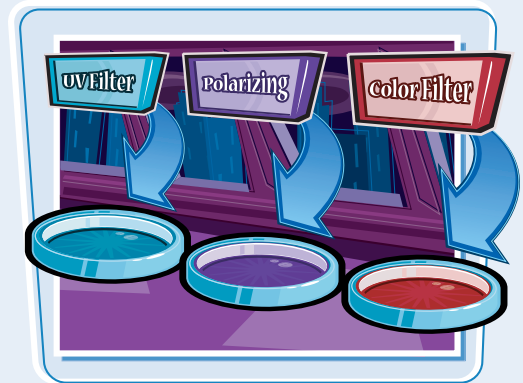
Some photographers like water-resistant camera bags, and some like to keep their camera and accessories in everyday bags, like book bags, messenger bags, and even diaper bags — all of which have plenty of room and pockets and do not get a second look from thieves. Just make sure your camera is in a well-padded place in the bag and that things do not rub against each other.

To protect easy-to-lose memory cards, you can buy hard- or soft-sided memory card cases that hold multiple memory cards.



### Filters

Filters, including a *UV filter* or *Skylight*, can protect the lens of some digital cameras and help in cutting down on haze. You can also use a *polarizing* filter on some digital cameras (if the camera lens had threads to accept a filter) to reduce reflections and to make colors more vibrant. If you are buying a polarizing filter, make sure it says “circular polarizer” on the filter case. Linear (noncircular) polarizer filters confuse autofocus systems. Although digital cameras do not require color-correction filters, you can use some color filters.



### Creative Filters

You can use filters to add all sorts of effects to your photographs. There are filters that add starbursts and halo effects to lights. A *diffuser* filter creates a light fog effect by using a soft focus. Color filters alter or enhance the colors of your picture. *Graduated* filters or *grads* affect only part of the image and are great for affecting the sky in a photo. You can also reproduce the effects of some creative filters in most image-editing software.



### Cleaning Supplies

To clean your lens, you can use microfiber lens-cleaning cloths and a blower brush. You can also use a lens pen. A *lens pen* has a brush on one end to sweep away particles, and a circular pad with lens-cleaning fluid to wipe away smudges on the other end. You can clean the exterior of your camera with a clean, soft cloth like you would any other electronic equipment.



# Build a Digital Darkroom

Unlike film photography, digital cameras do not require chemicals and a room without light to develop photos. Your digital equivalent of a darkroom is your computer in combination with your image-editing software and maybe even your photo printer. Armed with this equipment you can ensure that your pictures have great color and contrast, and that they are precisely cropped. To create this virtual digital darkroom, you need a computer, monitor, and software for editing images.



## Computer

Digital photo files and photo-editing tasks require more hard drive space and RAM than text files and processing requires. To speed up digital photography work, it is helpful to have a computer with sufficient RAM (at least 1GB), a hard drive with free space to store photos, and a reasonably large monitor that you can calibrate for accurate color.

## Minimum System Requirements

A good way to determine if your computer RAM and hard drive space is adequate for image editing is to check the system requirements for both the image-editing program and the operating system. You can find this information on the software product box.

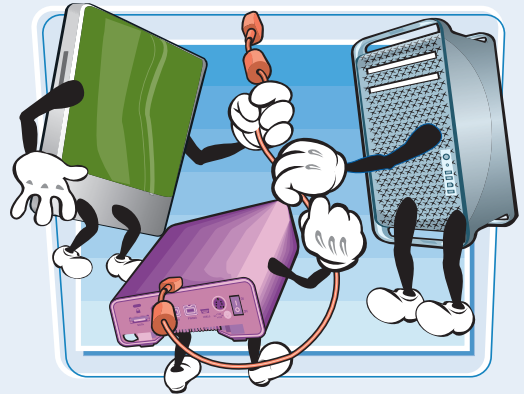
## CD or DVD Archiving

As your digital image collection grows, it is good practice to archive images on CDs or DVDs. A recordable CD stores 700MB at a cost of 10 cents or less per CD. A recordable DVD stores 4.7GB of data. DVD prices vary by brand and DVD format, but they cost a little more than CDs. The newest high-capacity storage is Dual Layer (DL) DVD, which offers more than 8GB of storage. Make sure you check your computer to determine which DVD format you need: DVD-R or DVD+R.



### Hard Drive Archiving

The cost of external hard drives continues to go down, making 250GB, 500GB, and even 1TB-plus drives ever more reasonable. External hard drives are connected via USB cords, or FireWire (IEEE 1394), or even via a network, making it much easier to access your archived info on a hard drive than going back to find a single disc with your photos. Some of these drives are very compact and are powered by the USB cord, making them extremely portable. Setting up a routine backup of your photos to an external hard drive is very simple.



### Choose an Image-Editing Program

An image-editing program allows you to adjust the contrast and color, and to rotate, crop, and add text and special effects to your pictures. In addition to basic image editing, most software helps you organize your images, e-mail them to friends, print them, and even helps you assemble impressive slide shows — which can be used for digital scrapbooking.



### Monitor Types, Sizes, and Settings

Both CRTs and LCD flat-panels display digital images accurately. Nearly all displays sold today are flat-panel displays. 20-inch monitors are practically standard issue on new computers today. Screen resolution should be at least 1024×768 pixels. Digital photo editing requires that the color depth be set to 24- or 32-bit depending on your graphics adapter. If you purchased your computer in the last few years, it is already set up at an adequate resolution and color-depth setting. Larger monitors help by displaying more of the image at a larger magnification, and multiple monitors allow you to have your photo on one monitor and your toolbars and panels on the other monitor.

