Photography Essentials:

Mastering Your Camera, Flash and Composition

(Class Workbook)

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Steve Kozak is an active member of the Professional Photographers of America and the Texas Professional Photographers Association. Steve has earned the "Master of Photography" and the "Craftsman" degrees from PPA, and is PPA Certified. His work has also appeared in the prestigious "Loan Collection". Professional recognition of his work includes the **Masterpiece Award** from Fuji Film USA.

Steve recently served on the PPA Board of Directors. He also served as Board Liaison to the Bylaws, Rules and Ethics Committee and to the Speaker Selection Committee. He is also a PPA qualified instructor for PPA Certification prep classes.

Steve has recorded over a dozen videos for the PPA EDU program. These videos include classes on the fundamentals of photography, manual flash photography, exposure, opening a new studio as well as videos for CPP study preparation.

He has taught 26 years at the prestigious Texas School of Professional Photography and 24 years at Imaging USA. He has also taught at the Mid-America Institute of Professional Photography, East Coast School and Image Explorations near Victoria, British Columbia. He has written for Texas Professional Photographer and The Professional Photographer magazines. He is also the author of "Preparing for PPA Certification", a study guide for those preparing to take the CPP exam.

Steve currently serves as Executive Director for the Texas Professional Photographers Association Executive Board and the Professional Photographers Association of New Mexico.

Steve's articles have been published in The Professional Photographer and Texas Professional Photographer magazines. His informative and inspiring programs make him a popular instructor on the speaking circuit.

Sunday:

8:00 Welcome/Introductions
8:15 Class Outline/Procedures/Policies/Expectations
8:30 The Basics of Photography - Exposure
9:30 Class Ends

Monday:

8:00-5:00 Trade Show Open, RENAISSANCE Crystal Ballroom 2nd floor
8:30 Metering
9:30 Camera Set Up
10:00 Quality of Light/Color Temperature/White Balance
10:30 Seeing Light
11:00 Natural Light Portraits
Noon Lunch
1:30 Determining Vision/Backgrounds
2:30 Lens Selection
4:00 Composition
5:00 Group Picture - (WEAR YOUR Texas School T-SHIRT)
6:00-11 FREE BBQ Meal, concert and fun at the Cowboy's Red River Dance Hall. Dinner served at 6:30. Sponsored by BWC Color Lab, Buses run continuously.

Tuesday:

8:00-6:00 Trade Show Open, RENAISSANCE Crystal Ballroom 2nd floor
8:30 Basic Flash Photography
11:00 Advanced Flash Techniques
Noon Lunch
1:30 General Posing
3:00 Off Camera Flash
5:00 Class Ends
5:30 FREE MEAL Garden Court RENAISSANCE
7-8:30 Evening class continues
9:00PM Parade—1st floor of RENAISSANCE
9:30-1am "If it's Gold, it Goes" Costume Party! Come dressed to have fun! Sponsored by Baby Dream Backdrops. The party will be in the RENAISSANCE Malachite Showroom. You will not want to miss this.

Wednesday:

8:00-Noon Trade Show Open, RENAISSANCE Crystal Ballroom 2nd floor
8:30 Getting to Know Our Studio Equipment
9:00 Lighting Patterns and Theory
10:00 Lighting Set-ups
11:00 Headshots
Noon Lunch
1:30 Prom/Dance
2:00 Groups/Family
2:30 Creativity in the Studio
4:15 Class Ends
4:30-10pm TRADE SHOW Extravaganza Crystal Ballroom Instructors and suppliers will have items for sale. Food, beer, wine and soda will be provided.
7:00-8:30 FREE meal Garden Court Sponsored by Arlington Camera and Vendors.
9:32 Door Prizes in the Trade Show

Thursday:

8:00-7:00 Trade Show Open, RENAISSANCE Crystal Ballroom 2nd floor
8:30 Class Projects
9:30 Class Projects
10:30 Class Projects
11:30 Review Class Projects
Noon Lunch - Trade show open
1:30 Review Class Projects
2:00 Finishing Your Work
4:00 Bring it On!
5:00 Class Ends
5:00-7:00 Class Dinner
7:00-9:00 Class Events
9:30-11:30 Unwind @ RENAISSANCE lobby bar Free beer and wine: Sponsored by Arlington Camera

Friday:

8:30-10:30 All School Program – Malachite Showroom – Thousands of Dollars in Door Prizes
10:30-Noon Class Meets - Graduation in individual classes

Are you thinking about turning pro?

Merely owning a camera does not make one a photographer any more than owning a pencil makes one a poet. For many, the fact that cameras nowadays are so smart that "anyone can take a picture" has them reasoning with a "no experience necessary" mentality. I know many who "decided" to become a professional photographer only to find themselves in over their head in just a few months. A short time passes and they have moved on to their next "profession". If you really want to succeed as a professional photographer, don't get caught in that trap!

The decision to turn pro should be made after an honest evaluation of your knowledge and skills, your resources and the creation of a workable business plan. To create a solid foundation on which to build a successful career in professional photography, consider your comprehension of these three aspects: The Fundamentals, The Art and The Business.

The Fundamentals

Basic Camera Operation

The average consumer's need to understand the science of photography has almost disappeared with the ease of operating today's automatic cameras. For the professional, a working knowledge of f-stops and shutter speeds is not an option. A solid understanding of exposure, lenses and flash photography is equally important. If you rely on the camera to make exposure decisions, consider taking a basic photography course before even considering turning pro.

Predict the results before you shoot

You should be able to look at a subject and background and be able to predict with some certainty how the photograph will look. Within reason, you should be able to judge the effects of depth of field and the intensity of the background relative to the subject.

Repeat results consistently

It's one thing to get a great shot one time. It is another to repeat the results time after time. You cannot go into a session "hoping" the images will turn out.

Be comfortable with posing

You should have enough experience to become comfortable posing clients. This is especially important with families and brides. You should be able to demonstrate and communicate the poses you need from your clients.

Own reliable equipment

You should be in a position where the equipment you own is reliable and that you have backup equipment on hand. Do not even think about photographing important events such as weddings without a backup camera, lens, flash and cables and sync cords.

Have a business plan in place

Think of this as a road map for your business to follow. Understand the basics of marketing, advertising, business workflow and accounting.

Equipment Basics

1. Camera Selection Camera Gear

___Canon R5	___Canon R6 Mark II	___NikonZ7II
___Canon RF 24-105 F4 Lens	___Canon RF 24-105 F4	___Nikor F 24-120 F4 Lens
___Canon RF70-200 F4 Lens	___Canon RF70-200 F4 Lens	___Nikor Z70-200 F2.8 Lens

___Complete Back up Camera System

2. Lens Selections:

Your Vision Is in the Lens You Use

So much of capturing your vision for any given image is in selecting the right lens. A lens will affect the perspective of the background as it relates to sharpness and as it relates to your subject.

What You See and What You Get

The focal length (mm) of the lens determines the "angle of view" - or how much you see in the image.

Lens Definitions

Full Frame Sensor	Cropped Sensor
Normal - 50mm	Normal - 30mm
Wide Angle - 28mm	Wide Angle - 18mm
Telephoto - < 75mm	Telephoto - < 50mm

Steve's Lens Selection Tips:

1. Purchase great lenses! They will long outlast the life span of your camera.
2. Avoid lenses only suited for half-frame sensors.
3. Don't try to get all the focal lengths in one lens.
4. Select lenses that are F2.8 or F4.
5. Avoid Variable Aperture lenses.
6. Image stabilization adds to the cost of the lens.
7. Generally, your camera manufacturer will make the best lenses for your camera.

3. On Camera Flash:

Westcott FJ80 II

Flash Accessories:
X3 Universal Wireless Trigger
Flash Bracket CB Junior or Stroboframe
Extra batteries
Backup flash system

4. Off Camera Flash:

Westcott FJ200 Strobe
Westcott FJ400 Strobe
Heavy duty light stand
Westcott 8' Air-Cushioned Light Stand
Softbox Rapid Box Switch

Westcott FJ200

Westcott FJ400 Strobe

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5. Tripod Selection

Not optional
Work slower
Allows you to make eye contact
Set up compositions in advance
Allows you to work with slower shutter speeds

Tripod -

6. Light Meter Selection

Not optional
Measures light falling on subject
Measures flash and ambient light
Quickly find equivalent exposures
Remote trigger flash with transmitter

Light Meter - Sekonic L-478DR
or Sekonic - L-308X-U (no remote)

7. Studio Lighting Selection

Makes you more versatile
Allows you to accept certain jobs
Work during inclement weather

2 heads for home portraits/dances
3 heads for studio work
4 heads if you have room for a hair light

- **Westcott FJ400**

Wescott 40” 5in1 Reflector

Adobe Photoshop CC

Calibrite Color Checker

Camera Gear

___Canon R5
___Canon RF 24-105 F4 Lens
___Canon RF70-200 F4 Lens

___Canon R6 Mark II
___Canon RF 24-105 F4
___Canon RF70-200 F4 Lens

___NikonZ7II
___Nikor F 24-120 F4 Lens
___Nikor Z70-200 F2.8 Lens

___Complete Back up Camera System

SD Cards

___**SanDisk Extreme** SD Cards (16GB or 32GB)

Portable Flash

___Westcot FJ80 II
___ X3 Universal Wireless Trigger
___Flash Bracket
___Extra Batteries
___Light Stand with Umbrella Adapter
___Complete backup flash system

___Westcott FJ200 Backpack Kit
___Westcott FJ400 Backpack Kit
___Westcott Rapid Box

Other Gear

___Light meter **Sekonic L-478DR**
___Light meter **Sekonic L-308X-U (no remote)**

___Tripod

Studio Lighting

___Westcott FJ400 Two Light Kit
___3rd and 4th head recommended
___3x4 Softbox
___4x6 or 3.5x5.5 Softbox
___13x40 Strip Light

___2 Heavy duty light stands
___Posing Stool (or tall bar stool w/o back)
___Heavy duty boom stand

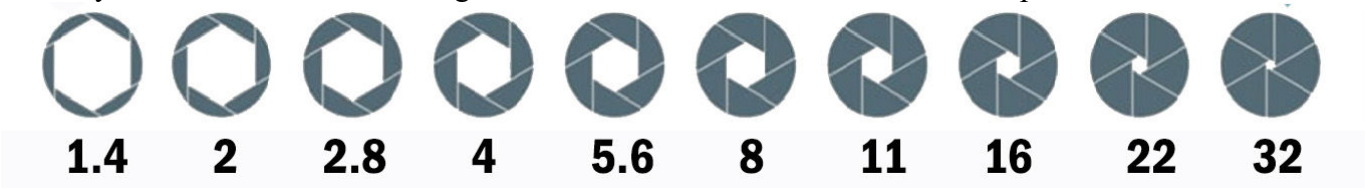
Studio Props/Background Ideas

___Background stands and crossbar
___White seamless paper (9 ft)
___Black seamless paper (9ft)
___Neutral color Muslin (browns or greys)

___Wallboard floor (Home Depot)
___Mirror 36”x48” (Home Depot)
___Cap & Gowns

F-stops

The F-stop, or "aperture" is the control in the lens that "opens up" or "stops down" the diaphragm inside as a way to control the amount of light that reaches the film or sensor. The f-stops are:



The f-stops on your lenses may not be numbered exactly the same as these, but they will be close. These are considered to be "whole stops". There may also be "half stops" and "1/3 stops" between each of these. F-stops are a unit of measure that refer to the size of the lens opening. They also continue on past 32.

You really should commit the listed f-stops, in order, to memory! Memorize the numbers as listed rather than those on your lens. We will learn to interpret the numbers on your lenses, later.

NOW COMES THE TRICKY PART!

The smaller the F number, the larger the lens opening.
The larger the F number, the smaller the lens opening.

A large lens opening such as F3.5 will let more light reach the film than a small lens opening such as F22. As a matter of fact, there is a relationship between each of the f-stops:

Any time you move your lens from one F# to the next smaller F#,
the amount of light that reaches the film **DOUBLES.**

EXAMPLE:

F5.6 lets in twice as much light as F8.
F4 lets in twice as much light as F5.6.

This pattern is the same throughout the F#'s
To look at this on the other hand:

Moving the lens from F5.6 to F8, cuts the light in half!
Moving the lens from F4 to F5.6 cuts the light in half!

And this pattern continues.

So in summary:

1.4 - 2 - 2.8 - 4 - 5.6 - 8 - 11 - 16 - 22 - 32...
Larger Openings <----------> Smaller Openings
More Light Reaches the Film <----------> Less Light Reaches the Film
Move One F-stop, Light Doubles <----------> Move One F-stop, Light is cut in half

Changing the lens opening from one f-stop to the next will either double the amount of light that reaches the film or cut it in half, depending on which way you move it.

Shutter Speeds

This camera control is usually found on the body of the camera, although it is sometimes found on the lens. The shutter speed controls the amount of light that reaches the film by determining how long the lens remains open. Memorize these shutter speeds:

...1sec. - 1/2 - 1/4 - 1/8 - 1/15 - 1/30 - 1/60 - 1/125 - 1/250 - 1/500 - 1/1000 - 1/2000...

Notice that shutter speeds continue in both directions. Also note that we go from 1 second to 1/2 second. Your camera will not show these speeds in fraction form. When you look at your shutter speed dial and it says 500, it means that it is 1/500th of a second!

(Now comes the tricky part!)
The smaller the shutter speed number (1/1000), the faster the shutter.
The larger the shutter speed number (1/2), the slower the shutter.
(Just because your camera says 1000 - it is not bigger than 2. Remember they are fractions.)

A fast shutter speed allows **less** light to reach the film than a slow shutter speed. **More** light reaches the film during 1/2second than 1/1000th of a second.
Shutter speeds have the same relationships to each other as do the f-stops in that when you move from one shutter speed to the next: You either **double** the amount of light that reaches the film or you **cut it in half.**

EXAMPLE:
Move from 1/250 to 1/125 and the amount of light reaching the film doubles.
Move from 1/30 to 1/15 and the amount of light doubles.
The pattern continues.

ON THE OTHER HAND:
Move from 1/30 to 1/60 and the amount of light reaching the film is cut in half.
Move from 1/500 to 1/1000 and the amount of light reaching the film is also cut in half.
The pattern continues.

So in Summary:

...1sec. - 1/2 - 1/4 - 1/8 - 1/15 - 1/30 - 1/60 - 1/125 - 1/250 - 1/500 - 1/1000 - 1/2000...
Slower Speeds <----------> Faster Speeds
More Light Reaches Film <----------> Less Light Reaches Film
Moving Objects may Blur <----------> Moving Objects Appear Sharp

Changing the shutter speed from one to the next will either double the amount of light that reaches the film or cut it in half, depending on which way you move it.

Exposure

The basics of photography begin with correctly exposing the film by finding the right combination of f-stop and shutter speed. Exposure can be expressed in this formula:

Exposure = INTENSITY X TIME
or, E = IT
"Intensity" is the f-stop and "Time" is the shutter speed.

If the formula is true (which it is), then we can plug-in some numbers just to see what happens. So let's do it...

E=F8 @ 1/125
(F8 and 1/125 are variables that I selected entirely at random for this example.)

"E" will represent the amount of light that reaches the film. If you remember any algebra, because there is an = in the equation, I can change my variables, so long as I keep them an equal value.
For Example:

E = 2x10, and E=4x5.
(E is the same answer in both, but we used different variables.)

In my sample, I stated E = F8 @1/125. If for some reason I wanted to change the F8 to F5.6, could I do it? YES! As long as I keep the amount of light that reaches the film equal!
If I move from F8 to F5.6, I am making the lens open up to let twice the amount of light reach the film. In order to remain equal, I have to cut the light in half by moving the shutter speed to the next faster speed.

E = F8 @ 125
and
E = F5.6 @ 250

F5.6 @ 1/250 would be an equal, or equivalent exposure to F8 @ 1/125 because in both cases, the exact amount of light reaches the film. As a matter of fact, there can be many equivalent exposures:

F22 @ 1/15
F16 @ 1/30
F11 @ 1/60
F8 @ 1/125
F5.6 @ 1/250
F4 @ 1/500
F2.8 @ 1/1000

Each of the above exposures yield the exact amount of light onto the film. This process is the same no matter which f-stop and shutter speed combination you choose to start out with. The hard part about exposure is figuring out which f-stop and shutter speed to start with in the first place. (We will cover this in-depth later.)

It is at this point that you may be thinking, "Gosh, If F8 @ 1/125 will work, why the heck would I want to change to F4 @ 1/500?" This is where we first begin to realize the magic of photography.

Depth of Field

The f-stops not only control the amount of light that reaches the film, but they also control depth of field. DOF is defined as "the area in the photograph that will be in acceptable focus."

The larger the lens opening, the shallower the DOF
The smaller the lens opening, the greater the depth of field.

A shallow DOF means that the background and the foreground will appear more out of focus.
A large DOF means the background and the foreground will appear sharper.

Depth of field extends in front of the subject as well as behind the subject. As a matter of fact, 1/3 of the depth of field is in front of the subject and 2/3's are behind the subject.(This assuming you have focused on the subject.) If the depth of field is 6 feet and your subject is 12 feet away from the camera, everything from 10 ft. to 16 ft. will appear sharp.

Controlling the depth of field allows the photographer to "soften" or blur the background to a degree, so that unwanted distractions are eliminated.

Even a medium depth of field helps the photographer to isolate the subject from an otherwise "busy" background.

Shallow Depth of Field

A shallow DOF means that the background and the foreground will appear more out of focus.

The image of this young cowboy has a very shallow depth of field. Notice how the background is quite out of focus. This illustrates what an image might look like at F2.8.

This technique allows the photographer to place the emphasis on the subject without distractions from the background.

Large Depth of Field

A large DOF means the background and the foreground appears sharper or more in focus.

This bridal image has a much larger depth of field. This illustrates what an image might look like at F11.

A larger depth of field is useful in this image because the elements in the background are used as part of the overall composition.

Controlling Motion

The shutter speeds not only control the amount of light that reaches the film, but they also control the apparent movement of objects in motion during the exposure.

Objects that are moving during the exposure will appear almost stationary at fast shutter speeds, and may record as a blur during longer shutter speeds.

Slow Shutter Speed
This image was recorded at F16 @ 1/8 with the camera on a tripod. Notice how the slow shutter speed recorded the movement of her hair blowing in the wind.

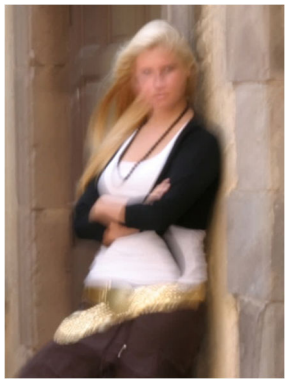
Fast Shutter Speed
This image was recorded at F2.8 @ 1/250. Notice how the fast shutter speed arrested the movement of her hair blowing in the wind.

By the way, shutter speeds help control movement of the camera by the photographer. We all have a tendency to shake when we hold the camera. For a picture to be truly sharp, the camera needs to be kept very still during the exposure.

When hand-holding the camera, use shutter speeds that are no slower than the focal length of the lens you are using.

For example,

It is recommended that you use shutter speeds of at least 1/60 or faster when your hand-holding the camera and using a 50mm lens. Use 1/250 if you have a 200mm lens on the camera.



Slow Shutter Speed
This image was recorded with a 100mm lens at F16 @ 1/8 with the camera hand-held. Notice how the slow shutter speed recorded the movement the camera in my hands.

Fast Shutter Speed
This image was recorded with a 100mm lens at F4 @ 1/125 with the camera hand-held. Using a shutter speed that is at least equal to the focal length of the lens (100mm = 1/125) allows me to hand-hold the camera and record a sharp image.

Using speeds slower than the focal length of your lens may require a tripod are some other camera support.

ISO Numbers

The ISO number of the film is a way of rating a film's or sensor's sensitivity to light.

The higher the ISO number, the more light sensitive it is.
The smaller the ISO number, the less light sensitive it is.

In other words:
The higher ISO's such as 400 and 800, are quite light-sensitive and are capable of recording in low-light situations such as indoors with no flash or even outside at night.

The lower ISO's such as 100 and 200 require more light, so they are used outside during daylight or indoors with a flash.

It is really important to use the right ISO for the lighting conditions under which you are working. No one setting will really do both.

ISO's have the same relationships to each other as do f-stops and shutter speeds.

200 ISO is twice as sensitive as 100 ISO.
400 ISO is twice as sensitive as 200 ISO.

The higher the ISO, the more you will likely introduce digital noise to your images. This will be more apparent as you begin to enlarge your images. These imperfections may appear as pixelization or uneven tonal values in areas of large color expanse such as a sky.

The ISO dial on your camera calibrates your camera meter, so that it reads the light correctly for the ISO speed. For now, we have not talked about the camera meter, but we will later.

Calculating Exposure

At last we reach a point where we will actually know enough stuff about camera to start taking photographs. We are going to begin with daytime exposures only, and gradually will be discussing indoor and studio exposures.

Every situation that you encounter has a measurable amount of light to work with, and with the help of the camera meter, we could measure the exact amount of light for that situation. For now, however, we're simply going to learn to estimate the amount of light without the help of the meter.

At this point we're working under daylight conditions only, and there is a little formula that makes this easy. We are looking for a starting exposure and this chart makes that simple to memorize for us. The formula is:

Lighting Pattern / Starting Exposure

Sunny / F16@1/ISO
Partly Cloudy / F11@1/ISO
Overcast / F8@1/ISO
Heavy Overcast / F5.6@1/ISO

For each of the lighting patterns, the f-stop is given. The shutter speed will be determined by the ISO.

For example, if it's a sunny day, and you are using 100 ISO, the starting exposure would be F16 at 1/125.
(1/125 is the closest shutter speed to 100 ISO.)
If you are using 400 ISO, the closest shutter speed will be 1/500, so your starting exposure would be F16 at 1/500.

Once you have determined the starting exposure, then you can go through the process we learned earlier, to determine the equivalent exposure you might wish to use, depending on the effect you want.

Example 1

Let's say it is a "heavy overcast" day, and you are using 400 ISO. The exposure would be F5.6 at 1/500.

You might like an increased DOF, so try

F8 @ 1/250
or
F11 @ 1/125
or
F16 @ 1/60

All of these exposures will work, but F16 will give you the most DOF. You can even go to F22 at 1/30, but remember 1/30 may be too slow to hand-hold the camera without noticeable camera shake.

Example 2
This time we find ourselves on a sunny day with 100 ISO. The starting exposure will be F16 at 125. We want to "stop" kids on bikes so we try :

F11 @ 250
or
F8 @ 500
or
F5.6 @ 1000.

Yes, there will be a shallower DOF, but what is really important here? By the way, notice that I have quit using the fraction form to discuss shutter speeds. You can too.

Bracketing

Bracketed exposures may ensure proper exposure when you find yourself in difficult lighting situations. Bracketing is simply the taking a photograph using several different exposures.
First, do your best to determine the correct exposure and take the photograph using that f-stop and shutter speed combination. Then, shoot a second image using the same f-stop but at one speed faster than the original one. You may also shoot a third image at one speed slower than the original.

For example: If you determine the exposure is F8 @ 125, then shoot at that exposure and then also shoot F8 @ 60 and F8 @ 250. This will yield three different exposures and then you can evaluate which image you prefer.

You may also bracket by keeping the shutter speed constant and changing only the f-stop.
For example: If you determine the exposure is F8 @ 125, then shoot at that exposure and then also shoot F5.6 @ 125 and F11 @ 125.

Bracketing may be very important if you shoot slide film or do digital photography. It may be the difference in a shot that works and one that does not. Slide film and digital must be exposed "right on". Bracketing is not really very necessary when shooting color negative film. It is very forgiving when you make a mistake.

Do you understand the Basics? Take this review to find out.

1. Which line has the "full" f-stops in the correct order?

A. 1.4 - 2.8 - 4 - 5.6 - 8 - 16 - 22 - 32...
B. 1.4 - 2 - 2.8 - 4 - 5.8 - 8 - 16 - 22 - 32
C. 1.4 - 2 - 2.8 - 4 - 5.6 - 8 - 11 - 16 - 22 - 32...
D. 1.4 - 2.8 - 4 - 5.6 - 8 - 11 - 16 - 22 - 32...

2. Which line has the shutter speeds in the correct order?

A. 1 - 2 - 8 - 15 - 60 - 125 - 250 - 500 - 1000...
B. 1 - 2 - 4 - 8 - 15 - 30 - 125 - 250 - 500 - 1000...
C. 1 - 2 - 8 - 15 - 30 - 60 - 125 - 250 - 1000...
D. 1 - 2 - 4 - 8 - 15 - 30 - 60 - 125 - 250 - 500 - 1000...

3. The f-stops serve two purposes - what are they?

A. To control motion and control depth of field
B. To control motion and control the amount of light that reaches the sensor
C. To control the amount of light that reaches the sensor and ISO speed
D. To control the amount of light that reaches the sensor and depth of field

4. If you move the f-stop from F5.6 to F8, what happens to the amount of light that reaches the sensor?

A. Decreases
B. Increases
C. Stays the same

5. What is "Depth of Field"

A. How far the camera can focus
B. The area in the photograph that is in focus
C. The distance in the background that is in focus
D. The distance between the camera and the subject

6. What happens to the depth of field when you move the lens from F11 to F16?

A. Decreases
B. Increases
C. Stays the same

7. Given F8 @ 1/125, what would the new shutter speed need to be if you moved the lens to F5.6?

A. 1/250
B. 1/60
C. 1/500
D. 1/30

8. Why would you want to move the lens from F4 to F2.8?
A. To increase the depth of field
B. To use a slower shutter speed
C. To allow less light to reach the sensor
D. To decrease the depth of field

9. What does the ISO of the film or sensor tell us?
What f-stop to use
B. What shutter speed to use
C. Its' sensitivity to light
D. Which lens to use

10. Define "equivalent exposure".
A. Exposures equal to the ISO
B. Exposures that yield the same amount of light onto the sensor
C. Exposures where the f-stop stays the same and only the shutter speed changes
D. Exposures where the shutter speed stays the same and only the f-stop changes

11. Give an equivalent exposure to F11 @ 1/15.
A. F11 @ 1/30
B. F8 @ 1/15
C. F8 @ 1/8
D. F16 @ 1/8

12. The shutter speeds serve two purposes - what are they?
A. To control motion and control depth of field
B. To control motion and control the amount of light that reaches the sensor
C. To control the amount of light that reaches the sensor and ISO speed
D. To control the amount of light that reaches the sensor and depth of field

13. What is the slowest shutter speed that you should use if you are hand-holding your camera?
A. 1/60 with a 200mm lens
B. 1/125 with a 28mm lens
C. 1/60 with a 50mm lens
D. 1/60 with a 28mm lens

14. Why would you want to change the shutter speed from 1/60 to 1/250?
A. To increase the depth of field
B. To use a slower shutter speed
C. To "freeze" a moving object
D. To "blur" a moving object

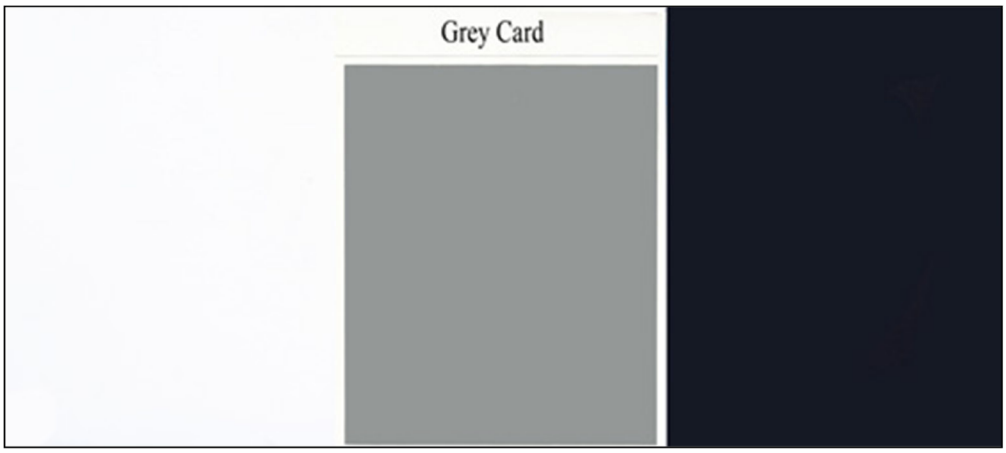
Metering

Many cameras have a built-in meter that will measure the amount of light that is falling onto the film plane. Meters vary from camera to camera in how they work, and how they deliver information to the photographer.

Some cameras will give you a shutter speed based on where you have set F-stop. Others will give you an f-stop based on where you have set the shutters speed. Still others use only a needle system where you have to make needle line-up to an "N" or some other point to determine the amount of light.

Camera meters can be easily be fooled by bright or dark backgrounds. It is very important to meter the most important part of the image. Often times, we need to isolate what the meter sees in order to get an accurate reading. Once you have determined correct meter reading, you may need to turn your camera to "manual" and set the f-stop and shutter speed based on your correct reading.

Using a Light Meter



Reflective:
Camera meters measure reflective light (light reflecting from a surface)
Camera meter averages the exposure to 18% grey

Incident:
Hand-held meters measure the light falling on the surface or subject
Not influenced by tonal values of the subject or background

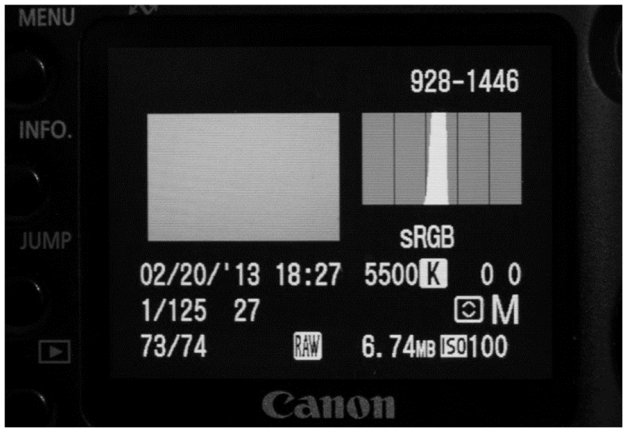
If your meter is set to measure in 1/10ths, be sure to interpret the 1/10 reading for your final exposure!

$F8.0_2$ = _____ $F8.0_7$ = _____
$F11.0_8$ = _____ $F2.0_9$ = _____
$F5.6_4$ = _____ $F2.8_3$ = _____

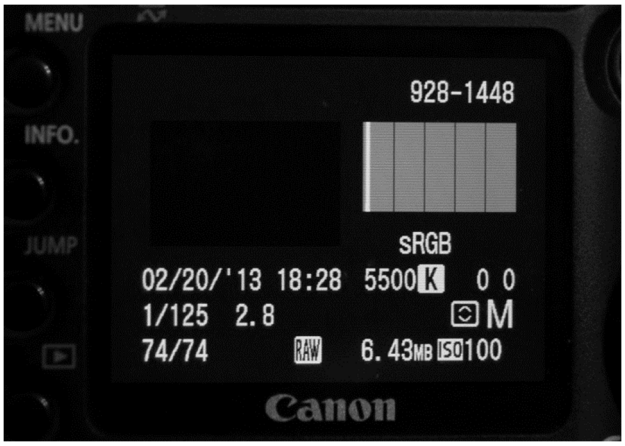
Determining Exposure

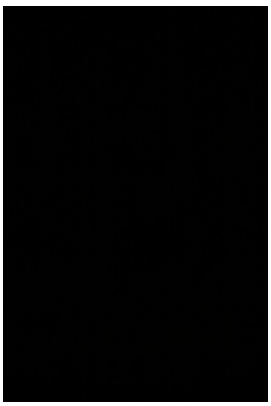
Histograms

Histograms are a graphic representation of the tonal values of the pixels within the image.



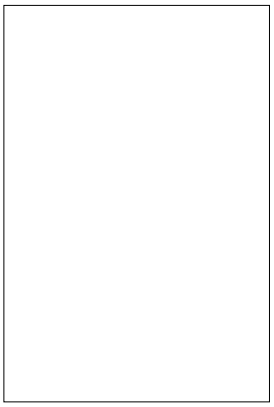
The graph horizontally represents the pixel's numerical value from _____ on the left to _____ on the right.





0 values represent _____while 255 represents _____.

The graph represents an approximate _____ stop range.



The blacks appear on the side of the graph while the whites or highlights appear on the _____ side of the graph.

Using The In-Camera Meter

Proper Exposure (18% Grey)

Two Stops Underexposed

One Stop Overexposed

Camera Meter Modes

Evaluative Mode (Matrix)

Center Weighted

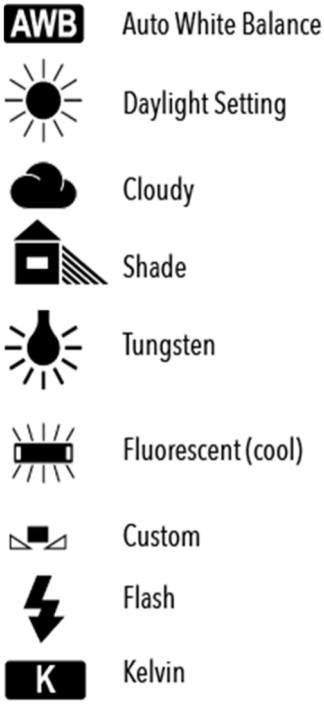
Partial Mode

Spot Meter Mode

White Balance

This control on the camera is used to correct the color casts that come with photographing in various types of lighting conditions. This control uses a series of icons to represent various lighting sources and the photographer can simply choose the icon that matches the light source being used.

There are also “custom” white balance options which can be used in tandem with other tools to set the white balance of a given scene.



Color Temperature	Light Source
1000-2000 K	Candlelight
2500-3500 K	Tungsten Bulb (household variety)
3000-4000 K	Sunrise/Sunset (clear sky)
4000-5000 K	Fluorescent Lamps
5000-5500 K	Electronic Flash
5000-6500 K	Daylight with Clear Sky (sun overhead)
6500-8000 K	Moderately Overcast Sky
9000-10000 K	Shade or Heavily Overcast Sky

Steve's Camera Set Up

Image capture quality RAW

Capturing your images in RAW allows the photographer to work with the full complement of data the camera is capable of capturing. Establish a workflow that utilizes RAW processing for speed of editing and for image protection.

Look in camera menu settings for "Image Quality" and select "RAW". There is no need for "RAW + JPG".

Set camera to half-stop increments

Your camera likely came out of the box set in 1/3 stop increments. Changing the camera to half stops makes navigation of your exposure controls more efficient.

Canon users, use the Custom Functions menu and look for "Exposure Level Increments".

Nikon users look for "Exposure Values" or "EV settings".

Set up focus selection to a single point

We do not want the camera to select where it wants to focus. Set up your focus selections to a single point which can be toggled around the viewfinder and placed at the point of your subject for accurate focusing.

Take focus off the shutter button

It is completely inefficient to have to focus before every image, plus it is hard on your equipment. Removing the focus from the shutter button allows you to focus with the button on the back and take all subsequent images at the same distance without having to re-focus for every image.

The following two pages may help you with finding the controls on your menu for taking the focus off your shutter. Consult your user's manual for complete info.

Take Focus off Shutter Button: Canon Cameras

Be sure to check your camera manual for confirmation on the Custom Function number for Back-Button AF in your EOS model. Here are examples of the C.Fn menu selection for recent EOS models:

EOS Rebel T3: C.Fn 7 (option 1 or 3)
EOS Rebel T3i: C.Fn 9 (option 1 or 3)
EOS Rebel T4i: C.Fn 6 (option 1 or 3)
EOS 60D: C.Fn IV-1 (option 1, 2, 3, or 4)
EOS 7D: C.Fn IV-1 (Custom Controls — Shutter, AF-ON, AEL buttons)
EOS 6D: C.Fn III-5 (Custom Controls -- Shutter, AF-ON, AEL buttons)
EOS 5D Mark II: C.Fn IV-1 (option 2 or 3)
EOS 5D Mark III: C.Fn menu screen 2 (Custom Controls -- Shutter, AF-ON, AEL buttons)
EOS-1D X: C.Fn menu screen 5 (Custom Controls -- Shutter, AF-ON, AEL buttons)

The terminology often used on the menu for this particular custom function may seem a little confusing, so an explanation is in order. In cameras without a separate C.Fn called "Custom Controls", the function is headed “Shutter/AE lock button”, or similar wording.

What this means is that anything *before* the slash mark refers to how the shutter button will behave. Anything *after* the slash tells you how the rear button will work if that option is selected. Using the popular EOS 50D as an example, here’s what you see on-screen, and here’s what it means:

0: Metering + AF start *(note: there’s no slash here)*
Factory-default setting. You activate camera’s meter and AF by pressing shutter button half-way down. Rear AF-ON button also does same if it’s pressed, so you don’t get the benefits of removing AF activation from the shutter button when this option is set.

1: Metering + AF start / AF stop
AF is still at shutter button. Pressing the rear button will actually LOCK the focus; potentially useful if you shoot a lot of moving subjects in AI Servo AF and prefer to activate AF with a conventional half-press of shutter button. Focus is unlocked by removing thumb from back-button.

2: Metering start / Meter + AF start
Back-button AF activation. Shutter button no longer activates AF, but of course fires the shutter. Metering is continuously updated — if you shoot a sequence of pictures, the camera takes a fresh meter reading for each one. There’s no locking of exposure, unless you separately press the AE Lock button (this last item is not possible on some EOS models).

3: AE Lock / Metering + AF start
Back-button AF activation. Difference between this setting and option 2 directly above is that when you press the shutter button half-way, your exposure is locked and won't change until you pull your finger off the button entirely. Thus, if you shoot a sequence of pictures in any auto exposure mode, the exposure setting used for the first shot is used for each subsequent shot. Can be useful if you were using back-button AF to easily lock focus and shoot a series of portraits, where you wouldn't expect lighting to change.

4: Metering + AF start / Disable
Similar to setting "0" above, but now, the camera's rear AF-ON button is disabled. AF activation is at the shutter button. Convenient if you're worried about accidentally pressing the back-button and don't want to use back-button AF.

Take Focus off Shutter Button: Nikon

I was unable to find as much documentation for Nikon cameras, but here is a bit of info for moving the focus off the shutter and onto the back for some of the popular models.

D3100, D3200, D5100, D80
Menu Option
Buttons
AE-L/AF-L button
AF-ON

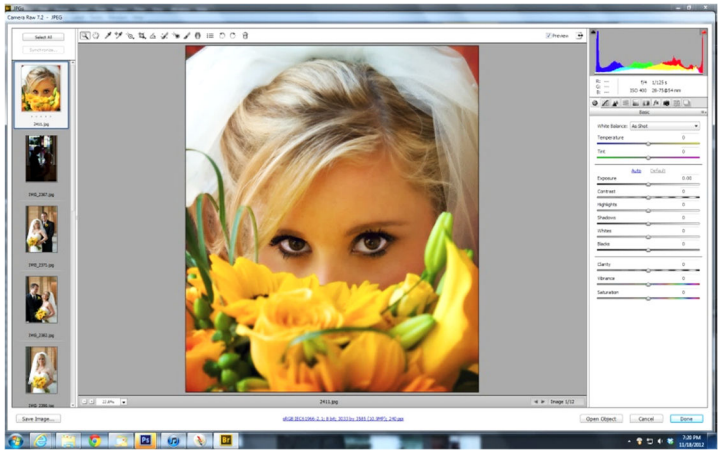
D700

(option a5:AF Activation - set to AF-ON button only).

D7000
Assign the AE-L, AF-L button on the back of the camera to be AF-On. To do this, go to your camera menu and look in the custom setting menu (the pencil). In the custom setting menu, go to Controls, and then choose F5 "Assign AE-L/AF-L button." Within this menu, choose "AF-On."
2) Now you need to set up the camera so it will take a picture even when focus has not been achieved. This is preferable in most situations because you may have focused and recomposed the shot. To do this, go to your Custom Setting Menu and choose Autofocus. Within this menu, select A1 "AF-C priority selection" and set it to "release." Then set AF-S priority selection to "release" as well.

(I am not a Nikon user and I don't really understand the need for step two, but this may be specific to the functions of the D7000.)

Photographing in RAW



Capturing your images in RAW format provide you with the entire amount of data that your camera is capable of recording.

JPG Captures_____ colors.
RAW Captures_____ colors.

RAW provides you with the full range of digital data for image processing.

Images captured in RAW have a wider range of image corrections for _____, _____, _____, _____ and more.

When you opt to capture in Jpeg mode, your camera compresses your file—sort of like squeezing a sponge causing you to lose _____ all for the sake of having a smaller file.

This smaller, compressed Jpeg file loses about _____ % of the information your camera was capable of capturing. This means that your editing of exposure, color, contrast and such is much more segmented making adjustments to your images more _____.

Photographing Using Natural Light

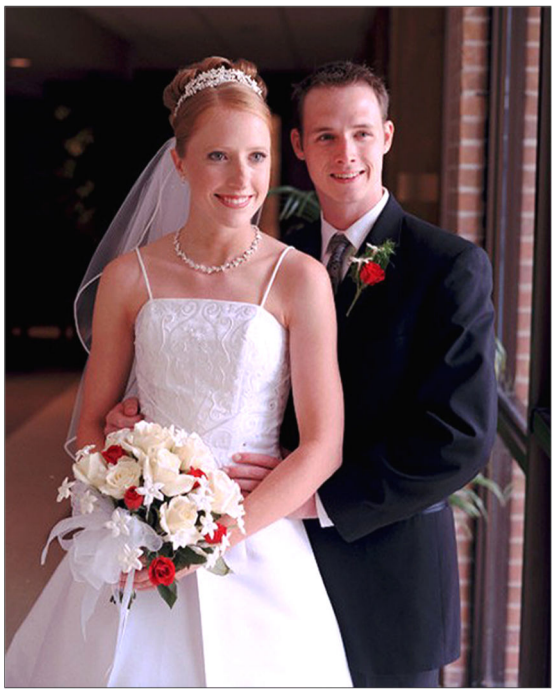
Quality of Light

Specular:

Diffused:

Photographing with Natural Light

To create texture and detail, learn to see and use _____ _____!



Know How to Use The Light!

With the face divided at the nose, notice that the camera sees more of one side of the face than the other. The wider side is referred to as the _____ side and the narrow side is called the _____ side. The lighting is named for the side it illuminates.

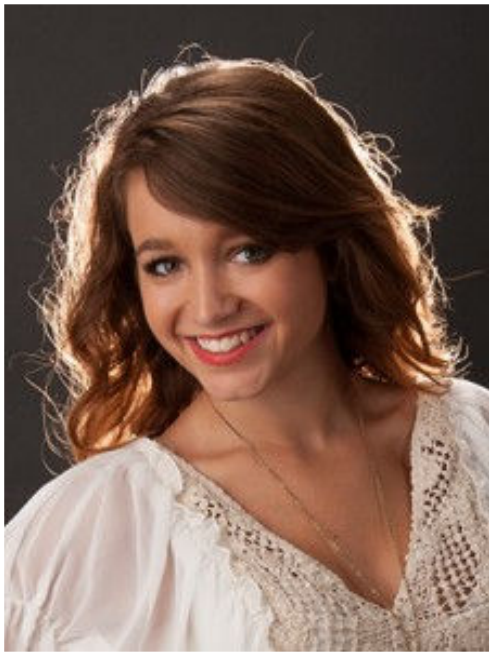
Broad Lighting

Short Lighting

Broad or Short?

The above image is _____ lit.

The above image is _____ lit.



The above image is _____ lit.

The above image is _____ lit.

Broad or Short?

The above image is _____ lit.

The above image is _____ lit.

The above image is _____ lit.

The above image is _____ lit.

Know How to Use The Light!

The image at right is created with _____ lighting.

Since the light seems to come from all directions and does not created any noticeable _____.

Using the same location and simply turning the bride so that one side of her is "shielded" by the thick foliage, the light becomes more directional as it rakes across her from the right side.

Shadows now appear on the left because there is no open sky in that direction.

This technique is known as:

"_____ _____".

Know How to Use The Light!

Having a _____ overhead creates a more directional pattern of light because the light comes in primarily from the side, much like lighting from a window. Blocking overhead or side light to create a directional lighting pattern is a technique known as "_____ _____".

To Move Your Photography Forward, Start at The Back!

Selecting the right background for your outdoor and locations sessions can be something of a challenge. This assignment is designed to help you discover what makes a great background and how to use you background to create images with impact. While you will be completing this assignment in a few days, the process of finding new and interesting places to photograph will continue throughout your career.

You should develop a variety of locations to photograph to complement a variety of subjects. Having a larger library of scenic places to photograph allows you to better serve your client's needs and desires for unique and interesting photographs.

GETTING STARTED

Begin this assignment by spending a few hours driving around your area with the sole purpose of finding places to work. You will need to change the way you look at the world around you. Quit seeing literally and start seeing with a creative eye. Learn to see designs, shapes, patterns, lines, angles, and natural movement in various settings.

Drive through neighborhoods, city parks, downtown locations, industrial parks and rural country sides. Look for interesting porches, walls, graffiti, bridges, windows and doors, landscaping, textures and colors.

While many locations you find will be open for public access, there will be locations that interest you that are on private property or residences. Try to meet or make contact with the person who can give you permission to photograph on the property. If it is a great location, offer a complimentary session and wall portrait to the owner if they will allow you to return from time to time with clients. Be sure to take some business cards.

Also scout around various scenic areas such as lakes, rivers, canyons and state and national parks.

WHAT MAKES A GREAT BACKGROUND?

Think the 5 D's:

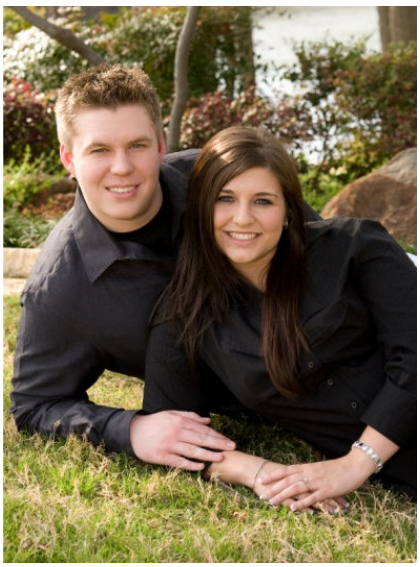
- Darker
- Depth
- Dense
- Design
- Diverse

Generally, I like a medium to dark background. This way, the subjects will stand out from the background. This is not to say that you cannot have light color backgrounds - you need those too, but a darker background will give you great results with little finishing work.

Darker

The dark background on the left makes the little cowboy stand out.

The bright highlights and sunlit water in the background on the right does not set the couple apart from the background making the background seem "busy".

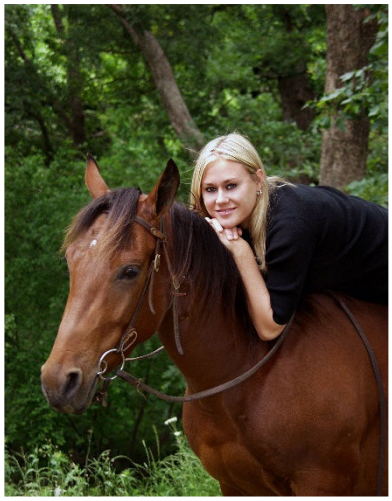


Depth

Try to see your background as something other than a one-dimensional backdrop, but rather a three-dimensional location with depth.

See if you can spot foreground, middle ground and background in the locations that you scout.

Dense



Try to find locations with dense foliage so as not to see through it.

Try to avoid backgrounds that reveal hot spots of sunlight and shadow.

The image on the left has uniformly even tones that keep the viewer within the scene.

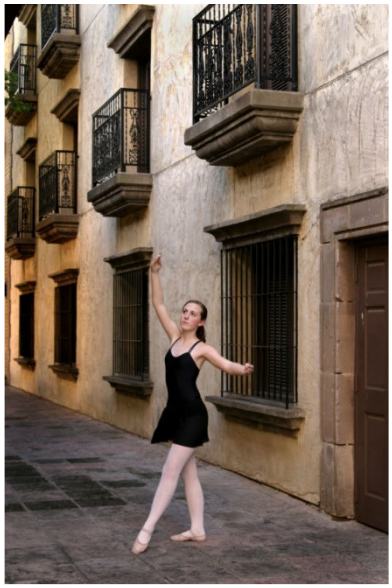
The bright areas in the image on the right take the viewer away from the subject.

Design

Look for leading lines, patterns and diagonals in a location. One-dimensional backgrounds such as a wall can work great if there are architectural or decorative designs.

While the background on the left is one dimensional (flat), it does have strong design elements that complement the image.

The image on the right has strong diagonal and leading lines and strong repetition because the image was taken down the length of the wall rather than shooting straight into the wall.



Diverse

You will not really want to drive all over town photographing, so try to find locations that offer three or four unique perspectives during a session. Getting variety from a single location is important when you have a limited time for sweet lighting.

BECOME A STUDENT OF LIGHT

As you begin your quest to find great backgrounds and locations, look first for the elements of a great background, but your job is not yet done. You now have to decide when the best time of day is to work in each location. For many locations, you may find the lighting is best in the morning or late afternoon, while other locations will only have a few minutes in the day where the lighting is suitable.

You will also discover seasonal changes in the lighting. Some locations photograph great in spring and fall but lack great lighting in the summer. Try to find the time of day where each location has its' "sweet" lighting.

PRO TIPS

*Metal buildings, overhead doors, vents and stairs can provide great background opportunities Try to work in your locations when the lighting on the background is the same lighting on your subject.
*Scout around churches and universities for interesting places to photograph. Take your 200mm lens when you are scouting and look for different perspectives through the camera
*A good background will often make an interesting image even if no one is in the scene.
*Higher camera angles will help eliminate bad horizon lines and distracting backgrounds.
*Consider "safari" sessions to other great locations out of your immediate area.

ASSIGNMENT

- Find at least three locations to photograph and find at least three unique perspectives in each of the locations (Three locations should yield 9 "backgrounds")
- Create 9 images (3 from each location) of just your background selections.
- Create 9 separate portraits, one from each of your new perspectives
- Describe why you choose each of your new backgrounds and what type of session you might expect to photograph there

(Image 1)

(Image 2)

Describe what it is that makes the background work in each of the 6 images.

Image 1

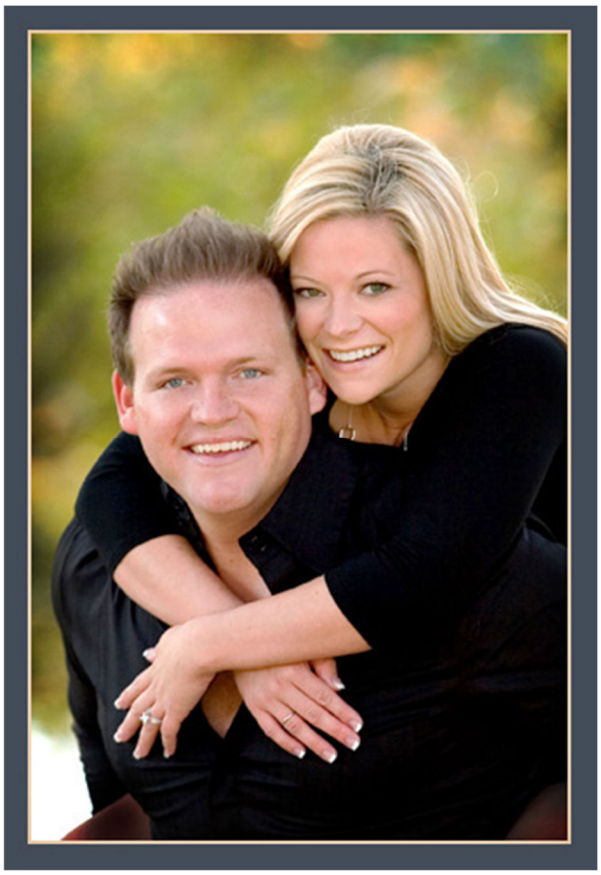
Image 2

Image 3

(Image 3)

(Image 4)

(Image 5)



(Image 6)

Image 4

Image 5

Image 6

Your Vision Is in The Lens You Use!

Assignment

This is a rather simple assignment to do, but you should take the time to really observe what you see in your viewfinder as you go through the process.

You should also really study the results of your images. I encourage you to print them out when you get home and lay them side by side to get the most out of your evaluation.

GETTING STARTED
We are going to begin by setting up a series of "test images".

- Select a large background area such as a large area of greenery or a background with an architectural interest
- Position your subject about 10 feet from the background and instruct them not to move
- Position yourself about 10 feet away from your subject and do not move
- Create a series of images without you or your subject moving using 24-28mm, 50mm, 100mm, and 200mm
- Repeat the entire series with your subject 20 feet away from the background and with you 10 feet from the subject

EVALUATE YOUR IMAGES:
Describe what you found:

How did the lens choice impact depth of field with the subject 10 feet from the background?

How about at 20 feet?

How did the lens choice impact the relationship of the subject to the background at 10 feet?

How about at 20 feet?

How did the lens choice impact what you saw in the background or what you did not see in the background?

If you or your subject had been allowed to move left or right (keeping the same 10 feet and 20 distances), could you have found better areas in your background to use with your subject?

What is your overall impression of the results?

The next exercise is to evaluate the lens choice for a given composition.

- Use the same background location that you selected in the previous series.
- Position your subject about 10 feet from the background
- Create a "head and shoulders" portrait using your 24-28mm lens. You can get as close as you have to get a proper composition.
- Next, try to get the exact composition and framing using 50mm. Back up as needed to keep the subject the same in the viewfinder.
- Repeat using 100mm, and 200mm. Keep backing up so that each image is as close to the same crop of your subject as possible
- Repeat the entire series with your subject 20 feet from the background

EVALUATE YOUR IMAGES
Describe what you found:

How did the lens choice impact depth of field with the subject 10 feet from the background?

How about at 20 feet?

How did the lens choice impact the relationship of the subject to the background at 10 feet?

How about at 20 feet?

How did the lens choice impact what you saw in the background or what you did not see in the background?

If you or your subject had been allowed to move left or right (keeping the same 10 feet and 20 distances), could you have found better areas in your background to use with your subject?

What is the overall impression of the results?

Bonus Question
Why did we not do either of these exercises with the subject standing right next to the background?

Digital Sensors - Size Matters!

A lens throws a circular image onto the film/sensor plane. That circle has to cover the film/sensor from corner to corner.

The illustration at left shows a 35mm frame well within the circular projection of the image by the lens and the image recorded by the film.

This is also how a digital camera with a full frame sensor would record the image. This is because the sensor is the same size as the 35mm frame of film.

Digital cameras are generally offered with “full frame” or “cropped” sensors. A full frame sensor will yield an image in the same way it would have been recorded on a piece of 35mm film.

A half-frame sensor is about half the size of the full frame and only records about 50% of the image that the full frame sensor would capture.

This has the effect of recording the image with more of a telephoto effect with the same lens.

To calculate this telephoto effect, multiply the focal length by the sensor’s “Multiplication Factor. This means a 200mm lens on a camera with a half frame sensor with a 1.6 MF produces an image that looks like it was done with a 320mm lens.

This is cool for telephoto images, but it is sad when you no longer have a wide-angle lens at 28mm because it is really like having a 45mm lens on a camera with a half frame sensor.

There are lenses built just for cropped sensors. These “digitally integrated” lenses throw a smaller image circle which renders a wide-angle image on the smaller sensor. But beware, Di II lenses will not move with you to a camera with a full frame sensor as the circle is too small to cover the sensor corner to corner.

Your Vision Is in The Lens You Use!

So much of capturing your vision for any given image is in selecting the right lens. This assignment is designed to help you discover how lens selection changes the perspective of the background as it relates to sharpness and as it relates to your subject.

WHAT YOU SEE AND WHAT YOU GET

The focal length (mm) of the lens determines the "angle of view" - or how much you see in the image. The focal length is consistent in terms of how much or how little is captured in the scene. For example, if you take 100mm and cut it in half to 50mm, you will see twice the area. If you double 100mm to 200mm, you will cut the scene in half. This is true at any focal length, so taking 28mm and doubling it to 56mm cuts the scene in half.

These images illustrate using a focal length of 35mm and then doubling it to 70mm.

COMPRESSION IS YOUR FRIEND

The focal length of the lens not only determines how much is seen in the background, but it also determines the compression - or how close the background appears to be to the subject. The longer the focal length, the closer the subject appears to be to the background.

This is especially helpful when you are dealing with a large background that is important to the scene. By working farther away from the background and working with a telephoto lens, the photographer is able to scale a very large background to an appropriate size as it relates to the subject. The photographer is also able to use a much smaller portion of the large background thereby limiting the image to the most desirable part of a background.

The image on the left was taken at about 28mm. The image on the right is at 75mm - more than doubling the angle of view and greatly increasing the compression.

These images are a wonderful example of how to control the "angle of view". The image on the left is at 28mm. Notice how much floor in front and wall on the right we have to see in this full-length portrait. I could not move any farther to the right because I would start seeing daylight between the columns.
The image on the right was done by moving to 150mm and backing up so that I get the exact same crop of the bride, I am able to eliminate much of the angle of view - which did not add any interest to the image. This also allowed me to move much further to the right to utilize more of the columns in the composition.

Notice how the compression makes the empty brick wall in the back look much bigger and much closer.

Notice how the 28mm lens on the left gives the image depth, but how this makes the foreground and background overpower the bride.

By backing up and moving to 120mm, the bride is in a nice proportion to the foreground and background elements.

HOW TO GET THREE FOR ONE

Having an assortment of focal lengths allows you to work more efficiently. In this example, I really have two completely different looks to offer this bride from the very same pose. By creating full length, 3/4 length and close up images from the same pose using different focal lengths, I am able to get a lot more variety without doing a lot more work.

SELECTIVE BACKGROUNDS
I love the design and balance of the bridal portrait on the left with my 28mm lens, but I REALLY love the way the 200mm lens allows me to isolate the background to the single water element.

The compression of the 200mm makes the water appear very close to the bride when she is actually safely away and in not danger of getting her dress wet.

GET RID OF DISTRACTIONS
The wider the lens, the more is included in your images. I prefer to control what is included in my images through lens selection.

The image below shows a nice background, but I hate seeing the bright sky in the upper corners.

The image on the right allows me to take the best part of that scene and include only the area that best suits my composition.

PRO TIPS

Try to use two cameras, one with a 28-75mm and the other with the 70-200mm.

Always use the 70-200mm on a tripod

Compose your images for your 70-200mm lens and then use the other camera for closer images that can be hand-held

For really bad backgrounds, use 200mm at F2.8 and get as close to your subject as you can

Use the f-stops to control the sharpness of the background

Evaluate these two images:

A. Describe the difference in the angle of view:

B. Describe the difference in compression:

C. Describe the difference in depth of field:

Selecting Lenses

We really begin to realize the creative potential of photography when we discover the wide array of lens options that are available. We are going to examine various types of lenses and their uses, but don't feel like you have to rush out and buy every lens we talk about. Take the time to really learn the basics of photography, and gradually add to your photographic equipment collection. I often see people who have spent hundreds and thousands of dollars on equipment, yet don't even know the what the f-stops are for.

We will look at two types of lenses; fixed and zooms. "Fixed" lenses have one focal length (magnification) while zooms have a range of focal lengths. Common fixed lenses are: 28mm, 50mm (normal), 135mm, 200mm and 500mm. There are some advantages of owning fixed lenses. They generally have larger lens openings than zooms and they are usually sharper.

Normal Lens

The term, "normal" lens refers to the 50mm lens when talking about 35mm photography. A 50mm lens captures an image in about the same perspective as the eye sees the image. There is little or no magnification of the image at all. It is a general-purpose lens. While it is not particularly versatile, it still has a place in your camera bag.

Wide-angle lenses

Wide-angle lenses are the perfect choice for photographing indoors where space is limited, or larger groups, and is a great choice for landscape and scenic photography.
Any lens with a focal length smaller than 50mm is considered to be wide-angle. These lenses record a "wider expanse" than the normal lens without having to back up. The most common wide-angle lens for 35mm photography is the 28mm. It "sees" almost twice as much area as the normal lens. (25mm would exactly double the coverage area of a 50mm lens) A 28mm fixed lens usually has F2.8 as it's largest lens opening. This is an economical option for photographers.

In general, a wide-angle lens has a tendency to distort horizontal and vertical lines, especially on the "wider" wide-angles. For example, when photographing a building that is several stories tall, the top of the building may appear narrower than the bottom. This distortion effect is more pronounced with wide-angle lenses than with other lenses, however, it does create interesting perspectives.

Wide-angle lenses have a large depth of field, so backgrounds and foregrounds almost always appear sharp.

Pro Tips:
*Wide-angle lenses allow you to work closer to large groups. This helps in the fact that your flash is more efficient at closer distances.
*Avoid using wide-angle lenses for close-up photographs of people. Distortions created by this lens can be very unflattering.
*A 28mm lens takes in almost twice the visual area of a 50mm lens.

Telephoto lenses

Telephoto lenses have a tendency to “compress” objects in the background with the subject, making them appear closer together than they really are. They are also an excellent choice for “people” photography. Telephoto lenses have a shallower depth of field than a normal or a wide-angle lens. This helps the photographer eliminate background distractions when taking portraits.

Any lens over 50mm are considered to be telephoto as they begin to magnify the image. Common telephotos are 135mm, 200mm and 500mm. A 100mm lens doubles the image size from a 50mm lens. 200mm doubles 100mm. This makes an image taken at 200mm to be 4 times larger than the same image if taken at 50mm. The larger the focal length, the more difficult it is to hold the camera steady. A sturdy tripod is invaluable, especially in low light.

Pro Tips:
*To hand-hold a telephoto lens, you should use a shutter speed equal to the focal length of the lens. For example, a 135mm lens will require a shutter speed of 1/125 to hand-hold with reasonable sharpness. A 200mm lens requires 1/250 to hand-hold.
*Use higher ISO to achieve faster shutter speeds. Telephoto lenses bring objects that are far away, closer. This is the ideal lens for wildlife, sporting events, and other situations where you cannot get very close to the subject.

Zoom lenses

Zoom lenses are actually many lenses built into one. They combine a minimum and a maximum focal length and give you all of the focal lengths in between. Two common 35mm zoom lenses are the 28-85mm and the 70-210mm. The 28-85 gives you a wide-angle to a medium telephoto. This is a great choice for people who enjoy landscapes and scenics. The 70-210 is a medium telephoto to a long telephoto and is a good choice for sporting activities and wildlife photography.
Zoom lenses may not be quite as sharp as “fixed” lenses and may not provide very large maximum lens openings, making them less effective in low light.

Pro Tips:
*The real quality of a zoom lens is in its sharpness and its functionality. Zooms with a maximum lens opening of F2.8 are far more efficient than ones with only F5.6 of F4.5 maximum openings. The 2.8 may cost twice as much, but will be worth it in the end.
* Consider acquiring a 28-85 and a 70-210 zoom, rather than a single lens that tries to cover that full range.

Teleconverters

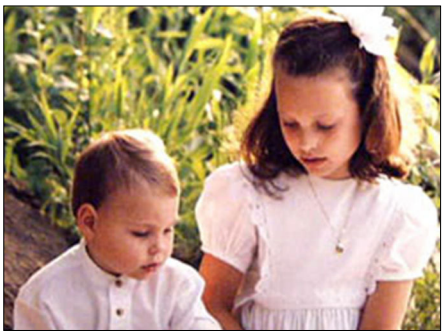
Teleconverters take a lens and double or triple it's focal length. With a 2x converter, a 50mm lens becomes a 100mm. A 70-210mm becomes a 140-420mm lens. With a 3x converter, a 50mm becomes a 150mm. The converter mounts to the camera just like the lens and then the lens mounts to the converter. They are fairly inexpensive at around $100 and up.
What may seem like a good idea at first, will eventually turn out to be frustrating and aggravating - at which point you will have a $100 paper weight! These converters reduce your effective f-stop by two or three stops, depending on the converter. They also reduce the contrast and sharpness of your lens considerably! With lenses costing hundreds of dollars, it could only happen in a dream that we would only need to spend $100 to achieve such results.

ORGANIZING WHAT YOU SEE

Photography is about designing and composing an image that is visually pleasing or effective, and recording it technically correct on the film. So as a photographer, you will need a technical mind as well as an artistic mind.

COMPOSITION - The placement or arrangement of elements within the image. This means the photographer must make decisions about what will be included in the picture as well as what will not. Elements to consider are: Subject, Foreground, Background, Props, and the Center of Interest. Elements of composition are the tools a photographer uses to design the image and tell the story. Rule of Thirds, Balance, Diagonals, Repetition, Pattern, Leading Lines, and Framing are just a few of the tools available.

CENTER OF INTEREST - Every picture starts with a center of interest. It is the focal point of the photographic story. It might be an action, a person, and object, or a location. The center of interest is the reason for the picture.



In the image on the left, we don't know what has the kids' attention.

On the right, we can see the book and the image now makes sense. The book is the center of interest.

RULE OF THIRDS - This rule gives us a suggestion for the placement of the center of interest. Mentally divide the viewfinder into thirds like a tic-tac-toe board. Then place the center of interest on one of the two horizontal or vertical lines.

The intersecting points are also strong positions to use for placement of the center of interest or other elements. One thing to know about this rule is that it is Okay to break it. Very rarely should the subject be place right in the middle of the image, but if it helps to create a strong composition, do it!

BALANCE - Balance in a picture means to keep elements in visual harmony. It does not mean the elements have to be the same size or even symmetrical. It is amazing how a "little" something can balance a much larger element. Color may also be used to create balance.

DIAGONALS - When it comes to arranging elements in a photograph, remember DIAGONAL LINES ARE DYNAMIC. Look for them. The may not always be there, but when they are, use them. They may be in the background or the foreground. They may serve as "Leading Lines" that direct your eye to the subject.

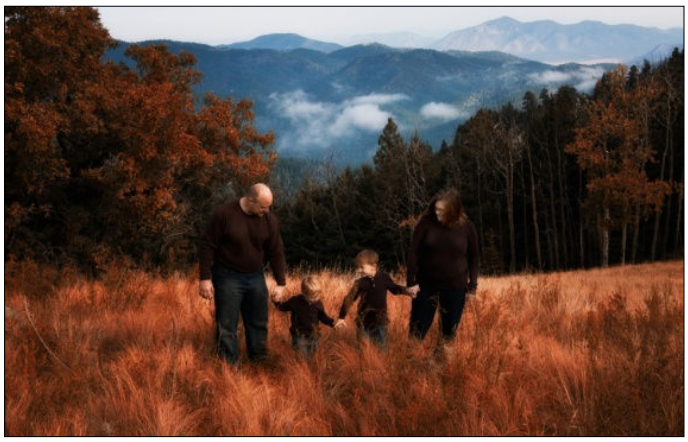
The diagonal lines created by the window sills and the baseboards all point to the subject and help to hold the viewer's eye on the dancer.

PATTERN - Repeating patterns create strong compositional interest. Repeated patterns in the background can serve to set the subject apart from the background. They can also provide visual movement within an image.

This bridal portrait has strong repeating vertical patterns which contrast with the triangular composition of the bride and her dress.

SHAPES - The arrangement of elements and the subject in a photograph can be strengthened through shapes. Three common shapes are the "S" curve, Triangles, and the Check Mark. The "S" curve compositions tend to be softer (feminine) and Triangles tend to be stronger (masculine).

FRAMING - With this technique, the photographer uses elements in the foreground to "frame" the subject. This is used to direct the viewer to the subject and hold the attention there. (Much like leading lines.)



The Basics of Flash Photography

There are three things that you need to know when using a flash:

No. 1 - The guide number of your flash
No. 2 - The correct flash sync for your camera
No. 3 - The flash to subject distance.

Guide Number: The guide number of your flash is simply a rating of how ***powerful*** your flash is, when used at a particular ISO. You will find the Guide Number in the "specs" pages of your flash's instruction book.

Flash Sync

Flash Sync: In order to use a manual flash, we also need to know the correct "flash sync" of the camera. This is the shutter speed that coordinates the flash with the shutter in the camera. Generally it is 1/125, but it may vary from camera to camera. Certain shutters sync at all speeds. Be sure to check your camera manual to determine your camera's sync.

Any time that you are using a flash, you must use the correct flash sync speed for your camera!

Failure to use the correct flash sync may result in a portion - if not most of your photographs to be black. This occurs when the flash fires and the curtain mechanism in the camera has not had time to get fully opened. The flash fires and the curtain blocks a portion of the film leaving a "clear" area on the negative. This clear area on the negative creates the black area on the photograph!

Guide No. (GNo.) (ISO 100, in meters/feet)

Normal Flash (Full Output) and Quick Flash (GNo.)

Flash Coverage (mm)	14	24	28	35	50	70	80	105
Normal Flash (Full output)	15/ 49.2	28/ 91.9	30/ 98.4	36/ 118.1	42/ 137.8	50/ 164	53/ 173.9	58/ 190.3
Quick Flash	Same as 1/2 to 1/6 manual flash output							

Guide number chart for Canon 600EX RT

Manual Flash (GNo.)

Flash Output	Flash Coverage (mm)							
	14	24	28	35	50	70	80	105
1/1	15/ 49.2	28/ 91.9	30/ 98.4	36/ 118.1	42/ 137.8	50/ 164	53/ 173.9	58/ 190.3
1/2	10.6/ 34.8	19.8/ 65	21.2/ 69.6	25.5/ 83.7	29.7/ 97.4	35.4/ 116.1	37.5/ 123	41/ 134.5
1/4	7.5/ 24.6	14/ 45.9	15/ 49.2	18/ 59.1	21/ 68.9	25/ 82	26.5/ 86.9	29/ 95.1
1/8	5.3/ 17.4	9.9/ 32.5	10.6/ 34.8	12.7/ 41.7	14.8/ 48.6	17.7/ 58.1	18.7/ 61.4	20.5/ 67.3
1/16	3.8/ 12.5	7/ 23	7.5/ 24.6	9/ 29.5	10.5/ 34.4	12.5/ 41	13.3/ 43.6	14.5/ 47.6
1/32	2.7/ 8.9	4.9/ 16.1	5.3/ 17.4	6.4/ 21	7.4/ 24.3	8.8/ 28.9	9.4/ 30.8	10.3/ 33.8
1/64	1.9/ 6.2	3.5/ 11.5	3.8/ 12.5	4.5/ 14.8	5.3/ 17.4	6.3/ 20.7	6.6/ 21.7	7.3/ 24
1/128	1.3/ 4.3	2.5/ 8.2	2.7/ 8.9	3.2/ 10.5	3.7/ 12.1	4.4/ 14.4	4.7/ 15.4	5.1/ 16.7

Guide number chart for Nikon SB910

Determining the aperture and flash output level in the Manual mode

In the Manual mode, use the guide number table and the following equation to calculate the aperture, flash output level, and shooting distance to obtain the correct exposure.

- The guide number (GN at ISO 100; m/ft) indicates the amount of light generated by the flash. The larger the number, the greater the flash output.

Guide number (ISO 100, m/ft)

Flash output level	Zoom-head position (mm)										
	*1	*2	14*3	17*3	24	28	35	50	70	85	105
M1/1	12.5/41	16/52	17/56	19/62	30/98	32/105	38/125	44/144	50/164	53/174	56/184
M1/2	8.8/29	11.3/37	12/39	13.4/44	21.2/70	22.6/74	26.9/88	31/102	35.4/116	37.5/123	40/131
M1/4	6.3/21	8.0/26	8.5/28	9.5/31	15.0/49	16/52	19/62	22/72	25/82	26.5/87	28/92
M1/8	4.4/14	5.7/19	6.0/20	6.7/22	10.6/35	11.3/37	13.4/44	15.6/51	17.7/58	18.7/61	19.8/65
M1/16	3.1/10	4.0/13	4.3/14	4.8/16	7.5/25	8.0/26	9.5/31	11/36	12.5/41	13.3/44	14/46
M1/32	2.2/7	2.8/9	3.0/10	3.4/11	5.3/17	6.0/20	6.7/22	7.8/26	8.8/29	9.4/31	9.9/32
M1/64	1.6/5	2.0/7	2.1/7	2.4/8	3.7/12	4.0/13	4.8/16	5.5/18	6.3/21	6.6/22	7.0/23
M1/128	1.1/4	1.4/5	1.5/5	1.7/6	2.6/8.5	2.8/9	3.4/11	3.9/13	4.4/14	4.7/15	4.9/16

*1 With the Nikon Diffusion Dome attached and the wide-flash adapter in place
*2 With the Nikon Diffusion Dome attached
*3 With the wide-flash adapter in place

Calculating Exposure

The power of the flash determines the exposure in flash photography. Unlike non-flash photography, we do not really have a choice of f-stops and shutter speeds. The f-stops are going to be dictated by the flash output and the shutter speed is dictated by the camera's sync speed.

We do not use "equivalent exposures" in flash photography.

Let's work on finding the single correct exposure when using a manual flash. In the examples to follow, **It is assumed that the G# is expressed at 100ISO!**

To determine the correct exposure when using a flash in "manual" mode, use the following formula:

G# / Flash to Subject Distance = F-stop

For example, if it is given that: G# is 110 and the flash-to-subject distance equals 20 feet:

110 / 20 = F5.6 (rounded to the nearest stop)

The correct exposure would be F5.6 and the shutter speed would be determined by the camera's sync. If your camera syncs at 1/60, then the exposure is F5.6 @ 1/60. If your camera syncs at 125, the exposure would be F5.6 @ 1/125.

If the flash to subject distance changes to 5 feet, then:

110 / 5 = F22

If our G# is 60 and the distance is 20 feet, then:

60 / 20 = F2.8

At 5 feet, we get:

60 / 5 = F11

Again, the shutter speed is a "given" based on the camera's sync.

Flash Set Up Check List

Camera set to _____ ISO
Shutter speed at _____
Flash set to _____ mode
Camera set to _____ mode
Flash Zoom Head to ____ Zoom _____
Flash ratio set to _____
White Balance set to _____

Using the *"Inverse Square Law"*

Cut distance in half --- stop down _____ stops
Example: If 10ft = F11, then 5ft = F_____

Double the distance --- open up _____ stops
Example: If 10ft = F11, then 20ft = F_____

The quality of light is determined by the _____ of the light source.
On camera flash is _____ and _____!

Getting the flash off the camera:
Complete control of the flash and exposure
_____ lighting
Not bound by shooting _____
Light control using modifies (umbrellas, softboxes)
Balance flash to _____

Control the output of your manual flash:

1.4 2 2.8 4 5.6 8 11 16 22 32
(Large openings) (Small openings)

Closing the lens by one stop cuts the amount of light reaching the sensor in half. (1/2x)

Closing the lens by one stop …….____
Closing the lens by two stops ..…_____
Closing the lens by three stops ….____
Closing the lens by four stops.….____

Advanced Flash Techniques

Fill Flash

When your subject is backlit, try using fill flash to add light to your subject. This helps to bring the exposure on the subject closer to the exposure of the background. This keeps the background from being too bright and washed out or your subject from being to dark and underexposed.

To use fill flash with a manual flash, read the meter for the background using the correct sync speed. For example, since your camera syncs at 1/125, then meter the background to find the F-stop that corresponds to 1/125. Then, read the flash meter to determine the F-stop.

Next, determine the output of your flash for a given distance, then reduce the power of the flash accordingly to get the correct exposure from the flash.

Example 1:

The background is F16 at 1/125

Setting up the flash at _____ feet yields an
output of F16 from the flash at full power.

Example 2:

The background measures F5.6 @ 1/125.

The flash output at 10ft is _____.

Reduce the power of the flash to _____
to get an output of 5.6.

Where would the output setting of the flash be if the flash were set up at 5 ft?

_____

The background measures F4 at 1/125.

What would the output setting of the flash be if the flash were set up at 10 ft?

_____

At 7 feet

_____

Bounce Flash:

"Bounce flash" creates a much softer quality of light and helps to eliminate distracting shadows. Bounce flash requires a room with relatively low ceilings - about 10 to 14 feet. The ceiling should be a light color, preferably white. This is important because you will be lighting your subject with the ceiling - not the flash. The color of the ceiling will be reflected in the overall color of the photograph.

To use bounce flash, calculate the distance from the flash to the ceiling, and add to it, the distance from the ceiling to the subject. Take that total distance and divide it into the guide number of your flash. The resulting number will be an F-stop. Finally, take that F-stop and "open up" the lens one or two additional stops. This is necessary because the ceiling does not efficiently return the light back down to the subject. Opening up this extra stop or two compensates for this loss of light. I suggest opening up one additional stop for lower, white ceilings and two additional stops for higher ceilings.

One of the "tricks" about using bounce flash is to know that light comes off of the ceiling at exactly the angle that it strikes the ceiling. What this means is that you want to angle the flash so that is strikes the ceiling at the halfway point between you and the subject. Pointing the flash straight up will mean that the light comes straight down - lighting yourself and not the subject. It is also possible to point the flash too far beyond the halfway point and therefore directing the light behind your subject. It takes a little practice.

If you have the chance to watch photojournalist on the news while they are shooting using bounce flash, you will notice that some will have a white notecard attached to the flash with rubber band. This card helps to redirect some of the light towards the subject with a bit more efficiency than just bouncing the flash off the ceiling. This also helps to add light to the subject's eyes and fill-in some of the shadows on the face that are created from the light coming off the ceiling.

The image at right was taken with bounce flash in a room with 12 foot, white acoustical tile ceilings which meant I would open up two stops on my bounce flash exposure.

The flash distance up to the ceiling and back down was 15 feet.

My exposure was _____ at 1/125.

Dragging the Shutter

You can take flash photographs at shutter speeds that are slower than the flash sync. For example, if your shutter syncs at 1/125, you can also use 1/60, 1/30, 1/15, 1/8 and so on. This is called dragging the shutter. Dragging the shutter allows you to record some of the ambient light along with the flash exposure. To do this, figure your F-stop for the flash exposure. Then, read the meter at that F-stop to determine the corresponding shutter speed at that F-stop. Set camera to the corresponding shutter speed.

For Example: A room meters F2.8 at 1/30. Let's assume you are going to shoot your flash at F5.6. Shooting at F5.6 at 1/60(or your given sync) creates a properly exposed subject but the room appears very dark. Meter the room exposure at F5.6 and the shutter speed drops to 1/8. (Remember "equivalent exposures" from the Basic Class?) Now, take the photograph at F5.6 at 1/8 and you will have a well exposed subject and also record the lighting in the room. You will need a tripod at these slow shutter speeds and a subject that is not moving about.

The background measured F2.8 at 1/15.

My flash was 10 feet away.

At full power, my flash output is F_____.

To get my flash to fire at F2.8, I had to set the power output setting to _____.

My shutter speed at left was 1/125.

What shutter speed did I use to balance my flash to the background? _____

My finals settings on the camera were: F____@_____. My flash was at _____ power.

Flash Worksheet **(Assume G#110 at 100 ISO and 1/1 unless otherwise stated)**

What is the correct exposure when the flash to subject distance is:

	Flash Power		Flash Power		Flash Power		Flash Power	
A. 5ft	@1/1	_____	@1/2	_____	@1/4	_____	@1/8	_____
B. 20ft	@1/1	_____	@1/2	_____	@1/4	_____	@1/8	_____
C. 7ft	@1/1	_____	@1/2	_____	@1/4	_____	@1/8	_____
D. 10ft	@1/1	_____	@1/2	_____	@1/4	_____	@1/8	_____
E. 15ft	@1/1	_____	@1/2	_____	@1/4	_____	@1/8	_____

2. How many stops are represented by:

1/8 _____ 1/32 _____ 1/4 _____ 1/16 _____ 1/2 _____ 1/64 _____

3. What is:

1/8 of F11 _____ 1/4 of F22 _____ 1/32 of F16 _____

4. What ratio setting would be required to fire the flash at F4 when the flash distance is:

A. 5ft _____ B. 20ft _____ C. 7ft _____

D. 10ft _____ E. 15ft _____

5. The subject measures F4 and the background measures F11. The flash is 5 feet from the subject. What are your settings?

A. Set the F-stop to: _____ B. Set the flash to: _____

6. You are photographing a bride on the center aisle. The flash is 7 feet away. You want to use F4. The background reads F8 @1/2. What are your settings?

A. Set the F-stop to: _____ B. Set the shutter to: _____

C. Set the flash to: _____

7. You are photographing a group in a room with 12 ft ceilings with bounce flash. The distance up and down is about 15 feet. What is the exposure? _____

8. What is the correct exposure at 400 ISO when the flash to subject distance is:

	F-Stop	Flash Power		F-Stop	Flash Power
20ft	_____	@_____	B. 5ft	_____	@_____
15ft	_____	@_____	D. 10ft	_____	@_____
7ft	_____	@_____			

9. You are using 400 ISO. The flash is 15 feet away. You want to shoot at F4. What are your flash settings?

10. You are using 400 ISO. The flash is 5 feet away. You want to shoot at F4. What are your flash settings?

Word Problems

1. You arrive at a home in the late afternoon to do an outdoor family portrait in their backyard. They want to be photographed standing inside their new gazebo which overlooks a lake that is in bright sunlight. Since they are in the shade, you:

A. Properly expose for the family and let the background blow out
B. Expose for the background and lighten the family in Photoshop
C. Use a flash in TTL with the camera set to A
D. Manually set your camera to expose the background and manually set the flash to fire about ½ stop less than the background

2. You are trying to photograph a senior who loves skateboarding. He wants you to capture a stunt that he has learned on his board, but every time you try to take the shot, the camera hunts for the focus and you miss it. How do you remedy this?

A. Set the camera so that it chooses the focusing point automatically
B. Change the focus control to only focus at the single box in the center of the frame
C. Move the focus control off of the shutter button so that the shutter no longer causes the camera to focus when pressed
D. Take a lot of images and hope one turns out

3. You are photographing an engaged couple on an overcast day when you notice their eyes are dark from shadows. You decide to use your flash to fill in these shadows but you realize the exposures are inconsistent: Wide angle images are under-exposed but when you zoom in, the images are over-exposed. What is the solution to stop this from occurring?

A. Don't zoom the lens, simply step closer or further back to compose the shot
B. Change the exposure so the eyes are no longer dark and don't use the flash
C. Set the flash to ½ power
D. Turn off the zoom head in the flash

4. You are photographing a child in the wildflowers late in the day. You are using you 70-200mm zoom and the camera meter tells you the exposure is F4@60 at 100 ISO. The images taken at 70mm look great, but all of the images taken that were zoomed to 200mm are blurry. What is the remedy?

A. The problem is shallow depth of field: Change the exposure to F8@60 so you have more depth of field
B. The problem is not enough light: Increase the ISO and set your camera to "A"
C. The problem is camera shake: Increase the ISO to 400 and set your camera to F4@250
D. The problem is focus: Because the zoom is so strong, set the camera to use only the center box for focus

5. You are photographing the 8th grade choir. They are standing on risers and there are five rows of students. Which row do you focus on?

A. Focus on the first row 1
B. Focus between rows 2 and 3
C. Focus in the middle row 3
D. Focus between rows 3 and 4
E. Focus on the last row 5

6. Your flash photos are turning out very harsh. The best solution is to:

A. Use an opaque, white cap that fits over the front of the flash to soften the light
B. Pull out the clear, plastic filter that is built into the flash and let it cover the front of the flash to soften the light
C. Power down the flash so it is not so bright when it fires
D. Move the flash further away from the subject
E. Any of the above will work
F. None of the above will work

Body Posing

There is so much wrong with the image on the left, it is a great place to start with body posing. Let's begin:

- Shoulders are square to the camera
- Hips are square to the camera
- Elbow pointed straight into the camera
- Showing the back of the hand
- Right arm in tight to the body
- The entire pose is in a straight vertical line
- Weight on the front foot.

So, what can we do to correct the lack of good posing in this image? Let's examine a few guidelines to improve the pose.

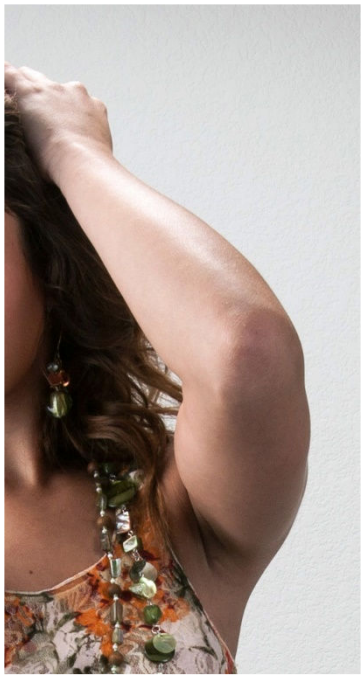
Turn Feet Away

With the feet turned to the camera, it has the effect to broaden the hips and create a straight body line. (right)

Turning the feet away from the camera lines up the body to create an angle throughout the shoulders and hips. Placing the weight on the back foot helps this as well.

Turning the body creates a more graceful line to the shoulders and more curves to the hips. Graceful lines and curves create more interesting movement to the body.

In the image at left, I turned her feet and hips about 45° away from the camera. Notice how this creates curves and has a slimming effect on her hips when compared to the image above.

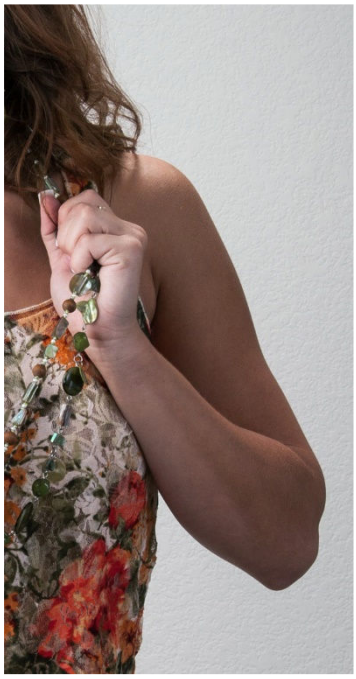


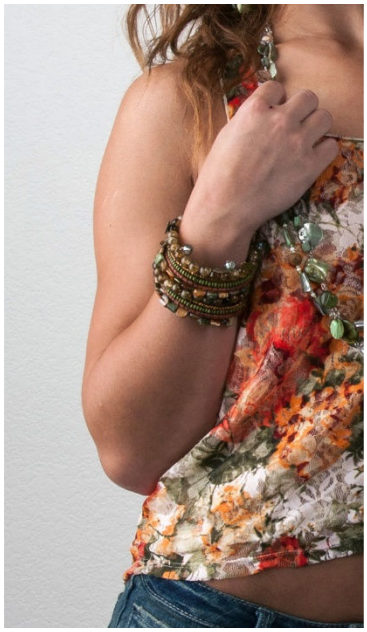
Don't Point Body Parts Toward the Camera

It is best to keep feet, legs, knees, arms, and fingers from pointing directly into the camera. Anything that points toward the camera appears larger and possibly distorted.

The image on the left is greatly improved by not pointing the elbow toward the camera. Instead, lower the elbow and use the bent arm to create a diagonal line.

One of the first rules of posing I ever heard was, "Anything that will bend...bend it." That is still a pretty good "guideline" to use. I try to say, "guideline" instead of "rules" because there are always compelling reasons to go against conventional wisdom.



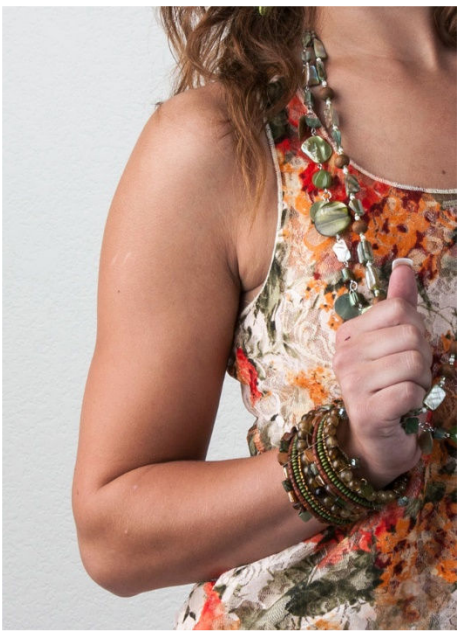


Create Space Between Arms and Body

Arms clinched in tight towards the body tend to give the appearance of added weight. Opening the arm to create space between the arm and body has a trimming effect. I have, however, used the arm close to the body to "conceal" weight.
Again, a guideline, not a rule.

Don't Show the Back of the Hand

The back of the hand creates a large area of flesh tones that may compete with the face. Typically, you try to photograph the side of the hand.



Bend the Wrist

Bending the wrist creates a thinner appearance and nice lines. Bend the wrist downward (towards the ground). In other words, lift the hand upward rather than allowing it to hang downward.

Before and After

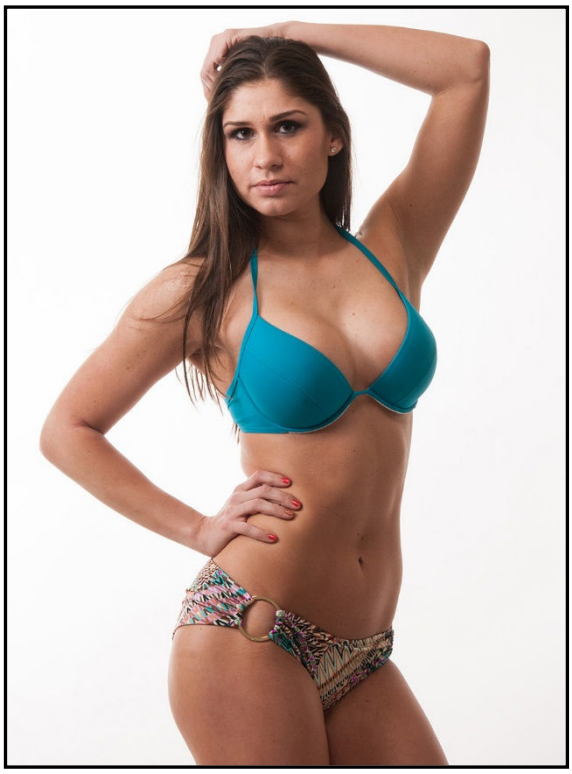
So here are the improvements I made to the pose at left.

A curvier body, leading lines and movement created by the arms and opening the arms from the body show her figure in a much more flattering way. (see right)

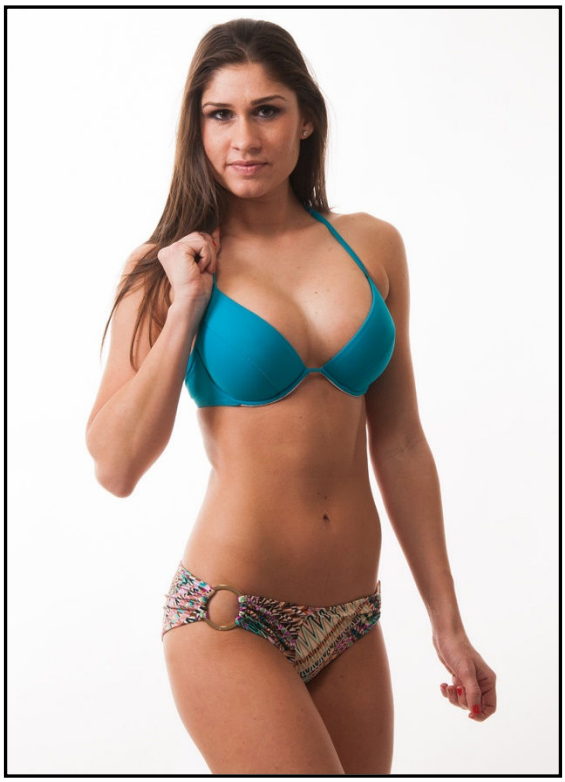
In the image at left, the bride is posed with her feet and body turned squarely towards the camera. This creates broad shoulders and creates no shapely curves to flatter her upper body.

In the image at right, her feet are turned about 45° and the weight is on the back foot. This creates a nice diagonal line to the shoulders and shows off her feminine form.

With the weight on her front foot, her front leg appears heavier. (left)

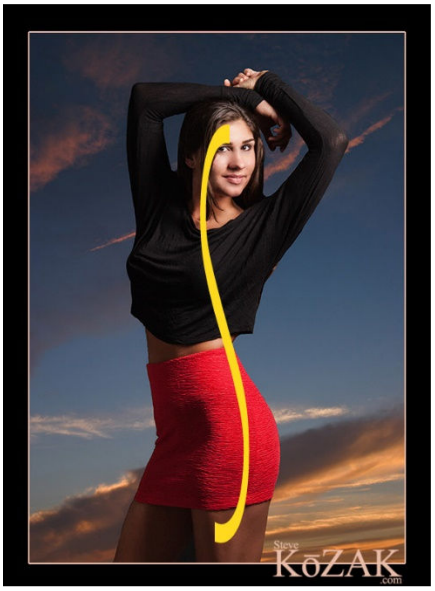


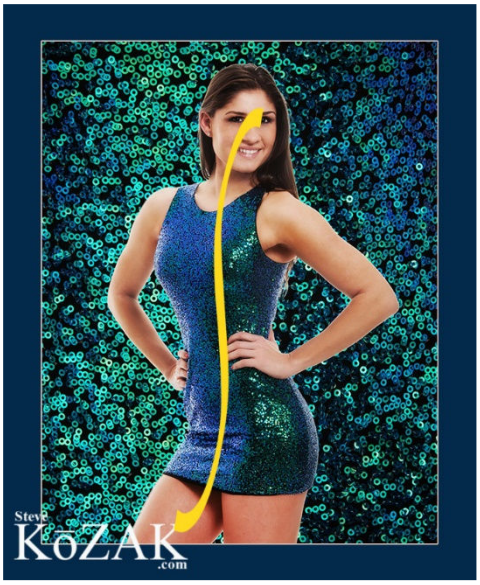
Placing the weight on the back foot allows the subject to bend her front leg to create a more slimming pose.
(right)



Feminine Posing (S-curve)
The classic feminine pose creates the curvy contours of the body at the hips and with the upper body. The head usually tilts towards the higher shoulder, but this rule can be broken to taste.

The usual method also includes having the subject place their weight on the back foot which leaves the front leg free to bend the knee to complete the bottom of the "S", although in the images at right, I got away with placing the weight on the front. The "S" can be reversed.





Oval Compositions
Oval compositions are also considered to be feminine poses and are often used in maternity photographs. (see below)

The Basic Pose (C-curve)
The classic basic pose (sometimes referred to as a masculine pose) creates the look of a "C" curve. The masculine tilt of the head is toward the lower shoulder. (see below)

While considered, "masculine", this does not mean that it might not be appropriate to pose a woman or a child in a "C-pose".

The "C-curve" can also appear reversed.

Angular Posing

Angular posing accentuates the angles that are created with bent arms and legs as well as strong head tilts. These angles are created to create strong, visual compositions. (see right and below)

Assertive Posing

This style of traditionally, masculine posing uses body language to portray a sense of confidence. From standing with shoulders square to the camera to powerful placement of hands and arms to portray status, power and confidence, assertive poses work with both men and women. (see left and both images below)

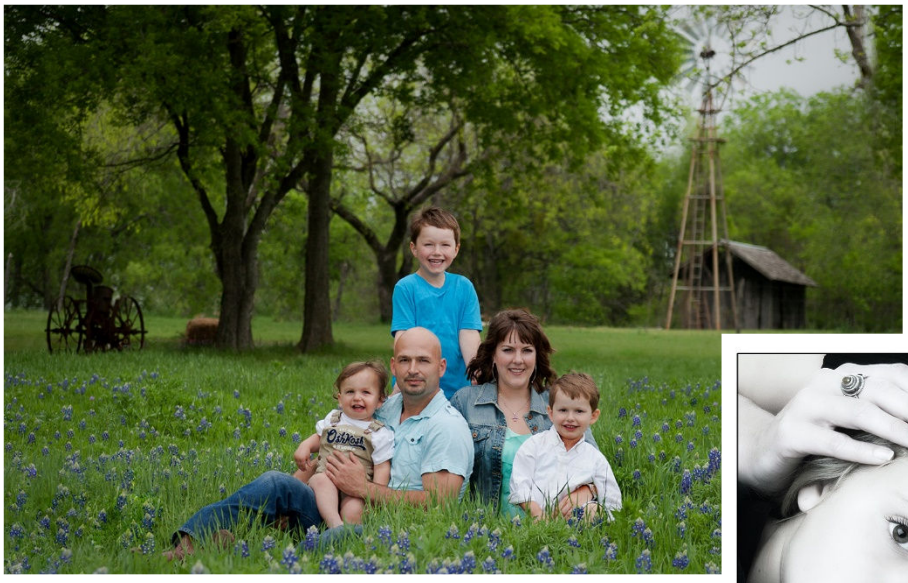
The image at left demonstrates angular and assertive posing.

While appearing somewhat "protective", the girl in the image at right is also "assertive in her leaning in towards the camera to create a strong connection to the viewer.

This team of lawyers shows several assertive poses.

Group Posing
With group posing, it is generally preferred to create images with the subjects' heads on different levels rather than a straight line.

One of the ways to accomplish this is to pose in such a way so as to create **"shapes".** Common choices include, **diamond**, **triangle**, **check mark**, **inverted check mark** and more.



The image above uses straight line posing. It is not bad but probably not ideal.

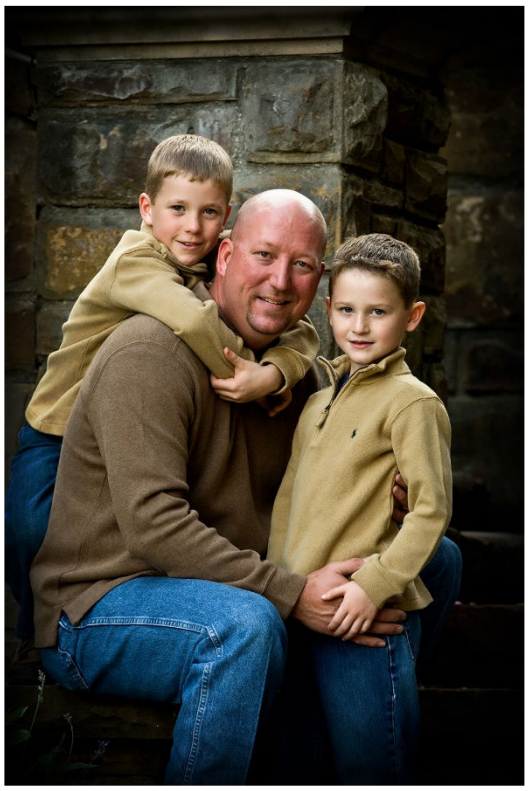
The image at left creates a triangular composition. The triangle is a strong compositional pattern that visually demonstrates strength and unity.

The image right uses a strong, triangular design with is often used in posing families.

In the image at left, each head is on a different level but does not really have a clear shape to the design. I should have improved this by having mom and dad switch places. That would have created a better diamond shape.

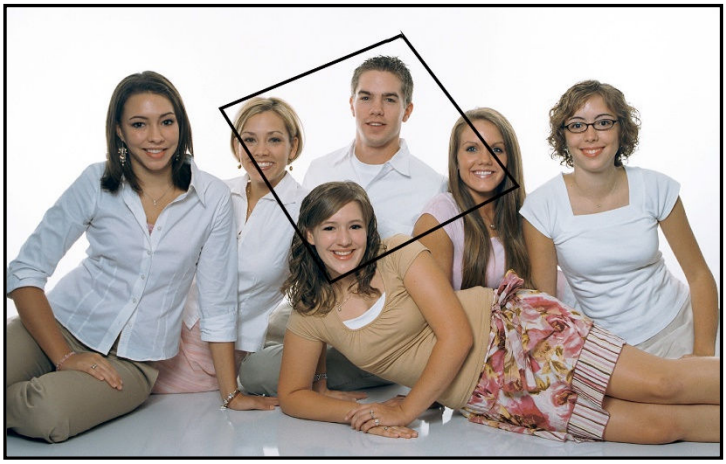
The image at left combines two check marks in the composition.

The image below places each head on its own level. The composition could be considered as almost oval. I always liked the “roundness” of the pose against the strong vertical and diagonal lines.



The image at left evokes a strong sense of affection that the boys have with their dad. Dad is leaning into his son and the youngest boy is leaning into and hugging his dad. Having their heads close together really sets off the feeling of closeness they have with each other.

The image at right starts with a diamond shape in the center. There are also two check marks. I probably would have improved the entire composition if I had switched the two girls at the far left.



Posing Psychology

Posing groups of people introduces some consideration of their relationship to each other. Are they friends or colleagues? Are all of the subjects equal in rank or is there a hierarchy? For example, the owner of a real estate firm posing with her office staff might need to be posed in such a way to suggest prominence for the owner. The psychology of posing might suggest the owner be placed in front with the staff standing behind to bring stature to the owner.

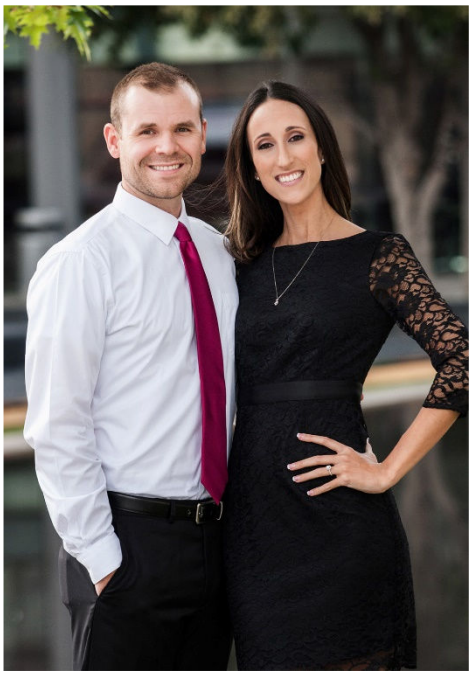
The posing in the image at right suggests that I (the handsome guy in the center with his hands on his hips) might be the leader of this band of photographers photographing in the mountains. My strong assertive pose and the fact that I am in front of the group leaves that impression.

In the image at right, there is no clear "leader" of this group as everyone appears as something of an equal. Posing everyone on an straight line might illustrate equal authority or a sense of "team". A sense of unity is created when subjects left and right of center turn their shoulders to the center.

Posing Groups of Two

Posing groups of two may also require some consideration of prominence, but for most images with two people, it is a matter of capturing relationships. Siblings, friends and couples poses allow for some degree of intimacy with the interactions of the two where images of co-workers or colleagues should shy away from any implied sense of affection.

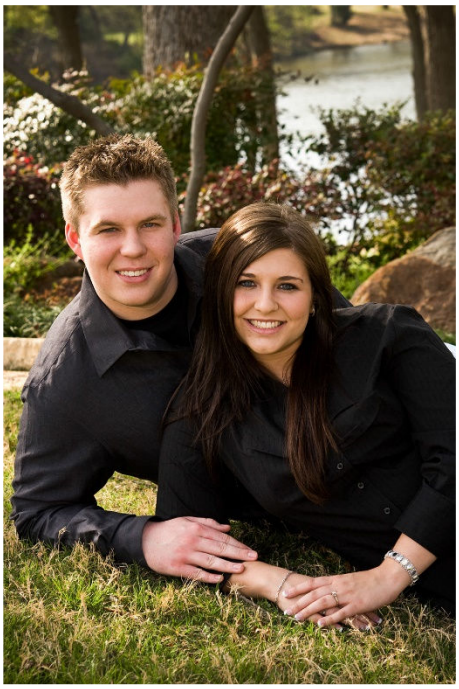
Consideration of the subject's height may also come into play, especially when one subject is particularly taller than the other. While not trying to imply that anything is wrong with two people being the same or of notable height differences, there are some techniques that can help create visual compositions that bring out the sense of the closeness in a relationship and downplaying drastic difference in height.



In the image at left, the couple is very close to the same height. Compositionally, their heads are almost on the same level, so the pose might be more interesting if their heads were not quite as even.

In the image at right, the couple's heads are pretty far apart which leads to some degree of loss in the feel of intimacy between the two.

While maybe not technically true, I consider the faces to be the center of interest in full length and up to half-body poses. As I move into images that are closer up, I consider the eyes to be the center of interest. I try to make sure the eyes of both subjects are on different levels. I try to create my poses by placing the two subjects' facial features at a 45°angle to each other. The late, Monte Zucker taught that one subject's eyes should be placed at the level of the mouth of the other subject. This sometimes requires using uneven ground, use of a posing stool, posing steps or creative posing to get one subject higher than the other.



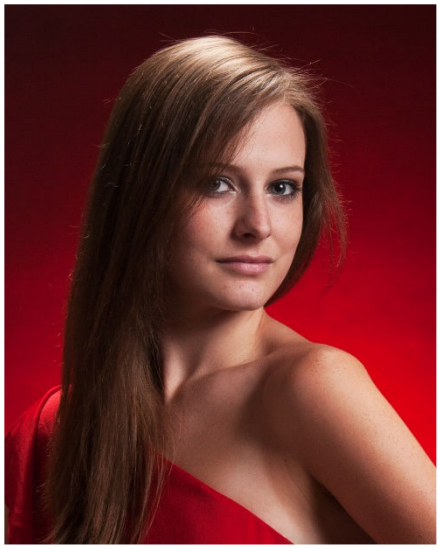
In both of these images, the eyes of the girl are about the same level as the guy's mouth.

The poses feel more intimate when the two tip their heads closer together.

NOTE:
Monte Zucker, Don Blair, Hanson Fong and Doug Box are all excellent sources for posing technique.

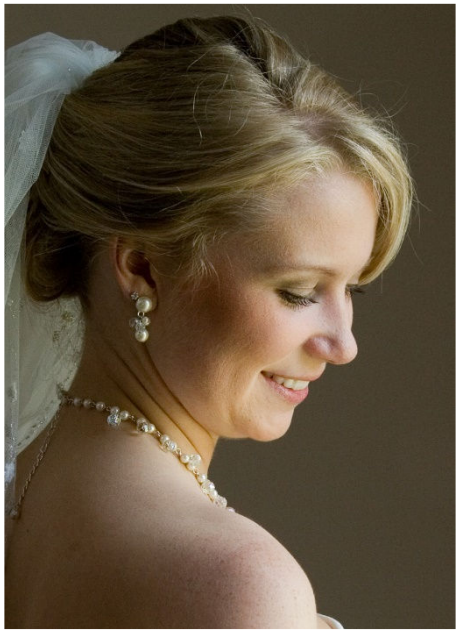
Facial Views
The three facial views are “full face”. “2/3 view” and “profile”.

Full Face
The nose and face are directly towards the camera.
This is appropriate for pass-port photos but not always be the most flattering option.



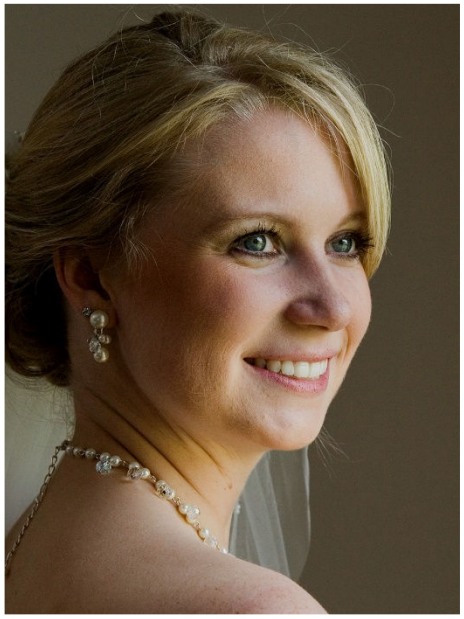
2/3 View
The face is turned away from the camera but not at profile. Two keys to watch are: the back eye should be completely visible and there should be flesh visible between the nose and the back cheek.

Profile
The face is turned 90° from the camera. The back eye is not visible, but the back eyelashes can be seen.



The image at left shows a pose where the nose breaks the plane of the back cheek, but not quite a profile. This causes an unflattering accentuation to the nose.

In the image at right, I turned her head so that the nose is comfortably contained inside the back cheek. This is much for flattering to this beautiful bride.



Overview of Studio Lighting Equipment

Getting to Know Our Studio Lighting Gear

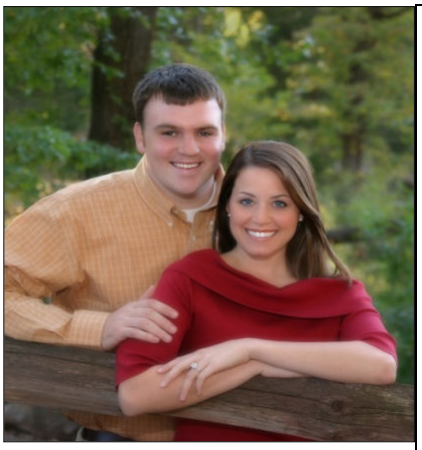
Main Light: This is the primary light that illuminates the subject. It is responsible for creating a pleasing "mask" of light for the face, creating texture and detail in clothing and illuminating the eyes.

Fill Light: The fill light is used to control contrast. By increasing the power of the fill you reduce the contrast in the photo. By decreasing the amount of light from the fill, you will increase contrast. The purpose of the fill light is to add just enough light to soften the shadows created by the main light.

Background Light: Used to illuminate the background in order to create depth or separation of the subject from the background. This light is usually placed low to the ground on a small stand about half way between your subject and the background.

Hair Light: The hair light illuminates the subject's hair providing separation from the background. This is especially important when photographing a subject with dark hair against a dark background. This light should only illuminate the hair and should not spill onto the subject's face.

Projector Spot: This light is used to project patterns onto a background using cut-outs of a specific shapes called, "cookies". The example at right shows a projected pattern.



Accent/Kicker Light: This specialty light adds a strong highlight on the subject—usually from the back to add interest or separation. The light coming in to the right side of the guy's face is an example of a kicker light.

Lighting Modifiers

Umbrellas: . Great for portraits as they provide uniform diffused light. They are available in a variety of sizes and materials. Select white, silver or gold, depending on the warmth of light you want to direct onto your subject.

SoftBox: Available in different sizes to help control the contrast of the light. Smaller softboxes produce higher contrast light while the larger softboxes provide a softer light.

Strip Light: A narrow softbox—great as a hair light or as a main light.

Scrim: Translucent diffusion panels placed in front of a light source to soften the light.

Snoot: When attached to strobes, snoots produce a round "spotlight" effect. Some have a focusing capability to allow you to control the spread of the light.

Barn Doors: These attach to your strobes to control light coverage. They usually have 2 or 4 hinged flaps that move independently and adjust how wide or narrow an area the light covers.

Louvers: Blinds attached to a softbox that open and close to help control the volume of light and the direction of the light coming out of the softbox.

Gels: Filter sheets used over light sources to change colors of backgrounds or correct the light balance. There are also gels to help diffuse light.

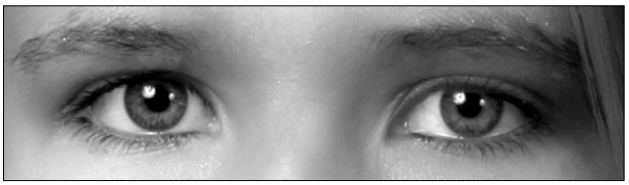
Lighting Accessory Gear

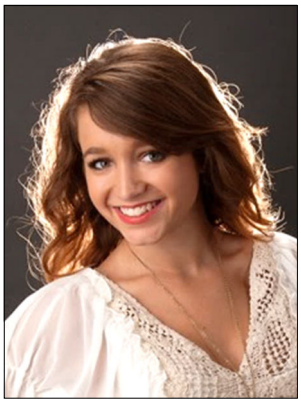
Reflectors: Reflector come in many shapes and sizes and are made from numerous materials. They are used to reflect or bounce light back into shadow areas to help illuminate details. Reflectors can be made from cardboard, metal, or fabric, and are usually white, gold, or silver.

Gobo/Flag: Gobo comes from the words "go between". Gobos are usually black cards or “flags” that are placed in front of the light source to block unwanted light. They are usually used to keep light from hitting a particular spot on the subject or to cast a shadow on the background.

Lighting Terms

Catch light: The points of light created by the light source that appears in the subject’s eyes. The catch lights traditionally should be at either the one o’clock or eleven o’clock position.





Rim light: The bright, outer glow of light coming from the back side is called a rim light. This is a great technique for creating a fashion look for your female subjects with longer hair.

Key: Refers to the overall colors or tones of an image.

High Key

Low Key

High Key: Refers to an image that is created using mostly light tones and bright backgrounds.

Low Key: Refers to an image that is created using mostly dark tones and dark backgrounds.

Flat Lighting
Lighting that strikes the subject from the front or that does not rake across the subject to bring out texture and detail is said to be “flat”. An overcast day is a good example of “flat” lighting. Even though an overcast day is soft lighting, the overall effect of it is to be flat because it is not directional.

Hard light can also be flat if it strikes the subject from the front and does not rake. For example, an on-camera flash creates flat lighting. A subject that faces directly toward the sun will also appear flatly lit if the sun is behind the camera.

Flat lighting is not always bad. It is commonly used in product photography as well as fashion photography.

For fashion photography, flat lighting diminishes the features of the model to focus more attention on the clothing or other product.

Flat lighting may also be a flattering choice for older clients and those with strong cases of facial blemished because of its tendency to hide wrinkles and skin imperfections.

On the image above, I used two lights - one on each side of the camera at 45° at equal power to create a flat lighting pattern. This helped to reduce the unsightly shadows of the raised arms throughout the image.

When photographing large groups, flat lighting may be the safest choice to avoid the possibility of creating uncontrolled shadows across the group.

Lighting Patterns

Where flat lighting is generally frontal and has little to no shadows, it does nothing to bring out shape and form and texture. Light and shadow creates detail and mood. Portrait photographers will use a number of classic lighting patterns to bring out the subjects features and to create drama or stronger interest.

Certain lighting patterns are also considered to be more flattering to some facial shapes. Some of the classic lighting patterns include, butterfly, loop, broad, short, split and Rembrandt lighting.

Butterfly Lighting

This popular style of fashion lighting creates a flat lighting pattern because it is placed above the subject's face in line with the subject's nose. This pattern creates the shadow outline of a butterfly just below the nose. (right)

A similar butterfly pattern is created when the subject is facing the camera and two lights are set at 45° on either side of the camera with the lights at equal power in used with the same modifier. The lights at 45° are said to be in a "butterfly" position.

Loop Lighting

A loop lighting pattern (left) gets its name from the rounded shadow created by the nose. To achieve this
pattern, the main light is placed at about a 45° angle from the camera and feathered towards the subject and
high enough above the subject to direct the shadow down while still keeping a catchlight in the subject's eye.

Broad Lighting and Short Lighting
If we see the face as having two sides divided down the center of the nose, a face turned towards the camera shows both sides equally. But turn the face to one side or the other, the camera will see more of one side and less of the other.

In the images below with the face divided at the nose, notice that the camera sees more of the right side of the face. The wider side is referred to as the **"broad"** side and the narrow side is called the **"short"** side.

Broad Lighting

Short Lighting

The lighting pattern is named for the side it illuminates first. In the image at left, with the placement of the main light to the right of the camera and the model's head turned to the left, the light strikes the right side first. This is referred to as **"broad lighting"**.

In the image at right, the main light was moved to the left side of the camera. Now the main light first strikes the model's narrow side of her face. This lighting pattern is called, **"short lighting"**.

Broad Lighting vs. Short Lighting
Broad lighting tends to make a face "fuller" and "rounder" and the appearance of added "weight" on the subject. Short lighting tends to slenderize a rounded face and tends to be the most flattering lighting pattern on most subjects.

My memory device is, "No woman wants to be a broad!" Since no one has ever come into my studio as asked me to make them appear "fuller and rounder", I make a point to do short lighting on most of my subjects. For subjects with narrow faces, short lighting may exaggerate the "narrowness" of the face. Therefore, broad lighting is the better choice for a narrow face.

Split lighting

Split lighting is created when the main light is positioned so as to only light one side of the face. (Left)

Since this technique is used to create strong shadows on the subject, it is often used to create a sense of drama or mystery. It may also give the feeling of power or fear.

Rembrandt Lighting
Named for the famous artist, Rembrandt lighting is when the main light is positioned high and on one side of the face with a small, triangular highlight spilling onto the shadow side of the face. The triangle should illuminate just under the eye and not below the nose. (right)

Rembrandt was know for using strong shadows in his paintings with the added triangle highlight on the shadow side to create depth.

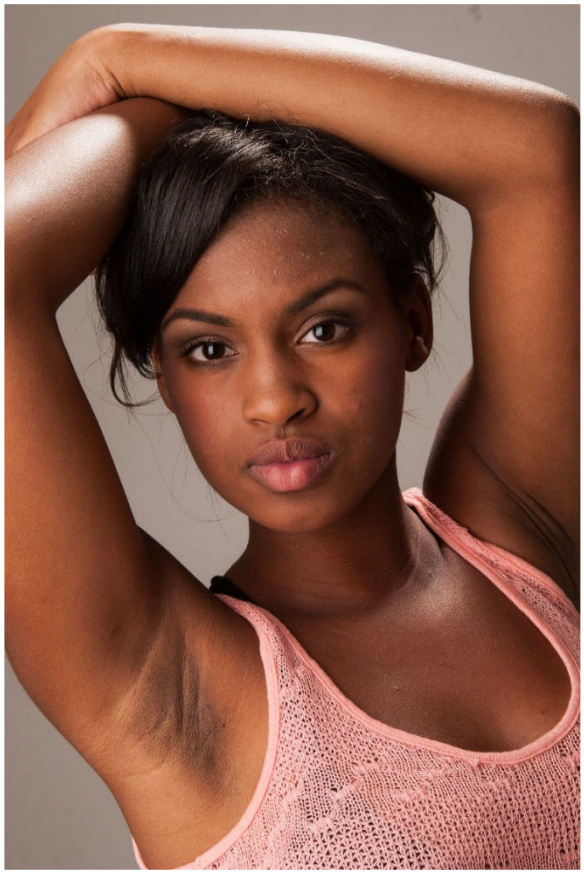
Generally, either of the lighting patterns may be used with a fill light or a reflector on the shadow side to lessen the contrast of lighting on the face. The amount of fill used is subjective and will be a matter of taste. For very dramatic lighting, do not use a fill or a reflector.

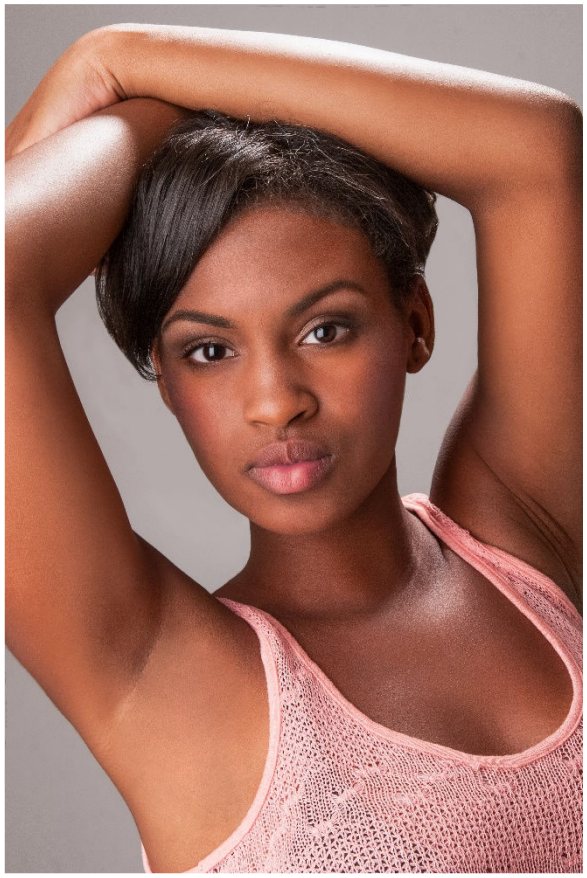
Retouching

Retouching images in my workflow includes removal of blemishes, softening wrinkles and facial lines and scars, eye enhancements and skin softening.

I include this in the pricing of my images. Remember, this is where a lot of your valuable time is spent, so make sure that you include appropriate production costs in figuring the pricing of your work.

Also remember, the time you spend retouching is time you are NOT spending on growing your business. You may be very surprised to realize your time is much better spent on getting new clients and moving your business forward than it is on doing production work. That is where Retouchup.com can play a big role in the success of your business.





Deep Retouching

Just because I can “fix” doesn’t mean I’m obligated to fix it. Extensive retouching in NOT included and requires an addition charge.

Image Enhancement

Simple enhancements such as vignettes and dodging or burning would be part of my normal finishing workflow.

Image Presentation

I will add a digital border and presentation at no additional charge. I will also add names and titles.


Amber

Elevate the Quality of Your Work
At the Camera and the Presentation

Don't Settle for giving your customers what they want - Give them _____ _____!

Develop a Style - Educate the Client to Style - Refer

Work Slower - Tripod / Do the Artist Thing
Not How Fast you Work - It is How Well!

Matting ($50.00/$295) ($35/$395)

Place Cards w/Titles in Gallery

New Techniques

Discover and Cultivate the Artist Within

Photography is an _____ - If you continue to do "formula" photography day in and day out - fast track to burn-out.

Photography is a _____ Medium - and there are a lot of folks who work by imitation and fail to ever discover their own artistic talents.

Become an Artist - We are Artist.
ARTIST: one who professes and practices an art in which conception and execution are governed by imagination and taste.

Write about your photography in a Journal. We mask our feelings and emotions - we are too familiar - writing helps to uncover those feelings.

List some of the places that you would like to go and photograph.

a. **e.**

b. **f.**

c. **g.**

d. **h.**

Select one or two of the above places and set a date on your calendar and **GO!** Do this until all have been covered!

Get away by yourself and go to a favorite place and shoot what ***you feel.*** **Hang the work where you can see it every day!**

Learn from other Artist. (Art Business News)
Discover an artist and become familiar with the style - learn about the artist!

OWN ART
Find a local artist that you really like and acquire his/her work. You should like it well enough to _____ _____ _____! Hang it up for people to see alongside your created artwork. Notice how much you enjoy owning it! **People feel the same way about owning your art!**

Keep an Inspiration Book

Keep a sketchbook

Shoot what you feel

Follow your energy

Scenics and Art for Sale

Get CPP and Masters

Do you understand the Basics? Take this review to find out.

1. Which line has the f-stops in the correct order?

A. 1.4 - 2.8 - 4 - 5.6 - 8 - 16 - 22 - 32...
B. 1.4 - 2 - 2.8 - 4 - 5.8 - 8 - 16 - 22 - 32
➡ C. 1.4 - 2 - 2.8 - 4 - 5.6 - 8 - 11 - 16 - 22 - 32...
D. 1.4 - 2.8 - 4 - 5.6 - 8 - 11 - 16 - 22 - 32...

2. Which line has the shutter speeds in the correct order?

A. 1 - 2 - 8 - 15 - 60 - 125 - 250 - 500 - 1000...
B. 1 - 2 - 4 - 8 - 15 - 30 - 125 - 250 - 500 - 1000...
C. 1 - 2 - 8 - 15 - 30 - 60 - 125 - 250 - 1000...
➡ D. 1 - 2 - 4 - 8 - 15 - 30 - 60 - 125 - 250 - 500 - 1000...

3. The f-stops serve two purposes - what are they?

A. To control motion and control depth of field
B. To control motion and control the amount of light that reaches the sensor
C. To control the amount of light that reaches the sensor and ISO speed
➡ D. To control the amount of light that reaches the sensor and depth of field

4. If you move the f-stop from F5.6 to F8, what happens to the amount of light that reaches the sensor?

➡ A. Decreases
B. Increases
C. Stays the same

5. What is Depth of Field

A. How far the camera can focus
➡ B. The area in the photograph that is in focus
C. The distance in the background that is in focus
D. The distance between the camera and the subject

6. What happens to the depth of field when you move the lens from F11 to F16?

A. Decreases
➡ B. Increases
C. Stays the same

7. Given F8 @ 1/125, what would the new shutter speed need to be if you moved the lens to F5.6?

➡ A. 1/250
B. 1/60
C. 1/500
D. 1/30

8. Why would you want to move the lens from F4 to F2.8?

A. To increase the depth of field
B. To use a slower shutter speed
C. To allow less light to reach the sensor
➡ D. To decrease the depth of field

9. What does the ISO of the film or sensor tell us?

What f-stop to use
B. What shutter speed to use
➡ C. Its' sensitivity to light
D. Which lens to use

10. Define "equivalent exposure".

A. Exposures equal to the ISO
➡ B. Exposures that yield the same amount of light onto the sensor
C. Exposures where the f-stop stays the same and only the shutter speed changes
D. Exposures where the shutter speed stays the same and only the f-stop changes

11. Give an equivalent exposure to F11 @ 1/15.

A. F11 @ 1/30
B. F8 @ 1/15
C. F8 @ 1/8
➡ D. F16 @ 1/8

12. The shutter speeds serve two purposes - what are they?

A. To control motion and control depth of field
➡ B. To control motion and control the amount of light that reaches the sensor
C. To control the amount of light that reaches the sensor and ISO speed
D. To control the amount of light that reaches the sensor and depth of field

13. What is the slowest shutter speed that you should use if you are hand-holding your camera?

A. 1/60 with a 200mm lens
B. 1/125 with a 28mm lens
➡ C. 1/60 with a 50mm lens
D. 1/60 with a 28mm lens

14. Why would you want to change the shutter speed from 1/60 to 1/250?

A. To increase the depth of field
B. To use a slower shutter speed
➡ C. To "freeze" a moving object
D. To "blur" a moving object

Flash Worksheet **(Assume G#110 at 100 ISO and 1/1 unless otherwise stated)**

What is the correct exposure when the flash to subject distance is:

	Flash Power		Flash Power		Flash Power		Flash Power
A. 5ft	@1/1 F22		@1/2 F16		@1/4 F11		@1/8 F8
B. 20ft	@1/1 F5.6		@1/2 F4		@1/4 F2.8		@1/8 F2
C. 7ft	@1/1 F16		@1/2 F11		@1/4 F8		@1/8 F5.6
D. 10ft	@1/1 F11		@1/2 F8		@1/4 F5.6		@1/8 F4
E. 15ft	@1/1 F8		@1/2 F5.6		@1/4 F4		@1/8 F2.8

2. How many stops are represented by:

1/8 3 1/32 5 1/4 2 1/16 4 1/2 1 1/64 6

3. What is:

1/8 of F11 F4 1/4 of F22 F11 1/32 of F16 F2.8

4. What ratio setting would be required to fire the flash at F4 when the flash distance is:

A. 5ft 1/32 B. 20ft 1/2 C. 7ft 1/16
D. 10ft 1/8 E. 15ft 1/4

5. The subject measures F4 and the background measures F11. The flash is 5 feet from the subject. What are your settings?

A. Set the F-stop to: F11 B. Set the flash to: 1/4

6. You are photographing a bride on the center aisle. The flash is 7 feet away. You want to use F4. The background reads F8 @1/2. What are your settings?

A. Set the F-stop to: F4 B. Set the shutter to: 1/8
C. Set the flash to: 1/16

7. You are photographing a group in a room with 12 ft ceilings with bounce flash. The distance up and down is about 15 feet. What is the exposure? F4

8. What is the correct exposure at 400 ISO when the flash to subject distance is:

	F-Stop		Flash Power			F-Stop		Flash Power
20ft	F5.6	@	1/4	B.	5ft	F22	@	1/4
15ft	F8	@	1/4	D.	10ft	F11	@	1/4
7ft	F16	@	1/4					

9. You are using 400 ISO. The flash is 15 feet away. You want to shoot at F4. What is your flash setting? 1/16 power

10. You are using 400 ISO. The flash is 5 feet away. You want to shoot at F4. What is your flash setting? 1/128 power

Action Items

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