improve your photography
how budding photographers can get pro results

fourth edition

by Jim Harmer of ImprovePhotography.com
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A (Very) Brief Introduction

This is the book I wish I had when I bought my first DSLR. At that time, the camera knew much more about photography than I did, and it punished me severely with blurry pictures, confusing buttons, and an undecipherable manual.

In the next 100 short pages, it is my hope that I can explain the most important concepts of photography that usually take beginners two or more years to learn. Since we have only 100 pages together, I will forego trying to impress you with complicated technological jargon, and will simply explain what you need to do to take great photos. Throughout the book, I will explain concepts and then we will go on an imaginative photo shoot together and apply the concepts from the chapter to common shooting situations.

If I am allowed one short piece of advice for a beginning photographer, it is

After mastering the concepts in this book, I would encourage you to join the Improve Photography community at ImprovePhotography.com and participate by reading my (free!) daily photography tips and asking questions on our Facebook fan page. I make myself available to each person in the community and personally respond to any photography questions you may have.

As you capture life at 1/100th of a second, don’t forget the Creator of the beautiful things you record.

Sincerely,

Jim Harmer
Chapter One: Exposure

By far, the greatest divide between the knowledge of a beginning photographer and that of a professional is the knowledge of exposure. Nothing will impact your photography so quickly as spending a few minutes to learn exposure. Spending the next few minutes learning exposure will immediately make you more knowledgeable about photography than 99% of the world’s camera owners.

I have attended many photography classes where the instructors made exposure seem so difficult that even I became confused! No need to worry, though. I have taught many, many photographers the basics of exposure and every single one of them eventually catches on—and I don’t anticipate failing on you!

Simply put, exposure is the amount of light that is captured by a camera during the process of taking a photograph. That is why we say that some photos are “overexposed,” which means too much light was gathered, or “underexposed,” which means that the camera did not gather enough light.

Digital cameras have three tools to control the amount of light captured on the sensor—shutter speed, aperture, and ISO. I will explain what each of these do so that you are able to set them on your camera to take a picture that is properly exposed.
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Improve your photography
Chapter 1: Exposure

Shutter Speed

Shutter speed is the measure of the length of time that a camera allows light to enter into it, and it is measured in fractions of a second. The longer that the camera allows light to enter it, the brighter the image becomes. An exposure taken in the black of night might last 30 seconds or more, while an image at the beach on a bright day might only last 1/2000th of a second or less.

The shutter speed does not only control how bright the image is, but also how blurry the image is. My guess is that the reason you chose to purchase a nice camera or to learn photography is that you want to learn to take pictures that look clear and not blurry, right? Well, you’re about to learn the #1 secret to capturing crystal clear pictures.

The shutter is a small piece of metal or plastic that covers the camera sensor and prevents light from being recorded except for the instant that you take a picture. When you take a picture, the shutter quickly flips up and allows light to reach the sensor for a tiny fraction of a second. Knowing that a shutter works this way, you can already see why some pictures end up blurry. If the shutter stays open for too long, something in the scene could move, and the sensor would record the moving path of that object.

So why, you might ask, do pictures end up blurry even when taking a picture of a stationary object like a tree or a building? The answer is that, even if you don’t feel it, your hands are constantly trembling. This minute movement of your hands is enough to make a photo look blurry if the shutter speed is too slow. If a fast shutter speed is used, even a trembling hand cannot move enough in 1/2000th of a second to make a difference in the picture. Just remember: fast shutter speeds freeze a moment in time and reduce blur.

There you have it! Now you know how to fix blurry pictures—increase the shutter speed. Unfortunately, increasing the shutter speed is not a panacea. There will be many, many occasions in photography where you find yourself unable to use fast shutter speeds. If the shutter moves very quickly across the sensor and only allows light to reach the sensor for (for example) 1/800th of a second, the camera may not be able to gather enough light to properly expose the image, and your shot will be underexposed. When shooting in a well-lit place like outside at your child’s soccer game, it will be easy to achieve fast shutter speeds, but it will be impossible for the camera to gather enough light to use a fast shutter speed when shooting, for example, indoors at a birthday party.
That is it! You have learned everything you need to know about shutter speed. However, there are still two more techniques you can use to control the overall exposure of a photo, and you will find that they are equally as important as shutter speed.

The reason the camera needs more methods of controlling exposure is in difficult lighting situations. Suppose you want to photograph a friend’s dance performance. You go to the recital hall ready to adjust your shutter speed to a fast setting, like 1/1000th of a second so that the fast-moving dancer is not blurry. Then, moments before the show begins, they turn off the main lights in the recital hall and suddenly it is very dark. When you take a picture at 1/1000th of a second, the picture comes out almost completely black! This example illustrates the need for another player in the exposure triangle—the aperture.

Aperture – depth of field and brightness

There is a small hole inside the center of a camera’s lens that allows light to pass through the lens and into the camera. The size of that hole is changeable by setting the aperture on the camera. Not surprisingly, a large aperture hole creates a brighter picture since more light is allowed to pass through. When the hole of the aperture is constricted, less light is allowed through.

Like how the shutter speed controls two things (brightness and blurriness), the aperture controls two things as well: brightness and depth of field. Depth of field is the photographer’s secret weapon. It allows us to make the background of a picture blurry and keep the subject in sharp focus. You have undoubtedly seen this many times when looking at pictures in magazines, and now you will know how to do it! You will hear photographers use the terms “shallow depth of field” and “full depth of field.” “Shallow depth of field” means that only a small part of the picture is sharp and the rest is blurry. “Full depth of field” means that the entire picture, from front to back, is in sharp focus. A large aperture hole creates shallow depth of field, and a small aperture hole creates full depth of field.

The size of the aperture is measured in something called f-stops. On the LCD screen on the back of your camera, you will see what the aperture is set to by looking for an “f” with a slash next to it “/” and followed by a number. For example, you
might see “f/8” or “f/16” or “f/5.6.” The higher the number, the smaller the aperture; the lower the number, the larger the number, the smaller the hole. For example, f/22 creates a tiny aperture hole, whereas f/4.5 is a large aperture. If you want to achieve shallow depth of field or a brighter image, f/4.5 would be a better choice than f/22.

F/5.6 would be the correct aperture because it produces narrower depth of field than f/16.

Now suppose you are on vacation and want to take a landscape photo of the beach. Would you use f/16 or f/5.6? Right again! F/16 would be a better choice because you want the entire landscape in focus.

Now that you understand what the aperture and shutter speed do, it might leave you to wonder why there is a third exposure-control tool—ISO. The answer is best explained with an example.

Suppose you are now at a night football game. Since the players run quickly, you automatically know you need a fast shutter speed to freeze the action. Since you know the fast shutter speed will make the picture darker, you try to compensate by using the lowest aperture number (large aperture size) available to you. You take a picture, look at the screen on your camera and are surprised to see that the picture is still too dark! Now what? ISO.

ISO makes the camera sensor more sensitive to light. A low ISO, such as 100, will produce a darker image than an ISO of 800. The easiest way to understand ISO is to compare it to an audio cassette player (I know… old school!). When listening to an audio cassette and cannot understand the words being spoken, you will naturally turn up the volume. However, turning the volume higher also increases the amount of static noise produced. Digital cameras work similarly. Increasing the ISO makes the camera more sensitive to light and produces a brighter image, but it has the drawback of increasing the amount of grain in the picture. If you find that your pictures are grainy, it means that the ISO was set too high. In general, you should always keep your camera set to the lowest ISO possible since it produces the cleanest photo, and only increase the ISO if you need to capture more light with your given shutter speed and aperture settings. Think of the ISO as your last resort.

Camera manufacturers such as Sony, Canon, and Nikon, have all made great strides in improving technology to reduce the graininess of photos taken at high ISOs, but there is still much improvement to be made. If you often find that your images are grainy, you would do well to take a few test shots with your camera at different ISO settings to see at what ISO your images become overly grainy. Some newer DSLRs can capture reasonably noise-free images at ISO 6,400 and other DSLRs can only get to ISO 800 before the image becomes unusably noisy. Wise camera buyers will pay significantly more attention to the camera’s ability to take noise-free images at high ISOs than the number of megapixels the camera offers.
I have conducted several surveys of readers of this book and have found that an extremely high percentage of the readers use DSLR cameras. Only a tiny fraction use point-and-shoot cameras. If you’re not sure what type you own, here’s an easy way to tell. If the camera fits in your pocket, it is a point-and-shoot. If the camera is too large for your pocket, it is either a DSLR or a bridge camera—either one will be capable of doing the following operations. I mention this statistic because it explains my focus in this book on cameras that are capable of adjusting shutter speed, aperture, and ISO. All DSLR cameras allow the user to adjust these settings, but most point-and-shoot cameras do not allow the user to adjust these settings, or do not provide a simple way for these settings to be adjusted. Many point-and-shoot cameras do not allow the photographer to adjust the shutter speed, aperture, and ISO. While this is very limiting, you can still learn the material in this section to help you know what the camera is doing when you click the shutter. Last, make sure to check the menus of your point-and-shoot to see if you can adjust these settings even though you don’t have a mode dial like most larger cameras.

No matter what brand of DSLR you own, you will find a mode dial with several letters on it placed on a wheel on the top of the camera. For Canon, you will see the letters “M, Av, Tv, and P.” On Nikon and Sony, you will see the letters “M, A, S, and P.” On my consumer-level DSLRs, there are also a number of icons on the dial (like the little icon of a mountain, or a person, etc). Before reading this book, it is likely that you have only used the icon modes. Since this book is about improving your photography past the level of general knowledge, you will never need to use the icon modes again after today.

The icon modes simply have pre-defined settings built in the camera that generally work to produce an acceptable image in different situations. However, this does not allow the photographer to use her own creativity to create an image, and the settings the camera chooses are almost always sub-optimal. Professional photographers use only two camera modes: Aperture Priority (“A” on the mode dial) and Manual Mode (“M” on the mode dial). Rarely, if ever, will a
professional photographer use Shutter Priority ("S" or "Tv" on the mode dial) or Program Mode ("P" on the mode dial).

When a photographer puts the camera in manual mode (the “M” on your mode dial), the photographer can choose the shutter speed, ISO, and aperture without the camera selecting any setting automatically. Professional photographers often shoot in manual mode, but it can be frustrating for beginning photographers.

Let us explore the difficulties of shooting in manual mode through an example. Suppose you are shooting at a friend’s wedding. First, you want to take a picture inside the church. It is well-lit near the front of the church, so you set your shutter speed, aperture, and ISO to match the scene. You choose a low aperture value so you can blur out the background. Then, the ceremony finishes and they walk to the back of the church. The back of the church is much darker, so your camera settings need to be changed. After you take a few test shots through trial and error to find the exposure, they have already walked out of the back of the church. Woops! You missed the shot. Now, you walk outside and try to take a few pictures. With the settings you had for the dim area in the back of the church, the picture is so bright that it is almost completely white! Now you have to reset your camera settings and find the correct aperture, shutter speed, and ISO for the outside pictures. Hopefully you can see that shooting in manual mode can be difficult.

For professionals who have years of experience in guessing what exposure will work in different situations, shooting in manual mode is actually not difficult, but it is frustrating for beginners.

For most beginners, I recommend shooting in aperture priority mode. In aperture priority mode, the photographer selects an aperture setting and the camera then detects how much light is in the scene and chooses a shutter speed for you that will produce a correct exposure. The photographer also chooses the ISO setting, but that will usually be ISO 100 (least amount of noise) unless it is needed for an exceptionally dark scene.

Now that you have your camera set to aperture priority mode ("A" or "Av" on your mode dial), we will replay the wedding scene and see how it impacts your photos. With the couple at the front of the church, you set your aperture to a low number to blur the background. Then, they walk to the back of the church where it is darker. You do not have to change anything because the camera will choose a slower shutter speed to compensate for the dark area. Then, the couple walks outside and it is very bright. Again, you do not have to change anything because the camera will compensate for the brightness by speeding up the shutter speed. All you have to do is choose an aperture that reflects the amount of depth-of-field you want in the photo. You can adjust the
aperture quickly when in aperture priority mode by scrolling the small grooved black wheel (not the mode dial) located near the shutter button on your DSLR. It’s easy!

For most beginning photographers, I recommend shooting in aperture priority mode for the first several months of shooting. Once you feel completely confident in getting the correct depth of field and exposure using aperture priority, you’ll be ready to try out manual mode.

Exposure Compensation

Once you shoot in aperture priority a few times, you will likely run into a common problem. It is convenient to have the camera select a shutter speed and all you have to do is control the depth-of-field via the aperture; however, there are many times when the exposure that the camera sets will not be to your taste. You don’t want to spend the time to go into manual mode, but you’d really like to brighten or darken the exposure that the camera is giving you in aperture priority mode.

The answer to this situation is to use exposure compensation. Exposure compensation allows the photographer to tell the camera to choose whatever exposure the camera thinks is correct, and then go a little brighter or darker. For example, you have undoubtedly seen many photos in magazines or on advertisements that are very bright, which gives the photo a clean look. If the camera chooses the proper exposure by setting the shutter speed to correspond with the aperture that you set, then you will not be able to program the camera to make the photo brighter without the aid of exposure compensation. In this situation, I would take a picture of a person and see that it is too dark for what I want, and then I would dial in some exposure compensation (+.3 or +.7, for example). With this exposure compensation, it would brighten up the pictures to achieve the look I want for this particular shot. Obviously, you could also use negative exposure compensation (-.3 or -.7, for example) to make the exposure darker if the camera is producing a shot that is too bright for your taste.

Unlike the mode dial and the scroll wheel that are standard on all DSLRs, each brand has a different way of allowing the photographer to dial in exposure compensation. You will need to consult your camera manual to see how your particular model of DSLR accomplishes this task.

Now it is time to get out and practice! It will likely take you a few weeks to master the basics of aperture priority mode, but you now have the tools to create the exposure and depth-of-field that you want! You will never again feel like it is your camera’s fault when a poor image is produced, because you now know how to fix the problems.
As I mentioned in the description of this book, this is the book I wish I had when I got my first camera. If I want this book to save you two years of learning photography the hard way (self-taught) like I did. When I first learned what shutter speed, aperture, and ISO did, I was then on my own to learn what settings to use in different situations. I would like to save you the time and hassle with some general recommendations on what settings you might choose for various shooting situations.

Obviously, these settings will not work in every situation because the even subtle changes in lighting can warrant different camera settings; however, these recommendations will save you a tremendous amount of time if you have a starting point.

Before we can begin the case studies, we need to discuss your gear. Every lens has what is called a “maximum aperture.” The maximum aperture is the largest size aperture (lowest aperture number) that the lens is capable of achieving at a given focal length. For example, the lens that you purchased with your camera was probably an 18-55mm f/3.5-5.6 lens. This means when zoomed out (18mm), the lens could achieve an aperture of f/3.5; however, when zoomed in to 55mm, the largest aperture that the lens could produce was f/5.6, which is much smaller of an aperture hole.

Some lenses are capable of achieving apertures as low as f/2.8 or even lower, but most consumer zoom lenses, like the ones that probably came
with your camera, will only achieve apertures of f/3.5 or f/5.6. As we work through the case studies in exposure below, you may see an aperture recommended that is lower than the aperture that your lens is capable of achieving. Do not worry if this is the case. Simply choose the lowest aperture your lens has available and you are ready to go.

Case Study in Exposure #1:
Person standing still indoors at a party

Aperture: f/2.8 or the lowest aperture available on your lens. This aperture is chosen because we want shallow depth of field so that the distracting background of house clutter or other people will not distract from the subject. Also, the low aperture number will bring in the most light which is useful when shooting in a dimly lit home.

Shutter speed: 1/100th is a good starting position, but the camera will automatically set the shutter speed if you shoot in aperture priority mode. In all cases, do not let the shutter speed dip below about 1/60th of a second when shooting with a lens of 60mm or shorter. The longer your lens is, the faster your shutter speed needs to be to prevent camera shake from producing a blurry photo.

ISO: 400 which will allow us to use a slightly higher shutter speed so that your pictures are not blurry in dim indoor lighting.

Case Study in Exposure #2:
Kid playing soccer on a sunny day

Aperture: f/2.8 or the lowest aperture available on your lens. This aperture is chosen because we want shallow depth of field to blur out distracting elements in the background. We want the player to stand out from the background.

Shutter Speed: 1/1000th of a second, but the camera will choose this setting automatically if you shoot in aperture priority mode. In fact, the camera will likely select a shutter speed of much faster than 1/1000th of a second if you use a low aperture number and it is bright outside. 1/1000th of a second would be a minimum shutter speed for this situation.

ISO: 100 would be the proper ISO setting for this situation because it is already bright enough outside to get a fast shutter speed. Remembering that higher ISOs produce more digital noise in
the picture, it is always advisable to shoot at ISO 100 unless more light is needed to achieve the desired shutter speed.

Case Study in Exposure #3: Landscape photo of a beach at sunrise

Aperture: f/18 is probably the safest choice for your aperture. The high aperture number will produce sharpness from near to far in the scene. If a lower aperture number is used, there would not be enough depth of field to keep the whole scene in focus. Most lenses will allow an aperture of f/22 or even higher, but aperture values this high cause something called “diffraction,” which reduces the sharpness of the picture.

Shutter Speed: 1/100th of a second. As the sun rises, the brightness of the scene will change dramatically over a short period of time. Before the sun rises above the horizon, your camera may choose a shutter speed that is too slow to capture a sharp image if you hand-hold your camera. If this is the case, you may need a tripod to stabilize the camera.

The general rule is to have a shutter speed at least equal to the focal length of your lens. If you use a focal length of 50mm, you would want a shutter speed of no less than 1/50th of a second. If you use a longer lens, such as a 200mm, you would need a shutter speed of 1/200th of a second to take a sharp picture hand held. Using this general rule, just make sure that the camera does not select a shutter speed that is too slow for the length of lens you use to take this picture. If the shutter speed goes too low, increase the ISO.

ISO: 100, unless a higher number is needed to achieve the shutter speed you need.

Case Study in Exposure #4: Family of five grouped together for a portrait in the shade on a sunny day

Aperture: f/8 or f/11 would be a proper aperture in this situation. Since this is a larger group, some people might stand closer than others from the camera. If too low of an aperture is used, some of the people in the group may be outside the plane of sharpness caused by the shallow depth of field. Using an aperture of f/8 or f/11 will provide just enough depth of field to make the people sharp and still get a little blurriness on the background to make the people stand out.

Shutter speed: 1/800th is a likely shutter speed that the camera would select on a sunny day.
with this aperture value. It does not matter what aperture value is chosen as long as it is high enough to prevent blurriness from the camera being handheld.

ISO: 100 because there is no reason to increase it since the scene is bright enough already to produce a fast shutter speed.

Case Study in Exposure #5: Group of 5 friends outside on a dark night

Aperture: f/5.6 would be a good choice in this situation. Although it would be preferable to have an aperture of f/8 or f/11 to make sure there is enough depth of field to cover the depth of the people in the photo, this high aperture would not gather enough light for this dim situation.

Shutter speed: 1/100th or as low as you can go without getting a blurry picture. Usually the shutter speed would be equal to the focal length of the lens to gather as much light as possible without producing a blurry picture.

ISO: 800 or higher. Some cameras can take a picture at ISO 4,000 that is not unusually grainy, but other cameras cannot go above ISO 800 without producing a grainy picture. Consequently, this setting would depend on what specific model of DSLR you shoot.

Flash: You would probably need to add a flash for this picture because even these settings would not usually be enough to properly expose the picture.

Case Study in Exposure #6: Basketball player running down the court indoors

Aperture: f/2.8 or the lowest aperture available on your lens. This will blur out the background and gather as much light as possible in the indoor situation.

Shutter speed: 1/1000th or as fast as you can achieve. The fast shutter speed is needed to freeze the movement of the players as they run down the court. 1/800th might produce acceptable results,
but 1/1000th is the most common choice of sports photographers as a minimum for freezing the action.

ISO: 800 or higher. It simply will not be possible to use a shutter speed of 1/1000th without increasing the ISO.

Advanced Exposure Tip: Photographers usually want to capture detail in every part of the image. All DSLR cameras can display a histogram of the exposure of your image. When you take pictures and want to see if you have over-exposed the image, check to see if any portion of the image touches the far right of the histogram. If it does, then detail has been lost in the highlights. A histogram touching the left side of the image shows that shadows were clipped, but this is less egregious.
Chapter Three: My Photos Aren’t Clear!

One of the most common questions I hear after meeting someone and telling them that I am a photographer is how to get photos that are clear. They always ask why it is that the photos they take from their camera don’t look as clear as some pictures they see and they ask why. Photographers typically do not use the word “clear” to describe what most beginning photographers are asking, because “clarity” is a technical term for a specific type of adjustment used in Photoshop. The term that photographers use to describe a photo that is “clear” is by using the word “sharpness.”

Sharpness is actually a very generic term that can refer to many different technical qualities of a photograph, such as acutance and resolution; however, I will use the term broadly in this chapter to help you understand how to take pictures that appear crisp and “clear.”

How to Properly Hold a DSLR Camera

The first and most important tip for taking sharp photos is to hold the camera properly. To understand how important this fundamental is, grab a flashlight or a laser light and shine it on the wall across the room. No matter how hard you try, it is impossible to hold the light perfectly still. This example is illustrative of why many photos do not come out as sharp as the photographer wants. If the camera moves from the natural shake of the photographer’s hand, the light recorded will produce a blurry photo. Learning to hold your camera properly will hugely impact how steady you can hold the camera, which will in turn help you to record dramatically sharper pictures.

It is ironic to me that many photographers are willing to spend thousands of dollars on fast lenses or new cameras with better low-light performance, yet they do not spend 10 minutes to think of the steadiest ways to hold the camera.

The most important aspect of holding a DSLR properly is good contact points. The problem with the photographer featured on this page is that her arms are not supported at all, so they cannot hold the camera steadily. While standing up, you can usually achieve solid contact points by resting your elbows against your body.

When holding the camera while crouching, kneeling, or lying down, photographers make many mistakes. In these positions, photographers often rest their elbows on hard surfaces. For example, while kneeling, many photographers rest one elbow on the knee. This position is not solid because the joint-to-joint contact allows for a lot of play. By scooting the elbow back slightly so it rests on the meat of the leg rather than on the knee, the contact point is much more solid. This is a tip used by rifle shooters to increase their stability while aiming, and it is just as applicable for photographers.

Holding the camera in landscape (horizontal) position. The most important aspect of holding a camera in landscape orientation is that the elbows are tucked in tightly against the body. This may feel awkward at first, but it will pay off when shooting in low-light or when you need to use a slow shutter speed without a tripod.

Second, be sure to press the viewfinder firmly against your face. When I hold my camera to my face, I turn my head slightly so that it contacts some of my cheek, which is an additional contact point.

Last, recognize that most people will be able to hold a heavier camera more steadily than a light camera. The body has difficulty in reducing jitters.
without something to push against. While I have found this to be true for me, it may not be true for all people. My wife hates shooting with my Nikon because it is so heavy that she can’t hold it still.

The picture below illustrates how to correctly hold a camera in landscape orientation. The graphic on the left (which, embarrassingly, is the logo for my company Improve Photography), is incorrect. On the graphic, the elbows of the photographer are extended, which is not as steady of a position as the picture on the right where the photographer pulls in her elbows to steady the camera.

The vertical position is one of the most difficult positions to hand-hold, because one elbow needs to be raised in the air and has no contact point with the body; however, there are a few things you can do to increase your stability when hand-holding the DSLR in the vertical position.

The first tip is to consider purchasing a battery grip for your camera. A battery grip is an extension to the bottom of the camera that holds an extra battery and provides a secondary shutter button so you don’t have to reach up and over the camera to reach the built-in shutter button. This feature comes standard with high-end DSLRs, but battery grips are available for any model camera. While the battery grip made by the camera manufacturer (Canon or Nikon, for instance) usually costs $200 or more, you can usually buy a cheap third-party battery grip for your camera for under $50 on Amazon.com.

If you do not own a battery grip for your camera, then pay special attention to the picture below. The model on the left has no support under her elbows, so it will be impossible to hold the camera steadily. The model on the right uses the support by her elbow to support the camera. This simple fix can allow you to shoot at much slower shutter speeds than would otherwise be possible.

If you use a shutter speed that is sufficiently fast for the subject you shoot and you hold your camera steady by using proper technique, you will likely improve the sharpness of your pictures significantly. Still, there is more that can be done to achieve sharper pictures, and each tip can aid you in achieving slightly sharper pictures.

One factor that can reduce the sharpness of a picture has to do with the design of the lens. Obviously, professional lenses are generally sharper than entry-level consumer lenses. However, professional lenses are usually very expensive. Still, photographers with entry-level lenses can still achieve beautifully sharp photos by recognizing the limitations of their lenses.
All lenses are sharper at some focal lengths and apertures than other lenses. As a general rule, lenses produce a slightly less sharp image when zoomed to the extremes. Photographers will often find that the picture is sharper if they do not zoom all the way out or all the way in. Keeping the lens slightly back from these extremes will often produce a slightly sharper image. You can test whether this is true on the lenses you use by simply taking test pictures at various zoom lengths and comparing the results on the computer.

The same is true with apertures as is true with focal lengths. All lenses are tuned to shoot a sharper picture at some apertures and work less well with other apertures. As a general rule, lenses are sharpest toward the low-middle of the aperture range, which is often around f/8 or f/11. If you find that some of your lenses do not produce sharp images, you may find that they perform better at these apertures.

The last tip that needs to be mentioned on the topic of sharpness is to be careful with how you press the shutter button. No matter how many fundamentals you do correctly, if you push the shutter button hard and quickly, it will jostle the camera and make the picture blurry.

As you practice these fundamentals as well as implement other tips taught in this book, you will begin to see that your pictures become as sharp as the photos you see in magazines and on the Internet.
Now that you understand the basics of exposure and how to take sharp pictures, I want to guide you through a sunset shoot so that you can capture some of your first truly professional-looking photos. I chose a sunset for our first shoot because you do not need any special gear and you have the opportunity to shoot a sunset every night until you get it right.

If all you do to take a sunset shot is to set the camera in aperture priority mode, set the aperture to a high number for full depth of field and fire away, you will probably get a few shots that look decent enough to brag about on Facebook; however, if you apply the tips in this chapter, you will be able to really bring your sunset shot to the next level and create something truly breathtaking. Follow this recipe for a sunset shot and you will be on track to create your masterpiece.

First of all, the camera must be set up correctly. We don’t use the “icon modes” anymore, so the camera will be set to aperture priority mode. What aperture should you choose? Since we want everything in the landscape in focus from the tree in front of you to the clouds in the background, you know you want to choose a high aperture number. I would recommend f/16 or f/18 as a starting point. The camera will automatically choose a shutter speed based on the brightness of the scene, so we don’t have to worry about that. Last, we need to select an ISO. In this situation, ISO 100 should be fine.
With the proper camera settings dialed in, it is time to try taking a picture. Before shooting too much, you will probably enjoy knowing a little secret that we landscape photographers use for shooting sunsets. Most people take sunset pictures right when the sun is dipping below the horizon. You can certainly get great photos at this time, but there is actually a better time to shoot a sunset. There are actually two “sunsets” per night. One happens right when the sun goes below the horizon, and then the colors in the sky dull down for about 25 minutes. Then, the sky will light up again with dramatic colors that are usually more vibrant than the “first sunset.” The reason for this phenomenon is that the brightness of the sun often reduces the brilliance of the colors in a sunset, so the sky is more vibrant once the sun has sunken further below the horizon.

The only difficulty in shooting after the sun sets is that it gets darker, which means you’ll need to use very slow shutter speeds. If you notice that the camera is starting to select shutter speeds that are 1/60 or below, you will likely need a tripod to keep the camera steady. Otherwise, your pictures will turn out blurry from the natural shake of your hands.

There is one more trick that will help you to make the sunset photo look more colorful. Most people find that sunsets look nicer when they are slightly under-exposed rather than keeping the same exposure typically used for other images. An easy way to get a slightly darker image without going to manual mode is to use exposure compensation. Simply dial in -.3 or -.7 exposure compensation and your sunsets will look dramatic, dark, and colorful. Easy fix!

Landscapes, including sunsets, generally look better with an element in the foreground, mid-ground, and background. This adds depth and interest to an otherwise average sunset and makes colorful sunsets unbelievable. You can find almost anything to put in the foreground: an interesting rock, a wave, a tree, sage brush, a person... you name it. I once spent a whole evening looking for good lightning images to purchase for a project I was working on. After spending 2 hours, I gave up because I couldn’t find a good shot. The reason? None of the images had a foreground element. They were just open black fields with lightning far in the background. This poor photographic technique can ruin even the most beautiful sunset, lightning, sunrise, or cloud pattern. Don’t forget to put something in the foreground.

Our recipe for shooting sunsets is simple so far: aperture priority set to f/18, put the camera on a tripod, wait for the second sunset, include part of the landscape near the camera rather than just shooting the sky, and dial in a little negative exposure compensation. If that is all you do, you can get terrific landscape photos of sunsets, but there are also some advanced tips to improve things even more.
two cameras have white balance in the same place on the camera, so it's probably best to consult your camera's manual to see how to change this simple setting. Most DSLRs have a button on the rear of the camera to control white balance.

While sunsets are usually most beautiful after the sun sets, don’t miss out on the creative opportunity to take a sunset picture with the sun in the image. Bewildering to me is the common belief that taking a picture of the sun can destroy a camera’s sensitive sensor. While it is true that an exposure in which the sun is in the image can cause warping of a camera sensor, it is incredibly unlikely to occur if a reasonable exposure value is chosen. Having taken thousands of pictures of the sun, I can say that the sensor can only be harmed if the sun is allowed to bake the sensor for an extended period of time.

Composition will be covered in a later chapter of this book, but relevant to this discussion on sunset photography is the important consideration of where to put the horizon line in the photograph. Generally, it is placed on the bottom third line or the top third line of the photograph. Putting the horizon exactly in the center of the image usually makes it dull and uninteresting.
Chapter Five: Action Photography

Now that you have taken at least one great sunset shot, you will undoubtedly start itching for something new. Action photography is a great way to practice your skills and it is a fitting topic for this stage of our learning process because it will give me the chance to explain how the focus on your camera works, and how to prevent blurry pictures.

“Action Photography” applies to a wide range of photographic opportunities: shooting a niece as she dances on a stage, photographing a college football game, taking pictures of a bird in flight, or capturing a race car speeding down a track. I use the term action photography generically to cover any situation in which the photographer captures a moving subject. No matter what aspect of photography interests you most, you will frequently find yourself in a position requiring you to focus on fast moving objects.

To understand action photography, we need a little background on how your camera creates an image. Knowing these steps will allow you to know how to react quickly to moving subjects in action photography. The process of taking a photograph begins when you press the shutter button halfway down. When you do this, the camera will adjust the lens back-and-forth very quickly until it sees maximum contrast, and then it locks the focus (Note: some DSLRs use phase detection autofocus sensors too, but that’s not applicable here). Focus systems in cameras have improved drastically in the last few years, but the camera still has to do some trial-and-error in moving the lens in and out until the correct focus is found. The camera will not take an image until it’s in focus unless you’re in manual focus mode. Then, you press the shutter all the way down to take an image. On a DSLR, this action makes a small mirror quickly flip up to not impede the path of light from the lens to the shutter. Then, the shutter quickly moves across the sensor to expose the sensor to light. Next, the camera’s sensor records all of the information about the light on millions of tiny receptors. While the camera is recording the information, the mirror flips down (unless it’s not a DSLR, in which case there is no mirror).

If you shoot in JPEG mode (to be discussed later), the camera will choose only the essential information and convert the information from the sensors into a compressed JPEG file. If you’re shooting in RAW mode (discussed later), the camera puts all of the information from the sensors in the file. This process of recording the information from the sensor into a RAW or JPEG file takes time. Cameras have a buffer, which
allows the camera to take several pictures in a row before it gets bogged down and won’t take any more pictures until the information has all been processed. In this way, a modern camera is literally a computer. All of these processes occur in just a fraction of a second on fast higher-end cameras; however, on a small point-and-shoot camera, there is a significant delay between when you press the shutter button and when the image finally appears on the LCD screen. For this reason, DSLRs far outperform point-and-shoot cameras in action and sports photography.

There are several ways that you can help your camera move quickly through these processes so the image will be recorded at precisely the correct moment. To illustrate this principle, let’s go on an action photography shoot together. Suppose you are shooting a football game (American football, not that sissy soccer stuff) and you want to take a picture of the receiver as he sprints downfield and catches the ball. Unless you change the way you shoot, the receiver will have moved by the time the camera performs all of the functions it requires to make a picture.

First, you need the right equipment to take a picture of the running receiver. Different cameras and lenses have different autofocus speeds, but most DSLRs perform reasonably well. Many cameras, including all DSLRs, have a focus mode called continuous focus. Canon cameras call this technology AI Servo. Nikon cameras call this technology continuous focus, but often abbreviate it in camera menus to read “AF-C.” This mode will predict where the subject of the photograph will be when the image is taken and continuously focuses as our receiver sprints through the frame.

If one shot focus is chosen for shooting a moving object like an athlete, the camera will lock the focus before the picture is taken, and the subject of the photo will always be blurry because the focus was locked when he was one or two steps behind where he is when the picture is taken. When shooting action photography, AI Server (Canon) or AF-C (Nikon) should always be engaged. Now the camera will be able to focus on the receiver much more quickly as he moves around.

Remember from Chapter One that the shutter speed controls the blurriness of the picture. Since the receiver is moving quickly, he will look blurry if a slow shutter speed is chosen. Generally, 1/1000th of a second shutter speed is required to freeze motion of sports. Obviously, this will depend on whether the sport is ping pong or drag racing, but 1/1000th of a second is a good starting point.

But wait! I mentioned in Chapter One that you should shoot in aperture priority mode most of the time rather than shutter priority mode; yet, I told you to set the shutter speed to 1/1000th of a second just a moment ago. The eagle-eyed reader will notice that it is not possible to set the shutter speed when in aperture priority, because the camera does this operation automatically.
Since it is imperative that the shutter speed be sufficiently fast for shooting action photography, you might decide to use shutter priority in this instance until you become more proficient in using your camera. As a starting point, I recommend using shutter priority mode for your first few action shoots so that you do not become frustrated with motion blur in your photos.

The reason that I personally do not (ever) use shutter priority mode, and the reason that almost every professional photographer I have ever met never uses shutter priority, is that the depth-of-field is the most important consideration to us. Again, we can return to the football game to understand how to use aperture priority even for shooting action photography. The background in sports photography is often distracting. In this football game, I want to capture the receiver sharp in the picture, but blur out the stands, crowd, water cooler, and anything else in the background that would distract the viewer from paying attention to the subject of the photo. If I choose shutter priority and dial in 1/1000th of a second, I would get the receiver sharp, but the camera might choose a high aperture number that would create so much depth of field that the background is completely sharp.

Instead of using shutter priority, most professional photographers choose aperture priority mode, choose the proper aperture (usually the lowest number available to blur out the background), and then the photographer carefully monitors what shutter speed the camera selects for the current lighting conditions. Whenever the photographer notices that the camera selects a shutter speed that is too slow, she simply increases the ISO so that the shutter speed can be increased.

Now that the camera is set up for taking action shots, you are ready to take pictures at the football game. Since action photography changes so quickly, you will likely take several pictures in rapid succession as the football players run around the field. Remember all of the recording that the camera’s computer has to do in processing the files for each image? If you take too many images in rapid succession, the computer will get backed up. Part of the problem is the camera’s processor is not fast enough, but another part of the problem is the quality of your memory card. A fast memory card will write the camera’s information to the card quickly, but a slow memory card will make the camera wait for it to catch up.

If you frequently find that your camera gets backed up when taking action photos and you have to wait between bursts of shots, there are two things you can do to speed things up so you do not miss the shot. There is nothing more frustrating than watching a great moment pass by as you wait for your camera to catch up.

The first solution is to shoot in short bursts of pictures. Rather than mashing down the shutter button for several seconds and waiting for the inevitable moment when the camera buffer fills up, skilled photographers push down the shutter button for only a moment and capture a burst of 3 images. Then, they wait for another interesting moment and capture another burst of 3 images. Giving the camera breaks between bursts will allow it to catch up so that you can always push the shutter down again if a perfect moment presents itself.
The second way to prevent the camera buffer from filling is to purchase a high-quality memory card. I strongly discourage off-brand or cheap memory cards because they often become the bottleneck in preventing photographers from capturing the moment in an action photography situation. Depending on the speed of your camera’s processor, however, it is possible that a faster memory card will speed up the write time of the camera if the processor is the slow point in the system. You can consult the back of your camera manual to see what memory cards are recommended for use with your specific model, but in most cases, purchasing a faster memory card will yield drastically improved results.

Armed with these simple focus and shooting techniques, you will be able to capture great photos of moving subjects. Remember, however, to disengage continuous focus after an action photography shoot. Although continuous focus is perfect for moving subjects, it is slightly less accurate than one-shot for shooting still objects and people who are not moving.
Chapter Six: Shooting Raw

Believe it or not, you have already learned a tremendous amount about your camera and how to take better pictures in the preceding pages. In fact, you are already more competent with your camera than most camera-toters ever become, and this information will impact the way you take pictures for the rest of your life. Still, there is much more to learn. The next fundamental of photography has to do with the actual file that you create when you take a picture. Also, you are about to be let in on the photographer’s secret weapon for getting the exposure correct every single time. As with every chapter, the concept will be demonstrated through a (completely ridiculous) example shoot.

Suppose you are sitting out on the beach one fine day when you see a beached whale washed up on shore. Great (for you, not the whale)! You will get the pictures for the newspaper and become famous overnight (I told you this was a completely ridiculous example)!

Immediately, you snap into action and set your camera to aperture priority with an aperture of f/8 to get enough of the whale in focus. In the heat of the excitement, you make a big mistake. Remember the sunset shoot from Chapter Two where we used negative exposure compensation to make the sunset photos more dark and dramatic? Well, you turn your camera on and set your aperture to take pictures of the whale, but you forget that the exposure compensation is still dialed in. All of the whale pictures are too dark, and you don’t notice it at all during the shoot.

Your heart sinks when you look at the images on your computer and see that all of your pictures are underexposed. One little camera setting ruined...
the entire shoot. Or did it? Fortunately, there is a technology that can save the shoot.

When you buy your camera and use it in default settings, the camera will save pictures as a JPEG, but you can adjust the camera settings to tell the camera to record photos in RAW instead of JPEG. The RAW files on a Canon camera are designated as “CR2” files. The RAW files of a Nikon camera are designated as “NEF” files. The RAW files of a Sony camera are designated as “DNG” files. All DSLR cameras are capable of recording images in either RAW or JPEG mode, but very few point-and-shoot cameras are capable of shooting in RAW mode.

If you took the pictures of the whale in JPEG, you are mostly stuck. It is possible to slightly brighten the images by using Photoshop or other digital image editing software options, but only a slight amount of brightness can be added without destroying the image quality.

If you shoot in pictures of the whale in RAW, you can probably brighten up the pictures of the whale without losing any image quality! How does it work? When the camera takes a picture, the image sensor saves a tremendous amount of data about the scene. In order to reduce the file size, it throws away much of this data to create a JPEG that will not use as much space on your computer. When the camera captures a RAW file, no data is lost and all of the information from the sensor is saved.

Since the digital image editing program, such as Photoshop, Lightroom, or Picasa has more information to work with in the RAW file, it can brighten up the image without losing image quality.

Shooting in RAW is one of the photographer’s greatest weapons for producing great photos. With RAW, you can make little mistakes in-camera and still produce perfectly exposed images.

Unfortunately, shooting in RAW also comes with several drawbacks that you should be aware of before you stop shooting in JPEG. A RAW file needs special software to be opened and edited. If you already own Photoshop, Photoshop Elements, Lightroom, or even Google’s free Picasa program, you will have no problem editing a RAW file. However, if you do not have a digital image editing program or you do not want the hassle of editing.
every photo you take, you need to know that a RAW file cannot be opened on any computer. Special image editing software is required to not only edit the file, but to even view it. If you take a great photo as a RAW file and email it to your mom, she will not be able to see it on her computer unless she has one of these programs.

Photographers use RAW files by opening up the images in special image editing software, making any necessary corrections, and then saving out a separate JPEG version of the RAW file. This edited JPEG file can then be emailed, posted on Facebook, or sent for printing. The RAW file is merely a digital negative that allows the photographer to make edits before creating a JPEG.

Almost all professional photographers shoot in RAW so that no information is thrown out. The only exception to this rule is that some sports photographers shoot JPEG because it does not slow the camera down quite so much and you can sometimes fire off more shots per second. Also, you might find it nice to take a little JPEG if you’re just taking photographs at a birthday party or a similar event which you don’t want to go through and edit later. Other than those exceptions, shooting in RAW will drastically improve the number of “keeper images” you take.

There is, however, one more reason that you might want to consider waiting to shoot in RAW until you improve your skill in post-processing (editing photos on the computer). When a JPEG file is created by the camera, the camera automatically adds contrast, color, and sharpness to the picture. The image that comes from the camera sensor is quite dull, so these enhancements make the image pop. If a photographer captures a RAW photo, opens it in Photoshop, and then saves a JPEG of the file, the resulting photo will look dull and lifeless since the camera did not automatically add basic edits. The point is that RAW photos look dull without some processing applied to the photo. Not only does the photographer need to be aware that a JPEG must be created from the RAW file in order to use the picture, but each picture will need some enhancements made or it will look overly dull.

Many photographers make this mistake when they first begin shooting in RAW. Remember that a RAW file is just that—raw. It has the data you need to produce a great looking JPEG, but never let a RAW file out the door without first adding basic enhancements or else it will actually look worse than if you had simply shot in JPEG.

If you are not sure whether or not you are ready to switch from shooting in JPEG to shooting in RAW, you may choose to set your camera to “RAW + JPEG.” If your camera has this feature (as almost all DSLRs do), the camera will create a RAW file as well as a JPEG file of every picture you take. This is good insurance if you want to try RAW but do not want to lose the pictures if it is too complicated or troublesome.
Without variation, when someone comes up and talks to me when I’m out shooting, they say, “That’s a really nice camera. How many megapixels is it?” Ugh... here we go. The purpose of this page is to teach you how to buy a camera and how to speak intelligently when someone asks you this abusive question.

When digital cameras first hit the market, they frequently only had 3 or fewer megapixels, which simply isn’t enough for many purposes. Camera manufacturers engaged in megapixel proliferation for many years, and the war has not ended—much to the dismay of professional photographers. In fact, Canon is currently working on a sensor with 120 megapixels!

A digital image is made up of millions of tiny pixels, or squares of color. A certain number of pixels are needed to be able to view an image at large sizes without pixelation. Few, if any, professional photographers would argue with the fact that 10 megapixels is plenty for almost all uses of photography. A 10 megapixel camera will print a beautiful 16” X 20” print or larger. Do you really need to go bigger than that? More pixels packed on a tiny sensor leads to unmanageable levels of noise in an image, so getting more megapixels in a camera is not only useless much of the time, it’s counter-productive to image quality.

So if you’re not looking for megapixels, how do you tell which camera is better? First, we need to differentiate between three basic types of digital...
cameras: DSLRs, Pseudo-SLRs, and Point-and-Shoots. All professional photographers use DSLRs. A Digital Single-Lens Reflex camera allows the photographer to look through the lens when taking a picture by use of a single mirror which flips up during the exposure.

DSLRs have large sensors to get good image quality, allow for interchangeable lens systems, and come with the newest technologies. Pseudo DSLRs, as I call them, encompass the many cameras which have interchangeable lenses and give photographers great control over the camera but which do not allow the photographer to look through the lens when taking the picture or do not use a mirror to achieve that view. Point-and-Shoot cameras are priced significantly lower and are much smaller. The image quality is not the same as a DSLR and the photographer does not have control of the camera or lenses like on a DSLR.

If money is an issue, you can still get beautiful pictures with a point-and-shoot camera as long as it has the creative shooting modes (manual, aperture priority, shutter priority) so you can take control of the exposure.

In the DSLR market, there are both full frame and crop frame sensors. A full-frame camera has the same breadth of view as a 35mm film camera, which has many advantages. A crop-sensor is much smaller than a full frame camera—resulting in a sort of built-in unchangeable zoom, which reduces the field of view. Currently, all entry-level DSLRs are crop sensor. A crop sensor is not really negative. A crop sensor is desirable for some wildlife and sports photographers who like the extra zoom achieved on a crop sensor, but most professional photographers want full-frame. A crop sensor lens won’t fit on a full-frame camera, but a full-frame camera lens fits on a crop-sensor camera. This is an important consideration when purchasing lenses (more in Chapter 6).

Camera manufacturers are scrambling to design cameras with better noise handling and ISO performance, which is beginning to change the battle from megapixel proliferation to low light performance proliferation. Low light performance is one of the very most important features of a DSLR. You might not think that this is very important until you’re at a dance recital and your daughter is quickly moving about a very dark stage, or you’re trying to capture a fox running through the shadows of a pine tree, or you’re trying to take pictures of skaters in a dim ice rink. In order to get enough light in these situations without having too long of a shutter speed, you have to have a camera with high ISO levels without much noise.

So which camera should you buy? There are so many factors to take into consideration that it’s impossible to answer; however, most professional photographers choose between Canon and Nikon. Canon and Nikon DSLRs have been head-and-shoulders above the competition for several years. Recently, other manufacturers such as Sony and Pentax have come much closer to matching the technology from Canon and Nikon. All of these brands offer incredible cameras, but professional photographers still prefer either Canon or Nikon. When purchasing a camera, keep in mind that you are investing in a lens system. If you buy a Nikon lens with a camera and later wish to
switch to Canon, you’re out of luck. You’ll have to sell all of your Nikon lenses and buy new Canon lenses (or vice-versa). One consideration might be which brand your friends are shooting, because then you can trade lenses with them. The inevitable question is which one is better between Canon and Nikon. You’ll hear different answers, but the truth is that the differences are minimal. When one company offers a new technology, the other quickly matches it.

When price is equal, Canon cameras generally have more megapixels, better video capabilities, and are very slightly less expensive. Nikon cameras generally have more side-features (such as GPS, better auto-exposure bracketing, and flash control) and have better low-light performance. These are gross generalizations of the two companies, but their product announcements over the last several years have repeatedly emphasized these differences. When investing in a camera system, consider the entire lineup of cameras by the company and pick which aspects of the camera are most important to you. Remember that you’re investing in a camera system, not just one specific camera that you’re buying now.

As a service to you, I keep a page on my website constantly updated with my recommendations of the best cameras on the market at any given time. Before buying a DSLR, you might want to take a look: http://improvephotography.com/1988/dslr-cameras/.
Almost any modern DSLR can record stunning detail, but lens quality greatly affects what is recorded by the camera. Most beginning photographers use the lens that came with their camera (called the “kit lens”) and generally make no complaints of image quality.

Before long, however, I start to get emails from my photography students asking if they need to upgrade their lenses to get “clearer” pictures. While professional lenses are generally much sharper than kit lenses, they are also extremely expensive. In fact, even the lowest cost professional lenses cost around $1,000 and can cost up to $13,000 for longer lenses. The question, then, is whether or not it is worth the money to upgrade to better quality lenses.

First of all, I would NOT recommend that a beginner buy a high-end lens. Why? Because you probably will not see any significant improvement in your photos. Think of lenses as a bottleneck. If the photo is otherwise compelling, the photographer has the skill to shoot with proper technique, and the photographer is skilled in post-processing, then the lens can add to the sharpness, color, and contrast of the photo. But even the best equipment will make no difference if the photographer does not shoot properly.

Chapter Eight: Purchasing Lenses

What is the difference between professional and consumer lenses?

**Benefit of Professional Lenses #1:** Maximum Aperture. This is probably the most important benefit of an expensive lens. Most low-end lenses have max apertures of f/5.6 at the long end of the lens; however, professional lenses often have max apertures of f/2.8 or even lower. The large apertures offered by professional lenses aides in creating shallow depth of field and light-gathering.

**Benefit of Professional Lenses #2:** Constant Aperture. Most cheap lenses change the max aperture as you zoom out. For example, the popular Canon 75-300mm lens can achieve an aperture of f/4 at 75mm, but when you zoom out to 300mm, the lens can only achieve an aperture of f/5.6. On many professional lenses, the maximum aperture available on a lens is constant throughout the focal length range. For example, the 70-200mm lens by both Canon and Nikon can achieve an aperture of f/2.8 at the 70mm or 200mm ends.

**Benefit of Professional Lenses #3:** Focus Motor. More expensive lenses use a silent wave motor, which produces faster and quieter focusing.

**Benefit of Professional Lenses #4:** Weather Sealing. While all lenses have a certain amount of weather sealing, high-end lenses have loads of it. This makes the lens last much longer without problems. I have rarely seen a kit lens or cheap telephoto lens that doesn’t have dust (or even mold…) inside the lens after a year or two of use. This happens much more rarely in professional lenses as long as they are taken care of.
Benefit of Professional Lenses #5: Sharpness. Kind of self-explanatory, but pro lenses are almost always sharper. However, this won’t make a bit of difference if you don’t use proper technique.

Benefit of Professional Lenses #6: Internal Focus. On cheaper lenses, the physical length of the lens extends as you zoom in. On many professional lenses, the lens focuses without changing the length of the lens. The only reason this matters is when using filters. This creates problems when using certain types of filters.

Benefit of Professional Lenses #7: Contrast. Professional lenses often produce significantly more saturated colors than cheaper lenses.

Benefit of Professional Lenses #8: Chromatic Aberration. Professional lenses produce less noticeable fringing around edges. This really isn’t a big deal unless you’re printing or displaying photos large.

Benefit of Professional Lenses #9: Color. The difference in color reproduction is slight, but professional lenses do a bit better. Lenses have nerdy names. For example, the 18-55mm f/3.5-5.6 AF-S DX VR Nikkor Zoom Lens is an average lens that comes with many entry-level Nikon DSLRs.

Let’s break it down. First, it shows the minimum and maximum focal length. It can zoom out as far as 18mm (that’s pretty wide) and can zoom in as far as 55mm (this would be about 3X zoom on a point-and-shoot camera). So you won’t get much zoom out of this lens. Next are the aperture values. This camera is capable of achieving an aperture value of 3.5 when zoomed out, and 5.6 when zoomed in. This automatically gives away the fact that this is a variable aperture lens. The “VR” in the name stands for “Vibration Reduction,” which makes the lens adjust to slight shakiness in the photographer’s hand. Canon refers to this same technology as “IS” for “Image Stabilization.” Now you know how to refer to the lenses you have and what all those crazy numbers are.

Some lenses do not have the capability of zooming. Photographers call these fixed-focal length lenses “prime” lenses. Because they can’t be zoomed, some budding photographers turn up their nose at them. Professional photographers know better. Some of the very sharpest lenses are prime lenses. Another perk—they are usually MUCH cheaper than traditional zoom lenses. I know buying a lens without any zoom isn’t as attractive as the
huge telephoto zoom lens, but most professionals recommend that beginning photographers buy a prime lens as their very first lens.

By far, the most common prime lens is the 50mm, which we call the “Nifty Fifty” or the “Thrifty Fifty.” If you still have some unused camera budget RUN to your nearest photo store and buy one. A 50mm prime f/1.8 only costs $100 for Canon or Nikon. You can buy this lens with even better aperture values (such as 1.2), but that gets pricey. Why is this lens so great? It’s one of the very sharpest lenses available, it’s a fast lens (capable of an aperture as low as 1.8), and it’s CHEAP! You simply will not be able to find any other decent f/1.8 lens for that kind of price. But what about the fact that it has no zoom? Ugh... you’re still stuck on zoom? Well, it’s not a big deal. You simply zoom with your feet (walk closer to the subject).

All right... fine. Let’s talk about how to get more zoom. If you are shooting sports, wildlife, or the guy’s window across the block, you’ll need a telephoto lens. As lenses get longer, it becomes increasingly difficult to get low aperture values. For example, Sigma produces a 200-500mm f/2.8 lens which weighs 35 pounds and costs $35,000. To achieve low apertures at 500mm, the lens needs to be giant to gather enough light. So keep in mind that if you go longer, you sacrifice aperture. There are, obviously, some cheap telephotos that will at least meet the minimum standard of quality for a budding photographer. One example of an acceptable cheap telephoto lens is the Canon 75-300 f/4-5.6.

There’s also a way to “cheat.” You can purchase, for a very reasonable price, a teleconverter for your lens. A teleconverter sits between the camera body and the lens and adds somewhere between 1.4 and 2 times the amount of zoom available; however, it does so at the expense of a significant amount of light and sharpness. A teleconverter is an attractive way to get a long focal length, but usually this means the image will be so soft that it will not be useable.

Brand of lens matters. Professional photographers stick with their camera manufacturer’s lenses or purchase Sigma lenses as well. Sigma is a company that makes lenses for camera bodies of most major brands which are somewhat cheaper than the camera manufacturer’s lenses.

Also, not all lenses have Image Stabilization (Vibration Reduction). This technology moves the lens to counteract the photographer’s shaky hands and can greatly impact the sharpness of hand-held images. Canon and Nikon put this technology in lenses, but other manufacturers, such as Sony, put this in the camera body.
Portrait Photography

Chapter Nine: Portrait Photography

At this point of our photography lessons together, you have learned almost every camera setting you will need to use on a regular basis. On top of that, you understand a bit more of how your camera works, what types of files it can record, and how the lens can impact the sharpness of a photo. In short, we have covered all of the technical information that you need to know to create great photos, and it is now time to delve into more shooting situations and pick up a few great tips from the pros to improve your photography.

There is no single tip that will make your portraits suddenly look professional. In fact, good portrait photography is the sum of hundreds of tiny things the photographer can do to make the photo compelling; however, there are five most vital aspects of great portrait photography: (1) lighting, (2) depth of field, (3) capturing emotion, (4) posing, and (5) composition. Composition will be discussed in great detail in a coming chapter, but the first four fundamentals of portrait photography are discussed below.

Portrait Photography Fundamental #1: Lighting

It is easy for beginning photographers to neglect proper lighting, but great light will improve your portrait photography more than anything else. Generally, photographers want soft light for portraiture. Soft light has nothing to do with the brightness of the light. It means that the light wraps
Improve your photography
Chapter 9: Portrait Photography

softly around curves and blemishes. You can spot soft light by looking at an area of highlight and shadow on a subject’s face. If the light gradually transitions from highlight to shadow, the light is soft. If the light produces a hard line between highlight and shadow, then the light is hard. Hard light is usually very unflattering because it accentuates wrinkles, blemishes, and fat rolls with a hard line of light.

Soft light is achieved by using a large light source. This explains why the tiny pop-up flash on your camera generally produces ugly hard light—because the light source is only 2 inches (5cm) wide!

Professional photographers achieve soft light by bouncing the light of a small flash through a large umbrella, which spreads out the light and makes the light source larger (and softer). Most likely, you do not have the equipment for this type of lighting if you are a new photographer; however, you can still achieve soft light by other means.

One way to achieve a larger light source from a small flash is to bounce the flash off of a wall or the ceiling. If you purchased a speedlight flash to go on top of your camera, you can tilt the flash head so that it shoots the light up to the ceiling rather than directly to the subject of the photo. This way, the light from the flash hits the ceiling, spreads across the surface of the ceiling, and then bounces down onto the subject. This makes a small flash become a large light source that produces beautifully soft light for your portrait.

The next time you are in a position to take a picture indoors, bounce the flash off the ceiling for great light!

The same principle of light applies whether you use flash or shoot in natural light outdoors. The sun is a giant planet so you might think it would produce soft light (large light source); however, it is relatively small to the subject. Even though the sun is large, it appears small because of how far away it is. This explains why pictures taken outdoors at when the sun is shining are often not flattering. The light source is too hard! You can achieve soft lighting outdoors by either going in the shade where the light is spread out, or by shooting on a cloudy day (the clouds spread out the sun’s light to cover the whole sky).
We have already discussed depth of field in the first chapter when we learned about aperture, but this time we will get into more depth. The truth is that there is more to depth of field than simply the aperture.

I am shocked by the number of beginning and intermediate photographers who never learn that there are more factors that impact depth of field than just the aperture. In fact, these other factors have as much impact on depth of field as the aperture does.

The first “other” factor that controls the depth of field is the focal length. Assuming all else is equal, the longer the lens, the shallower the depth of field. This is yet another reason why I advocate so strongly that landscape photographers buy an actual wide-angle lens rather than just the 18mm kit lens. A true wide angle lens has terrific depth of field for wide landscapes.

The second factor is the subject-to-lens distance. The closer you get to your subject, the shallower the depth of field. I always get a laugh when I see flickr comments on a macro shot that say something like, “Wow! Great creative use of depth of field!” I laugh because it is almost impossible NOT to have shallow depth of field for macro (close-up) shots because the lens is so close to the subject. Knowledgeable macro photographers usually put forth every effort possible to INCREASE the depth of field by using a high aperture value.

The last factor is the distance between the subject and the background. If you’re taking a photo of a newborn baby, you might as well give up on trying to use depth of field. Newborn babies are always lying down, so nothing you do can make the blanket behind the baby’s head blurry. It is so close to the focus point on the baby’s face that it is not possible to make it blurry.

What do these three additional factors teach you? If you’re disappointed with your lens not being able to get a sufficiently shallow depth of field, choose the lowest aperture, stand close to the subject, increase the distance between the subject and the background, and zoom in as far as you can. This technique also works on point and shoots when you want to blur out the background!

Portrait Photography
Fundamental #3: Capture emotion

The most compelling aspect of portrait photography to the layperson viewer of photography is the emotion that the subject of a photo exudes. It is easy for photographers to think that it is the responsibility of the model to show emotion for a photo. Whether the emotion that you want to capture is happiness, excitement, fun, or anything else, the photographer has the
primary responsibility for setting up a shoot so that the subject of the photo shows the correct emotion.

When you ask someone to take your picture, they probably stand 10 or 15 feet (4-5 meters) away from you, square off their stance to you, and say “SMILE!” The photographer’s action will produce a typical result. You will stand there with your shoulders squared off to the camera, give a big cheesy smile, and possibly even wave “hi” to the camera. If this is how the photographer approaches a shot, it will be difficult or impossible to achieve a professional quality photo.

There are two easy ways for a photographer to capture images of people with more emotion: (1) consider shooting candid, (2) play out the emotion you want to see.

First, shooting candid. Candid photography simply means that you do not allow the subject of the photo to see you take the picture. This is my preferred method for shooting portraits of my children. Kids usually hate posing for the camera and give cheesy smiles when they are forced in front of the camera. The easiest way to solve this is to simply put on a long lens, go to the other side of the room or across the backyard, and take pictures while the kids play. You will be able to capture more natural emotion this way than you could ever hope to achieve by saying “Hey Jimmy, smile for the camera!”

Second, play out the emotion you want to see. Most people are nervous of getting their picture taken and few people enjoy it. It is the photographer’s responsibility to know how to break the ice and make a person feel at ease so they can look their best. Learning this skill comes with time, but I have found that the easiest way to break the ice is to think of a fun or creative shot to try. By trying a fun or creative pose, the subject will understand your vision for the shoot and feel much more comfortable.

Portrait Photography
Fundamental #4: Posing

The simplest way to improve your posing is to never allow the subject to square off to the camera. This means that the subject’s shoulders and hips should generally be turned slightly away from the camera. This is one reason why no one looks good in their driver’s license photo—they are always squared off to the camera!

In my opinion, the pose does more to convey the essence of the model than anything else. Why? Because human beings rely so much on body language. The pose is the only way that the viewer can get a sense of the mood or the message that the subject of the photo is conveying to the viewer. Your goal as a photographer is to help the model use body language by placing them in a pose that conveys the message they want to send.
These four fundamentals of portrait photography are great ways for you to get better pictures without more gear or any complicated Photoshop trick. The fifth and last fundamental of great portrait photography, composition, will be addressed in the next chapter.
Chapter Ten: Composition

Composition is how the photographer frames the photo and makes elements in the scene interrelate. When a photographer takes a picture, one of the most important decisions that she makes is what she chooses to include in the frame, and where those objects are placed.

Composition is probably the second most important element of a great photo—second only to lighting. The good news is that it is not difficult to master the basics of composition.

The following techniques are the best ways to create interesting compositions. Give these techniques a try the next time you shoot and you’ll see an immediate and dramatic change in your photography.

The Rule of Thirds

Without a doubt, the most important and the most well-known rule of composition is the rule of thirds. The principle is as simple as picturing a tic-tac-toe board on the frame of your photo. For those of you who were deprived of childhood games, that means there are two imaginary lines going vertically and horizontally across the picture with the lines equally spaced apart.

If you imagine these lines on your picture, the rest of the rule is simply to apply. Determine what the focus of the picture is (the eye of a person if you’re taking a portrait, an interesting rock or tree in the foreground of a landscape, etc) and then place that object of interest on one of the intersections of the lines.

Photographers refer to the lines for the rule of thirds as the “top-right third,” or the “bottom-left third,” etc. There is no right or wrong answer for which intersection to place the focus of the picture on, but there are some guidelines.

When shooting a portrait, the eye of the subject should generally be placed on one of the top two thirds (either the top-right or top-left third line). This is a natural placement of the person in the photo because it gives enough space for the body to be in the photo.

When shooting landscape photos, the photographer can follow the rule of thirds by placing the horizon line properly. Obviously, the entire horizon of the Earth will not fit on one intersection, but placing the horizon on one of the horizontal lines is the best way to follow the rule for landscapes. So should the horizon be placed on the top third line or the bottom third line? Generally, I place the horizon along the bottom third line as long as the scene includes interesting clouds in the sky. If there are no clouds and the sky is not an interesting part of the scene, then I...
put the horizon of the Earth along the top third line so that more of the sky is cut out.

Simply following the rule of thirds will instantly make your photographs better than 95% of beginning photographers.

Simplicity

Readers of my ImprovePhotography.com website send in hundreds of questions per week through the Facebook fan page, email, and through the online photography classes I offer through the site. One of the most common emails I receive is from photographers who want me to review their portfolio and provide feedback. In providing feedback on portfolios, one of the most common things I say is that the composition is overly complicated.

Leonardo Da Vinci wasn’t even alive during the age of photography, but he was undoubtedly a master of artistry. My favorite quote from Da Vinci is “Simplicity is the ultimate sophistication.” When I tell my photography students that a composition is overly complicated, I am really trying to express this very thought from Da Vinci.

Applying that principle to photography, you can simplify your compositions by removing any element that is not essential to the story you want to tell through your photo. Many photographers forget that removing trash from the ground in a landscape or changing your perspective to not include a telephone pole in the shot, or blurring out a distracting background is actually a part of composition. Since we stated in the introduction to this chapter that composition is the way that elements in a photo interrelate, you can see that reducing the elements of a photo is certainly a part of composition.

It may seem obvious to remove trash or not include a telephone pole in your shot, but the “Da Vinci Rule of Composition,” as I call it, applies to many more situations.

Suppose you want to take a portrait of a grandmother kissing her baby grandson on the forehead. Applying the Da Vinci Rule, you would ask yourself, “What part of this scene do I need to show in order to tell this story?” Is the recliner that the grandmother is sitting in part of the story? Probably not. Are the grandmother’s feet adding anything to the scene? If you work through the steps, you might realize that the best composition for this shot is actually cropped in to only include the heads of the grandmother and grandson.

If the grandmother was sitting in a rocking chair and looking out a window, then your analysis would change. The old rocking chair might become part of the story and you would have to ask yourself if the window was part of the story, or if you just wanted the light from the window to fall on the grandmother.
The Da Vinci Rule of Composition simply states that a scene should be reduced to the bare number of elements so that the viewer of the photograph can focus on the story that the photographer tells without complication.

Next time you are on a shoot and you are not pleased with the results you get, remember this rule: “Simplicity is the ultimate sophistication. Remove every unnecessary detail from the scene, and re-shoot.

Perspective

One of the simplest ways to change the way the viewer understands a scene (and consequently how they understand the relationship of the elements in the frame), is to alter the photographer’s perspective.

An essential piece of gear when I shoot a wedding is a stepladder. I like to be able to have a two or three step ladder with me so that I can change my perspective on a scene by getting up higher. I also spend much of the time at any given shoot plastered to the ground shooting up.

The reason that many great photographers are willing to go to great lengths to change their perspective is that it transforms the viewer’s understanding of a typical scene and presents the scene in a new and interesting way.

You can apply this rule of composition in almost every shoot you do. Suppose we are together photographing a young toddler. If you stand up at a normal adult’s height and shoot down at the kid, it will be almost impossible to take a picture that looks professional. Why? Because that is the view that everyone has of kids. Knowing this, some photographers might crouch down or even go down to one knee to take the picture of the toddler. This is an improvement, but the truly great pictures of kids are usually from a very low angle where the photographer is lying down on the ground shooting up at the kids. The creative angle makes the viewer understand the scene differently and sees the subject of the photo relating to other elements of the image in a way that they hadn’t imagined before.

Find an interesting perspective of just about any subject, and you have found a story worthy of being told with a photograph.

As you practice improving your compositions and learn what placement of objects in a frame makes for compelling photography, it will eventually become second nature to you. Learn the rule of thirds, the Da Vinci rule, and perspective over the next few months by practicing and analyzing your work. Once you have those basics engrained in your mind, you will learn that compositional rules deserve to be broken frequently and you will then be fully prepared to make creative compositions.
Learning night photography is the very best way for a budding photographer to learn exposure and camera settings. That is so important that I will repeat it so that it sinks in... Learning night photography is the very best way for a budding photographer to learn exposure and camera settings. In fact, when I taught weekly photography classes in Florida, I would prefer to take my students out to shoot night photography before any other lesson.

When shooting at night, you learn exposure very well because exposure times are much longer and the drawbacks in using too high an ISO or an incorrect shutter speed are accentuated. Also, lighting becomes the driving determination in what to photograph because interesting lighting is not drowned out by the daylight sun. Learning to look for interesting lighting is the single most important factor in creating beautiful images. Professional photographers look for interesting lighting—not interesting subjects.

Night photographers also quickly learn that tripods are a necessity rather than an option—a vital lesson for shooting even in the day. Also, colors are vibrant at night, teaching photographers how to capture excellent color.

If you still feel uncomfortable selecting an aperture, shutter speed, and ISO, I would highly recommend that you take your camera and a tripod downtown this weekend to try your hand at night photography. I have no doubt that the
photos you take from this shoot will become some of the best shots you have ever taken. But before you go, there are a few tips that you will need to make your shoot a success.

The first thing that you need to know about shooting at night that is different from shooting during the day is that longer shutter speeds produce more digital noise. If the shutter speed is fast as in a typical daytime situation, the increase in noise is imperceptible; however, night photography often requires shutter speeds of 20 seconds or even longer! With such long shutter speeds, the increase in noise becomes noticeable. To remedy this problem, the ISO needs to be kept to within reasonable levels since the typical noise produced at an ISO level will be compounded by the long shutter speed.

Another tool to help you combat noise when shooting at night is long-exposure noise reduction. Most DSLRs have this feature. This setting is not commonly set during daytime shooting, so it can be difficult to find this setting on some cameras.

In most cases, you can access this setting in the custom functions of the DSLR, but your camera manual will explain this in detail. When you engage this setting, the camera will turn black after the shutter closes for a length of time equal to the shutter speed to complete noise reduction on the image. If your camera turns black after a long shot, just wait patiently. Your camera is not malfunctioning. For a more in-depth explanation of long-exposure noise reduction, you can read the chapter on this topic in my “Improve Your Night Photography” book.

Night photography is simply impossible to do well without the aid of a tripod. Since the scenes you shoot at night are dark, long shutter speeds will be required to gather a sufficient amount of light for a picture to be recorded. These long shutter speeds will produce blurry pictures if the camera is not locked down on a tripod. If you've ever shot a gun before, you know how important it is not to jerk the trigger. Even a slight bump of the firearm while the trigger is being squeezed can set a bullet far off course when it travels downrange. Photography is not very different. No matter how still you hold, if you smack the shutter button when you're ready to shoot, you'll have a blurry image. Even if you press the button gently, you're still slightly moving the camera at the critical time when the image starts to record.

There are two solutions to the problem of shaking the camera when pressing the shutter button, and either one of them will drastically improve the number of sharp pictures you get from a night shoot.
Improve your photography
Chapter 11: An Introduction to Night Photography

Shoot. One costs about $20 and one of them is free. For $20, you can purchase a shutter release (also called a cable release) for your camera. A shutter release is simply a remote control which connects to your camera and allows you to take a picture with the remote control so that you don’t move the camera by pressing the on-camera shutter button. This is a must-have for night photographers. Another advantage to a shutter release is that it allows you to use your camera on bulb mode. Most cameras only allow the user to set the camera for exposures of up to 30 seconds. That is fine for almost all situations, but night photographers often take much more lengthy exposures than 30 seconds. On bulb mode, the shutter simply stays open and the sensor records until you tell it to stop by releasing the button on the cable release. You can set your camera to bulb mode by choosing manual or shutter priority (manual is superior for night photography) and simply scrolling to the longest shutter speed available. The last option will be bulb mode (Nikons will show just the letter “B,” but Canons will read “Bulb”).

If you want to save your pennies but you still need a way to take a picture at night without pressing the shutter button and causing vibration in the picture, a workaround for this problem is to simply use the 10-second self-timer. This is what most of us use to take pictures of ourselves, but it works perfectly for night photography. The photographer simply presses the shutter button on the camera with the camera on a tripod, and then waits 10 seconds for the camera to take the picture. Any vibration caused by hand pressing the shutter button will dissipate by the time the picture is taken.

A technical problem arises when we attempt to take images at night—autofocus ceases to work. Your camera has several autofocus points, or tiny sensors which tell the lens where to focus. Autofocus measures the distance between the camera and the subject that the autofocus point is pointed towards, but it requires a stark contrast to get an accurate reading. For example, if you point your camera at a bright white poster board which covers all of the autofocus points, then the camera will not be able to focus for a lack of contrast. The same issue occurs at night because everything is dark and there is no contrast on which the camera can focus. Many times, this means focusing the camera manually. This is difficult because the viewfinder will probably be dark. If you are shooting astrophotography or landscape images without foreground elements, you’ll want to focus to infinity (the furthest distance at which a lens can focus). On most modern lenses, this means turning the lens to autofocus (a little switch on the lens), putting the focus ring furthest out, and then bringing the focus ring back in just slightly from the furthest point out.

One of the most fun photo projects is taking pictures of star trails. Although we cannot see the stars move with our naked eye, a long exposure by a camera shows the movement of the stars as they streak past. You can decide how much streaking...
you want by controlling the length of the exposure. A 15-minute exposure will produce relatively short streaks, whereas a 4-hour exposure will produce streaks the length of the image.

Because all star trail images are landscape shots, you might be tempted to use a high aperture, such as f/18 so that the stars and the foreground elements are both in focus. Unfortunately, this is not an option. If you do so, your foreground elements will be nicely exposed, but the light from the stars will be insufficient. So how do you get the foreground and the background in focus at such a short aperture? You’ll probably have to take two images at two exposure settings of the same scene—one with enough light for the stars and one with enough depth of field for the foreground—and then blend the two images together in Photoshop.

I already know what will happen on your next shoot. Next weekend you will head out to a dark place to take pictures of star trails. You will arrive at your location with perfect foreground elements and look up at the sky only to see clouds streaking across your perfect landscape. Fear not! Taking long exposures with clouds can produce dramatic images. The streak of the clouds gives an image an ominous and surreal look. You can get your star trails next week, but don’t pack up just because it’s cloudy.

At night, you might find that you like a different white balance than you would like during the day. After your night shoot, consider playing around with the white balance in Photoshop (Adobe Camera Raw). Many night photographers use a tungsten (blue) white balance.

The most important camera setting for shooting at night is Long-Exposure Noise Reduction, which you should already have enabled like I told you. The longer an exposure lasts, the more noise that appears. Cameras have several methods of reducing noise at long ISOs, but the most common is called “Dark Frame Subtraction.” In this method, the camera takes the exposure and then takes another exposure (which the photographer never sees) with the shutter closed. The camera detects which pixels are hot and where leakage occurs and then subtracts those deficiencies from the proper exposure taken by the photographer. This method is very effective in reducing noise in long exposures, but it takes twice as long.

Many photographers who use long exposure noise reduction become surprised when the camera takes a near eternity to write the image to the card. The reason is that during this time, the camera is taking the second exposure with the shutter closed. After the second image is taken, the camera subtracts the hot pixels from the normal exposure and then applies this information to the RAW file or the JPEG.

There really isn’t a good reason to ever turn long-exposure noise reduction off. The camera will not use it unless the exposure is sufficiently long to cause noise. On Canon cameras, it is sometimes triggered with exposures over even 1 second, but Nikon cameras usually don’t trigger this setting until the exposure is 10 seconds or more. This is just a manufacturer’s preference, but cannot be adjusted by the photographer. Either way, just keep long exposure noise reduction turned “on” no matter what you’re shooting.
If you have used a point-and-shoot camera or a cell phone camera before purchasing your DSLR, you will likely find that the focus mechanism on a DSLR is more complicated than on a point-and-shoot camera. In fact, point-and-shoot cameras rarely even show the photographer where the camera is focusing because the photographer just expects the camera to focus on its own. The reason that point-and-shoot cameras focus so easily is that they do not require the focus to be as sharp for a picture to be taken because the depth of field produced by a point and shoot is so expansive that any object that is not focused on will most likely still appear sharp if the picture is taken with a point-and-shoot.

DSLRs, on the other hand, have large sensors that produce more shallow depth of field. If the focus is even slightly off with a DSLR, the subject of the photo will not look sharp. When the automatic “green mode” is used on a DSLR, the camera simply guesses where the photographer wants to focus, but as the photographer takes more control of the camera, the photographer must also tell the camera where to focus for each shot.

When you look through the viewfinder, you will see several dots or squares that show the focus points of the camera. The camera is capable of focusing only on these specific spots. Many entry-level DSLRs have only 9 or 13 focus points, but more advanced cameras have 45 or more.
advantage of having more focus points is that the photographer can focus on any specific place in the image.

Suppose you want to take a portrait of a person. You set up your composition in the viewfinder and press half-way down on the shutter button so the camera will focus. Since you selected a low aperture number, the depth of field is shallow and you know the focus point must be placed on the subject’s eye. Unfortunately, your camera does not have a focus point where you want to focus.

If this happens to you, and it undoubtedly will, your only option is to focus and recompose. To do this, simply move the camera so the selected focus point rests on the subject’s eye, then press the shutter button half way down and keep it half way down as you recompose the shot to the composition you desire, and then take the picture by pressing the shutter button the rest of the way down.

Advanced Focusing Tip: Not all focus points are created equal. Some focus points, called cross-type focus points, can achieve focus by seeking contrast or the horizontal or the vertical axis. Other focus points can only find focus on one axis. While some DSLRs have multiple cross-type focus points, many entry-level DSLRs only have one cross-type focus point, which is always located in the center of the array. Therefore, your camera can achieve faster and more accurate focus if you use the center focus point and then recompose the picture to your desired composition.

Pre-focusing

Now suppose you want to take a macro image of a drop of water hitting a larger body of water. This situation will require an ultra-fast shutter speed to freeze the action, so you’ll need a wide aperture to get enough light. As you now know, a wide aperture also means short depth of field, so you’ll have to focus precisely on the little bead of water while it’s flying through the air. How in the world will you ever accomplish this? The answer, as the subtitle suggests, is pre-focusing. Place an object, such as your finger, in the spot where you anticipate the bead of water to be when you take the picture, then lock the focus by pressing the shutter button half-way down, then take the image at the precise moment when the bead crosses the point on which you’ve focused. While you won’t use this method very often, you’ll find it invaluable in certain situations.
Chapter Thirteen: Support

The importance of a tripod varies depending on the type of photography you do. Wedding photographers often don’t use tripods when they can help it because they like the flexibility of walking around and taking pictures from different angles very quickly. Other photographers, such as those who do wildlife or landscape, would not step foot into the field without a tripod. Let me explain why... Remember the example of the gun? You know that the slightest movement of a gun while the trigger is being squeezed will have drastic effects on the trajectory of the bullet. The further the distance of the shot, the further off-target a bullet will go if the gun was not steady when the trigger was pulled. Photographers, like marksmen, go to great lengths to have the camera as stable as possible when the image is taken so that the photograph is perfectly sharp. When a longer lens is used, camera shake will be more apparent than when a shorter lens is used—just like shooting a long distance with a gun requires even greater stability.

When a fast shutter speed is used, the importance of a tripod is lessened somewhat because there is less time for the camera to move during the exposure. If you’re on the beach on a sunny day and using a shutter speed of 1/8000th of a second with a reasonably short lens, then the use of a tripod will show little or no difference in the photograph; however, if you’re shooting a sunset where the light is dim, or if a longer lens is used, the use of a tripod will make a tremendous difference in the sharpness of the overall image.

Except for situations where the photographer must adjust quickly, such as portrait photography, professionals always use some type of support. Most of the time, this means a tripod, but there are some situations in which a monopod is commonly used. A monopod is simply a tripod with only one leg—a long stick with a mount to attach the camera. Monopods are commonly used by sports photographers because it allows them to move the camera quickly to follow the athletes while still providing some stabilization for the camera body and lens. Also, monopods are perfectly suited for long photographic hikes when carrying a tripod is burdensome.

Utilizing a tripod is probably the easiest thing you can do to quickly—and noticeably—improve the quality of your images. If your reaction to that statement was to head-out to Wal-Mart, think again. Professional photographers would generally prefer going cheap on a camera body to going cheap on a tripod. Amateur tripods simply don’t provide enough stability to achieve a sharp image.

Tripods have two basic parts: legs and a head. The legs are the large part of the tripod and the head is the mount which holds the camera body. Professional tripod legs are generally made of carbon fiber, which is more expensive but much...
lighter, and aluminum, which is heavier and more prone to perpetuating vibration.

Heads come in many varieties, but most professionals prefer ball heads. The key to a good ball head is quick adjustments and rock-hard stabilization once locked into place. Cheap ball heads will slowly slide down if a heavier camera is placed on it because it cannot hold the weight. The bad news is that a decent tripod and head will cost about $300—and that’s just for the bare minimum that a professional would use. Many tripods cost far more than this. You may be tempted to buy a cheap $50 tripod, but you know what they say: “Buy right, buy once.”

For your convenience, I keep an updated website page with links to the best quality tripod deals available. You can access this information at http://improvephotography.com/1984/best-professional-tripod-and-ballhead/
Chapter Fourteen:
An Introduction to Landscape Photography

Landscape photography is an excellent way for photographers to enjoy the art of photography. In fact, I consider myself to primarily be a landscape photographer.

Most beginning landscape photographers think that it is necessary to travel to exotic locations to do landscape photography, but that simply is not true. In short, they place more emphasis on the subject than the light. Remember that no landscape photo will look as good in bland mid-day light as it will during the golden hours. Professional landscape photographers wake up long before sunrise, get in position, and wait for the light to grow. One hour after sunrise, the beautiful morning light will dissipate and landscape photography will have ended until an hour before sunset.

While most landscape photos are best suited to morning or evening light, photographers can still take beautiful midday images. The key to getting great bright-light landscape images is a circular polarizer. A circular polarizer is an absolutely indispensable part of a landscape photographer’s gear bag.

Remember that beautiful landscapes still need solid composition. The web is full of bland waterfall images in which the waterfall is placed exactly in the middle of the frame, no foreground elements are used, and the background is not given proper treatment. I’ve said it before and I’ll say it again: the easiest way to make an average landscape photo great is to place something in the foreground—a tree, a bush, an interesting rock, a stream... anything. This will add depth and visual contrast to the image, as well as giving the viewer a sense of place. Take care when focusing a landscape image. Most landscape images require that the entire image be in focus. To accomplish this maximum depth-of-field, focus one-third into the scene. For example, if you’re taking a photograph of the sunset over a lake and the horizon line is in the middle of the image, one should focus down in the water.
Foreground, Mid-ground, Background

One of the best ways to improve your landscape photography is to include elements in the foreground, mid-ground, and background. This adds visual depth to the image and draws the viewer into the scene. What does this mean? When you go to take a shot of a beautiful scene, find something to put close to the camera and something far in the distance. When you’re photographing a waterfall, consider putting something near the camera: a flower, an interesting rock, a tree, etc. Then the photograph will have that foreground element, the ground leading to the waterfall as a mid-ground element, and the waterfall as a background element. Remember that when you do this, you’ll have to use a high aperture (somewhere between f/11 and f/22) so that both the foreground elements and the background are in focus.
Chapter Fifteen: Filters

Filters are circular pieces of glass which are screwed on to the front of the lens to accomplish a variety of different tasks. Before digital image editing, filters accomplished many tasks which could not be recreated in any other way, but in today’s world, there are only three common filters: the neutral density filter, the circular polarizer, and the UV filter.

The UV Filter—And Its Replacement

When you go to the camera store to buy a new DSLR, the store clerk will convince you to buy a UV filter. A UV filter is a clear glass filter which is really only used to protect the lens from scratches. Although even some professionals use UV filters to protect the lens, there is a very good case for not doing so. Because filters are not curved like the elements inside the lens, filters greatly increase the likelihood of getting reflections of sunlight bouncing around in the lens—causing excessive lens flares. Also, UV filters cut down the sharpness and contrast in the image. You’ve spent hundreds (sometimes thousands) of dollars on a lens, do you really want to degrade the optical qualities of your expensive lens with a flat piece of $8 glass—or sometimes plastic? The difference in image quality between images taken without a UV filter and images taken with a UV filter can sometimes be drastic when the light hits the lens in a certain way. So next time the salesman tries to sell you a UV filter, save your money and your image quality.

There is a far superior method to protect the lens from becoming scratched: a lens hood. A lens hood is a piece of plastic or rubber which wraps around the front of the lens and serves two purposes: to protect the lens and to eliminate stray light from affecting the image. Lens hoods are a near-necessity for photographers and protect the lens much better than a cheap UV filter.

The Polarizer

The polarizing filter is, by far, the most important filter for a digital camera. A polarizing filter has the same effect as wearing polarized sunglasses—it cuts through glare and brightens the highlights and darkens the mid-tones. This makes polarizing filters indispensable for outdoor photography in bright light. Let’s discover the value of a polarizer with the following hypotheticals.
You’ve seen beautiful daytime landscapes where the clouds are bright white and the sky a dark blue. How do photographers accomplish this look? The polarizer. Using a polarizer darkens the sky and brightens the clouds. A polarizer will also cut through the reflection in water or on leaves in a landscape. Now you’re in the Arizona desert taking images of the beautiful rock formations under the puffy cumulus clouds. The trouble is that the sky looks white or light blue and the clouds look dim and grey. The answer? The polarizer. The polarizer makes the sky look like a rich deep blue and the clouds a bright shade of white. Suddenly your amateurish photo of the rock formations and the sky will morph into a beautiful wall-hanger.

When you purchase a polarizer, make sure that it is a circular polarizer and not a linear polarizer. Linear polarizers affect the autofocus system of the modern DSLR. A decent polarizer will cost about $30, but you can definitely spend up to $300 if you want to go fancy. I can recommend the Hoya brand of polarizer as producing very good results. Be careful not to buy a $10 version online... I’ve seen my share of junky polarizers, so caveat emptor. Also be cautious of the fact that polarizers come in many different sizes, so the polarizer has to match your lens. You need to know two things about a polarizer before you can use it. Remember that you must employ these two aspects of polarizer technique if you expect to see any results from your polarizer.

1. Circular polarizers have an adjustable ring on the front, which the photographer spins to control the amount of polarization. At the lowest setting, the polarizer will show little or no difference than shooting without the polarizer, and at the highest setting you may see too much polarization. In most situations you’ll see that the best results occur when you dial in as much polarization as possible and then back it off just slightly.

2. The polarizer works at 90 degree angles to the sun. To remember this, make a gun shape with your fingers—forefinger pointing directly at the sun and thumb making a right angle to your forefinger. The direction to which your thumb points is the direction where you should shoot in order to see the effect of the polarizer. You can rotate your hand in any direction and your thumb will still point to the correct direction to shoot as long as your forefinger still points at the sun. If you shoot at an angle other than 90 degrees to the sun, you’ll see little or no difference in using a polarizing filter.

The Neutral Density Filter

Generally, photographers are fighting for the fastest lenses and the highest ISOs in order to get more light on the sensor. The neutral density filter (ND filter) has precisely the opposite purpose—it reduces the amount of light which is allowed to enter the lens. ND filters come in many different strengths and some filters (called variable ND filters) allow for adjustment of how much light the filter blocks. Why would anyone want this? Here are a couple reasons...

1. ND filters are useful in working with video. I realize that this book concerns only still photography, but many DSLRs now include the capability of recording HD video. Because video starts to get choppy when shot at too fast a shutter speed, an ND filter is used to allow slower shutter speeds.

2. ND filters can be used when shooting a waterfall during the day. When shooting a waterfall, a longer shutter speed is desired so that the water looks silky and smooth from motion blur. The ND filter allows a long shutter speed even in bright light so that this can be accomplished.
Chapter Sixteen: High Dynamic Range Photography (HDR)

High dynamic range photography is by no means a “new” invention, but it was only popularized recently and has completely overtaken the photographic industry. There always seems to be some fad in photography that lives and dies overnight (remember the soft focus fad?), but I personally believe that HDR is here to stay. High dynamic range is a technique in which the photographer takes at least 3 images of the exact same scene—one over exposed, one properly exposed, and one under exposed—and then blends those images together in order to capture a larger range of detail in both the highlights and shadows. HDR photography is a little tricky, but if you pay attention to this chapter, you can create images that will undoubtedly draw the attention of all your friends and family members.

When an HDR image is created, the photographer has great latitude in deciding how realistic-looking the ultimate image is. This decision is made when the photographer brings the images into HDR processing software and makes tonemapping adjustments. HDR has been overdone for too long. Look at the image above. Cool right? This is an example of HDR which is too strong or overdone. In this particular image, it works because it matches the subject of the photo; however, when beginning photographers first try HDR, they seem to overdo the HDR effect in every situation. Don’t let this be you. Your images will look much more beautiful if you give it a more realistic look. When you process the HDR in software, you’ll easily see what adjustments make the image look realistic and what makes the image look fake and overdone.

The Step-by-Step Approach to Tonemapped HDR

Step 1: Find a scene that you’d like to shoot in HDR. The type of scene that, in my experience, produces the best HDR result is one in which one exposure cannot capture the entire tonal range. In this particular image, it works because it matches the subject of the photo; however, when beginning photographers first try HDR, they seem to overdo the HDR effect in every situation. Don’t let this be you. Your images will look much more beautiful if you give it a more realistic look. When you process the HDR in software, you’ll easily see what adjustments make the image look realistic and what makes the image look fake and overdone.

Step 2: Put your camera on a tripod. Because you’ll be taking three images of the same scene, any movement of the camera as the separate images are taken will prevent you from layering the photos one on top of the other. It’s extraordinarily difficult to get good HDR results without the camera mounted on a tripod. Keep in mind that nothing in the scene can be moving. If the pine trees are blowing in the wind, their position will change between the three images.

Step 3: Turn on auto-exposure bracketing. If your camera has this feature (as almost all DSLRs do), it will allow you to automatically take three or...
more exposures at varied exposure levels. In our mountain lake landscape, we determine that we need one image that is over exposed by two stops (stops is a measure of the amount of light), one image that is correctly exposed, and one image that is under exposed by two stops. We set our camera to take these three pictures in rapid succession so we only need to press the shutter button once. Consult your camera’s manual on how to set auto-exposure bracketing, but it’s usually very easy to do. If your camera does not have auto exposure bracketing, you can just put the camera on manual mode and vary the shutter speed so you have one image that is too bright, one that is correctly exposed, and one that is too dark.

Step 4: Put the images on your computer and do not edit the images in any way yet.

Step 5: Open the 3 images in an HDR processing program. Once the images are blended into an HDR file, you won’t see any difference at all, because almost all current computer monitors are incapable of properly displaying it.

Step 6: Make the proper tonemapping adjustments to the image in HDR processing software. This is really a trial-and-error process. Keep messing with the dials until things start to look right. In more advanced tutorials, you can learn how each adjustment works.

Step 7: Save the tonemapped file as a jpg or tiff. At this point, you may be happy with the image and you can quit, but I usually receive better results when I take the tonemapped image into Photoshop and blend the HDR with one of the original single images.

What Software Do I Need to Create an HDR Image?

You need specialized software in order to make an HDR image. The software blends three or more images together and allows the image to be tonemapped for easy viewing. There are three main options for HDR processing software:

#1. Professional photographers use a program called Photomatix to process HDR images. Photomatix is created by a company named HDRSoft and can be found at www.hdrsoft.com. When I created my first HDR, I first tried four other programs and simply couldn’t get the image to look right. Then I switched to Photomatix and suddenly the process was easy and I was producing beautiful shots. Photomatix costs between $40 and $100 depending on which version you purchase.

#2. Photoshop has the ability to produce HDR images, but the software was barely usable until Photoshop CS5. The new Photoshop CS5 has improved significantly upon older versions of Photoshop in processing HDRs, but it is still not quite as good as Photomatix. Photomatix gives the photographer more control over every aspect of the processing—unlike Photoshop CS5. If you have an older version, don’t bother trying to process HDRs in it, because it simply won’t work properly.
#3. Qtpfsgui. No, that’s not a typo. Qtpfsgui is a FREE program which allows users to create HDR images. Unfortunately, this program is difficult to use and I have never had great success with it; however, if you’re just dying to try HDR and you can’t lay down the money for Photomatix or Photoshop CS5... here’s an alternative.

Pseudo-HDR

A major limitation to HDR photography is that the photographer must take 3 or more separate images, which eliminates situations where something in the image will move during the taking of the photos. Fortunately, pseudo-hdr photography allows for photographers to take HDR images even in situations where something in the frame will move. A true HDR, where three or more images are taken, is ideal because the separate images allow for detail to be captured even in the brightest and darkest areas of the picture; however, photo editing software allows a photographer to take one image and change the brightness or darkness of the image to create three separate images. Basically, the photographer takes one image into Photoshop and saves it in three different settings: one in which the exposure has been reduced to produce a dark image, one where the exposure is correct, and one image where the exposure has been changed in Photoshop to make the image brighter. After this step, the photographer brings the three images into HDR processing software and follows the normal steps to create an HDR.

While pseudo-HDRs are not as ideal as true HDRs because the single image—which is saved out at different settings—will not have the detail in the brightest and darkest areas of the image, it is a good way to get the HDR “look” in situations where it is not possible to take three images of the moving scene.
Chapter Seventeen: Digital Image Editing

I have found that many budding photographers have issues with “Photoshopping” images because they feel that it is cheating. Since I have seen so many photographers fall into this trap, I want to take some time explaining how most modern photographers approach digital photography so that you are able to hit the ground running.

Usually, the argument made by purists is that digitally altering an image is “fake” or “not real.” The truth is that very few photos are “real” or accurately represent the scene being photographed. That bald eagle wasn’t really that close—you used a long lens to make it seem closer. That sunset wasn’t really that colorful—you changed the white balance to make it seem warmer. That hummingbird didn’t really freeze in mid-air—you used a shutter speed of 1/4000th of a second to make it seem like that. That landscape wasn’t really that bright at 4AM—you used a long shutter speed to make it seem brighter. The space behind your child wasn’t really a creamy blur—you used a wide aperture to make it seem that way. So the argument that digitally edited images don’t represent the actual scene is true, but almost no photographs represent the scene. Whether the alteration of reality happens in-camera or through the computer makes little difference.

What of the argument that an edited image does not represent the skill of the photographer? One who asks this question knows nothing of digital image editing. Digital image editing is extraordinarily detailed work requiring extensive study, practice, and skill. Even after years of studying digital image editing, a photographer will still have much to learn. Image editing is truly an art form, so it clearly represents the ability of the photographer.

Admittedly, there are some specific types of photography that require images to not be altered on a computer. For example, photojournalists should not indulge in much photo editing. A photojournalist’s code of ethics requires her to only use a few digital editing techniques: non-material cropping, sharpness, etc. Because we depend on photojournalists to report major news events, their photographs must be strictly representative of the actual scene; however, their work is not to create art. Their work is to report.

I have never seen anyone become upset that a painting of a landscape was simply made up by the painter. It makes no difference whether the landscape a painter creates is a real place or not. It is art, and most types of photography work the same way.
I have never met a professional photographer who does not use Photoshop on his or her images. While there are alternatives, Photoshop is the industry standard; however, Photoshop comes with a price tag. The full version of Photoshop CS5 costs approximately $700, but there is a beginner version for $80 that is called Photoshop Elements. For most beginning photographers, Photoshop Elements is a better choice than the full version of Photoshop. The full version of Photoshop adds some very advanced features which a professional would find to be essential, but this will simply confuse beginning photographers. Also, it will likely take several years of learning Photoshop Elements before a beginning photographer needs to upgrade to the full version of Photoshop.

While Photoshop Elements is undoubtedly the most popular option for beginning photographers, there is a lesser-known program called Lightroom that many budding photographers miss out on. Lightroom is a program that allows photographers to easily categorize and sort through hundreds or even thousands of photos in a catalog and make basic edits (color, sharpness, contrast, horizon adjustment, skin smoothing, etc) very quickly. I actually recommend that beginning photographers purchase Lightroom before Photoshop Elements. Lightroom is easy to use and most of the edits most commonly performed by photographers can be done within the program.

For photographers who like to do more in-depth editing, compositing multiple images into one, or other complicated tasks, the budding photographer could purchase Photoshop Elements to do more in-depth work on photos and use Lightroom for all of the day-to-day editing. Most professional photographers own both Lightroom as well as Photoshop and use both programs daily.

While Photoshop is, for the most part, unchallenged in its domination of the in-depth photo editing category, there is a competitor to Lightroom that has become quite popular in the last few years—Aperture. Aperture is Mac-only and will not operate on Windows PCs.

If you are not ready to lay down the cash for Photoshop, Photoshop Elements, Lightroom, or Aperture, there are many free programs which
are easier to use and will allow you to make some rudimentary edits on your photos until you are ready to mortgage the house and sell your left kidney in order to afford Photoshop.

Picasa (by Google)

Pros: Easy to use. Manages all of the photos on your hard drive from one convenient spot. Allows for creative editing. Displays RAW images (but doesn’t allow much adjustment of them).

Cons: Not powerful enough for a serious photographer. Doesn’t have the editing capabilities of a professional program.

Aviary (web app)

Pros: No program to download. You run the program in a browser by going to Aviary.com. Has many features to edit images over and above what picasa offers.

Cons: Doesn’t manage your photos. You have to upload each image before editing and then download afterward.

Gimp (free download)

Pros: Open source program which has many of the same features as Photoshop.

Cons: Not user friendly and it has its share of bugs in the software.
Conclusion

Everywhere you go for the rest of your life, people will carry cameras and snap pictures. The time that you have spent in reading the last short 100 pages will benefit you for the rest of your life and change the way that you approach every photograph you ever take.

Many of the concepts described in this book take practice to master, but with time you will be able to create type of images you desire.

I would encourage you to continue your learning of photography by joining me at my website, ImprovePhotography.com. There is a vibrant community of photographers at ImprovePhotography.com to help you continue to improve. You can ask questions about photography at our Facebook fan page, read the free articles on ImprovePhotography.com, or even take an online photography class with me.

If this guide to photography has been helpful to you, please consider paying it forward by providing a review of this book on Amazon.com by simply searching the title of the book on Amazon.com.

Thank you for purchasing this book and allowing me to introduce you to the best tips for beginning photographers.
To learn more about photography, read the Jim Harmer’s daily photography tips website at ImprovePhotography.com.