

Basic Photography Using a Digital Camera

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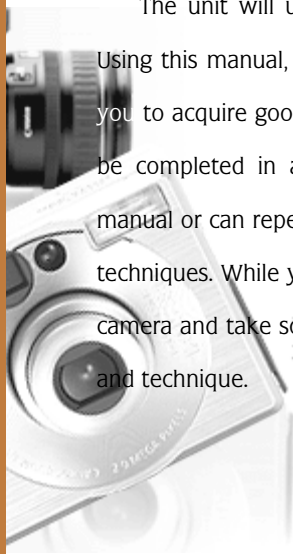
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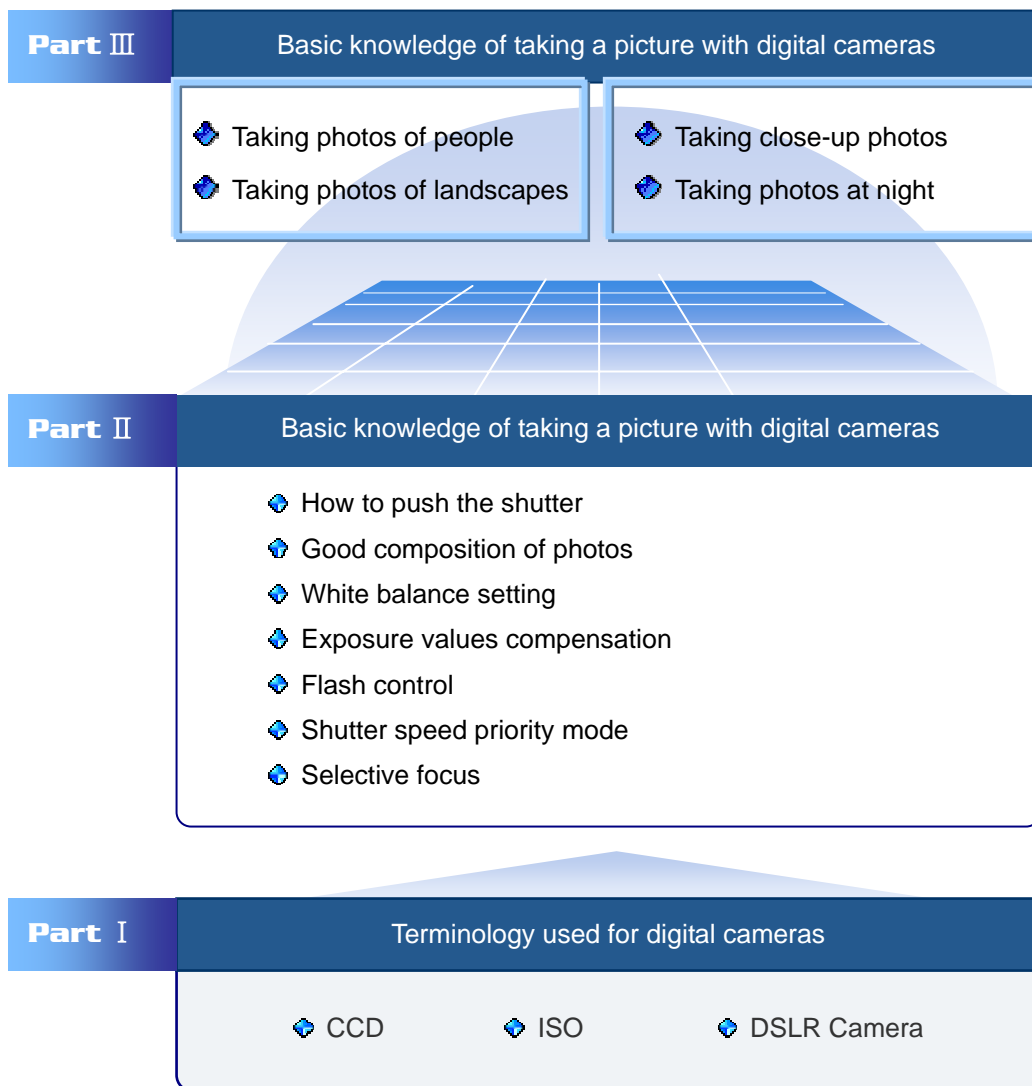
Most people take a picture to record and keep their memories. Digital cameras make it convenient to check a photo after photographing and to edit photos with computer software. Everyone can take a picture, but few people know how to utilize various functions to take a better picture.

Have you ever been irritated because photos are blurred or subjects are distorted? What causes low quality photos? Do you think the reason is that you are not a professional photographer? Many people do not know the basic rules of taking pictures and what functions there are in their digital cameras. These instructions will provide you with basic techniques to take better photos with your digital camera. The unit consists of three procedures. The first step will describe some basic digital camera terminology. It will help you understand how digital cameras work. Next you will learn seven fundamental techniques for using basic functions which are common in the average digital camera. Then, you can apply the techniques when taking a picture in real situations.





The unit will use a self-paced learning method to deliver the instruction. Using this manual, you will be led step-by-step through procedures that allow you to acquire good picture-taking techniques. Although the unit is designed to be completed in about 2 hours, you can either move quickly through the manual or can repeat some steps to help you become more familiar with those techniques. While you are going through the unit, you should operate your own camera and take some pictures. It is very important to memorize each function and technique.



In this unit, you will learn basic knowledge and fundamental techniques of photography with digital cameras. Seven skills in the second part are prerequisite to taking a better photograph. Based on these techniques, you will learn how to apply them to various situations. While you go through the unit step-by-step, you will be able to acquire basic understanding of how to take better photos.





Equipment you will need


-  Digital camera
-  Manual of your digital camera
-  Accessories, such as a tripod or external flash, if you have them
-  This unit is written using the Sony digital camera F-707 shown on the right




Prerequisite Knowledge or skills

-  This unit is written for beginners. Even If you do not have any experience of photography with digital cameras, you can learn basic techniques with the unit.
-  You should operate your digital camera based on the manual while you are reading this unit. In addition, don't hesitate to take some pictures. Practice is the most important thing.


Limitation of the contents

-  Photography is large area; therefore, most photography books in bookstores have more than 300 pages. Because of the unit's length, limited techniques are mentioned in this unit. These can be called useful tips to use digital cameras.

Required time


-  This unit is designed to be finished approximately within two hours, but feel free to finish it early. You can refer to it whenever you take a picture.

Assessment

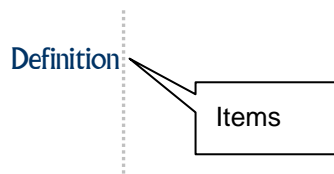
-  You will be asked to answer seventeen questions after finishing this unit. It will be helpful to remember key points.

Conventions used in this unit


You should be aware of the following conventions used to indicate sections, important items, or useful tips


-  The following heading will denote the beginning of a new section



Lesson 1 **What is a CCD ?**



-  The following box will show an important item, such as definition, step, or skill

 **CCD (Charged-Couple Device)**

-  The following box will denote a useful tip related to each section

 **TIP**  **How to compare CCD sizes?**



Part I

Understanding Terminology used for the Digital Camera

- 1. What is a CCD?**
- 2. What is an ISO?**
- 3. What is a DSLR camera?**

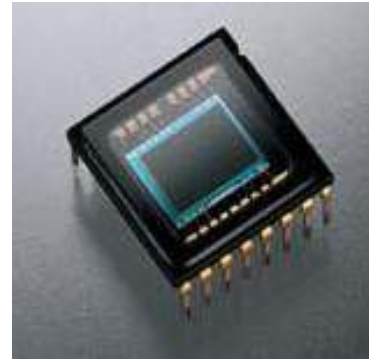


Lesson

1

What is a CCD?

As you know, a film camera uses film to save an image. However, the digital camera has a sensor which is positioned behind the lens. When you press the shutter button, the sensor measures the light striking it and creates a digital image much in the same way a photocopier makes a copy of a document. This image is stored on removable storage called a memory card.



The CCD inside of Camera

Definition

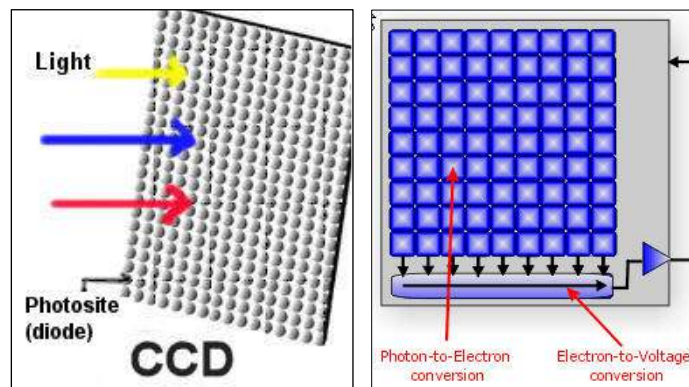
🌱 **CCD (Charged-Couple Device)**

A semiconductor technology used to build light-sensitive electronic devices such as cameras and image scanners

How It Works

The CCD is a collection of tiny light-sensitive diodes, which convert photons (light) into electrons (electrical charge). These diodes are called photosites. In a nutshell, photons are converted to electron by the photosite and the electron is converted to voltage. Then, these analog forms (voltage) are digitized into pixels within the supporting camera circuitry before downloading to memory.

The structure of CCD



The feature of a CCD can be described by the number of pixels and physical size. If there is a 4.0 megapixel camera, it means there are 4 million sensors in its CCD. It also means the camera can produce 4.0 megapixel-photos.

On the other hand, the size of the CCD is very important. The bigger CCD can receive a greater amount of light, so a photo will be clearer. However, the price will be higher. For example, let us compare two digital cameras. One is 4.0 megapixel and the CCD is 5.52mm x 4.14mm. The other is 3.0 megapixel and CCD is 23.7 x 15.6mm. In this case, the second camera is much more expensive because of the size of the CCD even though the first one has a higher number of pixels.

TIP**How to compare CCD sizes?**

When you buy a digital camera, you should look at the specifications. If a CCD size is 1/1.8 inch, it is referring the diagonal size of the CCD. Regular cameras have a 1/2.7, 1/1.8, or 2/3 inch CCD. However, high-spec cameras have a much larger CCD, and the size is described as 22.7 x 15.1mm in the specifications.

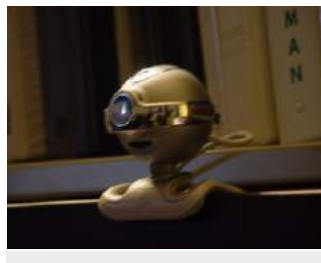


Lesson 2**What is ISO?**

The meaning of ISO (International Standard Organization) is how sensitive the image sensor is to the amount of light present. The sensitivity is reacting speed by light. If the value of ISO is high, you can take a picture without a flash even if the amount of light is low. However, a noise will occur on a photo if using a high ISO setting because higher gain, more noise. You can see the difference in the value of ISO using same shutter speed and aperture in following pictures.



ISO = 100



ISO = 200



ISO = 400

Extent of ISO The values of ISO can be classified as follows:

- Low speed: ISO 25~50
- Middle speed: ISO 100~200
- High speed: ISO 400~

As a beginner, use the minimum possible ISO setting. You should increase the ISO setting only when the shutter speed is too slow to hand hold, you need a faster shutter speed to capture action, or you need a smaller aperture for depth of field.

For example, suppose you are in a concert and can not use a flash. Your digital camera will automatically select good combination of the shutter speed and exposure setting. However, if you find the camera is using a shutter speed that is too slow (1/60 sec. and slower) to handhold the camera steady and shake-free (thus resulting in blurred pictures), and you cannot open up the aperture anymore, and you do not have a tripod or other means to hold the camera steady, you might select higher ISO setting which will then allow you to select a faster shutter speed.



TIP

How to change the ISO setting?

Usually the ISO setting of regular digital cameras is equivalent to 100 or Auto. If you want to change the ISO setting, you should check whether you can change it or not in the manual.



Lesson 3

What is a DSLR camera?

There are two very different classes of digital cameras: point-and-shoot (p/s, fixed-lens) and Digital-Single-Lens-Reflex (DSLR). The digital cameras most people have are point-and-shoot cameras which are small and cute. On the other hand, the DSLR cameras are larger like the one pictured here. DSLR cameras are usually for professional photographers, but currently many non-professionals are interested in using DSLR cameras. Even if two cameras have the same number of pixels, a DSLR camera is more expensive than a point-and-shoot camera. In addition, because DSLR cameras have a larger CCD, the quality of the photo is better. However, don't be disappointed in having a point-and-shoot camera. Recently, those p/s cameras have many functions like DSLRs.



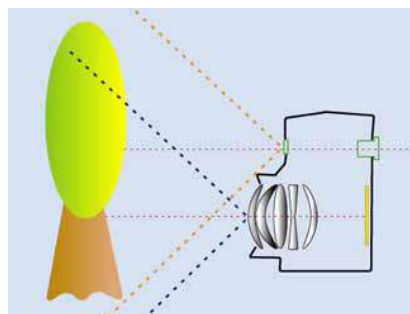
DSLR camera



Point-and-Shoots

Different View finders

These two kinds of cameras have different types of view finder. A regular digital camera (p/s) has a range finder requiring an additional view finder, which is separate from the lens, to see a subject. This kind of camera is light, fast, and silent. However, the image viewed through a view finder is different from the image viewed through a lens because a view finder is in a different location coming from a different angle as in the following picture.

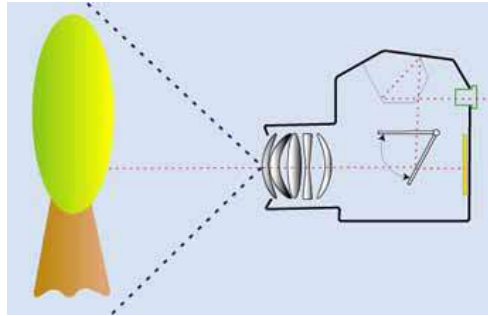


Range finder of point-and-shoot cameras

- The red line shows an angle through the range finder
- The blue line shows an angle through the lens



In contrast, DSLR cameras have just one lens. There is a mirror in the camera. You can see the subject from the same angle as the lens. Therefore, you can add additional lenses to a DSLR camera.



Single reflex lens of DSLR cameras
- There is a reflex mirror in the camera body

Differences The following table explains the differences between point-and-shoot camera and DSLR cameras.

	Point-and-shoots	DSLR
Strengths	Small & light, silent Good light metering Ability to record movies	Better image quality Instant operation, Fast AF(Auto Focus) Huge lens range
Weaknesses	Lower image quality Slow operation & AF	Large & heavy noisy

■ Point-and-shoot cameras – using a range finder

- It is generally smaller, lighter, and more silent than a DSLR camera.
- The camera already knows what the exposure should be because the image sensor is exposed to the image while you are composing.
- Most cameras let you make movie files with sound, such as mpg, avi or mov file. DSLR cameras can not make movies because of their reflex mirrors.
- Because it has a small CCD and tiny pixels compared to DSLR, there are two flaws: much more distortion(grain) in photos and much slower ISO speed.
- Overall these cameras are not as fast as we'd like. For example, you have to wait for them to turn on after pressing the button. In addition, they don't focus very quickly because they have tiny motors.




■ DSLR Cameras – using single-reflex lens

- DSLRs have sensors almost as big as 35mm film, which is about five times the linear dimension or 25 times as much area as the sensors in p/s cameras. These huge pixels gulp in every last photon of light so even at high ISO settings the images are much cleaner than p/s cameras. This lets you use high ISOs all the time, with even better results than film in low light.
- You can turn them on very quickly and take a picture right after pressing the button. DSLRs have the fast AF motors of their film cousins. They also can track subjects in motion for great sports shots.
- You can use all the lenses you already own and can buy new and used ones. Even a 15 year old autofocus or 40 year old manual focus lens can be used, depending on your camera
- DSLRs tend to be large and heavy although the latest inexpensive ones are as light and as small as the biggest p/s models at the same price.
- DSLRs have a lot of motors and mechanics which make the same noise.

TIP**☞ Do I have to buy an expensive DSLR camera to get good quality photos?**

The best answer is “Not necessarily”. You can take superb photos with most of the mid-level digital cameras on today’s market. Most of us tend to believe that a more expensive camera will produce better photos. The truth is that having a more expensive camera will no more improve your photos than buying an expensive golf club will automatically improve your golf game. Not only do the point-and-shoot cameras help beginners to automatically adjust setting but they are offering manually changing setting to us. The most important thing is how to effectively use your camera using photographic knowledge.



**TIP** **How to select the right camera for you?**

There are important considerations when you are looking for a digital camera.

- Budget

You know which models are affordable to you.

- Experience level

If you are a beginner, find models that seem easy to use. There are so many kinds of models in stores. Go to the store and handle different cameras. If you are more experienced, you may want a camera that gives the user more control even if it is not a DSLR camera.

- Sensor size (e.g. 3, 4 or 5 megapixels)

The size of the sensor means how large you can enlarge the resulting photo. The large size does not mean you can take better photos. If you were to take a color photograph of a scene with three cameras with different-sized sensors (3,4 or 5 megapixels), the 4X6 or 5X7 inch prints would appear to be the same quality. If you do want to make larger photos, the larger sensor size is needed.

- Zoom factor

You should consider the optical zoom factor which describes the amount of enlargement produced by the camera's lens. The digital zoom factor is created by electronically magnifying the image. It degrades the quality of the image by literally cropping from the center of the sensor. The optical zoom factor is the most important thing.

- Camera mode

Look for cameras that have the best feature (mode) you need. Look carefully at the specifications of the cameras. For example, does it offer different scene modes? Does it offer the shutter priority mode?

- Memory and battery

If you already have other digital devices such as a digital camcorder or PDA that uses a digital memory card, it would be a good idea to decide on a camera that uses the same kind of memory you currently have. Determine what type of batteries the camera uses. If you are a frequent shooter and it takes AA batteries, you will blow through them. A rechargeable battery may be a better choice such as Li-ion battery, but I recommend you to buy an extra battery.



Part II

Basic Knowledge of Taking a Picture with the Digital Camera

1. How to push the shutter
2. Good composition of photos
3. White balance setting
4. Exposure values settings
5. Flash control
6. Shutter speed priority mode
7. Selective focus



Notice**Before you begin this part****■ Use your camera now**

From this point, you will learn practical knowledge of digital photography. Turn on your camera and handle it for the following sections.

■ Understand exposure

In this unit, only exposure value compensation is used to mention about exposure. Basically, ISO, shutter speed, aperture, EV compensation and flash are connected to each other and involved in the exposure. A better photo can be produced by a good combination of setting the above mentioned. You should keep in mind lessons three to seven are related to exposure.

■ Understand the difference among digital cameras

Again, you should have the manual for your digital camera with you. The functions and setting of cameras are different according to manufactures or camera models. You should know what kind of options you can choose for your camera.

If your camera does not offer the shutter speed priority mode, don't be upset. You can find a continuous shooting option or burst option that can take picture with high shutter speed. Some camera offers lots of scene setting: for example, one person, group, fire works and so on. These settings come from adjusting the exposure in each situation.

Even if your camera does not have a manual setting, such as the aperture priority mode, understanding the lessons in this unit will help you improve your photography skill.



Lesson 1**How to press the shutter button****A Squeezing the shutter smoothly**

You might have been disappointed due to blurry photos like the example. A common error many people make is to move the camera when they press the shutter button. A blurred image is thought to be a focus problem. However, it may have been caused by the camera shaking. Gently squeezing the shutter button instead of pressing it eliminates a lot of unintended camera shaking. Knowing how to press the shutter button is the first step in producing a good photo.



A photo was blurred because of camera movement

Smoothly Squeezing You should always try to squeeze the shutter button smoothly and not jab at it. Shutter bounce has become a serious problem with the newer cameras that are small and light. Putting your camera on your palm and holding your breath in a stable position, are the key factors you should consider.

The best way to push the shutter button is using two touches. It does not mean touching the button twice separately but pressing the shutter with two steps as following

Two Steps

① Press and hold the shutter halfway down while focusing on the subject



② Gently squeeze the shutter all the way down



These two steps are useful for the focus-lock technique which will be described later in this unit.

TIP**☒ Holding the camera steady**

Even though you smoothly squeezed the shutter, it would be big problem if your camera was moving. So, holding the camera steady is also important. Here are some tips to steady the camera.

- holding the camera with arms braced
- using a strap to steady
- leaning against a tree or wall
- using a tripod

The following pictures show how to support the camera in order to prevent blurred pictures.

Remember that if there isn't enough light for the auto-focus to work during a shot, you will probably need to use a tripod or something else to stabilize the camera. If you don't have a tripod, you can put the camera on a desk, rock, bag, and so on.



B

Utilizing focus lock

You might be unhappy with unfocused subjects as in the photo on the right. Many try to place the subject at the center in the photo. However, if the subject is not at the center, your photo might look more professional. Most digital cameras focus only on the center of the frame. If you want to take photos with the subject placed at off-center, you need to use the focus lock feature of your camera.



Only the background was focused

Four Steps

Here is how to use focus lock to compose a picture – The key skill to use the focus lock is depressing the shutter button halfway

- 1 Press and hold the shutter button halfway down so that camera focuses on the subject



- 2 Keep your finger on the button



- 3 Slowly move the camera to compose the shot



- 4 Gently squeeze the shutter button all the way down



Lesson 2

Good composition of photos

A

General rules

There are several rules for taking a good picture. We will talk about three rules that will help you produce noticeably better photos using digital cameras.

Rule one

First, fill the frame with your subject. Especially when you are taking a picture of people, it is better to focus on the subject. The subject in the picture on the left is too small to recognize. The photo on the right is zoomed in, making her the focus. You don't need to take a picture of the whole body. Stand close to your subject or use the zoom function of your camera.



The subject is too small



The camera was close to the subject

Rule two

Second, change your camera position. Even though it is the same subject, you can get a more unique photo depending on your camera position or angle. The title of the picture on the right is "traditional line." The photographer emphasized the line of old houses by moving the camera position instead of taking a picture of the whole house.



Unique composition (emphasizing the line)



II. Basic Knowledge of Taking a Picture

Rule three ■ Third, use the rule of thirds. Golden Section, which is also called golden ratio, is the most important rule for any artists or architects. This proportional relationship asserts a natural balance and dynamic symmetry. A popular guideline used by photographers is called the “Rule of thirds.” When composing a photo, you should try to place important elements at the crossing point that the imaginary lines dividing the image into three parts both horizontally and vertically are meeting.

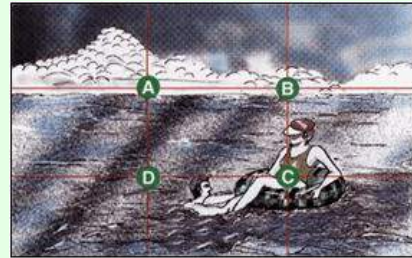


The rule of thirds

TIP

■ How to use the rule of thirds

- Drawing imaginary lines dividing the image into thirds both horizontally and vertically. There are four crossing points as follows. You can place important elements on the intersecting points of the imaginary lines. The image on the right is emphasizing the sea placing the AB line and the person placing the C point.
- Photos using the rule of thirds give us a feeling of stability



B Various compositions

We have talked about the significant rule of composition, the rule of thirds. Although there are basic rules of composition, the composition of photos is very subjective. You can make innovative composition considering basic compositions. Let's look through some basic compositions.

Basic compositions

▣ Circle composition



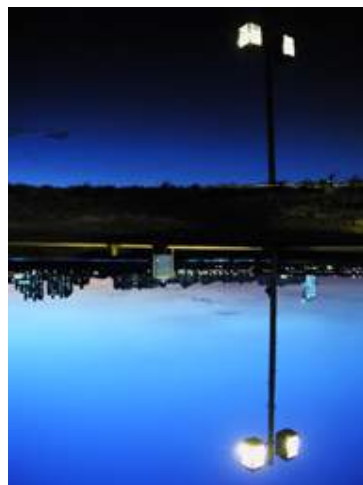
▣ Triangle composition



▣ Diagonal



▣ Symmetrical composition



▣ Horizontal composition



Lesson

3

White balance setting

Have you ever taken a photo indoors at night? If you have, you would get a picture similar to the one below. The background color of the photo below is yellowish because of incandescent light. You can adjust the color using the white balance setting

The overall color of the photo was changed because of incandescent light



White balance ■ The color of light reflected off any object is determined by the color of the light source. Human eyes automatically adapt to the changing colors of the light source and as a result, the objects appear white regardless of whether they are in the shade, in bright sunlight, or under a florescent lamp. Digital cameras attempt to operate much in the same manner, by determining the color of the light source and processing the information from the camera's sensor in order to correct the color information. White balance is that your camera adjusts the image captured by camera's sensor to compensate for the different colored light sources.

◆ Definition of white balance






The feature of the camera that adjusts the image captured by the camera's sensor to compensate for the different colored light sources



Automatic White balance ■ Digital cameras have a feature called automatic white balance (AWB) that attempts to adjust the color balance settings automatically for the color temperature of the scene being photographed. In most cases, using the AWB is your best choice. However, in some situations, AWB doesn't correctly read the color in the scene.

White balance Setting ■ If you know what your light source is, you can usually set the camera to it and this may give better results. Most digital cameras have settings for *sunlight*, *shade*, *electronic flash*, *fluorescent lighting* and *tungsten lighting*. You can change to an appropriate white balance setting after checking a photo you took with automatic white balance setting. The options for white balance might be different depending on manufacturers. You should check your manual.

■ Example Icons of white balance

	a camera automatically adjusts white balance
	when taking a picture with sunlight outside
	when taking a picture under incandescent light inside
	when taking a picture under fluorescent light inside
	preset mode – you can manually change white balance



Auto mode



Indoor mode- Incandescent light



Lesson 4

Exposure values compensation

Notice that the following photo is too dark. This is because there was not enough light. But, the picture was not taken when the weather was not bad outside; what was the problem? Now is a good time to talk about the relationship between light and exposure. The amount of light that strikes the camera's sensor is controlled by two factors: how much light is let into the camera (via the aperture) and how long the light is on the sensor (shutter speed). Usually



The photo is dark because of the lack of exposure

your camera automatically calculates these settings. However, if the camera reads the scene incorrectly and overexposes an image, you will want to correct the setting and shoot again. To compensate for this potential problem, most digital cameras offer a setting called Exposure Value (EV) that lets you make small changes to increase or decrease the exposure of the photo.

Definition

◆ Exposure Value (EV)

Automatic setting which controls how much light is let into the camera (via aperture) and how long the light is on the sensor (shutter speed)

Changing the EV is easier than changing shutter speed or aperture value, so EV has simple steps to automatically increase or decrease both shutter speed and aperture value

▣ Changing EV value

- + value increases the exposure to increase backlighting
- value decreases the exposure to increase backlighting



Examples of changing EV value

EV = + 2.0



EV = 0



EV = -2.0

When should you change the EV value? The camera usually calculates an appropriate exposure automatically. For example, when you take a picture of sunset, your camera will increase exposure because of the lack of light. Your photo of the sunset will be brighter than what you look at. At that time, you can decrease the EV value; then, your photo will illustrate a real sunset atmosphere.

TIP**Using Auto Bracketing**

- A quick and easy way to get the best exposure is to use the auto bracketing menu in your digital camera. More and more cameras are now offering an auto bracketing feature that automatically changes the setting each time you take a photo. If you turn on the bracket function, the camera will take several photos (generally three) each at a different EV setting. You select the number of EV steps that the camera offers and the range of EV settings. For example, the shot may be taken at -.5, normal, +.5.

This auto bracketing function is useful for taking pictures of static subjects such as landscapes.



Lesson 5**Flash control**

Two types There are two types of flash for cameras: built-in flash and external flash. Many cameras have a built-in flash integrated with the camera body as the picture on the left below, or a popup style flash. All digital cameras have built-in flash units that automatically fire when sufficient light is not available to get a proper exposure. Even if you have built-in flash, you can add an external flash. The external flash has several sophisticated features, so you need to make sure which type of flash will work best with your digital camera before buying it.



Built-in flash



Built-in popup style flash



external flash

When Most people think that the flash should only be used at night, but there are more than two ways to use a flash in the daylight. We will now talk about when and how to use a flash effectively.

☒ When to use a flash:

- At night:

You need to use a flash at night, of course, but you should be careful about overexposing or underexposing a shot. If you are shooting too close to the subject, the subject will appear washed out or too bright. On the other hand, if you use your flash beyond its useful range (usually beyond 12 feet), the photo image will be dark.



- Under shadow:

Flash can be used in a daylight situation to prevent shadow. When your subject is under the shade of a hat or tree, a flash prevents the subject's face and background from being too dark. You should use the fill flash mode (always on).

- Against light:

When you are taking a picture against light, a flash is useful, as in the following photos. You can get better photos if you use flash.



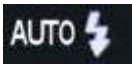



The face is dark because of back light



Using a flash

Flash mode Most digital cameras have several flash modes that can be used for different lighting situations. Here are typical icons about the flash setting shown on the LCD screen.

▣ Three kinds of flash mode

	Automatic mode	The flash is in shooting mode and is fired when the camera determines it is needed
	Fill flash mode	The flash fires with every exposure
	Flash off	The flash is turned off for every exposure when you want to control the shutter speed or aperture to take a night shot
	Red eye reduction	When you taking a picture of people or animals at night



Sometimes, your subject will have red eyes as shown here. The red eye effect occurs when you use a flash in a dark environment.

Red eye reduction ■ Suggestions for red eye reduction:

- Use the auto red-eye reduction mode of your digital camera.
- Increase the ambient light if you are in a room. The brighter it is the better.
- Use a bounce flash. This method can be used when you have an external flash that can be pointed toward the ceiling.



Red eye effect

TIP

■ **Making light from the flash softer**

- If you think your flash is too bright, you can soften the light. It is very simple. As in the following photo, tissues or a post-it note can be used to reduce the light from the flash.



■ **Good night landscape photo**

- Because a flash can only make a close subject brighter, you cannot take a picture like this one. You must change the shutter speed or aperture value and use a tripod. We will talk about this in part 3.



Lesson 6**Shutter speed priority mode**

In this chapter, we will talk about how to change the shutter speed. If you use the shutter speed priority mode, you can take action photos or prevent blurred photos.

You may be displeased with the photo on the right. The subjects became blurred because they were moving. The reason is that the motion speed is faster than the shutter speed. Every time you shoot a photo using your camera's automatic settings, the camera adjusts the exposure settings using a combination of shutter speed and aperture settings. The camera doesn't know when you are shooting a subject that is moving fast, which would require a higher shutter speed.



The photo was blurred because the children were moving

High speed mode You can change the shutter speed from 30" to 1/1000 depending on your camera. Generally if the shutter speed is less than 1/125, we call it high speed mode. If you use high speed mode, you can take a picture of a moving subject without blurring, like the picture on the right.



Fast shutter speed can capture a moving person like this



II. Basic Knowledge of Taking a Picture

Slow speed mode ■ By using a slow shutter speed when photographing a road during the night, you can produce trails of lights like the one shown on the right. When should you use a slow shutter speed? The answer is that when you want to take a picture under low light or to make a blurred photo. However, you should be careful about two things. First, it is better to use a tripod when using a slow shutter speed. Second, when you take a picture of people using a slow shutter speed at night, the people will not remain in the same position for a long time.



Slow shutter speed can capture the trace of light

Changing shutter speed ■ If you want to change the shutter speed, you should look into your camera manual to find the shutter speed priority mode.

Here are examples of pictures taken at different shutter speed



Shutter speed = 1/125



Shutter speed = 1

Summary

- ◆ High shutter speeds: when shooting moving people or subject
- ◆ Slow shutter speeds: to show motion or direction of motion
- ◆ The camera will automatically select aperture setting to compensate for the shutter



TIP

Using Burst Mode

- Many cameras offer a burst mode that will take several photos a second. This feature allows you to shoot a series of photos of a moving subject. The number of photos that your camera can take in a single burst is different, but three shots is common today. This mode can be selected by menu, so see if your camera offers it or not by looking in the manual.



Lesson

7

Selective focus

The person in the picture on the right is clearly shown but the background is blurred. It makes the girl the center of attention. This effect is called “Selective focusing technique”. In this chapter, let us talk about how to use selective focusing technique. Unfortunately, it is a little difficult for small digital cameras to make the selective focus effect. However, there are some general tips to make the effect with general small digital cameras.



The person was focused but the background was not

Depth of field

When you are taking a photo, the camera focuses on an object. The range in a photograph, from near to far, that appears to be in focus is called depth of field. In a narrow depth of field, only the things at a short distance are focused and the background at a long distance away is blurred. A wide depth of field means that both subjects nearby and faraway are in focus.

- Wide depth of field – all subjects both close up and faraway are focused
- Narrow depth of field – only close subjects are focused



How to make selective focus

Wide depth of field

The

Narrow depth of field

selective focusing technique is more available in manual cameras such as DSLR cameras, but there are several ways to obtain the selective focus effect with regular digital cameras.

Here are three ways to get the selective focus effect:

❖ Decrease the F value.

It means that you should open the aperture. If the aperture is more open, the background will be softly blurred. It is possible to change the aperture setting in your camera. The aperture setting has a number. A smaller number means more of an opening in your aperture. The range of the aperture is from F2.0 to F8.0. The mode in which you can change the aperture setting is called the aperture priority mode. If you set the aperture setting to F2.0, the camera will automatically adjust the shutter speed to ensure a correct exposure.

❖ Use the zoom function as much as possible.

It is better to zoom in on your subject to make the selective focus effect. This means you should stand as far from the subject as possible so you can zoom in. In other words, you should take a close-up shot using the zoom function, for example, making a photo of a face or just the upper half of body.

❖ Increase the distance between the subject and the background.

The greater the distance is between the background and the subject, the better the selective focus effect.

❖ Use Focus lock.

Remember the focus lock technique is useful to make the selective focus effect. Here is how: focus on your subject, zoom in, then press the shutter button half-way down, make a composition by moving the camera, and smoothly squeeze the shutter.

- ❖ Using a small F value (aperture setting)
- ❖ Increasing the distance between your subject and the background
- ❖ Zooming in
- ❖ Using focus lock technique



II . Basic Knowledge of Taking a Picture



Part III

Different Methods in accordance with Various Situations

- 1. Taking photos of people**
- 2. Taking photos of landscapes**
- 3. Taking close-up photos**
- 4. Taking photos at night**



Lesson 1**Taking photos of people**

In this chapter, we will talk about how to take photos of people. It is important to apply basic techniques to real situations. You will use several skills to take good photos of people. Keep these directions in mind and practice as much as possible with your digital camera. Your photos will improve with practice.

Composition ■ Good composition of people photos

- ◆ Emphasizing people more than background
- ◆ Meeting the eye level of your subject
- ◆ Using rule of thirds

◆ Emphasizing people more than backgrounds:

- The photo shown on the right has a problem—the subject is too small to recognize. This problem occurs often when taking a picture of people in sightseeing backgrounds. Fill the frame with your subject. In the case of the sample photo, you should come close to your subject or make your subject come to your camera.



The subject is too small

- You don't need to include the whole face in the frame. When taking a picture of people, many people try to capture the whole body or face in the photo. You can break this stereotype. The photo on the right is a very good photo even though part of head is out of the frame.



Not necessary to take a whole face



III. Different methods in accordance with various situations

- ❖ Adjust to the eyelevel of your subject:
 - Avoid shooting a subject from a low or high position. Sometimes this kind of photo is funny but not desirable. The rule of thumb for photographing portrait is to make sure the subject's eyes are in sharp focus.



The camera was too high

- ❖ Using the rule of thirds:
 - As mentioned in the section 2, one of popular rules of composition is the rule of thirds. First, draw imaginary lines dividing the photo into thirds both horizontally and vertically as shown on the right. Second, place important elements of the composition where those lines intersect. The focus lock technique is very useful for moving the subject in the frame.



The rule of thirds gives stability

Light ❖ Getting the correct amount of light

- ❖ Change EV setting
- ❖ Use flash when backlight is present



- ✦ Using exposure compensation:
 - If you think the light is too bright or dark, increase or decrease the value of EV in accordance with the brightness of the background. The photo shown on the right is too dark. You should increase EV value to make the photo brighter.



The photo taken at sunset time

- ✦ Using a flash when there is too much light behind your subjects
 - Because faces of people are dark when there is too much back light, it is better to use a flash. The people in the sample photo were in shade, so their faces are too dark. Flash can be used day or night.



The subjects were under shadow

Shutter speed: ✦ Taking photos of moving people

- ✦ Use shutter speed priority mode
- ✦ Use burst mode



III. Different methods in accordance with various situations

✦ Using shutter speed priority mode:

- When shooting a subject that is moving fast, a higher shutter speed is required. Select the shutter speed priority mode and set the shutter speed to a value under 1/250. You can freeze motion and take a sharp picture.



It is hard to capture moving children with regular shutter speed

✦ Using burst mode:

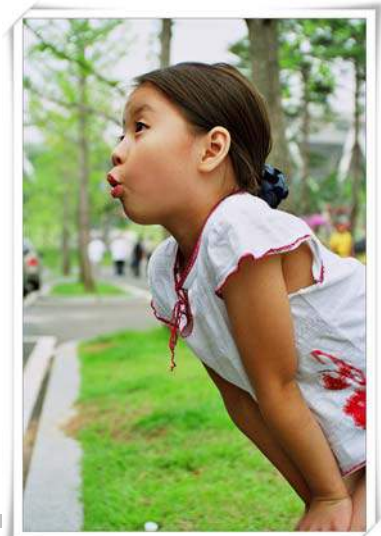
- If you want to take a continuous motion picture, use the burst mode which will take several photos in a second.

Selective focus ✦ Making professional people photos:

✦ Using selective focus technique

✦ Using selective focus technique

- Make a narrow depth of field with the selective focusing technique. As mentioned in Part 2, Lesson 7, the selective focusing technique is a good technique to make the people stand out in your photo. You can also use it when you shoot photos of flowers or other objects. If you want to use selective focus, change the aperture setting to a lower setting, increase the distance between your subject and background, and zoom in on the subject.



The girl stands out by selective focus technique



Lesson 2**Taking photos of landscapes**

In this chapter, you will learn techniques for taking photos of landscapes.

Composition: **+** Good composition of landscape

- Parallel a photo frame with horizon
- Use innovative composition based on basic composition

• Parallel the frames with the horizon:

- If you are photographing landscapes which include the horizon, it is a good idea to make the frame parallel to the horizon, by placing it at the one-third line as in the picture shown on the right.

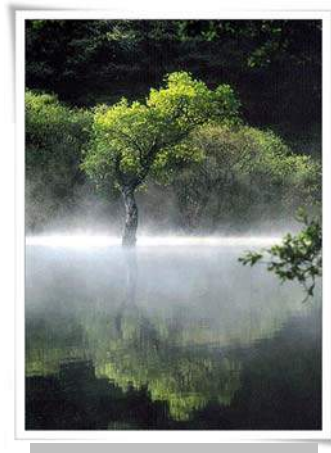


Paralleled horizon

• You can apply various basic compositions to your photos as follows. Furthermore, you can make your own innovative compositions in your photo.



The rule of thirds



Symmetrical composition



III. Different methods in accordance with various situations

Skills ■ How to make a good landscape photos

- ◆ Increase the value of the aperture setting
- ◆ Change the EV value
- ◆ Make the shutter speed slower
- ◆ Use a tripod

◆ Increase the value of the aperture setting:

- As in the opposite photo, increasing the aperture setting makes a wide depth of field that focuses in front of and behind the subjects. This technique is generally available in daylight. Night photographs use a different aperture setting. You will learn this in a later lesson.



All subjects were focused

◆ Change EV value:

- If you are taking a picture in sunset or sunrise, you should consider the exposure of your camera. Usually using -1EV or -2EV is useful in taking photos like the one shown on the right.



Taken by -2 EV



✦ Make the shutter speed slower:

- The water is blurred and appears to be moving in the photo on the right. If you use a slower shutter speed, the area surrounding the creek or waterfall remains in focus, but the water becomes blurred and takes on a mood. You have learned how to use the shutter speed priority mode. If you want to make an effect similar to the sample photo, change the camera setting so that the shutter speed is no faster than 1/4 of a second. Depending on the speed of the water, you can adjust the shutter speed. Remember that most point-and-shoot cameras (regular digital cameras) make the aperture opening



The water looks like moving

smaller (increase F number) if the shutter is open longer (a slower shutter speed). So you should check the brightness of your photo after changing the shutter speed. You can change shutter speed even if your camera does not have the shutter speed priority mode. If your camera has the aperture priority mode, set your aperture to the smallest setting. The smaller the aperture, the longer the shutter must stay open.

Four steps

- ① Mount the camera on a tripod or stable platform
- ② Compose the image you want to capture
- ③ Change the shutter speed to no faster than 1/4 of a second
- ④ Take a photo, review, adjust, and shoot again if necessary



Lesson 3

Taking close-up photos

It is getting easier to take close-up photos of tiny things in nature because many digital cameras offer a macro mode. The macro mode is designed to focus at a very short distance. Here you will discover how to capture the incredible world of close-up objects.

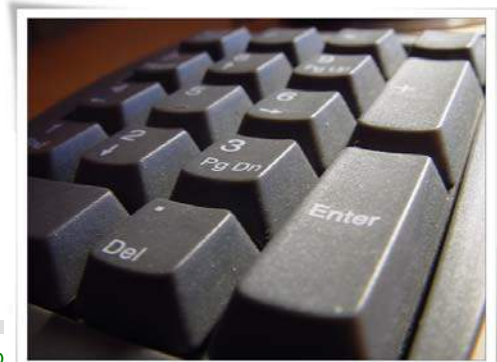
Flower close-up



▣ Finding subjects anywhere

- Most people think that macro photograph is only for natural subjects. The creative use of a camera's macro mode is to take a photo that gives a viewer a chance to look at common objects with a different perspective.

Keyboard close-up



Skills ▣ Taking a macro photograph

- ◆ Use macro mode in your camera
- ◆ Use aperture priority mode
- ◆ Steady the camera

◆ Use 'Macro mode' in your camera:

- If you can find this icon shown here in your camera, your camera offers a macro mode. However, you should read a manual to find out the macro focus range which is different in every camera. The range contains a minimum distance and a maximum distance.



❖ Use the aperture priority mode:

- After setting a macro mode in your camera, you should consider the aperture opening. As mentioned before, the F number is related to the depth of field. Because your camera is so close to the subject, wide depth of field is necessary to obtain focus. This means that you should increase the F number (close the aperture more). Of course, the camera will change the shutter speed depending on the F number.

❖ Steady the camera – use a tripod if possible:

- When you are increasing the F number, you should take care to steady the camera if the shutter speed is slower than 1/30 of a second. The best way to steady the camera is by using a tripod. You can use the zoom function while using the tripod.
- Place the camera on the ground or on something placed high if your subject is located at ground level. Check your setting and use a self-timer function which is a good way for preventing camera movement.



Using tripod



Lesson 4

Taking photos at night

In the city at night, streetlights and neon signs create exotic images which look nothing like their daylight counterparts. We have lots of opportunities to take photos at night. Night photography requires different photographic approaches. In this chapter, we will talk about various night photography skills that synthesize the basic knowledge you have learned so far.



A bridge at night

Photographing people ■ The basic skill of how to take photos of people was shown in lesson 1, such as making a good composition, changing EV, using fast shutter speed mode, using burst mode, extending focus. Here are other basic skills that especially apply to night photography.

- ◆ Use of flash
- ◆ Red-eye reduction
- ◆ White balance setting

◆ Appropriate distance of flash and softer light from flash:

- A flash is absolutely necessary at night. When using a flash, you should think about the appropriate distance for using flash. The distance between the camera and people should be less than seven feet.
- If your subject is too close to your camera, the photo may be too bright or have a washed-out effect. You can use tissue or post-it notes to make the light from flash softer when it is necessary to use flash and your subject is very close.



**Photographing
landscape**

- ✦ Use red-eye reduction:
 - You have learned how to reduce the red eye effect in the previous lesson. At night, you should turn on the red-eye reduction mode in your camera.
- ✦ Change white balance setting:
 - When you are taking photos indoors, consider what kind of illumination is used. After taking photos, review your photo and change the white balance setting if necessary.
- ✦ We have also talked about basic skills of taking photos of landscapes in daylight in lesson 2. The techniques shown below can make good landscape photos at night.

- ✦ Tripod
- ✦ ISO value or EV value
- ✦ Aperture and shutter speed

- ✦ Preparing a tripod:
 - A tripod is especially important for take a good photo at night. It is better not to use a flash because of the limitation of distance. In night photography, you will set a low F value and use a slow shutter speed. Then, you should steady your camera. Generally, if the shutter speed is slower than $1/30$ of a second, the subject will be shaken. In addition, using the self-timer function prevents the camera from shaking when pressing the shutter button.
- ✦ Increasing ISO value or EV value
 - As mentioned in part 1, ISO is the sensitivity setting. You can take a picture in low light circumstances with a high ISO value. You should consider, however, the distortion in your photo. Review the photo after taking a picture. You can also use a higher EV setting to increase the amount of light.



III. Different methods in accordance with various situations

✦ Using a lower aperture value:

- If you want to make sparkling streetlights as the picture on the right below, use the aperture priority mode. Once the F number is low (the aperture is more open), the light on the bridge tends to spread out as in the photo shown on the left below. In contrast, once the F number is higher (the aperture is more closed), the light appears to sparkle as in the photo shown on the right below.



F = 3.0



F = 8.0

✦ Making the shutter speed slower

- While the shutter is open, the lights will be expressed as lines by afterimage of car movement. At first, you should select the shutter speed priority mode and change to a range between one second and four seconds. Take a photo using the self-timer function and use a tripod to steady the camera.



The shutter speed = 4

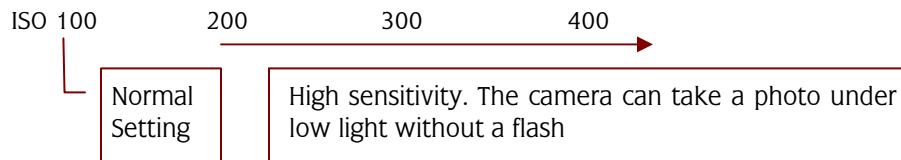


Appendix

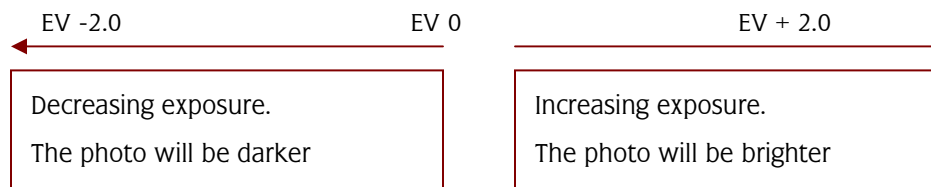
A

Review of important settings

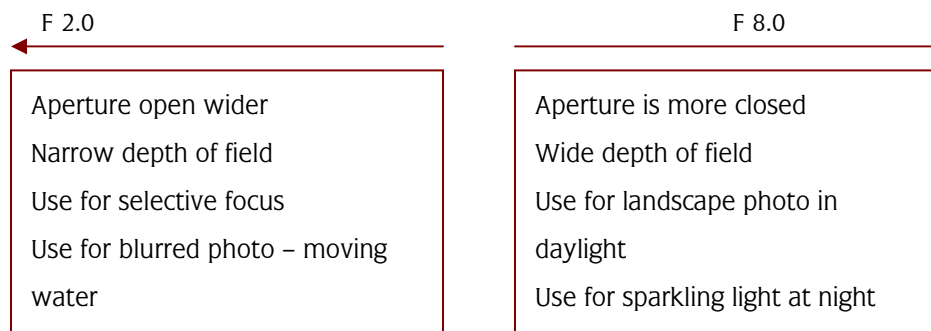
ISO Sensitivity of the camera



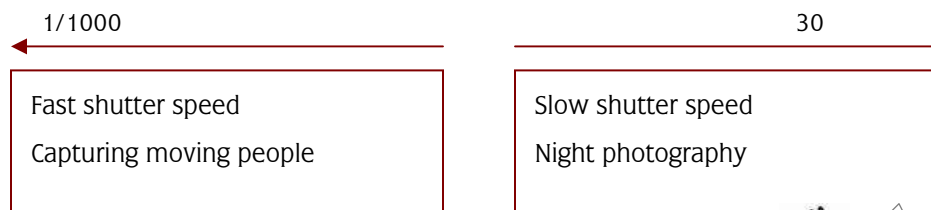
EV Exposure value compensation



Aperture Aperture priority mode – you can change aperture opening by adjusting the F setting



Shutter Speed Shutter speed priority mode



Appendix

B

How to take good photographs

Here are some recommendations for taking good photos by *National Geographic* photographers

Recommendations

- A lot of amateurs make the same mistakes: not thinking about what they're shooting; not considering the light; staying on the outside and not getting in where the action is; using a flash in a big interior where it won't do any good.
- Shoot more pictures and throw away the bad ones. You'll try more things: angles, exposures, and so on. The one way to get the photo right is to try lots of different approaches.
- Try to get close enough to your subject to capture the important details.
- Take a tripod, which allows you to use slower speeds and longer lenses during twilight.
- The human eye sees differently than a camera, so try to imagine how that image will look in a photograph
- Force yourself to "think little" and to "think big" by doing close-ups and long shots. You'll gain a lot in the process of looking for details and grand-scale images.
- Try to include people in every picture you shoot.



Appendix

C

Assessment

1. Write an appropriate terminology in the blank.

_____ is a semiconductor technology used to build light-sensitive electronic devices such as digital cameras and image scanners. It is the sensor used in digital cameras. The important feature is its physical size. The larger the sensor, the larger the digital image it produces.

2. Which of following explanations of ISO for digital cameras is true?

- a. A higher ISO number requires more light for a proper exposure
- b. A higher ISO number indicates the film is less sensitive
- c. Shutter speed settings on digital cameras are the equivalent of ISO ratings on film
- d. The basic sensitivity setting of most digital cameras is equivalent to ISO 100 film

3. There are two kinds of digital cameras in column 1 and appropriate features in column 2. Match the features to the appropriate camera by writing the letters next to column1. Answers may be used more than once.

Column 1	Column 2
1.P/S(point and shoot) camera – ()	a. Smaller size, less weight
2.DSLR(digital single-lens-reflex) camera – ()	b. External LCD
	c. Fast auto focus
	d. Huge, fast ISO range

4. Why is it important to gently squeeze the shutter button?

5. Examine Picture 1 and Picture 2 below. The subjects in the Picture 1 are out of focus. Picture 2 shows that focus lock overrides the auto-focus and prevents it from refocusing on the background. Arrange the items in appropriate order to use focus lock to make Picture 2. (→ → →)

- a. Gently squeeze the shutter button all the way down
- b. Keep the finger on the button
- c. Press and hold the shutter button halfway down so that camera focuses on one of the subjects

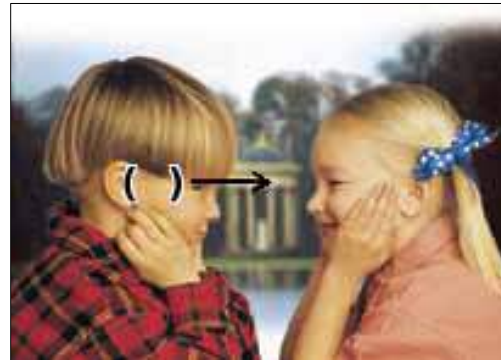


d. Slowly move the camera to compose the shot

[Picture 1]



[Picture 2]



6. Of the following pictures, which one used "rule of thirds" best?

a.



b.



c.



d.



7. Part 1 lists names of photo compositions. Match Part 1 with the appropriate picture in Part 2.

- Part 1

- a. triangle composition ()
- b. horizontal composition ()
- c. symmetrical composition ()
- d. diagonal composition ()

- Part 2

[Picture 1]



[Picture 2]



[Picture 3]



[Picture 4]



8. For which of following situations should you adjust the white balance setting of the digital camera?
- When you review the photo through the LCD, the photo is blurring
 - When you review the photo through the LCD, the color of people has reddish hues
 - When you try to make good composition
 - When you prevent red-eye in your photo
9. When you want to make the background brighter or darker, which of following setting should you change in your digital camera?
- AE
 - CCD
 - EV
 - Sync
10. The following statements are about using the flash function. Indicate if the statements are true or false by circling the correct response.
- Flash can be used in situations of daylight to prevent shadow (**true / false**)
 - Black or gray paper can be used to make flash light softer (**true / false**)
 - When you are taking a picture against light and far from the subject, flash is useful (**true / false**)
11. Which of following occurs after shutter priority is selected in digital cameras?
- High shutter speed should be accompanied with external flash mode
 - Slow shutter speed can be used when we want to get photo freezing the action
 - The camera will automatically select aperture setting to compensate for the shutter speed
 - We can control exposure value of background with this setting
12. Select the appropriate condition when using the out focus technique.
- The aperture setting should be made (**smaller / larger**)
 - You should use (**zoom / AE lock**) function as much as possible.
 - The distance between a subject and background should be made (**closer / far**)



13. Example photos in part 1 represent poor techniques for taking photos of people. Select an appropriate technique in part 2 to improve each picture in part 1. Answers may be used only once.

- Part 1

a. [Picture 1] ()



b. [Picture 2] ()



c. [Picture 3] ()



d. [Picture 4] ()



- Part 2

[Technique A]: Get more exposure using EV

[Technique B]: Getting closer to subject or subject should be closer to camera

[Technique C]: Shutter speed should be higher

[Technique D]: Following the rule of thirds

14. Which is the appropriate technique for shooting landscape?

- a. It is better to use a burst mode
- b. It is better to use a tripod
- c. It is better to use a macro mode
- d. It is better to use a red-eye reduction



15. Choose appropriate descriptions for shooting close-up photos. (Two answers should be selected)

- a. It is better to use a shutter slow mode
- b. It is better to use an aperture priority mode
- c. It is better to use a flash priority mode
- d. It is better to use a macro mode

16. Which technique can have the same effect as the illumination on the bridge in the following photo?

- a. White balance should be changed
- b. Flash should be used
- c. Aperture should be more closed
- d. Macro mode should be selected



17. Which technique should be used to make night photos as shown in the following examples?

- a. Selective focusing technique should be used
- b. Flash mode should be used
- c. Lower number of ISO range should be selected
- d. Shutter speed should be slower

