Pro Digital Photography

Table of Contents

Lessons - Professional digital photography made simple

Professional digital photography made simple

» Lessons
» Message board

Welcome to your lessons. Some lessons may have quizzes or assignments for additional learning. Don't forget to join your fellow classmates and instructor on the message board.

Lesson 1

The photography revival

There's never been a better time to be a digital photographer. Prices are dropping steadily, and digital photo quality keeps increasing. Quality digital cameras are now very affordable and within reach.

Digital photography provides instant gratification, too. You can see your pictures on the spot with the camera's built-in LCD (liquid crystal display) screen. Later, you can view photos on your television or computer monitor, send them via e-mail, and produce your own vibrantly colored prints. There's no film to drop off and pick up days later. You can do everything with your pictures right now.

> Throughout this course, we provide Flash examples. To view these examples, you need the Adobe Flash Player. Keep an eye out for notes with links that say "See how to ____ " or something similar. Some of these files are very large (10 MB or so) and may take a while to appear or download if you have a slow connection.

Digital photography is versatile and has many applications, from recreational to professional. You can share your pictures of a wedding, vacation adventure, garden, or new addition to the family with anyone anywhere in the world, within seconds.

The more you understand your camera's features and what they can do, the better your photos will be and the more you'll enjoy taking and sharing your priceless photo memories.

The Four Steps

Throughout this course, you'll learn four essential steps in the digital photography process:

1. Taking good photos
2. Downloading and organizing your photos
3. Adjusting and editing your photos
4. Printing your photos

You can see these four steps in action in Demo 1-1.

Demo 1-1: The four steps of digital photography.

In other words, you don't just take photos -- you're also the photo lab and photo archiver!

Most people need the most help with learning how to take a good digital picture. Understanding your camera's functions, as well as some fundamental creative photography concepts and digital-image editing techniques, can enable you to wow yourself with the digital pictures you take.

Here in Lesson 1, you'll learn some of the more common features in today's digital cameras, as well as what each feature does and when you might want to use it.

This lesson aims to present all the topics that will be meaningful to those new to digital photography. However, as you work through this lesson, let your unique digital photography needs guide you in deciding what's meaningful to you. Is it truly important to know what CCD stands for? Probably not. However, understanding how megapixels affect photo print sizes is necessary information for selecting the camera that meets your needs or using your current camera optimally.

Course Overview

Many courses focus strictly on camera features and digital photography workflow (how to manage

---

Professional quality prints in a flash

» **HP PhotoSmart printers**

True-to-life color photos without the photo lab, professional-quality black-and-white photos and direct printing from your HP camera or memory card (no computer required).

and print your digital photos). Although this course presents the basics on the technical side, it also explores some ways you can take pictures to make them better and perhaps more creative.

Here's the lesson-by-lesson breakdown of what you'll learn:

- **Lesson 1:** Understand your camera's features and functions, and how and when to use them.
- **Lesson 2:** Take better pictures by applying some basic forethought before you shoot, and review tips and experiments to develop your experience and creativity.
- **Lesson3:** Establish a basic workflow to download, store, and organize your pictures. Also learn key techniques for editing your photos, and explore what level of image-editing software you need.
- **Lesson4:** Get ready for printing or e-mailing your photos. Develop a better understanding of image quality and resolution.

Now that you know what the course is all about, you'll learn about camera features and functions and how to select the right settings given various picture-shooting circumstances.

Digital camera features and functions, and how to use them

Many digital camera owners have been taking pictures with the fully automatic (or auto adjustment) mode of their point-and-shoot digital cameras. Many continue to happily do so; however, you might want to experiment with what else your camera can do. Or, you may decide to become a serious photo hobbyist, developing your craft and learning more as you go.

As with film cameras, digital cameras run the full range of prices and features. You can get affordable point-and-shoot cameras, as well as digital SLR (single-lens reflex) cameras for prosumers (serious hobbyists) and professionals.

Deciphering digital camera classifications

There's an overwhelming amount of information out there to help a user select and purchase a digital camera. To be able to compare apples to apples, you have to understand that digital cameras fall into several different categories based on camera capabilities and pricing. The following sections describe how some retailers currently classify digital cameras.

Point-and-shoot digital cameras

These feature entry-level price points, limited zoom capabilities, and a smaller removable storage card. These cameras can shoot images up to 5 or 6 megapixels in size, are generally fully automatic with a variety of shooting modes and manual settings, and include a built-in flash.

A **shooting mode** or **preset** is a collection of settings that help the camera shoot a picture under particular conditions. For example, a camera might offer a preset to help it take a picture better under fluorescent lighting.

Intermediate digital cameras

These occupy the next step up in price, with more features and flexibility. They're currently the most popular, shooting images up to 6 or 8 megapixels and offering more zoom capabilities and more manual and shooting modes or preset functions than basic point-and-shoot cameras. Intermediate digital cameras also offer larger LCDs for enhanced image preview, more storage for capturing more images, and some unique features like red eye removal. These cameras usually have rechargeable batteries.

Advanced consumer digital cameras

These appeal to the more serious hobbyists and budding photographers who want more control. These cameras generally can shoot images up to 10 megapixels and have improved zoom and flash capabilities, as well as other specialized features like image stabilization. If you're considering one of these cameras, make sure you're well-versed in photography so you can take advantage of the more extensive manual features. Advanced cameras sometimes have built-in color enhancements and filters.

Prosumer digital cameras

These address the needs of a serious hobbyist or serve as a light-duty alternative for professionals. These cameras are often larger and look like a 35-mm film camera, as opposed to having the compact, all-in-one form of less-expensive models. These cameras usually have a quality zoom lens with extended range, or can use the same interchangeable lenses as the manufacturer's film cameras. These cameras are capable of capturing images at 10 megapixels or better and offer an even wider variety of advanced features. Prosumer and professional digital cameras may include

Capture high-quality images

» HP Photosmart R742 digital camera

Shoot 7 MP photos for stunning prints, using this stylishly slim camera with an all-metal body. Zoom in with 3x optical, 8x digital. View photos on a bright 2.5-inch image display. Industry-leading in camera red eye removal ensures photos look their best.[1] Footnote: [1]For more information, please visit www.hp.com/go/noredeye;

their own flash or be equipped for the use of an external flash unit.

Professional digital cameras

These are digital SLR models. They offer rugged durability, fast shutter speeds (for capturing successive shots), interchangeable lenses, image sizes up to 14 megapixels, and huge storage capabilities. Although digital camera and accessory pricing continues to fall for models in all categories, you can still expect to pay in excess of a few thousand dollars for a full pro setup.

If you're primarily interested in consumer digital cameras, learn more with the HP Digital Camera buying guide.

The most basic considerations

When you're buying a digital camera, you need to consider a variety of factors to match the camera's capabilities to your needs and skill level. This section covers the most basic considerations.

How many megapixels?

It's nice to be able to converse with a salesperson and understand what he or she is talking about when you're purchasing any kind of technology. When having such a conversation about digital cameras, one of the first terms that might come up is "megapixel."

Simply put, a **pixel** is a dot of color in a digital picture. One million pixels equals one megapixel. A digital image with more megapixels has better quality and can be printed at a larger size. In digital camera terms, that means that a camera capable of creating images with more megapixels can capture better-quality images. It also correspondingly costs more.

In digital photography and printing circles, the number of pixels a camera can capture in the image also translates to the image size, quality or resolution, although cameras may offer separate size, quality, and resolution settings.

An average digital camera produces images that make very nice prints acceptable to the casual photographer. If you're a serious hobbyist or professional, you want a camera that can create images at 8 megapixels or better to achieve the image print sizes and quality you want.

Demo 1-2 shows how megapixels relate to the image size of your photo.

Demo 1-2: The number of megapixels in your digital image affect its print quality and size.

The quality (megapixel amount) in a digital image file directly impacts print quality and size. What constitutes good or photo-quality output varies and is subjective, so think of the values in the following table strictly as guidelines:

Megapixel	Dimension of photo-quality prints (in inches)
1	4 x 6
2	5 x 7
3	8 x 10
5	10 x 12
10	16 x 20

Table 1-1: The relationship of megapixel size to photo-quality print size.

If you plan to shoot images primarily for a Web site rather than for printing, keep in mind that images of smaller size and quality download and display faster. In other words, you don't need a pro-level camera to take product photos for use on a typical Web site.

Zoom and lens accessories

Zoom can be handy, but a lot of zoom isn't always necessary. Even the lowest-priced digital cameras have a 3X optical zoom, with a higher number meaning even more magnification, or zoom. Average-priced digital cameras can have more optical zoom, but there's usually some kind of trade-off in other aspects or features of the camera.

Zoom lets you get closer to the action without physically moving closer to it. The camera lens telescopically brings the scene closer to you. If, for example, you're a nature photographer, you might want a powerful zoom lens to be able to photograph animals from a significant distance.

Many average-priced digital cameras can accept lens accessories. If you see threads on the inside of the lens opening, the camera's manufacturer likely offers lens accessories for the camera. Some of these accessories can include adding specialized zoom capabilities, such as super-wide angles and close-up filters for extreme close-ups. Your camera's manufacturer may have other types of lenses and accessories available as well, as shown in Figure 1-1.

Figure 1-1: Sample accessories.

Be aware of how zoom is described in an advertisement or brochure. If you see combined zoom, the advertiser is combining both the optical and digital zoom ratings. In such a case, you'd want to find out how much of that combined zoom value refers to optical zoom, because optical zoom is the superior type of zoom. (You'll learn more about optical and digital zoom in the next lesson page.)

Storage capabilities and media types

Do you remember back in the old days when you had to wait for weeks or even months before dropping vacation pictures off for processing because the roll of film wasn't finished? One of the joys of digital cameras is that you can take as many photos as you like and download them to your computer any time you want, because the camera records digitally. Some cameras include internal digital storage, and most cameras can record images on a reusable digital storage medium -- usually a memory card or stick.

Cameras use a number of storage media types; however, some are more common and versatile than others. CompactFlash was one of the first formats to gain wide acceptance in the digital camera market. CompactFlash comes in Type I and Type II -- the only notable difference is the size and storage capabilities. SD (Secure Digital) memory cards come in a wide variety of capacities, from 64 MB (megabytes) to 4 GB (gigabytes). Most types of memory cards are the size of a matchbook or smaller, as shown in Figure 1-2.

Figure 1-2: Secure Digital memory card storage media appears to be emerging as the new standard.

A number of other media are also available: SmartMedia cards and Sony's Memory Stick media -- two popular examples -- come with capacities of one gigabyte or more.

The larger the storage capacity, the more images the media can store. If you're considering a prosumer or pro-level camera, which can take higher-megapixel and therefore larger images, make sure you budget for adequate removable storage.

Ease of use

Consider the design and ease of use of the camera. If you're making a decision about two comparable cameras, you'll surely choose the one that's easier to use. Even when it comes to making manual adjustments, make sure that it fits your grasp and that the buttons are well placed.

Digital cameras have menu options and features to navigate on the built-in screen. Try it to see whether the menu hierarchy works and makes some kind of initial sense to you.

In the next section, you'll learn about common features and functions of digital cameras.

Glossary of features and functions

Beyond fully automatic (auto adjustment) shooting, most cameras offer at least some shooting modes and manual features that enable the camera to compensate for various picture-shooting circumstances. However, different manufacturers sometimes use different names for essentially the same features. Even if it's as dry as crackers, get your camera's manual out so you can read and review it to learn feature names.

Good basic knowledge of your camera will come right out of your owner's manual. Most manufacturers also offer addition online help that's specific to a particular camera model.

The rest of this section presents a fairly comprehensive but not exhaustive list of common digital camera features and functions, with some brief notes on how or when to use each one.

Shooting modes
Selecting a shooting mode or scene selection mode tells the camera to select settings for particular conditions automatically. For example, a camera may offer shooting modes for portraits, night scenes, or sports action. Better cameras offer semi-automatic modes such as program auto (P), aperture priority (A), or shutter priority (S). When selecting a camera, make sure it offers the modes you envision using. The semi-automatic modes usually appeal to serious hobbyists and pros, so consider a camera with those modes if you plan to expand your skills.

Flash
Nearly every digital camera that includes a built-in flash -- and that's most of them -- enables you to choose among various flash settings, including turning the flash off. Many cameras also offer a setting for reducing or eliminating **red-eye,** that annoying red glow that appears in the eyes of a person you've photographed using flash.

HP recently came out with a camera that also removes glowing pet eyes. Since glowing pet eyes are different than red eyes on people, most cameras aren't able to correct it. See www.hp.com/go/noredeye for details.

Optical zoom
Optical zoom refers to the physical lens' capability to extend to optically magnify the subject(s). Use optical zoom in situations where you can't physically get closer to your subject or where you as the photographer must remain unobtrusive, as shown in Demo 1-3.

Demo 1-3: Using the optical zoom on an object that's far away.

Digital zoom
This feature digitally and mathematically enlarges the image, giving the impression of an optical zoom. Because digital zoom can reduce image quality, more seasoned photographers tend to discount this feature. However, image quality can still be acceptable at smaller print sizes.

Macro focus mode
This mode overrides the general use auto focus mode, so that you can take extreme close-up shots of subjects such as flowers, as shown in Demo 1-4, insects, coins, stamps, and so on.

Demo 1-4: The macro focus mode makes a big difference in capturing images close up.

Macro capabilities aren't the same on all cameras, so check the distance specification carefully. How close can you really get? You can achieve even more highly magnified shots with additional close-up filters like those shown in Figure 1-3, if they're available for your camera model.

The Battle with batteries

Digital cameras use up battery power quickly, especially when you're using flash. If your camera gets any kind of regular use, either for business or pleasure, get rechargeable batteries and a charger. Go by the manufacturer's recommendation for the battery type. More importantly, get an extra backup set so you don't miss baby's first steps or the only goal scored in a closely played game of soccer.

» Digital camera memory

Digital camera memory cards allow you to store more photos on your digital camera, as well as saving you battery power and time.

Figure 1-3: Close-up filters.

ISO settings

For digital cameras, the ISO (International Standards Organization) setting refers to the image sensor's sensitivity to light. Lower ISO settings, that is, 100 and 200, allow lower light sensitivity for photographing in bright light situations like sunny days. Higher ISO settings -- 400 and up -- enable the camera to take acceptable images in lower light situations. Demo 1-5 shows how your photo will look depending on the ISO settings. The effects you see here are all due to changing ISO settings; everything else remained the same.

Demo 1-5: Depending on your ISO settings, your photo can vary greatly.

Most digital cameras have both automatic ISO settings and presets to choose from. Be aware that higher ISO settings have been known to compromise image quality in digital cameras. You should experiment to determine what's acceptable for you on those higher ISO settings.

EV

EV (exposure value) is another light-related setting that can be helpful in bright light situations that can wash out parts of an image. Automatic settings aren't always capable of managing bright light in a photo composition, so look for a camera that also offers manual settings if you'll be shooting in extreme lighting conditions. Some cameras also offer exposure compensation and exposure metering to help fine-tune EV. Demo 1-6 shows the difference between a photo taken using the EV setting and one that wasn't.

Demo 1-6: To avoid having your photo washed out on a bright day, turn on the EV setting.

Exposure Compensation

Exposure compensation can be helpful in more severe light extremes, such as bright sunlight (using settings in the negative [-] range) and strongly backlit shots (using settings in the positive [+] range). Demo 1-7 shows a variety of photographic examples using different levels of exposure compensation.

Demo 1-7: Exposure compensation can be helpful in circumstances where you have extreme brightness or backlit shots.

Exposure metering

Metering means measuring the amount of light in your scene to determine the best exposure. Based on the lighting in the scene you're shooting, some digital cameras enable you to change the metering method:

- **Multi-patterned, matrix,** or **evaluative metering:** Splits the frame into a checkerboard type of pattern, so the camera can take several samples to determine the overall best exposure.
- **Center-weighted metering:** Averages the exposure of the full frame with an extra weighted average to the center.
- **Center spot** or **spot metering:** Allows you to meter the subject precisely, and ignores the rest of the frame. This metering method works best for macro mode shots and brightly backlit subjects.

Demo 1-8 shows the different metering methods you can choose depending on the lighting situation.

Demo 1-8: Change the metering method to determine the best exposure for your shot.

Shutter speed

Most current digital cameras have a mechanical shutter like a film camera. The shutter speed refers to the length of time, such as 1/25 for 1/25th of a second, the shutter remains open to admit light into the camera to take the picture. As mentioned previously, some digital cameras offer a shutter

priority mode, in which you specify the shutter speed, and the camera sets the aperture size to yield the best exposure. Because a fast shutter speed shoots a smaller "slice" of time, it can yield a shot in which an object in motion appears frozen. A drop of water coming out of a faucet can appear suspended in mid air, for example. Because a slower shutter speed captures a longer slice of time, you might need to use a tripod to achieve a crisp image.

See what kind of results you can get with slow shutter speeds versus faster shutter speeds in Demo 1-9.

Demo 1-9: Using a slower shutter speed allows you to capture motion in your photo. The same object in motion appears frozen if you use a faster shutter speed.

All of the light that comes into the camera and strikes the sensor to record the image is collectively called the **exposure.** Shutter speed and aperture size are the two important settings that determine the overall exposure for an image.

Aperture
The aperture opening controls the amount of light reaching the image sensor based on its size setting, with size or diameter expressed in f-stops. The methods used to express the f-stop setting may vary, so f/8, f-8, and 1:8 are all different expressions of the same f-stop setting. Your camera may have an aperture priority mode, in which you specify the aperture setting and the camera sets the shutter speed for good exposure.

Depth of field
A large aperture setting -- a lower f-stop setting -- creates a shallow depth of field. With a shallow depth of field, objects in front of and behind the image subject appear somewhat out of focus. This may be desirable for a portrait or close-up of a flower, so that the crisp subject "pops" from the softer background.

A smaller aperture setting -- a higher f-stop setting -- has a greater depth of field, in which all objects appear in focus, regardless of their position relative to the subject.

Demo 1-10 shows how photos look with both large and small aperture settings.

Demo 1-10: A shallow depth of field brings focus to a specific subject, such as a flower, while softening the background of trees. A great depth of field focuses equally on all subjects.

Figure 1-4 shows two small flowers, each about the diameter of a pencil. The depth of field is so shallow that the second flower directly behind is out of focus.
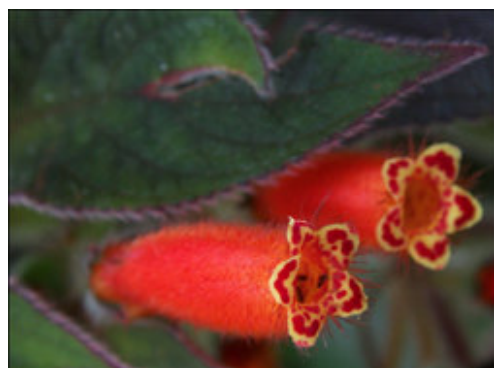

Figure 1-4: An example of shallow depth of field.

White balance
White balance compensates for different types of lighting that can create a dominant hue of color that needs to be corrected to produce more natural results, as shown in Demo 1-11.

Some types of light for which an available white balance preset may compensate include:

- Incandescent
- Florescent
- Sunlight
- Daylight cloudy
- Shade

- Twilight

Demo 1-11: Different white balance settings change the dominant hue of a photo. Use the setting that best fits your lighting environment to capture the most natural colors.

In addition to the presets, a higher-end camera might be capable of taking a manual sample to measure the light's temperature in areas where you're taking photos.

Learn about even more glossary terms related to digital photography.

Burst mode

More and more digital cameras have some type of **burst, multiburst, or continuous mode** for taking a series of photos in quick succession. Select and use a camera with a burst mode if you want to shoot a lot of action, such as someone throwing a frisbee as shown in Demo 1-12. The capability or performance may vary by:

- The resolution, or quality, at which the burst mode can perform
- The maximum number of frames per second
- The maximum number of photos it can take in burst mode

Demo 1-12: The burst mode allows you to take a continuous series of photos in quick succession.

Now it's time to find out about file formats, such as JPEG, TIFF, and RAW. That's coming up in the next section.

File formats

In the world of digital photography, you need to determine how you're going to print or share your photos. Because the format can somewhat determine the final image size and quality, you should be aware of which format works best for which intended use. That way, you can select a camera that saves pictures in the correct format, or choose the right format on a camera capable of multiple formats. The following sections detail typical digital camera file formats available in easy-to-understand language.

JPEG

The JPEG (Joint Photographic Experts Group) format rules the world of point-and-shoot and intermediate digital cameras, and it still remains an option in most high-end models. For the average casual, recreational, or even creative dabbler, this format works great for online sharing and smaller prints. You don't need to be concerned about any other format in this lesson unless you're into more serious business, professional photography, or commercial printing applications.

However, JPEG images may lose some quality because the camera applies compression, but average folks usually can't tell the difference unless they carefully study a side-by-side comparison.

JPEGs work great for images shot for the Web.

To get really technical, JPEG is a compression method rather than a file format. Through the compression, it loses some quality compared to TIFF format. Some cameras enable you to select the level of JPEG compression. With a low compression setting, quality loss isn't detectible to the eye, and the resulting JPEG file takes up much less media storage space compared with other formats.

TIFF

TIFF (Tagged Image File Format) images don't lose any image file quality but do take up a lot of media storage space compared to the humble, space-efficient JPEG.

Some higher-end digital cameras enable you to choose between saving JPEG or TIFF image files.

RAW

RAW is just that: raw data. This format is sometimes referred to as a true digital negative unaffected by the camera's processing. This format takes picture data directly from the camera's picture-taking sensor and saves it without any alteration or compression.

Pros favor RAW images, because they provide the greatest range of photo-editing possibilities.

Power in your pocket

» HP Photosmart R847 digital camera

Looking for the Rolls Royce of digital cameras? The Photosmart R847 has all the makings, including stunning 8 megapixel resolution, 24x total zoom, a gigantic, 3", auto-bright display with wide viewing angle, and even a way to get rid of annoying "pet eye".

However, some image-editing programs still don't support raw images. So, if you want to use and edit RAW images, budget for the software to do so.

Moving On
This lesson aimed to answer some of the questions a beginning digital photographer has, explaining some of the technical jargon found in a camera's owner's manual. It also covered a good range of common digital camera features and what they're used for. In Lesson 2, you'll proceed with taking some photos, understanding photography fundamentals, and getting those creative juices flowing.

Before you move on, be sure to complete the assignment and take the quiz for this lesson. In addition, visit the Message Board and introduce yourself to your instructor and fellow students.

Next steps »

Congratulations on completing the lesson! Don't forget the following:
» Assignment:Get to know your camera
» Quiz:Lesson 1, quiz 1
» Discuss what you've learned with your instructor and other students
» Return to the lessons list to get a quick overview of the entire class

Privacy statement   Using this site means you accept its terms   Feedback to Home & Home Office
© 2007 Hewlett-Packard Company, L.P.

Digital cameras 101: features, functions, and file formats assignment

View your shopping cart

Assignments are designed to help you apply the information learned in the lessons.

Get to know your camera

Find your owner's manual (dust it off, if necessary), and read it end to end. Keep a personal tally of how many features you weren't aware of. As you go through your manual, have your camera ready and confirm where each feature is located, or confirm how to find it on the camera's built-in screen menu. Don't concentrate on the design engineer's technical specifications but on the camera's features instead.

If you're thinking of buying a digital camera, open your Web browser. Go to a search page such as Google or Yahoo!, type **digital camera reviews** in the search field, and press **Enter .** Randomly check at least three different Web sites, and select one to start researching based on your individual needs.

Assignment Completed »

Privacy statement   Using this site means you accept its terms   Feedback to Home & Home Office

© 2007 Hewlett-Packard Company, L.P.

Lesson 1, quiz 1

🗐 **View your shopping cart**

Quiz: Lesson 1, quiz 1

Quizzes are designed to give you a chance to test your knowledge.

1. Which of the following are basic considerations in selecting a digital camera? (Check all that apply.)

- A. ☐ Number of megapixels
- B. ☐ Optical zoom capability
- C. ☐ Camera storage media type
- D. ☐ Ease of use that suits you
- E. ☐ Length of the shoulder strap on the carrying case

2. True or False: The more megapixels, the higher the image quality.

- A. ◯ True
- B. ◯ False

3. Which of the following camera features allow you to select a variety of settings automatically for specific types of shots, such as portraits and night scenes? (Check all that apply.)

- A. ☐ Quality modes
- B. ☐ Shooting modes
- C. ☐ Flash modes
- D. ☐ Scene selection modes

4. True or False: Macro focus mode is best for photographing distant objects.

- A. ◯ True
- B. ◯ False

5. True or False: JPEG is the most common digital photography file format used by casual and recreational photographers.

- A. ◯ True
- B. ◯ False

Submit »

Lessons - Professional digital photography made simple

Professional digital photography made simple

» Lessons
» Message board

Welcome to your lessons. Some lessons may have quizzes or assignments for additional learning. Don't forget to join your fellow classmates and instructor on the message board.

Lesson 2

Manage the light

Because a digital camera's sensor captures each image using light coming into the camera, managing lighting is always a primary concern when shooting pictures. A camera with a built-in flash can do only so much, even if you bought a higher-end camera with an external, stronger flash that you can bounce off the ceiling to light up a dim room, for example.

Although your camera probably has a number of preset flash modes to help compensate for various situations, your camera can't do it all, so it helps to become proficient in working with the lighting situation.

Sometimes, extreme lighting prevents you from capturing a decent shot. Even advanced photo-editing software can't always rescue severely overexposed or underexposed photos.

The following topics present some fundamental ways to adjust for various lighting conditions to achieve more consistent results. Managing existing lighting can't replace the performance of professional lighting equipment and specialized accessories, especially in a studio setting. However, you'll learn that you can work to some degree with the lighting situation and through trial and experimenting.

While working through this lesson, understand that there are all kinds of "rules" for taking good photos, but sometimes exploring on your own and breaking the rules results in a more compelling photo.

Natural sunlight

Professional photographers consider the first hour after sunrise as the golden hour. During that hour, the sun's natural light produces warm contrast and depth. You can take advantage of the golden hour and other ideal lighting conditions by planning your photo shoot in advance, when possible. In general, you get better pictures shooting in the morning and afternoon, when the sun's angle casts more gentle shadows that better define the subject. The harsh vertical angle of the noon sun can cause deep shadows that obscure parts of the subject; for example, the subject's face might be mostly covered by a shadow if he or she is wearing a hat.

If you're shooting at high noon and getting heavy shadows on a subject's face, try selecting the camera's flash mode that forces the flash on. In such a situation, the flash can work as fill flash (explained later in this lesson), providing lighting from a lower angle to fill in the areas shadowed due to the harsh overhead sun. Some image-editing applications enable you to fix an image by applying a fill-flash correction after the fact.

Demo 2-1 illustrates how natural sunlight affects your photos throughout the day.

Demo 2-1: A series of shots utilizing natural sunlight taken throughout the day.

Shooting outdoors on an overcast day often results in even better photos. Cloudy or overcast conditions provide a soft, even lighting that flatters most subjects without causing shadows that can obscure details.

Indoor light

When you walk into a room at an indoor event with your camera in hand, identify which kind of light

Print your photos on the best

» **HP Photo paper**

HP offers a complete line of photo papers in sizes ranging from 4x6" to 13x19" in many different finishes for all of your photo printing needs.

the room has -- incandescent, fluorescent, or one of those combined with natural light coming through windows during the day. After you evaluate the available light, keep the following tips in mind as you shoot:

- Immediately snap a few test shots and review them on the camera's LCD screen. As you adjust camera settings and other conditions to work with the lighting conditions, review additional shots as needed to make sure you're working with the right combination.
- If the camera doesn't focus well, which requires adequate lighting, or subjects look dull and grayed out when you review your initial shots on the camera, make sure you've selected a flash mode that supplies flash. Sometimes, especially at night, indoor lighting may not supply enough illumination for good pictures.
- Keep your back to any natural light coming through a window. This ensures that you're shooting at an angle in which the natural light illuminates your subjects, rather than casting shadows on them due to backlighting. (You'll learn more about backlighting shortly.) As you go deeper into the room, the impact of light from windows may weaken.
- Don't take any shots with your subject in front of a bright lamp, another situation that can cause backlighting. Try to move either the subject or the light so that the light is behind you as you face your subject. That type of alignment for the lighting creates the best results.
- If you see a heavy yellow/orange or blue cast in your sample shots, that means the lighting is throwing off the white balance for the photos. Incandescent lighting can cause a yellow/orange cast, whereas fluorescent lighting can cause a blue tone. Most digital cameras offer a white balance preset to correct for each of these lighting types.

Consult your camera's user's guide to learn how to select the correct white balance setting.

- Experiment to create a strong contrasting effect by removing the shade from a lamp and placing it to one side and at a slight forward angle to your subject. This approach gives a stronger cast shadow like the one shown in Figure 2-1, in which the lighting is coming from the right to create heavier shadows to the left. (You might also adjust your white balance for that incandescent lamp bulb, right?)

Figure 2-1: A simple light bulb can create dramatic contrast and depth.

Backlit situations

Backlighting occurs when the dominant light source is behind your subject, as when you're trying to take a picture of a person who's sitting indoors in front of a window or when you're shooting toward the sun. When you shoot a picture in such circumstances, the subject appears dark because you're technically shooting the side of the subject that's being shadowed rather than lit.

The easy way to avoid backlighting is to ensure that you always have the light to your back, which positions you between your subject and the dominant light source. If you can't avoid backlighting entirely, set your camera to a flash mode that forces the flash on (this mode might even be named fill flash), so the flash fills in the shadowed areas on the subject. Alternately, find a floor or table lamp that you can position in a way that lights the subject from the front.

That being said, backlighting can give a photo a dramatic impact, creating a hard silhouette as in the picture of a forest against the sunset shown in Figure 2-2. This is an example where breaking the rules can yield the photo effect you really want.

Figure 2-2: Backlighting can result in a dramatic and favorable effect.

Red eye

If you've ever thumbed through a stack of family photos, you've probably noticed at least one shot tainted by red eye -- the red or green glow in people's eyes that results when the flash bounces off the interior of the eyes. Make sure you check your preview shots for this problem. While most cameras offer a flash mode you can set to reduce or eliminate red-eye, it is often not effective. Some newer cameras, such as those from HP, offer in-camera red-eye removal. These cameras can be set to automatically remove red eye after the picture is taken. Or you can manually remove red eye after the picture is taken. This eliminates the need to remove it with editing software later.

There's even more to learn about light and lighting, but that's for another course. At this point, you've covered the basics and are ready to dive into some specialized shots, such as macro or close-up shots, which will be covered next.

See the tree for the forest: the world of macro

People always seem to be looking at the big picture. Often, however, within that big picture are a number of wonderful smaller pictures or elements in a scene that can turn into amazing photo opportunities.

Macro shots

A camera's macro shooting mode enables you to take an extreme close-up that can potentially be less than 1 inch away from the subject, depending on your camera's capabilities. Experimenting with the macro mode can give you a different way of seeing and exploring the world through digital photography.

With macro shots, you have to be aware of the shadows on and around the subject, your own shadow, and that of your camera. You can get so close to the subject that your camera may block some of the available light.

Macro and close-up shots help you deconstruct the scene to find more visual treasures, as shown in Demo 2-2.

Demo 2-2: You can capture great details in flowers by using the macro mode.

By using macro mode, you take not just a picture of a garden but a picture of specific flowers within the garden, like the example shown in Figure 2-3. When shooting images for business, use the macro mode to show specific product features close up in a corporate brochure, catalog, or Web site.

Heavy-duty megapixels

» HP Photosmart R847 digital camera

Looking for the Rolls Royce of digital cameras? The Photosmart R847 has all the makings, including stunning 8 megapixel resolution, 24x total zoom, a gigantic, 3", auto-bright display with wide viewing angle, and even a way to get rid of annoying "pet eye".
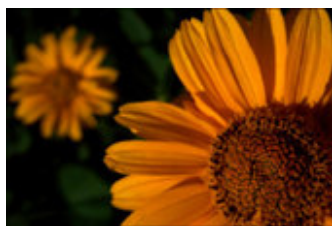
Figure 2-3: Seeing the flower for the garden.

Even just getting closer to larger subjects, as in the snapshot of a classic car shown in Figure 2-4, can lead you to creatively highlight designs and shapes within the larger form. For business, you might be a realtor photographing a listing and showing the fine gingerbread wood trimmings on a prized Victorian home.

Figure 2-4: Use macro mode to deconstruct a subject and highlight its features.

Experimenting with the macro mode provides new ways to observe your surroundings and subjects, and take better shots. Next, learn about shooting angles, composition, and the rule of thirds.

Shooting angles, composition, and thinking outside the box

Creative fields such as photography are inherently subjective, but guidelines do help beginners. If you know the tried-and-true methods for framing a photo, you can improve composition and interest in your photos, even if you're shooting at a spontaneous moment.

Rather than simply showing a subject positioned in the center of a shot, a photo can be informative, provocative, and puzzling, and evoke a range of emotions and feelings. A marketing campaign for a car can present it as being slick and fast, or as a practical and reliable family vehicle. One photograph may be purely artistic, whereas another might capture a significant moment from a worldwide news event.

A photo can be well-planned and contrived or the result of the luck of being in the right place at the right time. Digital manipulation can even introduce a bit of deception into the mix.

No matter what the shooting conditions are, even the most seasoned photographer can take hundreds of shots in a session and then use only a few. Now that digital cameras eliminate film waste, expense, and messy darkroom chemicals, you don't have to worry about the cost of shooting photos as a learning process. You can shoot as many pictures as your storage media can hold, and delete those that don't work for you.

Following are some rules to help you learn to move away from simple centered shots to capturing photos with more visual interest. If you practice applying some of these techniques, you'll develop your own style that continues to evolve over time.

Angles for creative views

Consider changing the angle from which you approach your subject. Experimenting always leads to something interesting and unexpected.

Print like a pro

» HP Photosmart D7260 printer

Easily crop and enhance photos, using the included HP Photosmart Essential software, and then print lab-quality shots. With our Photosmart D7260, quickly print laser-quality documents from your wired home computer network.

You can add drama by shooting your subject from a low or high angle. For example, lie down on a rocky shore or use a ladder to shoot downward at a group touring the facility. How about shooting almost directly upward at your subject?

Take the photo of an office building in Figure 2-5 as an example. From some distance, it would look like another office building. Moving up close enough to take the photo near the base and pointing upward makes the building feel more like a towering edifice.
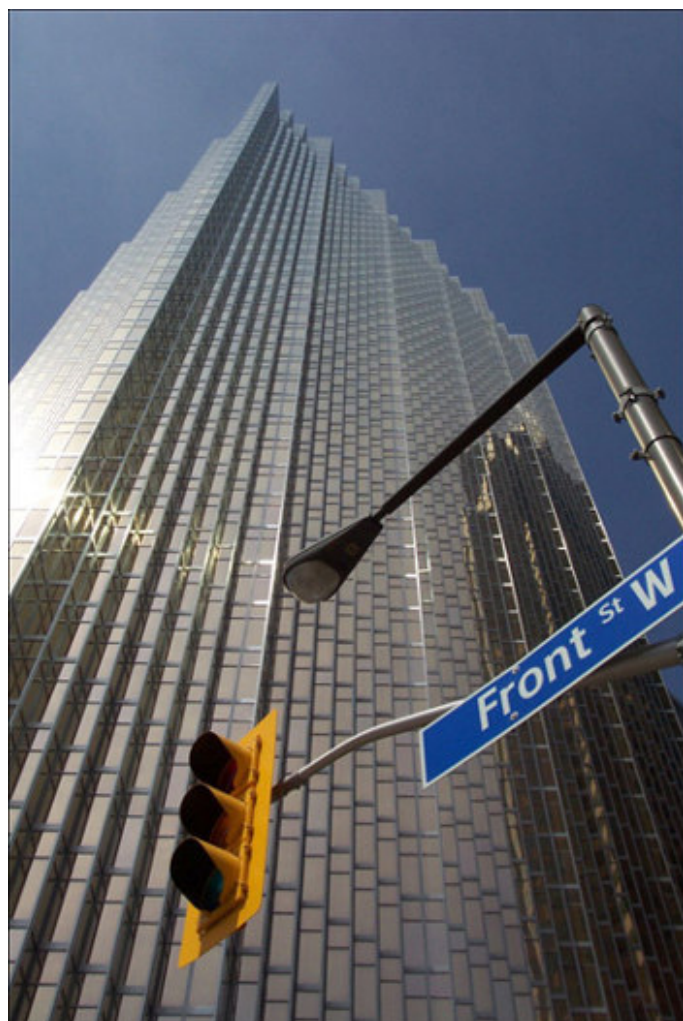

Figure 2-5: Creative angles can build drama.

Mind the background

It's easy to focus so much on a subject that you disregard what's around it, particularly in the background.

Imagine you're on a mountain trail on a Caribbean island, and you have a spectacular view of the ocean coast and offshore islands. You hold your camera up and start looking at the LCD or through the viewfinder to preview a shot. Looking carefully at all sectors within the frame, you notice things that would mar the final image, such as overhead wires and a communications tower. You then change your position and add a little zoom to eliminate the wires and tower from the frame. An example of this is shown in Demo 2-3.

Demo 2-3: Frame your shot and change positions to avoid capturing any distractions in your photo.

When you're framing your shots, train yourself to look at all the elements of the shot, including objects in the background. (You don't want a shot where a telephone pole appears to be growing out of someone's head, do you?) If an unwanted object is showing up in your shot, try changing the angle by moving the camera up or down, moving to another position, or zooming in on the subject.

Basic composition: the rule of thirds

The lesson mentioned earlier that a photo with the subject centered in the middle can be a little

"typical," which translates to boring. You can improve a photo's composition by shooting with the subject positioned outside the center of the photo, using a technique called the rule of thirds.

Here's how it works. In your mind's eye, add gridlines that divide the photo frame into three equally spaced columns and three equally spaced rows. Then, as illustrated in Demo 2-4, consider placing your subject approximately on one of the points where the lines intersect.

Demo 2-4: Using the rule of thirds can create a more interesting composition than simply placing your subject in the center of the image.

Don't be too stringent about applying this rule, but be aware that always placing the subject in the center of the scene can become a bad habit. Using the rule of thirds for some of your photographs can help those shots have a more natural feel.

As this section only touched on the importance of experimentation, the next section addresses that topic in-depth. Find out about the Seven-Step Experiment, and get creative tips for shooting people and products.

Experiment to develop experience

Hands-on experimentation can better prepare you for almost anything. You can easily combine your camera's capabilities with simple tricks like keeping the light to your back to compensate for many situational problems.

By practicing with different combinations of settings and in different environments, you can reduce the risk of losing a potentially great photo opportunity and be more efficient at preparing for shots. For example, taking photos at an event can be a lot more fun when you can anticipate camera adjustments for better pictures.

Try an experiment now to practice for comfort and efficiency.

The seven-step experiment
Testing your camera in a controlled situation and noting what you're doing, the settings you're choosing, and how they're affecting your images is a skill-building tool that can help you reduce the chances of losing special moments.

A practice session like this Seven-Step Experiment has long been a skill-building tradition in film photography. This kind of exercise remains a practical learning tool for digital photography as well.

Try the following steps to practice with your camera features and experience how your camera performs in controlled circumstances:

1. Get a notebook and pen or pencil, as well as your digital camera, and then select a subject to photograph. Pick any subject of interest to you for this experiment.
2. In your notebook, write down a brief description of your subject and the shooting and lighting circumstances, such as "Flowers near the window with natural light" or "Product photos in a real office setting with fluorescent lights."
3. Put an empty storage media card in the camera, so you know the file number will correspond with the first shot you take: #1 in your notebook.
4. Take the first photo with the camera's fully automatic (auto adjustment) shooting mode to establish a "baseline" against which you'll compare your later shots.
5. Take a series of additional shots, changing settings such as the type of flash used or changing aspects of the composition such as the shooting angle and nature of any lighting used. Number each shot in your notebook, and jot down the settings and techniques you used for each shot, as well as any other notable conditions.
6. Review your shots in sequence on the camera's LCD or preferably on a computer after transferring them from the camera. Compare your outcome onscreen to your notes. Verify which settings worked best in the experimental situation.
7. Return to your notes and update them by rating each shot and noting what you like and dislike about it. Highlight the settings with the best performance. Keep your notebook for reference and continuing future experiments.

If you're experimenting outdoors, the position of the sun will change and should be noted. As an extension to your experiment, consider shooting the same or a similar subject during sunny versus overcast conditions, making notes about the different results in your notebook.

Features make the difference

» HP Photosmart M447 digital camera

What could be easier than our intuitive-to-use Photosmart M447 digital camera? Get ready to snap away with impressive results, courtesy of the 5 megapixel resolution and 5x digital zoom.

In your first experiments, don't attempt to come up with and test every possible camera setting. That may not be realistic with only 24 hours in a day. Start off by testing just one or two settings and compositions in combination. You can gradually try more complex experiments and combinations later, unless you're a more experienced photographer.

It can be a real eye opener to review your experimental photos on your camera's LCD or computer screen and compare what you see to your notes. Having a written and visual record of what works often makes the preferred combinations stick in your memory.

This is just one of perhaps many ways to experiment. Develop your own methods. The more experiments you complete, the more experience you gain, giving you more potential to take great photos.

The next section offers a plethora of tips for capturing visually interesting shots of people at work and play.

Tips for shooting people

You may admit to lining everyone up to say "cheese" with a hand wave for a photo, maybe even one for the company newsletter. Or you may be guilty of taking yet another photo of an executive behind his or her desk.

To capture more interesting, spontaneous shots of human subjects, try these tips:

- Take as many photos as possible. You'll improve your chances of capturing special moments, expressions, angles, perfect light, and more.
- Fill the frame with your subject and move in a little closer. For example, a shot that crops out an unruly head of hair can help the viewer focus on an interesting face. Some of the shots in Figure 2-6 illustrate how filling the frame with a cute face can give a great result.
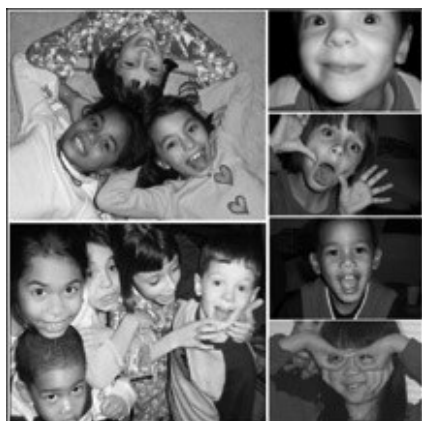

Figure 2-6: A collage of people shots that evokes fun and laughter.

- Take pictures of people being people. Don't ask your subjects to pose, but take shots of them talking, laughing, and just engaging with each other. How about taking the executive out from behind the desk and showing him shaking hands, having discussions, and engaging with others in different ways? Some of the shots in Figure 2-6 also illustrate this interactive approach.
- Action is good. Rather than showing someone posed in front of a wall, show that person engaging in a favorite work or recreational activity.
- Stay inconspicuous at an event. When human subjects aren't aware of your presence, you're able to capture more natural pictures.

Tips for shooting products

You need to think in different terms to get a creative product photo. After all, it's hard to get an action shot of an inanimate object. You can still be very creative using these tips:

- Show a product being used. This tells the story of what the product does and what benefits it gives the user.
- Add relevant components to the scene. The new model of juicer that your company is launching might be photographed with a variety of fresh fruits and vegetables to add vibrant color that draws attention. The photo becomes a silent salesperson, giving your customers ideas about all the different types of healthy delicious juices they can enjoy.

- As with people, try zooming in on a particular product element or feature. Details and benefits sell, and different views of the product add interest.
- Take a high-resolution photo, even when you're taking photos for your corporate Web site. You should always start with a high-quality digital photograph, even though it'll be scaled down and optimized.

Don't hesitate to try your creative ideas. Some of the best photographs ever taken were creative accidents.

Random acts of creative photography

It seems like magic when it all comes together and you know you've just taken a nice photo. Having a carefully planned photo turn out the way you want is certainly satisfying.

However, don't hesitate to try a casual excursion where you take random photos. Take your camera with you during a walk around town, shooting people, buildings, statues, or whatever comes into your camera viewfinder as you go. Do the same on a nature hike. Rather than shooting the kids and the ball at a soccer game, take pictures of the parents and league officials; get off the bleachers and look around.

Also, don't limit yourself to the fully automatic shooting mode. Try different features and presets, work with the zoom, work with the flash, and more. For example, Figure 2-7 shows some flowers from a street-side floral vendor shot in such a way that the blooms fill the frame.

Figure 2-7: The frame is filled with a floral fire.

Pay attention to orientation

You can add interest by changing the orientation of your frame as well. Consider rotating your camera 90 degrees if your subject might be best represented by the portrait (vertical) orientation. Figure 2-8 shows an image with the portrait orientation on the left, compared with one in landscape orientation on the right.

Figure 2-8: Comparison of portrait (left) and landscape (right) orientations.

When you download an image to your computer, it initially lays on its side in the landscape orientation. However, even with the most basic software included with newer computer operating systems and digital cameras, you can rotate it back to portrait orientation as intended.

Check out the HP Digital photograpy center for even more photo-taking tips and how-tos.

Moving on

In this lesson, you learned about lighting and composition, and explored an exercise and specific ideas for improving your shots. Lesson 3 walks you through the key aspects of downloading, organizing, sharing, and editing your digital shots.

Before you get back into the technical workflow of what to do after you take all your photos, you can further evaluate how to build your expertise and creativity. Complete the assignment and take the quiz for this lesson. As always, the Message Board is open 24/7, and this is a good opportunity to share some of those ideas you have bubbling.

Next steps »

Congratulations on completing the lesson! Don't forget the following:
» Assignment:Approach your subject
» Quiz:Lesson 2, quiz 1
» Discuss what you've learned with your instructor and other students
» Return to the lessons list to get a quick overview of the entire class

Privacy statement   Using this site means you accept its terms   Feedback to Home & Home Office

Photography fundamentals: take better pictures assignment

📧 **View your shopping cart**

Assignments are designed to help you apply the information learned in the lessons.

Approach your subject

Perform this assignment to help develop your sense of lighting and composition:

1. Choose a readily available subject that you can photograph outdoors: a person, pet, vase of flowers, tree, building, your car, or anything you choose. Take numerous photos at various distances, and more importantly, from different angles as discussed in Lesson 2. Try applying the rule of thirds and different zooms to achieve interesting compositions. Take as many shots as you can, even taking shots on different days with different lighting conditions, if possible.
2. Transfer the pictures to your computer and review them onscreen. Study the shots in detail, considering the following questions.

   What makes some shots more interesting?

   Where you surprised by any outcomes?

   Did any photos appear more dramatic?

   Do you prefer a particular type of composition or lighting, and why?

You have completed this assignment.

Next steps »

hp

Lesson 2, quiz 1

📇 **View your shopping cart**

Quiz: Lesson 2, quiz 1

Quizzes are designed to give you a chance to test your knowledge.

Please feel free to take this quiz again. We will update your score.

1. True or False: Sometimes it's important to break the rules in photography.

    A. ⚪ True
    B. ⚪ False

2. True or False: You can achieve better photographs only by purchasing lots of additional lighting accessories.

    A. ⚪ True
    B. ⚪ False

3. True or False: It can be just as important to consider what's in the background of your shot as it is to consider your subject.

    A. ⚪ True
    B. ⚪ False

4. True or False: Always ensure that you center the photo's main subject in the middle of the frame.

    A. ⚪ True
    B. ⚪ False

5. True or False: Taking a posed group shot at an event always gives the best result.

    A. ⚪ True
    B. ⚪ False

Submit »

 # Lessons - Professional digital photography made simple

Professional digital photography made simple

» Lessons
» Message board

Welcome to your lessons. Some lessons may have quizzes or assignments for additional learning. Don't forget to join your fellow classmates and instructor on the message board.

Lesson 3

Transferring pictures to your computer

With a film camera, after you finished shooting your roll(s) of film, you then did one of two things:

- You made a trip to the photo lab for processing, paid for processing (not to mention the costs of any later reprints or enlargements), and then returned at some point to pick up your pictures.
- If you were more experienced, you used your own darkroom and chemicals to develop and print your pictures.

Either way, you went through a lot of effort to see what did or didn't turn out. Film photography still has its place and value, but there's such a difference in convenience and processing with digital photography.

For business and marketing functions, moving or developing digital photography services in-house saves money and time and facilitates shorter timelines to meet project deadlines. For homebodies who like to document every special event in life, digital photography provides the capability to take more pictures without interruptions for changing film, potentially reduces expenditures for photo prints, and provides special avenues for sharing images via e-mail, Web sites, and special projects.

With digital pictures, you can do it all or as much as you choose to do. Maybe the whole image editing thing isn't for you. You can still download your photos, burn the ones you want to CD, and have a photo lab or online photo service make prints. Even that scenario saves on film costs.

If you want to experiment more and have the required hardware and software, you might tweak the photo's appearance slightly and then make your own prints. Or perhaps you want full control, right down to advanced image editing and full print production.

It's all very flexible, and it's all up to you.

Engineered for performance and outstanding value

» **Desktop PCs**

View our wide selection of desktop PCs to see reliable HP quality at a great value. We'll even help you choose the right desktop for your unique needs.

Downloading
After you take your photos, you need to download (copy or move) the digital images from your camera to your computer. Your computer then becomes your personal digital darkroom in which you organize and edit your work.

You may use one of a few methods to download the images, based on your camera model.

Direct connection
Use a USB (universal serial bus) cable that connects from the camera directly to your computer.

Docking station
A docking station stays connected to your computer, usually via a USB or FireWire cable, or infrared or wireless connection. The camera fits into the docking station for the transfer. The docking station might perform other functions with the docked camera, such as recharging the batteries without removing them from your camera, automatically launching the software to organize and edit your photos, and moving your photos from the storage media card in your camera to your computer.

Flash card (media) readers
Many of today's newer home computers and laptops have built-in memory card readers. If you have an older computer you can purchase a separate flash card reader, connect it to your computer via the appropriate cable (usually USB or FireWire), and install any required software. Then you can remove the storage media card from your camera and insert the card into the card reader, which remains connected to your computer for convenience, and finally transfer the images stored on the card. Some card readers support up to eight types of media storage cards.

A card reader is a small, handy, inexpensive device that plugs into any reasonably current computer. It also reads different card formats, including CompactFlash, SmartMedia, and others. Some computers, including newer multimedia-oriented notebooks, also have a built-in card reader for specific types of media.

If you're visiting family or friends while on vacation and someone has a card reader, you can slide your storage media card into the reader and share your photos right away.

Printer docks and readers
Some photo printer models enable you to dock a compatible camera so that you can make prints even without downloading the images. Similarly, some photo printers and all Hewlett-Packard Photosmart photo printers have built-in media card readers for direct printing, and don't require a computer connection to print photos.

A **photo printer** is an inkjet printer optimized for printing digital photos onto special photo paper. Most photo printer models have print quality that is equal to those prints from professional photo labs. To learn more about photo printers, visit the HP Photo Printer buying guide.

Depending on which transfer method you use, you might need to use a program or utility. That's covered in the next section.

Exploring transfer software utilities
Every camera should come with some type of software utility to help move your pictures from your camera to your computer. These utilities vary, and some include additional functions including photo organization (sometimes into logical groups called albums) and photo editing. For example, HP provides free downloadable software called Photosmart Essential which downloads your photos and provides additional editing, organizing, printing and project capabilities. You can download the software at www.hp.com/go/pse.

Follow the step-by-step instructions that come with your camera to install the software, connect your camera to your computer, and transfer image files. If you have trouble and need more help, your camera manufacturer's Web site has some type of related FAQs (frequently asked questions) or technical support available by phone, e-mail, or live online chat.

You can download and enjoy Photosmart Essential for free -- no matter what kind of camera you use.

Recent Microsoft Windows and Mac OS X versions have built-in photo transfer capabilities and support the majority of recent camera models. You just connect the camera to your computer, and the built-in utility displays a prompt asking whether you want to transfer the photos or open a folder window to view them.

Next up -- get tips for organizing your photos into folders.

Get it all organized

Once you've copied or moved digital picture files to your computer, you can treat them like any other file: copy, paste, and organize the files into folders with relevant names.

For the typical photographer, the wisdom of organizing comes later with the inevitable wish that miscellaneous pictures weren't jumbled together. Don't create a digital shoebox full of unorganized photos on your computer. Arrange images in a meaningful manner, so that you can easily find what you want at any time.

You can choose one of several ways to organize your photos.

Use a photo-management application
Most photo-management programs help you organize your digital pictures and usually include fairly easy-to-use options for:

- Transferring images from your camera to your computer
- Optimizing an image to send by e-mail

Versatile and affordable

» Digital cameras

From point-and-shoot models to cameras designed for the photo enthusiast, HP innovation makes it easy to shoot and share digital pictures.

- Preparing an image for good, better, and best print quality
- Applying preset image sizes for e-mail and printing purposes

Figure 3-1 shows how HP Photosmart Essential allows you to view and then organize your photos. Photosmart Essential organzies photos into folders automatically, then allows you to sort photos by date, tag, or subject.
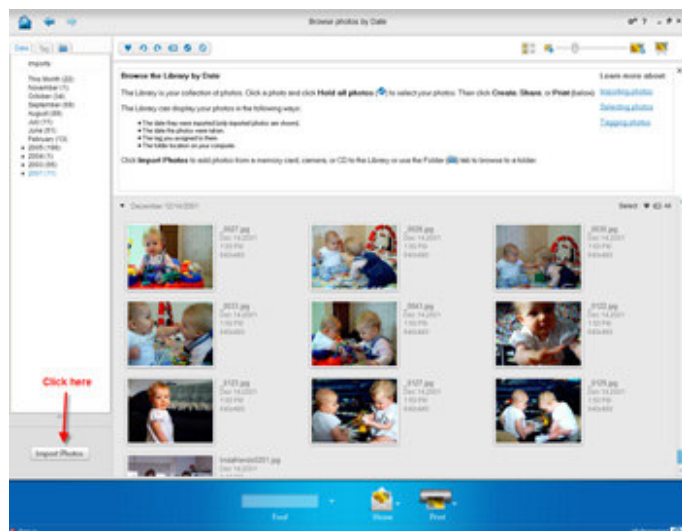

Figure 3-1: Most cameras include software for transferring and organizing digital pictures. HP's free Photosmart Essential sofware helps you organize, view, edit, and share photos.

Enlarge image

Sometimes referred to as photo album software, these programs are multifunctional, so make sure you're getting the features you want if you decide to spend extra money for a third-party package. Prices for consumer-level photo album programs are generally reasonable, ranging from $10 to slightly more than $100. Adobe Photoshop Album and Corel Photo Album are leading album programs.

Look for these capabilities when shopping for photo album software:

- Create, name, and protect digital photo albums
- Flip (click) through onscreen books
- Add tags or custom labels (also called **metadata**) to help better classify and identify photos
- Search for images and sort them
- Create slide shows on your computer or for the Web
- Choose custom presentation styles
- Add headings, messages, or captions to photos
- Perform basic image editing, such as rotating, cropping, resizing, color, contrast, and brightness adjustments
- Create screensavers
- Automatically order prints from an online service.

Use an online photo service

Online photo services enable you to share your photos by uploading them to a public photo gallery hosted by the site. Once you've uploaded your pictures, friends and family can view them online. Most services also enable you to order prints of your uploaded images or to create and purchase special projects like mugs and mousepads that feature your images.

Most of these services are free. From there, you pay on a per-item basis for any prints or special items you purchase. Snapfish (operated by HP) is a popular online photo service sites that enable you to share photos and create prints and other items. You can easily link to it from Photosmart Essential.
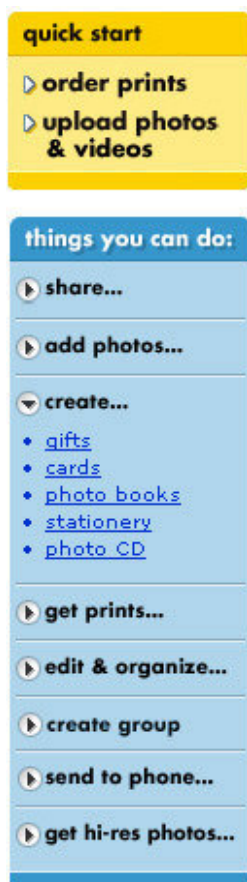
Figure 3-2: When you upload your photos to Snapfish, you have many options for printing and sharing your photos.

Build your own filing system

Of course, you don't have to take your photos online. And, if you have a slow dial-up Internet connection, uploading a set of photos could take hours. It's easy to set up your own custom photo filing system on your computer, no matter which operating system you use.

You don't have to use any one approach, but staying consistent is key. For example, if you decide to organize your photos within the My Pictures folder in Microsoft Windows XP, you might create subfolders that organize images by event, such as *Dave's Wedding*, *2007 Beach Vacation*, or *Ann's Graduation*. In a business environment, you could create a folder to hold the photos for each product, client, or project. Another option is to organize your folders by year and then within each year's folder use subfolders for events.

> To enhance the descriptive names you create for the folders, include the date the pictures were shot, especially if you take a lot of pictures of the same or similar subjects. For example, you might name your folders *Roses 6-30-06*, *Roses 7-15-06*, and so on.

Along with organizing your photo files comes storage considerations, and file backup and protection. Those topics are covered next.

Storage, backup, and protection

Storing and backing up your image files generally need more attention from most users, and especially for those of you who have amassed considerable volumes of work on your computers. Take the time now to consider your practices for protecting your precious photos.

Selecting photo storage solutions

As you move into better-quality digital cameras, you can capture very large, high-quality image files. It doesn't take long for those image files to gobble up a significant amount of the hard disk space on

Considering other forms of protection

Consider adding a surge protector (as opposed to a cheap power strip) as a good first line of defense in protecting your electronic images. Such a

your computer. Although it's possible to add a second hard disk or upgrade to a larger hard disk in many systems, that may not be the best option for you unless you're skilled in computer repair.

When it comes to space, a single compressed JPEG photo takes up much more hard disk real estate than the average spreadsheet or text document.

Most digital photographers opt to add an external hard drive device for storing photos. With models exceeding 100 GB, one of these drives usually provides room enough for storing other files too. You can choose one of many types of external hard drive devices, including mini and portable models. Most of these drives connect to your computer via a high-speed USB or FireWire connection, whereas other models connect to a network rather than an individual computer. A few models even connect wirelessly to a network. Prices vary based on total capacity and features.

If you're looking for more space for storing your digital images and other media, adding an external hard disk usually provides the fastest, most practical solution. Great storage options from HP include the Personal Media Drive and the Media Vault.

Making backups
If you lost everything on your computer today, would you be devastated or just inconvenienced? Consider what you have on your computer's internal hard disk for just a moment. How much of that content is irreplaceable?

Backing up consists of making a copy of your data -- documents, spreadsheets, photos, and so on -- on a storage location that's isolated and separated from your computer (that is, on a separate disk or storage medium). You should back up your files at regular intervals to keep your backup current.

You can use a specialized backup program or utility to make the back up, which you might need to purchase separately and install on your system. Most backup programs consolidate all the backed up information into a single file, from which you can later restore individual folders or files as needed. Your backup software might offer additional appealing features, such as the ability to schedule backups to occur automatically at night or the ability to perform partial -- incremental -- backups to save time.

Windows XP includes built-in backup capabilities. If you purchased Microsoft Windows XP Home, you have to install the backup utility from the XP CD-ROM. The Professional version of XP has the backup utility already installed.

Good old copying represents a more simplified form of backing up. If files like your digital files are important to you, you can make copies on another disk or storage medium. While it's more time-consuming to simply copy your files, you don't have to restore the files later to use them.

What should I back up, and where should I keep it?
In addition to deciding how to make your backups, you need to decide when and what to back up. The issue of "when" presents another trade-off. Backing up more often requires more time and storage space. Backing up less often saves time, but it means you stand to lose more data if something goes wrong with your system.

A good backup plan requires you to perform a full system backup every month, with incremental backups of new data files at weekly intervals.

The last backup item to consider is where you want to store the backup information. Remember, if you store backup copies on your system's hard disk and it fails, you may lose those backups in addition to the original images. For safety, store the backup files or copies on a separate disk of some sort.

In the past, it was popular and cost-effective to use popular types of drives called tape backup drives for backups. Now, an external hard disk may offer a good backup solution, assuming you haven't already moved your original images to that disk. Even better, because most systems now come equipped with a drive for burning CD-Rs or DVD-Rs (or variations of those media), CD-R or DVD-R might be the best bet. You can burn (back up or copy) image files to CD-R or DVD-R, and then store the discs in a separate location for enhanced safety. Most backup programs back up directly to CD-R or DVD-R, even when a backup requires multiple discs.

Companies often store their backups at a secure site away from their facility. You could store copies of important files in a safe deposit box, for example. If you have any online storage space

device protects against power surges that can damage a computer in a few nanoseconds (billionths of a second).

Also consider antivirus -- and especially if you have a high-speed Internet connection -- and firewall software. These programs prevent malicious files and programs from infecting and damaging your computer's system files, as well as your data files.

» **Desktop storage**

Whether you want to back up your personal media and data for safety's sake or clear up your hard drive to make space, look to HP for your storage needs.

through your ISP, you also can copy your vital images to that storage for added safety.

Now that you understand your storage and backup needs, move on to image editing software, covered in the next section.

Review image editing programs

You've now downloaded and organized your photos and have backed them up for safety. Your photos turned out well. You did delete some that just weren't keepers. But you think that even some of your better shots could use a little extra something. It's time to consider editing your images.

Many digital cameras include a basic image editing program that meets the needs of beginning users. Such a program enables you to crop, rotate, and perform other basic corrections on your photos.

> You can't rescue every image. An image can be so dark or washed out that it doesn't contain enough recognizable color information to enhance or change. You can do some pretty amazing things with an image editing program, but it doesn't perform miracles.

Image editing programs range in price from free up to several hundreds of dollars, with the more expensive programs offering professional-level capabilities. Evaluate your needs to decide which program will work best for editing your photos. Your needs may change over time, so think about your current and anticipated photo-editing requirements.

Roughly speaking, users fall into one of the following categories in terms of image editing needs.

Novice
You want to be able to make some of your favorite shots a little better. You're satisfied with most of the photos while shooting, want to touch up some of them through cropping, resizing, removing red eye and using basic lighting adjustments, and maybe even do a little experimenting with basic creative projects. You have little time to learn new software.

If these statements describe you, consider sticking with the basic editing program that came with your camera, such as HP Photosmart Essential or Premier software that comes with HP digital photography products. Depending on which operating system you're using, your computer may already include an image editing program, that suits your entry-level needs. Or, consider using an online service, such as Snapfish, l that offers basic editing capabilities in addition to the ability to organize and print your pictures.

Intermediate
You want to be creative and have more control and options over your photography. You don't need a top-of-the-line professional program, but you'd like a program that enables you to stretch creatively at an affordable price. You have time to learn a new program, but you don't want to become an expert.

If these statements apply to you, consider a program such as Adobe Photoshop Elements. This scaled-down version of a professional-level program offers a wide range of accessible photo-editing features for a reasonable price. Corel Paint Shot Pro X and Ulead Photo Express both offer a nice feature set for a reasonable price to appeal to those falling between a novice and a pro.

Advanced and professional
If you're a serious hobbyist or professional, you require all the digital darkroom features needed to perfect your photos. You also need digital manipulation functions that allow a wider breadth of creative possibilities. Finally, you require an image editing program that enables you to prepare digital photos that meet specifications for print and other forms of artwork. You have the time and drive to master the editing program's extensive functions.

If these statements describe you, consider the long-time leader in professional digital image editing: Adobe Photoshop. Photoshop is the world's industry standard and the choice of most professionals everywhere. It has a vast expanse of capabilities useful to everyone from Webmasters, professional photographers, and skilled graphic designers working on the Windows or Mac OS X platform. Other notable entries in this category include Ulead PhotoImpact for Windows users, and Aperture for Mac OS X users.

> A freeware program called GIMP offers fairly advanced features and is available for download at

Edit your work like a professional

» Adobe Photoshop CS3
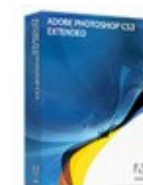
The essential software for perfecting your images, Adobe® Photoshop® CS3 now offers productivity and workflow enhancements, powerful new editing tools, and breakthrough compositing capabilities.

the GIMP Web site.

Now that you have a good idea of the range of available image editing software, take a look at the features you should expect to find in these packages.

Explore image editing features

Because there are so many image editing programs to choose from, you need to do a little research to pick the best one. Publishers of the commercial programs and many shareware programs have Web sites offering extensive information about a program's features.

The basics
Basic editing features you should look for in any image editing program you're considering for purchase include:

- **Rotating:** You can rotate a picture clockwise or counterclockwise at various angles, often with preset selections, but some better editing programs let you rotate precisely.
- **Cropping:** Cropping means trimming away content from one or more edges of the picture. Crop to cut out unwanted visual clutter, to accentuate strong vertical or horizontal orientation, or to focus the image on a particular part of the subject.
- **Resizing (resampling):** This feature changes the image's dimensions and sometimes its quality to prepare the image for the method you'll use to share or publish it. Some programs include custom or preset selections to resize the image for e-mailing, printing, or resolution (quality).
- **Brightness (lightness) and contrast:** An image editing program usually offers automatic brightness and contrast correction, and better programs enable you to select the level of correction to apply.
- **Color correction (saturation):** Most basic image editing programs enable you to make at least some color corrections. Depending on the program, it may be able to correct only the whole image or a selection in the image.

Demo 3-1 shows you how these basic image editing functions work.

Demo 3-1: Combining image editing functions to make a final product.

The next section looks at advanced image editing features and examples of how you can put them to use.

Advanced editing features and manipulation techniques
Although learning advanced photo editing might sound daunting, persevering through the learning curve pays off with the satisfaction of having the power to apply awesome corrections and effects to your photos, such as:

- Removing, moving, altering, distorting, adding, and changing the photo's color or its content
- Fixing faded and damaged photos
- Balancing colors and light and dark levels

There are four essential types of tools to look for in any advanced image editing program:

- **Selection tools:** Enable you to specify or target an area of a photo you want to manipulate, down to a single pixel
- **Correctiontools:** Commonly used for fixing colors, brightness, and contrast
- **Paintingtools:** Include brushes, pencils, and spray cans you can use to stroke colors or effects onto an image
- **Blendingtools:** Mix and blend elements of a photo

Figure 3-3 shows a before-and-after shot of an old photo digitally restored. The original damaged photo appears on the left. The center figure identifies the areas that will be restored. The image on the right has been restored. (This demonstration was created using Photoshop.)

Prepping pictures for the Web

You usually won't get good results if you take a photo direct from a digital camera to a Web page. For starters, the picture will be too large and download too slowly. Plus, the image might not have the correct file format and its colors might not display well. You can correct for these issues by using an image editing program to optimize an image for the Web.

Photoshop and Photoshop Elements have very good image-optimizing tools that enable you to save JPEG and GIF (Graphics Interchange Format) images as efficiently as possible for use on the Web. This duo also has a Save for the Web option that leads to an interface dedicated to optimizing and previewing your photos. You'll learn more about e-mail and Web optimization in Lesson 4.

» Photosmart Essential

Have fun with the easy editing, printing, sharing and creative features. Now your photos will look even better!
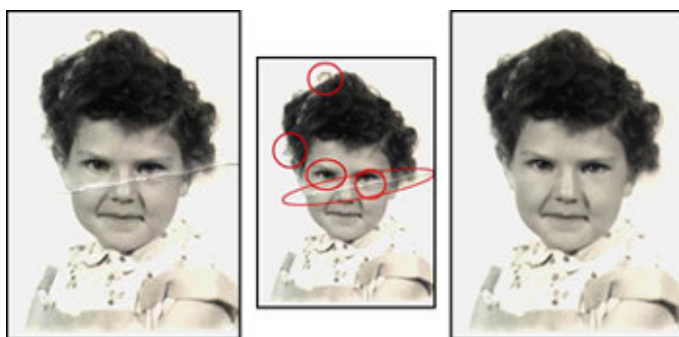
Figure 3-3: An advanced image editing program enables you to restore heavily damaged old photos.

Figure 3-4 demonstrates how you can use advanced image editing software to remove unwanted elements from a picture. The tree in front of the cabin was removed using the clone tool in Photoshop (a tool also available in Photoshop Elements).
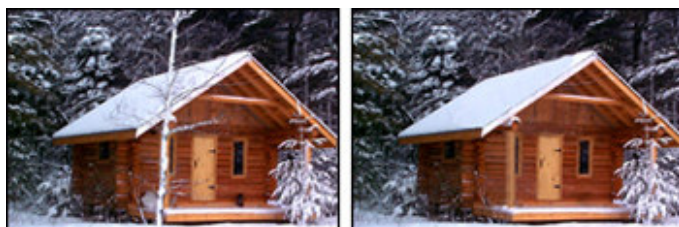

Figure 3-4: You can remove unwanted visual distractions without retaking the photo.

There's much more you can do with image editing software, especially when it comes to tweaking color, enhancing dull or overexposed images, and combining two or more images. If you've come this far and you're hungry for more, consider taking a more advanced digital photography course after you complete this one.

Moving On

This lesson helped you explore how to download, organize, and back up your digital images. You also learned key points for selecting an image editing program and got a preview of some of the image correction and design possibilities you may want to try out on your own digital pictures. In Lesson 4, you'll learn about image size and printing considerations, color calibration, and preparing your images for sharing via e-mail or the Web.

Work through the assignment and take the quiz to wrap up this lesson. Some of you might have your own ideas for, suggestions about, and methods of downloading, organizing, storing, and editing your photos. What's on your mind? The Message Board is open to beginners and experts alike.

Next steps »

Congratulations on completing the lesson! Don't forget the following:
» Assignment:Warm up to organizing, editing, and backing up
» Quiz:Lesson 3, quiz 1
» Discuss what you've learned with your instructor and other students
» Return to the lessons list to get a quick overview of the entire class

Download, organize, and edit assignment

View your shopping cart

Assignments are designed to help you apply the information learned in the lessons.

Warm up to organizing, editing, and backing up

Lesson 3 provided an overview of what you do after you shoot some digital pictures: transfer, organize, back up, and edit images. The following steps help you explore your current capabilities in each of those areas and plan for any changes you might want to make:

1. Get your digital camera and take several pictures each of at least two different subjects.
2. Connect the camera to your computer. Set the camera to its playback or transfer mode, and transfer the images to the computer's hard disk using either the transfer or album software that came with your camera or the computer's operating system.

Sometimes, digital photo software automatically places the images in specific folders on your hard disk. If you use transfer software, you need to learn where it puts your picture files so that you can work with them after the transfer.

1. Working in your operating system, organize the newly transferred images into folders, naming each folder after the subject of the photos.
2. Check to see if your system has a backup program or utility installed. If it does, use the utility to back up your newly organized photos.
3. Use image-editing software to open a few images and perform basic edits. Save your edited images with new file names.
4. Burn a copy of your pictures to a CD-R or DVD-R, if you have the appropriate type of drive installed on your computer.
5. (Optional) Go online and research backup programs and image-editing programs. If you find a demo or trial version that offers the features you want, download, install, and test the trial.

You have completed this assignment.

Next steps »

Privacy statement   Using this site means you accept its terms   Feedback to Home & Home Office

© 2007 Hewlett-Packard Company, L.P.

Lesson 3, quiz 1

📧 **View your shopping cart**

Quiz: Lesson 3, quiz 1

Quizzes are designed to give you a chance to test your knowledge.

Please feel free to take this quiz again. We will update your score.

1. True or False: Downloading is moving the digital images from your camera to your computer.

    A. ⚪ True
    B. ⚪ False

2. What can you do with photo album software? (Check all that apply.)

    A. ☐ Search and sort
    B. ☐ Update your operating system
    C. ☐ Organize and protect your digital photos
    D. ☐ Add text for headings, messages, or captions to your photos

3. True or False: Backing up involves making some type of copy of your data and storing that copy in a location isolated and separate from your computer.

    A. ⚪ True
    B. ⚪ False

4. True or False: Anyone can do basic image editing, and most digital cameras come with an image editing program.

    A. ⚪ True
    B. ⚪ False

5. Which of the following is a basic image editing operation? (Check all that apply).

    A. ☐ Cropping
    B. ☐ Toasting
    C. ☐ Rotating
    D. ☐ Resizing

Submit »

Lessons - Professional digital photography made simple

Professional digital photography made simple

» Lessons
» Message board

Welcome to your lessons. Some lessons may have quizzes or assignments for additional learning. Don't forget to join your fellow classmates and instructor on the message board.

Lesson 4

» View single page

Setting picture quality and size on your camera

Lesson 1 gave you some guidelines about what size prints you can make from the pictures shot by your camera, based on the quality of the images your camera can make, in megapixels. In this lesson, learn more about image quality or sizing and how it applies to printing and working with digital images.

When you're shopping for a digital camera, the advertised megapixel capability for the camera identifies the highest-quality picture that camera can make. If a camera is capable of shooting a 6-megapixel image, that means the camera can capture a picture that's roughly 2,816 pixels by 2,112 pixels (which multiplies to 5,947,392 pixels, which rounds up to 6 megapixels).

The term **pixel** is an abbreviation for **pic**ture **el**ement. Colored pixels make up a digital photo. The **pixel dimensions** for a digital photo -- such as 2592 x 1944 -- identify how many pixels wide and tall the image file is. Pixel dimensions are commonly written without the comma.

You may not always want to shoot a picture using the maximum size and quality that your camera offers. That's why most digital cameras enable you to take pictures using various settings for size and quality.

The settings for picture size and quality vary depending on the camera manufacturer and model. Some manufacturers enable you to choose the picture size in megapixels (as in 7M, 5M, and 2M), with each setting corresponding to specific dimensions for the picture (3072 x 2304, 2592 x 1944, and 1632 x 1224). On some cameras, you might choose a particular size in pixel dimensions, or a quality setting such as Super Fine, Fine, Standard, Economy; or Good, Better, Best). In still other instances, you might be able to specify the image quality or size by selecting particular dimension or output type, as in 3:2 or VGA.

Consult your camera's user's guide to learn which settings it offers for picture quality and size and how to change those settings when you want to.

Remember that the better the picture quality and the larger the picture size, the larger the digital image file will be. You can fit fewer larger pictures on your camera's storage media. Many current digital cameras display an indicator to show you how many more pictures a storage card can hold based on the current size and quality settings.

Image editing programs generally show the pixel dimensions of a digital picture in a status bar near the bottom of the screen.

In the next section, learn the relationship between image size and resolution, and the difference between display and print resolutions.

Image size and resolution

In addition to taking up more space on a camera's storage card, a higher-quality, larger digital picture can be displayed and printed at more and larger sizes without any negative impact on how it looks. That's because higher-quality images are made up of more pixels.

Photosmart eliminates the guesswork

» **HP Photosmart D5360 printer**

Print true-to-life-color photos and laser-quality documents on both sides of the page, and even print your own designs on CDs and DVDs, with the HP Photosmart D5360.

Affordable digital photographs

» **Digital cameras**

Display resolutions

When you include your image on a Web page or at a particular size in a publication, you need to be concerned about the image's **ppi** (pixels per inch), also called **resolution.** That is, if you're preparing an image to insert it into a publication at 300 ppi for professional printing, the image will be smaller than if you were placing it at 100 ppi.

To look at it another way, let's say you have a digital camera image you shot at 1024 x 768 (1,024 pixels wide by 768 pixels tall). If you set up that image as 300 ppi, it will be just under 3.5 inches wide (1,024/300=3.41). If you set it up at 100 ppi, the image would be about 10 inches wide (1,024/100=10.24).

> Web images are usually set to 72 ppi, which is usually mistakenly called dpi. Photo-quality images are at least 300 ppi.

Your digital camera images use a particular ppi when opened in an image editing program. Many camera JPEG images open at 72 or 96 ppi, with the resulting dimensions (in inches) coming from the picture's overall pixel dimensions divided by the resolution. The resolution used by most computer monitors, by default, is 96 ppi.

In many cases, you won't work with the image ppi in an image editing program. You'll just insert the image into a publication and resize it on the fly, or you'll try to print the image at a particular photo print size such as 4 x 6 inches or 5 x 8 inches. You have to be concerned that the image contains enough pixels overall to print at the size you want.

Having more pixels -- a higher ppi -- than needed usually isn't a problem. The picture file may be large and print more slowly, but its details should remain crisp. A problem occurs if you try to size or print the image at a large size when the image has too few pixels. In that situation, each pixel must display at a larger size because the ppi is lower, and at some point you'll start seeing the square pixels with the naked eye. Such an image is said to be **jagged** or **pixelated.**

Figure 4-1 shows an extreme example. The image on the left is pixelated because it's shown at too large a size -- and too low a ppi -- while the image on the right appears at a normal resolution.

Figure 4-1: If an image has too few pixels, it appears jagged (left).

Advanced image editing programs enable you to view your images onscreen using a few options: Print Size and Actual Pixels. You can have a good preview representation onscreen of the size of your print output with the Print Size option. The Actual Pixels option provides an accurate preview for e-mailed images, assuming the recipient's monitor is set to the same size as yours.

Dots per inch: print resolutions

When it comes to printing images, use the expression dpi (dots per inch) rather than ppi to describe the resolution. In many cases, the measurements are rather interchangeable. Setting up an image at 300 ppi means it will print accurately at 300 dpi.

Some basic image editing applications have print size and print quality preset selections that set up a photo with a few clicks of the mouse. If you appreciate that simplicity and it suits your needs, you'll do just fine.

As when viewing images, image files shot at a higher quality have more pixels, and you can therefore print them at larger sizes. Your image file will always have the same number of pixels. When you select a print size, you're choosing only how many of those pixels to use per square inch

From point-and-shoot models to cameras designed for the photo enthusiast, HP innovation makes it easy to shoot and share digital pictures.

of print output. You're not changing the digital image file's pixel dimension -- you're affecting the print output size.

Understanding resampling

More advanced image editing programs enable you to change an image file's pixel dimensions along with its ppi. This process is called resampling the image. Resampling uses a mathematical process called interpolation to decide where to add pixels if you're making the image larger or remove pixels if you're making it smaller.

For example, say you have a digital image file that's 1600 x 1200. If you resample it to 1280 x 960 (decreased by about 20 percent), you're discarding pixels and your print output quality can be maintained only at a smaller print size (20 percent smaller, in this example) if you want to use the same number of pixels per inch. Read that one more time: The image now has fewer pixels, and prints well only at smaller sizes.

While different types of interpolation give varying results, keep in mind that the more you change the size of the digital image file -- especially if you're making the file larger -- the more you'll likely reduce the image appearance.

Reviewing print sizes

Your digital camera's user's guide should include a table of optimal printing sizes for pictures you shoot with the camera's various size or quality settings. As discussed in Lesson 1, but worth repeating here, keep the following guidelines in mind:

- A 1-megapixel camera can produce good 4 x 6-inch prints
- A 2-megapixel camera can produce good 5 x 7-inch prints
- A 3-megapixel camera can produce good 8 x 10-inch prints
- A 5-megapixel camera can produce good 10 x 12-inch prints
- A 10-megapixel camera can produce good 16 x 20-inch prints

Now that you've covered image size and resolution, you're ready to move on to other printing considerations. That's coming up next.

Ready to print

You'll get better print output results if you understand how paper and printer settings work together. Today's photo-quality desktop printers produce great prints at a modest cost per print.

Pick your printer and paper

If you don't want to print images yourself, you can choose from a variety of online services to do it for you. You can send your digital image files directly via the Web, drop them off on a CD-R and let the professionals print for you, or even insert your CD-R or camera storage media into a retail kiosk for printing on the spot. Most of these sources give you the choice of standard photo print (paper) sizes, and one or two paper finishes, usually matte and glossy.

Making your own prints at home or the office provides added flexibility and convenience. You can get some nice results from an average desktop inkjet or photo-quality printer. Many great printers are available for a few hundred dollars or less, and entry-level prices for standalone photo printers have dropped to $100 or so when this course was written. See the HP Photo Printer buying guide for more information.

The paper you use for photo printing significantly contributes to the quality of the output. Some printer manufacturers produce their own brand of paper to match the technical and mechanical methods their printers use to apply ink to paper. Different papers absorb ink differently. A low-quality paper, for example, might not absorb ink well enough to produce a print with vibrant, realistic color.

You can find photo-quality papers in assorted sizes, weights (thickness), and finishes, such as matte, glossy, or even linen. Glossy papers are usually the most expensive but produce the highest-resolution prints for detail and rich colors. You can also use specialty papers for printing items such as business cards or notes. Get more information on choosing photo paper.

Your printer's specifications may also affect the size of photo paper you select. Some standalone photo printers, such as HP Photosmart compact photo printers, accept paper sized for 4 x 6-inch or sometimes 5 x 7-inch prints This type of paper often has a perforated tab at one end for you to use to feed and retrieve the paper without smearing the printed photo.

Other photo-quality printers accept sheets up to 8 1/2 x 11 inches or larger. If you choose full-size

Great photos deserve the best paper

» HP Photo paper

HP offers a complete line of photo papers in sizes ranging from 4x6" to 13x19" in many different finishes for all of your photo printing needs.

paper, you can size and print your photos at custom sizes, or print multiple copies of a photo on a single sheet. Some image album and editing programs even provide an automated way to print multiple copies of an image or multiple images on a single page of output.

There's a special way to refer to printing multiple copies of an image on a single sheet. For example, if you're printing four copies of a picture on one page, you're printing it "four-up."

Some photo printers have multiple ways for feeding the paper. Consult the printer documentation to learn the proper way to load the paper, including which side must be facing up. It's always a disappointment to waste pricey photo paper by printing on the wrong side.

Understanding printer settings

Once you've selected your paper, you need to understand the printer settings to use to print your photos. A common question in preparing an image for desktop printing is "What print resolution should I use for my picture file for the best results?"

As mentioned previously, 300 dpi is usually considered photo quality. In some cases, 150 dpi might produce a good print. On the other end of the spectrum, you may want to go with a size up to 600 dpi for very fine prints, especially for prints that you intend to frame and display. The available print resolutions vary depending on your printer -- some go up to 1200 dpi or more. But keep in mind that a higher print quality results in a slower print job, especially on an inkjet printer.

What's the right resolution? The easiest guideline to follow is: whatever looks good to you. If you're printing for business, print at the resolution that looks good to your client.

When you're printing an image, no matter which application you use, select the correct printer in the Print dialog box that appears after you click **Print.** Then, click the **Properties** button to open a dialog box in which you select settings for the current print job. The properties dialog box, as shown in Figure 4-2, presents an assortment of options to specify your print quality. Review your printer's manual to learn more about the settings for your particular printer.
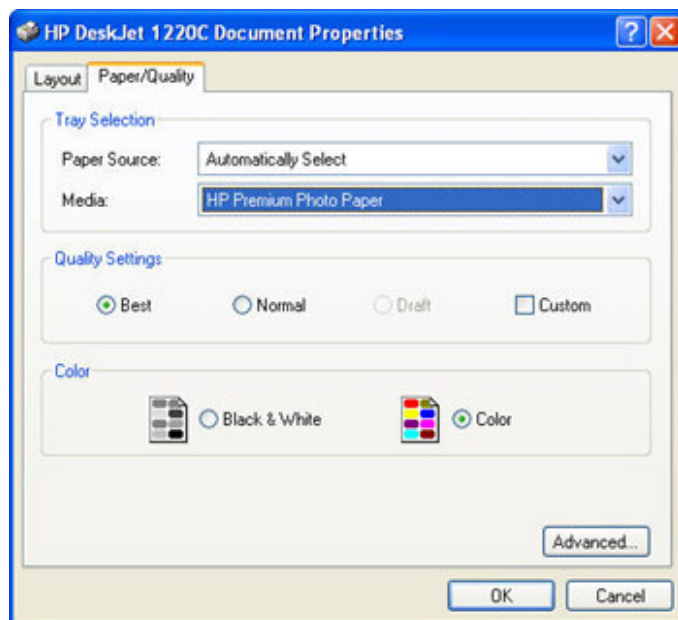

Figure 4-2: Use the properties dialog box to select settings for every photo print job.

Enlarge image

As shown in Figure 4-2, at a minimum you need to select the type of paper you're using, and print quality or resolution. You might see print quality settings such as Best, Normal, and Draft; or you may see specific resolution choices like 300 x 300 dpi or 600 x 600 dpi.

You might need to click the **Advanced** button or a similar option to specify the correct paper size, such as 4 x 6, for the printout.

After you select the desired settings, you can usually click **OK** to close the properties dialog box, and

then click **Print** in the Print dialog box to send your picture to the printer. After a minute or so, you should be able to remove a nice, colorful print from the printer's output tray.

Unless you use special quick dry paper, such as HP's Advanced Photo Paper, most inkjet pictures need a few minutes to dry. So if you've printed a full bleed or borderless print, let it dry first or you'll smudge it when you pick it up.

The next section addresses a somewhat advanced but important aspect of digital photography manipulation: monitor calibration.

Calibrate for the experts

Expert and professional digital photographers and graphic artists ensure that the monitors on the computers they use to edit digital photos have been **calibrated** to display colors in a way that more accurately matches the output where the photo will be used, whether printed or online. A poorly adjusted monitor can result in you overcorrecting your images -- especially when it comes to color corrections -- without knowing that you've done so.

For a Webmaster, a calibrated monitor ensures that color changes to images keep the image in the correct zone for displaying on a limited 256-color Web color palette. Although you can't control other people's monitors to ensure they're displaying properly, if your monitor is calibrated to the right range, you'll be around the benchmark.

On the flip side, some printers include settings either in the print software or on a display menu on the printer itself for adjusting print color output. After calibrating your monitor, do some test printing to see that your printer output is fairly close to what's displayed on your monitor.

If you're shy about calibrating your monitor, you can at least adjust your printer settings to match your screen display.

See how to calibrate your monitor.

Prepare your images for Web and e-mail

Preparing images for posting on your Web site and for e-mail is quite different from working in print. You're almost working in reverse -- reducing your image by discarding pixels and shooting for the smaller file size for a couple of good reasons:

- Smaller digital image files download and display more quickly in Web browsers.
- E-mail servers often limit the sizes for file attachments and reject messages if attached files are too large.

Don't resample your digital photos to a smaller size before uploading them to an online photo service for sharing via the Web. You want those image files to be at their original quality, so you'll get the best quality when you order prints of the uploaded pictures.

There's not a lot of difference between preparing Web-ready images and those you share via e-mail, but some unique tips are covered in the next two sections.

Ready for the Web

Perhaps you're considering a low-end camera to shoot photos for posting on a Web site. Even though you'll reduce those images to the smallest possible size, you still need a good photo to start with, particularly for a corporate or commercial Web site. Quality images can swing perceptions of a company's Web presence from professional to being the winner of "Le Grand Fromage" award.

If you're a Webmaster, you already know that the 72 ppi resolution works best for images displayed on the page, and that you should use image editing software to convert an image to that ppi as well as optimize it for a 256-color Web color palette. (Note that a site may also include links for downloading high-quality images, and you'll need to supply those images at the required specifications.) Beyond that, the site design determines the sizes for images when placed. In pixels, images are usually placed at a size that's a fraction of 3-megapixel photo.

Protect your investment

» **Digital camera memory**

Digital camera memory cards allow you to store more photos on your digital camera, as well as saving you battery power and time.

A shooting mode for every possibility

» **HP Photosmart R937 digital camera**

If you like state-of-the-art gadgets, our Photosmart R937 is for you. With it's interactive touch screen and huge display, you'll discover how easy it is to frame, view, sort, and share your photos.

When saving an image as JPEG, you're prompted to select the image quality -- a compression setting -- which also affects the file size.

Ready for e-mail

Even though computer monitor sizes and resolutions keep improving, not everyone who receives your pictures via e-mail has the top of the line. So, reduce the size of a copy of your picture to a smaller size that displays fully on monitors set to a variety of sizes. When you e-mail the resized copy, you're sure that all the recipients can view it without having to scroll around too much.

To e-mail a picture that doesn't exceed most screen sizes, first size it between 400 x 300 pixels or 800 x 600 pixels.

Moving on

That's our final lesson. You've learned what you need to consider in terms of image size and quality as they relate to viewing and printing digital photos. Thank you very much for joining in. The most important aspect of digital photography is: Have fun with it!

The Message Board is still open for discussions, questions, comments, and any ideas you have to contribute. Before you leave the course though, be sure to do the assignment and take the quiz for this lesson.

Next steps »

Congratulations on completing the lesson! Don't forget the following:
» Assignment:The Printing Experiment
» Quiz:Lesson 4, quiz 1
» Discuss what you've learned with your instructor and other students
» Return to the lessons list to get a quick overview of the entire class

Class Certificate

Click the image or download the class certificate.

Related classes

» Beginner's guide to saving, printing, and sharing your digital photos
» Tune up your Windows® XP PC

Ready for print and e-mail assignment

Assignments are designed to help you apply the information learned in the lessons.

The Printing Experiment

Using what you learned in Lesson 4, try the following steps to experiment with sizing and printing an image:

1. Select a picture from your digital camera and print it at its original size, using the printer's highest quality setting.
2. Print the image again at the other available print qualities. Compare the resulting photos. Is there one that you prefer?
3. If you have image-editing software that can resize an image, create two copies of the image file, and then resize the copies. Then, although the image files are different sizes, print them at the same size and compare the results.

Assignment Completed >>

Lesson 4, quiz 1

🖾 **View your shopping cart**

Quiz: Lesson 4, quiz 1

Quizzes are designed to give you a chance to test your knowledge.

1. True or False: When setting the image quality on your digital camera, the higher the quality setting, the larger the image file, and the fewer the number of pictures you can fit on your camera's storage media.

  A. ◯ True
  B. ◯ False

2. True or False: A 6-megapixel image is more than 2000 x 2000 pixels.

  A. ◯ True
  B. ◯ False

3. Each colored dot in a digital image is a pixel; putting many pixels together creates a complete digital image.

  A. ◯ True
  B. ◯ False

4. True or False: The paper you use for color printing makes no significant contribution to the quality of your output.

  A. ◯ True
  B. ◯ False

5. True or False: Having a good camera is one part of the equation. Beyond that, developing the eye or a good shot, using good image-editing and handling techniques, and understanding your printer help you get the most out of digital photography.

  A. ◯ True
  B. ◯ False

Submit ≫

Privacy statement   Using this site means you accept its terms   Feedback to Home & Home Office