

Photo Lessons

For Kids

16 lessons that will
encourage your
child's love
of learning

A cleverhomeschool.com Book
by Jason Huskey



Notes for parents:

Thank you for downloading our photography lessons. We love photography and hope your kids will too. The goal of the first six lessons is to quickly improve your children's pictures without getting technical. We will not be talking about shutter speed, aperture or ISO until lesson number seven. For now just set your child's camera to AUTO or Program(P) mode and turn their flash off. *See below for more detailed camera settings.*

You can complete these lessons at any pace that suits your child but we recommend only doing 1 or 2 per week. This will allow your child enough time to complete the photo assignments.

Let your child explore their creativity first without too many limitations.

Camera settings

Here is a list of camera settings that will help your child get the best picture quality from their camera.

- Auto exposure mode (Use AUTO or Program(P))
- Auto focus
- Highest image quality setting (use JPEG Fine at the highest available megapixel setting)
- Turn flash off (AUTO mode may not allow you to turn off the flash – Use Program mode if this is the case)
- Turn on image stabilization

*If you are looking for more fun things to learn with your child please visit
<http://www.cleverhomeschool.com>*

Thanks again, and have a great time teaching your child to take amazing pictures. Email any questions to jason@cleverhomeschool.com

Jason and Valerie Huskey

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Lesson #1 – Learn About the Camera

Introduction



Taking pictures is so much fun. Part of that fun is learning new things. These first five lessons will not get into technical terms much. Instead I want to show you a few things that will improve your pictures quickly no matter what camera you have.

Each of these lessons will end with a photo assignment. Please do your best to complete these. You can read all you want about photography but you will never truly understand it if you don't practice.

Don't worry if your pictures are not impressive at first. As we build on your knowledge throughout this course you should notice your pictures getting better and better. At the end of the course, compare your first photos with your last photos. Hopefully you will see a big improvement.

Taking pictures should not be about the gear you have. After saying that, there are a few things you should know about cameras before starting. This first lesson will introduce you to a few basics so that you know what I'm talking about in later lessons.

Types of cameras

There are four basic types of cameras on the market today:

1. Compact digital camera – Many compact cameras do not allow the user to make decisions about their photos. These cameras will use an onboard computer to determine the best settings for a scene.
2. Phone camera – Cameras in phones used to be very basic but they have come a long way. Most of the settings are determined automatically but you can download apps that will give you more control.
3. Super zoom camera – This type of camera is the middle link between a compact camera and a DSLR. The photographer usually can take full creative control. It will have automatic settings but you can override them with your own settings. The built-in lens will go from wide angle to superzoom.



4. DSLR camera – This stands for Digital Single Lens Reflex. When looking through the viewfinder you can see exactly what will be in the picture. DSLR's give the highest quality images but are also the most expensive. You will have full control of all settings and you can also change lenses.



I love shooting with my DSLR because it is so fast and the quality is much higher. But you don't need an expensive camera to get started. Many of the world's most famous pictures have been taken with cameras of low quality. The creative decisions are always up to the photographer.

Parts of a camera

Here are a few parts you need to know for the next lessons:

- **Lens** – Allows light to enter the front of your camera. This light will eventually be recorded as a picture.
- **Shutter button** – The button you press to take the picture
- **LCD Screen** – The screen on the back of the camera used for viewing your pictures.
- **Optical viewfinder** – The small hole you look through to compose your picture.



Photo modes



Your camera may have a mode dial like the one shown to the left. These first five lessons do not explain exposure. So for now use the “Auto” or the “Program” mode. This will tell the camera to make the exposure decisions for you. Just concentrate on being creative.

File types

A digital picture can be saved in different file types. The most popular type is the JPEG. A JPEG is a great combination of high quality and small file size. As a beginner you should use the highest quality JPEG setting on your camera. If your file size is set too low, your pictures will look fuzzy.

PNG files are similar to JPEGs. TIFF and RAW files are lossless formats. This means there is no loss in quality from the original image. TIFF and RAW files will take up 10 times more space than JPEGs and PNGs.

Popular file types

- JPEG
- PNG
- TIFF
- RAW

Turn off your flash

Please turn off your flash for these first five lessons. The built in flash on your camera will usually make your pictures look terrible. You will see:

- dark shadows behind your subject
- flattened facial features
- red eye
- a strange mix of light color.

 In addition to all the problems above, on-camera flash also blinds and annoys people. There are better ways to do flash and we will talk about that in later lessons. Look for a lightning bolt icon on your camera to turn off the flash.

Flash on



Flash off



Note: Your camera may not allow you to turn off flash in AUTO mode. If this is the case switch to Program mode (P on the mode dial).

Lock your focus

Most cameras focus when you press the shutter button halfway down. Your picture may look blurry if you move the camera or your subject moves after focusing. Remember to refocus if your camera or the subject has moved.

Your camera is probably set to focus on the middle square shown in your viewfinder. To focus on a person that is not in the middle you should:

1. Point the middle square at your subject
2. Focus by holding the shutter button halfway down
3. Move the camera back to where you want it while still holding the shutter button halfway down.
4. Take the picture

Review

1. Do your best to complete all the photo assignments
2. Learn the basic parts of a camera
3. Set your mode dial to Program(P) or AUTO
4. Turn off your flash
5. Lock your focus

Photo Assignment #1

Take a picture of a toy or other non-living object

Things to remember:

- Pick an object you can photograph again after going through all five lessons. We will compare your first picture to your last picture at the end of this course.
- Save your photo in a safe place so you can view it again later.
- Use Program(P) or AUTO mode
- Turn off your flash
- Lock your focus
- Plan your photo below

Camera Settings:

Focus: Auto

Exposure: Auto

Flash: off

Plan your photo:

Subject: _____

Location: _____

Time of Day: _____

Lesson #2 - Get in close to your subjects

Getting close

Let's pretend you are taking a picture of your little brother or sister. Your first reaction might be to get their whole body in the picture. Many times there is clutter in the background that takes away from the subject. There might be toys on the floor or distracting lines or textures on the walls. If you are outside you might notice a tree or sign post that seems to sprout from your subjects head. Instead, walk in closer or even use the zoom button to make their head and shoulders the only things in the picture.



"TYPICAL RILEY POSE" BY PEASAP IS LICENSED UNDER CC BY 2.0

Eyes show a lot of emotion. To add a bit of mystery to your photo you can go even closer and make their eyes the only thing in the frame. Perfect focus is hard to get when shooting this close. We'll talk about focus next.



"EYE SEE YOU" BY PEASAP IS LICENSED UNDER CC BY 2.0

If you are having trouble getting close enough you can try switching to a longer lens or using the built in zoom in your camera. This will have the additional benefit of getting rid of distracting backgrounds.

Focus is important

Focus is always an important technical issue, but when you are getting in close you have to pay even more attention. If your subject is a person, make sure their eyes are in focus. When we are looking at a picture of a person we are automatically drawn to their eyes. Even animals do this. If you have a dog or cat you might notice that your pet will look directly into your eyes. I've always wondered how animals know to do this.

For this lesson your camera should be set to autofocus. Most cameras will focus on the object in the middle of the frame. Your camera may even show a little box on the screen that

indicates where it will be focusing. To focus you will need to hold the shutter button halfway down. Watch as your subject becomes clear.

Out of Focus



"IMPRESSION" BY JENNY DOWNING IS LICENSED UNDER CC BY 2.0

In Focus



"DUSTY" BY JENNY DOWNING IS LICENSED UNDER CC BY 2.0

Most lenses will only focus when you are 1 or 2 feet away. If your camera is not focusing, move back slowly until it does. To find out how close your camera or lens can focus you can do three things.

1. Read the owner's manual if you have it.
2. Look at the lens itself. Some lenses will have the minimum focus distance written on them somewhere.
3. Find a toy or other non-moving object and position your lens one inch away from it. Slowly pull back while trying to focus on the object. Make a note of the distance where the camera actually focuses.



"IN GOD WE TRUST" BY KEVIN DOOLEY LICENSED UNDER CC BY 2.0

When taking pictures of very small things like flowers and insects it may be almost impossible to get close enough. Macro mode is the solution. If your camera has a macro mode try using it to take a picture of a quarter. This will allow you to focus at shorter distances.

Get rid of distracting backgrounds

Have you ever seen a picture of someone who seemed to have a tree or light pole growing out of their head? When taking pictures it is easy to only think about your subject. You also need to notice the background. One step to the left or right will easily get rid of the tree problem. You must also be on the lookout for cluttered or distracting backgrounds. If the background is cluttered just move in closer to your subject.



If you are taking pictures of someone and they do not seem comfortable with you being so close, step back a little bit. Always use courtesy when photographing people.

Make the eyes pop!

Take a look at this monkey. Where do your eyes come to rest in this photo? Most likely you end up staring into his eyes. Have you ever seen a picture from a professional photographer where the eyes just seem to glow? To get results like this you must know where the light is coming from. In this picture you can tell the light is coming from the top right by finding the reflection in the monkey's eyes.



"BABY MONKEY IN A BASKET" BY MOHD KHOMAINI MOHD SIDIK IS LICENSED UNDER CC BY 2.0

Here's a handy tip to find the light. Carry a marble in your camera bag. When you arrive at your shooting location put the marble in your hand just like an eye socket. Then slowly turn your body around while watching the marble. Stop when you see the reflection of light in the marble. Remember this angle. If you shoot from this angle your subject will have beautiful catch lights in their eyes.

Review

1. Get close to your subject – Fill the frame
2. Remember to focus on the most important part of the picture
3. Pay attention to the background



Photo Assignment #2

Take a close-up picture of a person, a pet, or a toy.

Things to remember:

- Fill the frame with your subject
- Focus on the eyes or the most important part of your subject
- Pay attention to the background
- Children and babies are difficult because they are always moving. If you are having trouble, try taking a picture of a toy instead.
- Plan your photo below

Camera Settings:

Focus: Auto

Exposure: Auto

Flash: off

Plan your photo:

Subject: _____

Location: _____

Time of Day: _____

Lesson #3 – Holding the Camera Right

Camera shake

Have you ever thought your camera has a problem focusing? You set up a shot and it looks perfectly focused in the viewfinder. When you check the image on the camera screen your subject is slightly blurry. This is usually not a problem with the camera or the lens. The more likely problem is the way you are holding the camera.

It may not seem like that big of a deal but more pictures are ruined by camera shake than anything else. It becomes even harder to hold the camera steady when you are shooting in low light. To keep pictures from being blurry you need to practice holding your camera correctly.

The pictures above show what camera shake looks like. It means the difference between a sharp photo and a photo that could have been better. If you know how to properly hold your camera you will have much sharper images.

Camera Shake



No Camera Shake



How to hold a camera

Here is the proper way to hold a camera:

1. Wrap your right hand around the right side with your pointer finger over the shutter button.
2. Hold your left hand flat with your palm up. Support the bottom of the camera with your left hand.
3. If you have a large lens, wrap your left hand fingers around it from below.
4. Tuck your elbows into your ribs.
5. Look through the viewfinder to create more stability.

Correct



What is wrong with these pictures?



No support on the bottom of camera - Elbows not tucked in



Not looking through the viewfinder - Elbows not tucked in



No support on the bottom of camera



Not using two hands - Very little stability here

Stand up straight

Don't lean forward or backward. If you need to get closer just take a step forward or zoom your lens in. You should also place one foot a step in front of the other for added stability.

Correct



Wrong



Wrong



Breathing is important

Right before taking a shot breathe in and let it out. Slowly press the shutter button at the bottom of that breath. Your body has the least movement right after exhaling.

Shooting in the vertical position

Correct



Wrong



When taking pictures in the vertical position you have to rotate the camera. Always rotate so your right hand goes on top instead of on bottom. It's very awkward and unstable to have your right hand on bottom.

Straight Horizon Lines

Now that you have learned how to properly hold your camera we need to talk about holding it straight. When taking pictures of beautiful landscape scenes your picture can be ruined easily by having a horizon that does not appear level.

When you look at the first picture below it should look strange. We are used to viewing level horizons in real life but this picture is at an angle. As you are lining up your shot, make sure you pay attention to the horizon. If it's not level, tilt your camera to correct it.



Review

1. Always practice holding your camera correctly to reduce blur.
2. Stand up straight.
3. Press the shutter button at the bottom of your breath.
4. Hold the camera straight, especially when taking pictures of horizons.

Photo Assignment #3

*Take a picture of a level horizon
while holding your camera correctly*

Things to remember:

- Practice holding your camera correctly
- Stand up straight
- Press the shutter button at the bottom of your breath
- Make sure the horizon is level
- Plan your photo below

Camera Settings:

Focus: Auto

Exposure: Auto

Flash: off

Plan your photo:

Subject: _____

Location: _____

Time of Day: _____

Lesson #4 – Find a New Angle

Are your pictures boring?

If you have been taking pictures for very long you may start noticing that they all look the same. This can happen when you always use the same poses or angles. To fix this problem take photos of the same subject at many different angles.

The picture of the airplane to the right would be my first instinct when I see this little airplane. But it may not be the best angle, the best lighting, or the most interesting picture. So let's keep shooting and see what happens.



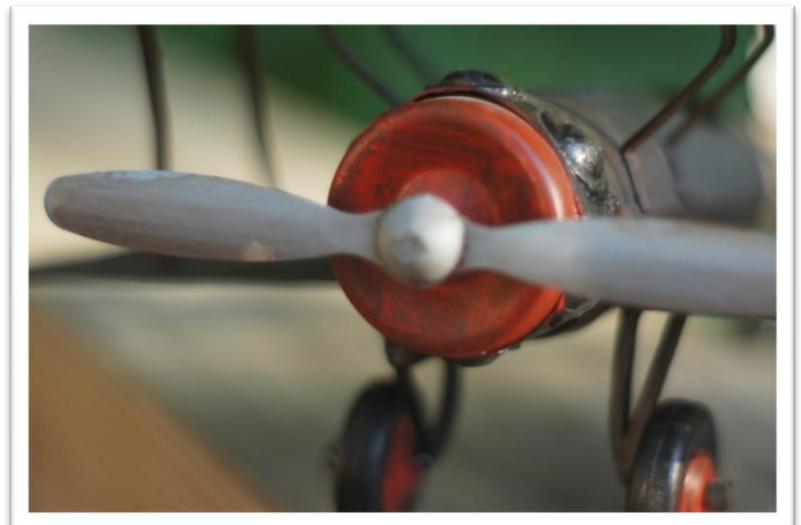
Get on the floor

You may need to lay flat on your back and look up to find an interesting shot. Professional photographers are always willing to do something silly to get the best shot. Don't worry if you look weird doing it. Some of the best pictures happen when you try to shoot a subject in a way it's never been shot before.



Zoom in

You don't always have to show your whole subject. As we learned in lesson number two, get in close to your subject. In this photo we only see the engine, propeller, and wheels. The wings are not included and that is perfectly fine. This is still an interesting picture even without those other details.



Look down

Get on top of your subject and shoot down. Notice the shadow from the plane's tail. This is a detail we can't see from other angles. When shooting from this position try to get directly over the subject and shoot straight down.



Fun photo to try: Get some friends together and have them lay on the floor with their heads touching each other. Put your camera directly over them and shoot down.

Shoot at eye level

When taking pictures of people or animals you should be on their eye level. When we are talking to someone we tend to look in their eyes. Even animals do this. If you have a pet dog or cat go talk to them and see if they are looking right back into your eyes.



"CAT" BY ANAA YOO LICENSED UNDER CC BY-ND 2.0



"CAT" BY ANAA YOO LICENSED UNDER CC BY-ND 2.0

Take a look at the two pictures above. The cat is not making eye contact in the left picture but he is on the right. The picture on the right allows us to make friends with the cat. It is much more personal and meaningful.

Which is your favorite picture of the little airplane?



My favorite picture of this group is the one in the center with the sun peeking out over the wing. I would not have gotten this shot if I only took one picture and stopped. Always look for a new angle in your pictures.

Review

1. Try lots of different angles of the same subject
2. Don't be afraid of looking silly when finding creative shots
3. Try shooting at eye level when you are taking pictures of people or animals
4. Review your pictures later and pick your favorite shots

Photo Assignment #4

Pick one subject and take pictures from at least 5 different angles

Things to remember:

- Choose a toy or other non-living object (Don't use your little brother for these photos. It will be too hard for him to stay still.)
- Do not move your object between shots. Only move your camera.
- When finished, choose your favorite angle and print it out to display on your wall.
- Plan your photo below

Camera Settings:

Focus: Auto

Exposure: Auto

Flash: off

Plan your photo:

Subject: _____

Location: _____

Time of Day: _____

Lesson #5 – The Golden Hour

What is the golden hour?

The golden hour is one of the best times of day to shoot pictures. It actually comes around two times every day. It happens right after sunrise in the morning and right before sunset in the evening.

The quality of light at this time is amazing. It is soft and golden. Skin tones are warmed up giving people a tanned look while shadows are long and diffused. It is quite easy to take great photos during this time of day.



“HIDING” BY GARRETT CHARLES IS LICENSED UNDER CC BY 2.0

Examples of golden hour photography



Take a look at this happy couple. What makes these pictures so special is the quality of light. You can see the sun highlighting their hair from behind with that soft golden glow.

Professional photographers add a hairlight all the time in their studios to get a similar effect. You can do it using natural light by putting the sun behind your subject. Compose your shot so that the sun is not in your picture. Otherwise it will look too bright and washed out.



Use a tripod

As the sun gets lower on the horizon the available light will fade out. Your camera will try to compensate for the lower light. Most likely you will start to see blurry pictures. To fix this problem you need to get the camera out of your hands.

Set the camera on a tripod, a table, a rock, or any place stable. Use your camera’s “self timer” instead of pressing the shutter button. This will allow you to keep shooting as the light gets dim. Most self timer buttons use the logo to the right.



What is soft light?

Soft light is characterized by even tones. This means the light is spread out evenly on surfaces which creates less contrast. Shadows are not harsh; instead they blend in with your subject to add just the right amount of interest to your photo. If you were to take a black and white picture in soft light there would be many variations of gray colors as shown in the graphic below.



Soft light happens during the golden hour but it also happens anytime on an overcast day. Don't put your camera away just because the clouds roll in. This is often the best time to shoot.

What is hard light?

Hard light creates high contrast scenes. This means that shadows will be very dark and reflections of light will be very bright. Hard light happens during midday when the sun is shining down. With the sun directly overhead, people will have ugly dark shadows in their eye sockets and under their nose. One good thing about hard light is that it can make colors more vibrant. The sky will seem more blue and the leaves a deeper green. If you were taking black and white pictures under hard light there would be mainly whites and blacks as shown in the graphic below. There would not be much gray in the picture.



Soft Light



Hard Light



Time to practice

Try taking pictures of the same thing on a sunny day at noon and also during the golden hour before sunset. When you compare them you should immediately notice how much better your pictures are during the golden hour.

Do you take pictures at noon?

Many professional photographers refuse to take pictures on a sunny day at noon. This is because when the sun is shining directly down it creates hard light. Hard light is not very good for photos of people.

When you are just starting out in photography I would recommend that you do not shoot outdoors during midday to avoid a lot of frustration. One exception to this rule happens on cloudy days. If the sky is overcast then you can shoot all day long and get great photos.



"STONE WISHING WELL" BY DARRON BIRGENHEIER LICENSED UNDER CC BY -SA 2.0

Tips

When you are just starting out it will be frustrating taking pictures at noon on a sunny day. Here are a few things that will help:

1. Find some shade to shoot in (Shadows created by buildings are great for this).
2. If you don't have any shade, make it with an umbrella.
3. Get in close to your subjects.
4. Try to find backgrounds that are lit the same as your subject.

Review

1. The golden hour happens 1 hour after sunrise and 1 hour before sunset.
2. If you don't have to squint it's a great time for taking pictures of people.
3. Find soft light when taking pictures of people.
4. Avoid the harsh midday sun.
5. Stabilize your camera with a tripod when the light gets too dim.

Photo Assignment #5

Take a picture during the golden hour

Things to remember:

- The golden hour happens about 1 hour after sunrise and 1 hour before sunset
- Look for soft light
- Avoid the harsh midday sun
- Plan your photo below

Camera Settings:

Focus: Auto

Exposure: Auto

Flash: off

Plan your photo:

Subject: _____

Location: _____

Time of Day: _____

****Bonus Photo Assignment****

*Take a picture of the same object you used
in photo assignment #1*

Things to remember:

- Use all the knowledge and techniques you have learned from these first 5 lessons to take a better picture of the same object from photo assignment #1
- Get in close
- Hold your camera properly
- Try different angles
- Shoot outside during the golden hour
- Compare the two pictures to see how much you have improved
- Plan your photo below

Camera Settings:

Focus: Auto

Exposure: Auto

Flash: off

Plan your photo:

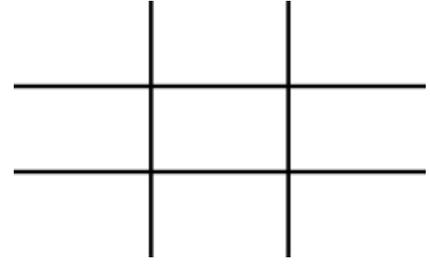
Subject: _____

Location: _____

Time of Day: _____

Lesson #6 – The Rule of Thirds

This lesson is about composition. This is a big word that means how you position things in your photos. You have probably played tic tac toe before. That little game is going to help you decide how to compose your pictures.



The Rule of Thirds

When looking through your camera imagine a tic tac toe grid. This grid divides your picture into thirds. Both the horizontal and vertical sections are split into three sections.

Take a look at the picture to the left. The horizon was not placed directly in the middle. Instead it was placed closer to the bottom of the picture.

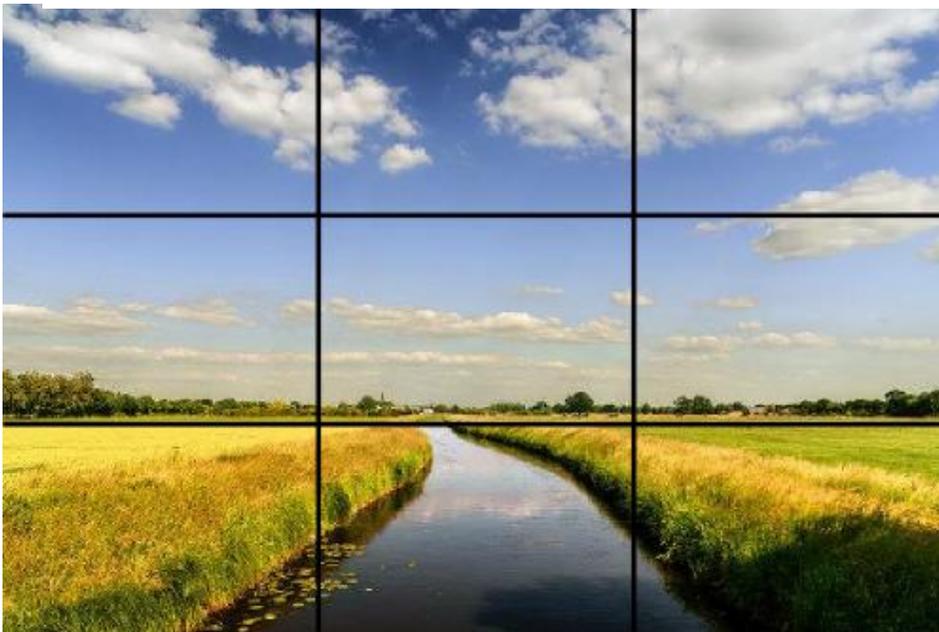
When we place the horizon in the middle it seems like the picture has been cut in half. This is usually not as appealing to our eyes.

Now when we put a tic tac toe grid over the picture you can easily see that the picture has been cut in thirds.

2/3 of the picture is sky and 1/3 is land. This makes the composition more interesting than simply putting the horizon right in the middle.



"RIVER LANDSCAPE (ISSEL)" BY UWE POTTHOFF LICENSED UNDER CC BY 2.0



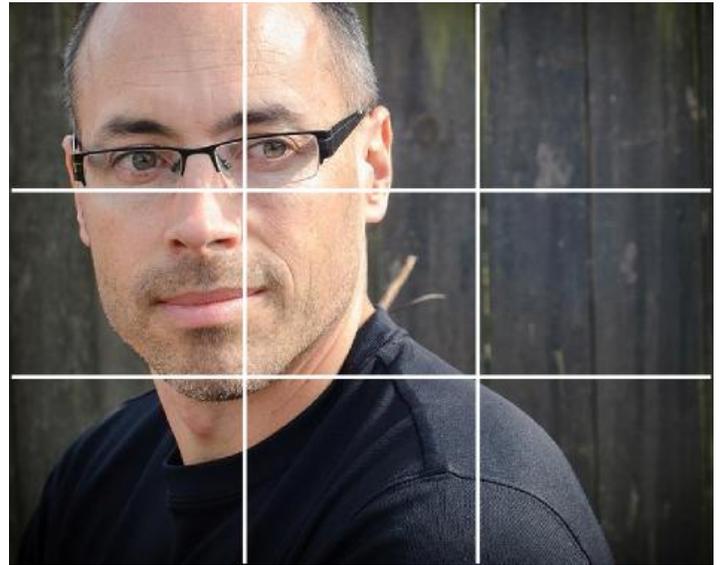
"RIVER LANDSCAPE (ISSEL)" BY UWE POTTHOFF LICENSED UNDER CC BY 2.0 – GRID ADDED

People

We can also use the rule of thirds when taking pictures of people. The idea is to make sure your main subject is not in the direct middle of your picture.



"SELF PORTRAIT" BY LOREN KERNS LICENSED UNDER CC BY 2.0



"SELF PORTRAIT" BY LOREN KERNS LICENSED UNDER CC BY 2.0 – GRID ADDED

Take a look at the pictures above. The man's head was placed on the upper left intersection. He is also looking back into the picture. We can try to imagine what he is staring at to the right.

Movement

How can a still picture show movement? Leave room in front of your subjects for them to move into.



"76 START RUNNERS" BY ELVERT BARNES LICENSED UNDER CC BY-SA 2.0



GRID ADDED

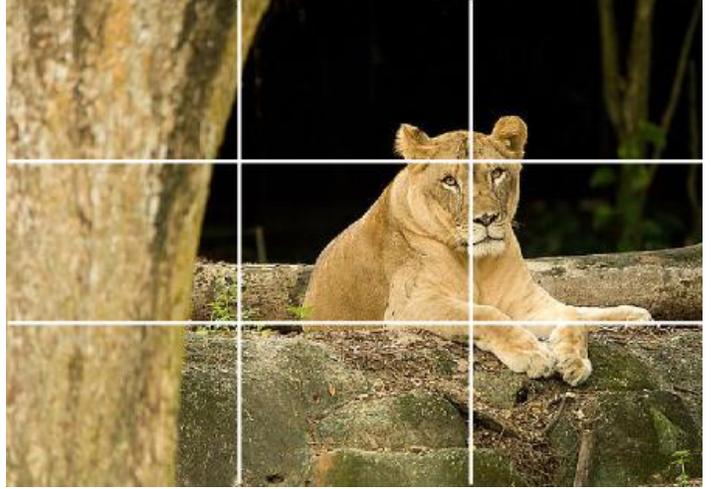
The runner in green is the main subject above. The photographer left plenty of room in front of her. We can imagine her running across the picture. Do the same thing for still subjects. Leave room in the direction they are pointing.

You may also notice that her head is not exactly on a thirds intersection. This is OK. The rule of thirds is not absolute. It is merely a guideline to help you make more interesting pictures.

More Examples

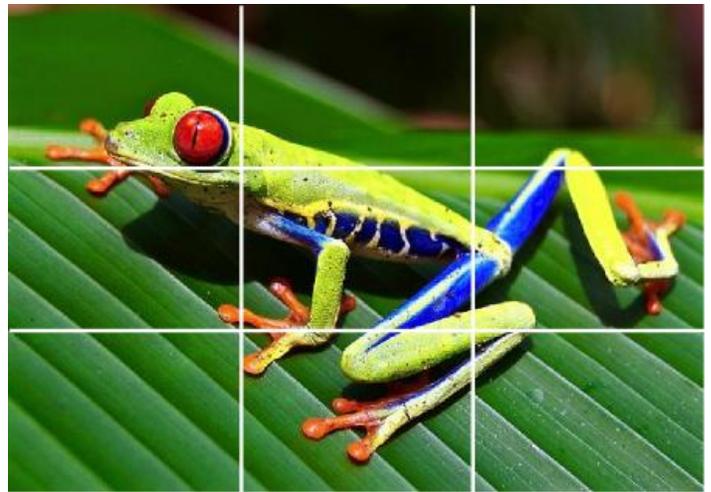


"HELLO, HUMAN" BY CHI KING LICENSED UNDER CC BY 2.0



GRID ADDED

When taking pictures of people or animals; try making their eyes the most important part. Place their eyes near an intersection of the tic tac toe grid.



Photography rules are made to be broken. You don't have to use the rule of thirds all the time. But you need to know the rules before you can break them.

Review

1. Try not to place your subject directly in the middle of your picture.
2. Imagine a tic tac toe grid as you are setting up a shot.
3. Place your main subject on one of the intersections.
4. When taking landscape pictures place the horizon on either the upper or lower third line. Do not place the horizon directly in the middle.

Photo Assignment #6

Take a picture using the Rule of Thirds

Things to remember:

- Imagine a tic tac toe grid when you are looking through the viewfinder
- Place your subject on one of the intersections
- When taking landscape photos place the horizon on the upper or lower third line. Do not place the horizon directly in the middle.
- Plan your photo below

Camera Settings:

Focus: Auto

Exposure: Auto

Flash: off

Plan your photo:

Subject: _____

Location: _____

Time of Day: _____

Lesson #7 – Intro to Exposure

Exposure refers to how much light reaches your camera sensor when you take a picture. It is a very important concept for all photographers to understand. This lesson is going to get a bit technical. You will probably have to read through it several times.

Underexposed



Do not worry if you don't completely understand exposure after this lesson. It has taken me years to fully grasp how the 3 parts work together.

Think back to a picture you took that looks too dark. You are noticing exposure.

When a picture is too dark we say it is underexposed. When a picture is too bright it is overexposed.

Your camera has a light meter inside that measures how much light is in a scene. Sometimes this light meter can be tricked. Taking a picture of a white bunny in the snow will trick your camera. The bunny and the snow will come out gray.

Correct Exposure

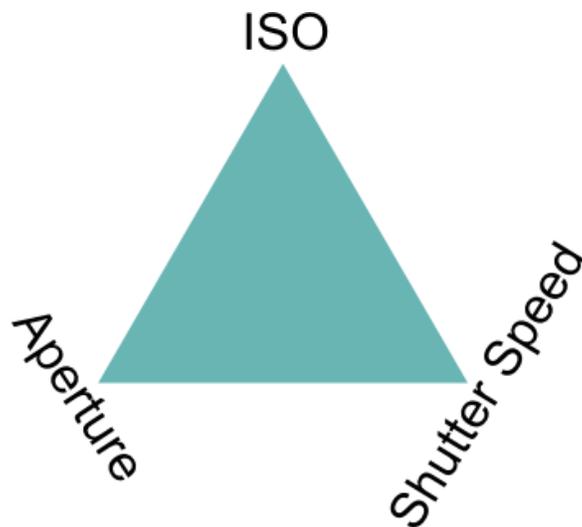


Today's cameras are very good at judging many situations but you still need to understand how to correct some odd situations or to use special techniques. Therefore you need to know the 3 parts of exposure.

The Exposure Triangle

There are 3 parts to exposure.

- Shutter Speed
- Aperture
- ISO



Overexposed



Shutter Speed

Think about a bucket that is under a water hose. Our goal is to fill the bucket up without going over the top. Will it take 1 minute or 5 minutes to fill the bucket? Shutter speed is similar to how long the water is left on.

If you leave the water on too long the bucket will overflow. If you turn off the water too soon the bucket will not fill up.

Your camera has a sensor that is similar to this bucket. Instead of collecting water it collects light. When you take a picture your camera opens the shutter for a short period of time. If it stays open too long the sensor will collect too much light. The picture will be too bright.

If the shutter does not stay open long enough the sensor will not collect enough light. The picture will be too dark.



Aperture

Think about the bucket again. This time you have your choice of three different hoses.

1. A very thin hose like a drinking straw
2. A regular garden hose
3. A fire hose

If you choose the tiny straw hose it will take a long time to fill the bucket. If you choose the fire hose it will only take a couple of seconds.

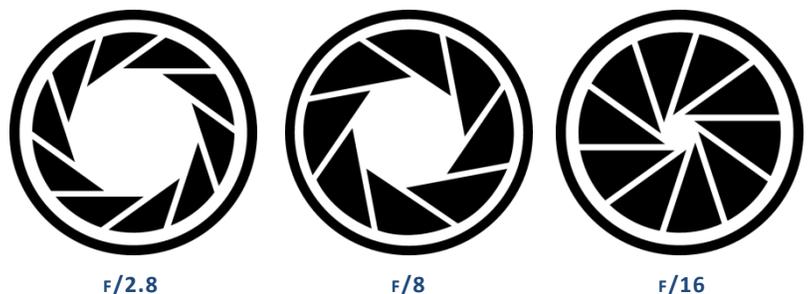
Your camera lens has an Aperture inside. Choosing different aperture settings is like choosing different

sizes of water hose. If you have a wide aperture it lets in lots of light. A tiny pinhole size aperture does not let in much light.

To the right is what the aperture in your camera lens looks like. Remember: A large opening lets in more light.

Large F numbers = small opening

Small F numbers = large opening



ISO

ISO is the third part of exposure. ISO uses numbers like 100, 200, 400, 800, 1600 and so on. These numbers represent how much amplification is done to the light signal. Low numbers mean less amplification. High numbers mean more amplification.

Going back to the bucket again... Let's imagine this time we have our choice of three different buckets. The first is thin and tall. The second is a regular size bucket. The third is short and wide.



Imagine if you were trying to fill up these buckets with a water hose from ten feet away. Which bucket would be the easiest to hit with the stream of water? The widest bucket would be the easiest to hit. If your camera is set to ISO 100 and your pictures are all too dark, turn it up to ISO 400 and try again.

Here's another way of thinking about ISO:

If you turn up ISO it's like turning up music. The music gets louder. Turn it up too much and the speakers start to crackle and pop. The sound quality suffers.

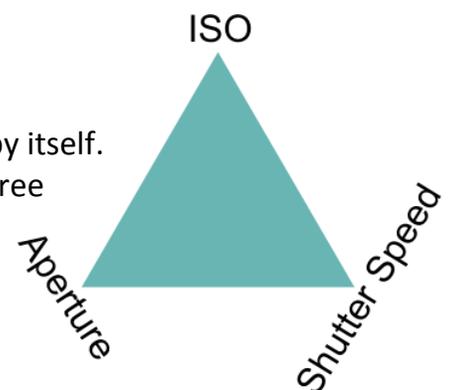
When you turn up ISO the light signal hitting your sensor is amplified. This allows you to shoot in lower light situations. But turn it up too much and the quality suffers just like with music.

The effect of a high ISO setting is called noise. Noise is the unpleasant random colored pixels throughout your picture.

Putting It All Together

Each of the three pieces of the exposure triangle may seem confusing by itself. To get correct exposure you have to find the right combination of all three settings.

Use the diagrams on the next page to memorize how camera settings affect the amount of light your camera sees.



Shutter Speed



1" 1/2 1/4 1/8 1/15 1/30 1/60 1/125 1/250 1/500 1/1000

Slow = More Light

Fast = Less Light



Aperture



F/2 F/2.8 F/4 F/5.6 F/8 F/11 F/16 F/22

Wide = More Light

Small = Less Light



ISO



100 200 400 800 1600 3200 6400 12800

Low = Less Light

High = More Light



Using Manual (M) Mode on your camera

Manual mode will allow you to set each part of the exposure triangle by yourself. Your camera will show a light meter diagram on the LCD screen like the one below. This is your road map when shooting in Manual (M) mode.

Your goal is to get the little guide above the zero. To do this you must adjust one of the three settings: shutter speed, aperture, or ISO. Use the diagrams above to put your guide on zero.

Guide (This will move)

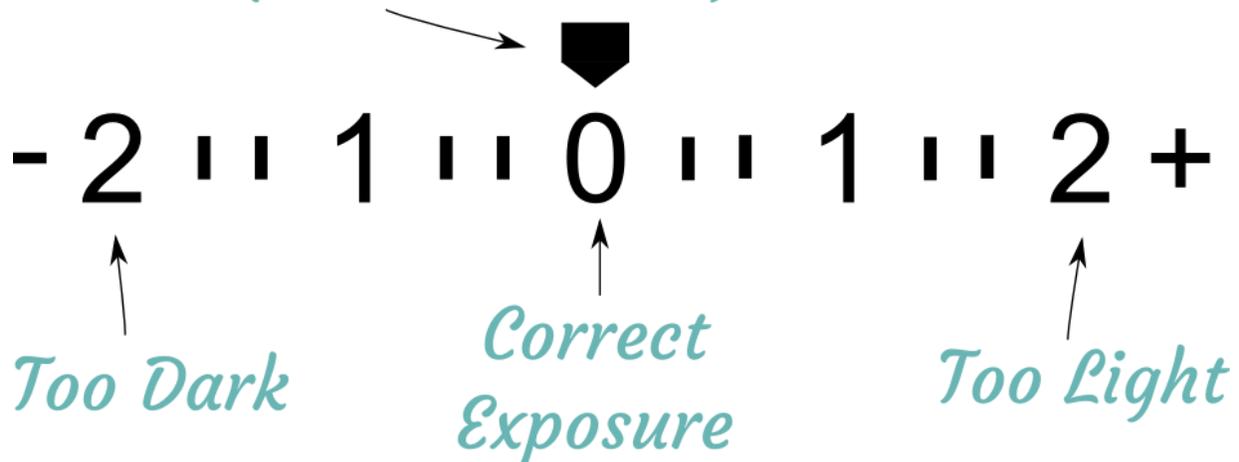


Photo Assignment #7

Use Manual (M) Mode to take a correctly exposed picture

Things to remember:

- Shutter speed: Higher number = less light
 - (This is not technically correct because shutter speeds are measured in fractions. But to simplify things think of 1/1000 as a higher number than 1/4.)
- Aperture: Higher number = less light
- ISO: Higher number = more light
- Your goal is to get the light meter guide above zero before taking the picture
- Plan your photo below

Camera Settings:

Focus: Auto

Exposure: Manual (M) mode

Flash: off

Plan your photo:

Subject: _____

Location: _____

Time of Day: _____

Lesson #8 – Silhouette

In this lesson we are going to see how your camera can be tricked into taking a silhouette picture. Sometimes tricking your camera can turn out to be a very good thing. A silhouette is when a person or thing is very dark in your picture. The background on the other hand should be bright.

Silhouettes create mystery and allow the viewer to use their imagination to complete the picture.



"SILHOUETTE" BY BEA REPRESA IS LICENSED UNDER CC BY 2.0

Step 1 – Find an Interesting Subject

You cannot use the subject's colors or textures to make the photo pleasing so you have to rely on its shape. Look for subjects that are recognizable by shape alone.

In the photo above you can tell that the main subject is a person jumping. You may also recognize the buildings in the background. Turn to the next page to find out where these buildings are located.

If you guessed the British Houses of Parliament and The Clock Tower that houses Big Ben in London you were right. Here is a picture during the day.

Pick one of these subjects for a silhouette photo:

- Family members
- Friends
- Toys
- Buildings
- Animals
- Your bicycle



"BIG BEN + HOUSES OF PARLIAMENT" BY ALEX FRANCE IS LICENSED UNDER CC BY SA 2.0



"SILHOUETTE" BY ASHLEY CAMPBELL IS LICENSED UNDER CC BY 2.0

If you are taking a silhouette of a person have them stand sideways to the camera. This way you will be able to see their eyelashes, nose, and lips. You can probably recognize your family members by looking at the profile of their face. If they are looking straight into the camera you will lose all the detail in their face.

Step 2 – Turn Off Your Flash

The flash will light up your subject which is not the effect we are looking for. Instead have your parents help you turn off the flash on your camera.

If your camera does not allow you to turn off the flash in Auto mode try switching to Program mode. This is the big "P" on your mode dial.

Step 3 - Put Your Subject in Front of a Bright Background

A sunset or sunrise is best for this. See how the flower to the right is placed right in front of the sunset.

You can also use window light as shown in the picture of the toy soldiers below. Find the brightest window in your house. Then create an action scene by setting up some toys on the window sill.

Step 4 – Trick Your Camera

We must make the camera think that the background is the most important part of this picture.

Use Auto Mode

Your camera takes a meter reading of the light when you press the shutter halfway down. Therefore you can point your camera at the brightest part of the picture and press the shutter halfway down and hold it.

While still holding the shutter halfway down move your camera back to frame your subject where you want it. Finally, press the shutter button all the way down to take the picture.

Some cameras have an AEL button on the back. This stands for Auto Exposure Lock. Instead of pressing the shutter halfway down you can hold down the AEL button instead.



"SHORELINE SILHOUETTE" BY CHAD COOPER IS LICENSED UNDER CC BY 2.0



"TOY SOLDIERS" BY KYLE MAY IS LICENSED UNDER CC BY 2.0

Use Manual Mode

If you are having trouble tricking your camera you might have to switch to manual mode. Turn your mode dial to M. This means you are now in complete control of how light or dark your subject is. Start with these camera settings:

- **Exposure Mode:** Manual (M)
- **Aperture:** 8
- **Shutter Speed:** 250
- **ISO:** 100

Take the picture and then review it on the LCD screen.

- If your subject is not dark enough increase your shutter speed to 500 and try again.
- If your picture is too dark decrease the shutter speed to 125 and try again.

Keep experimenting with different shutter speeds until you get the picture just right.



"STAIRCASE SILHOUETTE" BY RANDY ROBERTSON IS LICENSED UNDER CC BY 2.0

Review

1. Find an interesting subject
2. Turn off your flash
3. Put your subject in front of a bright background
4. Trick your camera



"KAANAPALI SILHOUTTE" BY EDMUND GARMAN IS LICENSED UNDER CC BY 2.0

Photo Assignment #8

Take a silhouette picture

Things to remember:

- Find an interesting subject
- Turn off your flash
- Put your subject in front of a bright background
- Trick your camera
- Plan your photo below

Camera Settings:

Focus: Auto

Exposure: Auto or Manual Mode

Flash: off

If using Manual (M) mode start with these settings:

Aperture: 8

Shutter: 250

ISO: 100

Plan your photo:

Subject: _____

Location: _____

Time of Day: _____

Lesson #9 – Window Light Portrait

This lesson is all about picking the right light when taking pictures of people. When I first started taking pictures of people I had a hard time. All my pictures turned out terrible and I could not figure out why. The reason I took bad pictures was the light I was choosing.

I once positioned a group of people outside in the middle of the day with the sun shining right in their faces. This is the worst possible light for several reasons:

- People squint when the light is too bright.
- People’s eyes start watering if they are exposed to that type of light for too long.
- Dark shadows are formed under their eyes and nose.
- Skin tones are too bright and washed out



Instead I discovered something called the “Window Light Portrait”. Window light is typically more soft and pleasing almost any time of day. By switching to window light you will instantly see an improvement in your pictures.

Step 1 – Pick the right window

Typically a north or south facing window will be best because the sun will never be shining directly into it. You can usually shoot at any time of day when facing north or south.

East and west is a different story because during a sunrise or sunset the light will be coming directly through the window. Direct sunlight through a window will create the same problems I described above.

If you can’t find a compass don’t worry too much, just look for a window with nice soft light coming in. If the sunlight is too harsh use a partially see through white drape over the window. Don’t use a colored drape as that will change the color of the light.

Step 2 – Turn off all interior lights

This may sound strange because we are making it darker. But the reason you should turn off interior lights is because they have a different color than sunlight.

Normal incandescent lights give off orange colored light. If they are left on, your subject's skin color will look wrong.

Compare the two pictures to the right. Do you see how her skin looks orange when the lights are left on?

Lights On



Lights Off



Step 3 – Turn off your flash

In this lesson we are specifically trying to capture the light coming in a window. Therefore turn off your flash. Your flash will overpower the window light and we won't get the effect we're going for.

If you cannot turn off the flash in "Auto" mode switch to "Program (P)" mode.

Compare the two pictures to the right. You might be thinking the one with flash looks better because it shows more of her face.

Unfortunately it flattens out her facial features and is just kind of boring.

I enjoy the picture without flash because it seems more interesting and mysterious.

Flash On



Flash Off



Step 4 – Position your subject

This is the most important step. Start by asking your subject to stand sideways to the window. This will throw light on half of their face.

Now have them turn their head slightly toward the window. This will light their face more evenly. Use your camera in auto mode and experiment with this setup.

Either of these positions is okay. It all depends on the look and effect you are going for.

Sideways



Head tilted toward window



Step 5 – Use a reflector (Optional)

As you can see in most of the pictures above the girl's face is partially in shadow. Place a reflector on the dark side to add some light.

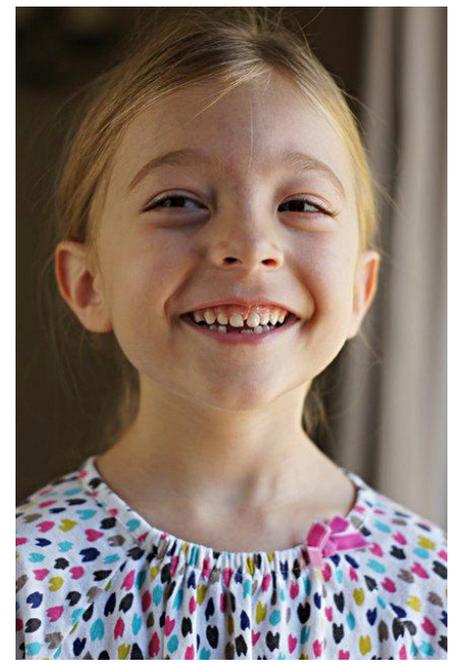


You can purchase reflectors like the one in the picture above on [amazon.com](https://www.amazon.com) for \$10 to \$15. Or you can use a white foam core board from Walmart.

No Reflector



With Reflector



Remember: Place your subject between the window and the reflector.

Photo Assignment #9

Take a portrait using window light

Things to remember:

- Pick the right window
- Turn off all interior lights
- Turn off your flash
- Position your subject
- Use a reflector (Optional)
- Plan your photo below

Camera Settings:

Focus: Auto

Exposure: Auto

Flash: off

Plan your photo:

Subject: _____

Location: _____

Time of Day: _____

Lesson #10 – Bokeh

What is Bokeh?

Bokeh is the beautiful blur in a picture. It can be used to get rid of a distracting background or just to add some interesting light shapes. In the picture to the right a cluttered background was blurred out so that we can focus on the main subject.

The circles of light in the photo of the man below can also be described as bokeh. I have removed the bokeh in the picture to the right. Which version do you like better?



“FACES AT THE POW WOW” BY TONY ALTER CC BY 2.0



“THE REAL SPANK” BY DENISDENIS CC BY 2.0



“THE REAL SPANK” BY DENISDENIS CC BY 2.0 BACKGROUND REMOVED

Step 1 - Use the right lens

To easily blur out a background you need to use a lens with a low aperture number. Look for a lens with f/2.8 or lower. Don't worry if you only have one lens to choose from. You can still create bokeh in your pictures. Many photographers will use a prime lens with a very low aperture number such as f/1.8 or even f/1.4.

A “prime” lens is a lens that does not zoom. It is fixed at one focal length. A popular prime lens is a 50mm that goes to a very wide aperture of f/1.7 or f/1.8. You can typically find these lenses for less than \$150 for most DSLR cameras.

Step 2 - Use the lowest aperture number available on your lens

Set your camera to Aperture Priority (A) mode. This allows you to set the aperture while the camera sets the shutter speed for you. Set your aperture to the lowest number available. Hopefully your lens can go to f/2.8 or even lower.

If your lens can only go down to f/4 or f/5.6 then step 3 and 4 become way more important.



"BUHO" BY JUANEDC.COM CC BY 2.0



f/2.8

Remember a low aperture number means the hole that lets in light is very wide. A large aperture number means the hole is small.

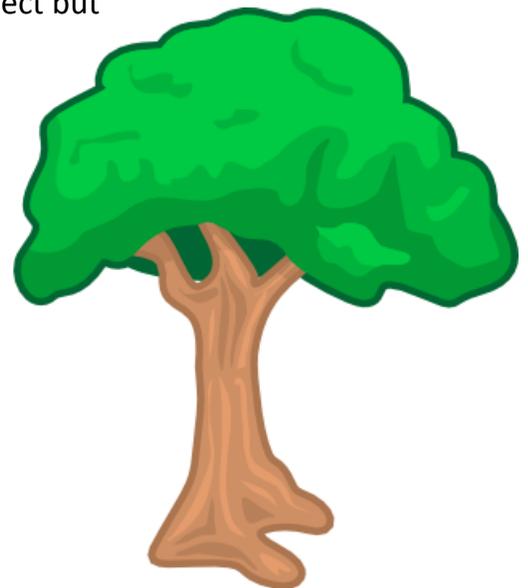


f/16

Step 3 – Place your subject far away from the background

Step 4 – Get close to your subject

Notice in the diagram below that the camera is close to the subject but the background is far away. This will help you achieve a nice bokeh.



Additional tip:

If you have done everything above and are still having trouble blurring out the background, try using a longer lens. Switch to a 200mm or even 300mm lens. If your camera has a zoom function, zoom all the way in.

A longer lens will help you achieve bokeh.



"PAULINKA" BY PIOTR P CC BY 2.0

Review:

- Use the right lens (Pick one with the lowest aperture number)
- Set your camera to the lowest aperture number available on your lens
- Place your subject far away from the background
- Get close to your subject
- Use a longer lens or zoom in if you are having trouble

Photo Assignment #10

Take a picture with bokeh

Things to remember:

- Use the right lens
- Use the lowest aperture number available on your lens
- Place your subject far away from the background
- Get close to your subject
- Plan your photo below

Camera Settings:

Focus: Auto

Exposure: Aperture Priority (A)

Aperture: Use the lowest setting on your lens. f/2.8 or lower is the best.

Flash: off

Plan your photo:

Subject: _____

Location: _____

Time of Day: _____

Lesson #11 – Food

This lesson is going to put together a lot of the skills you have already learned. In previous lessons we talked about window light, using a reflector, shooting from different angles, bokeh, getting in close, and exposure. Review those earlier lessons if you need a refresher.

In addition to the skills mentioned above you are going to use all your creativity in this lesson. Your goal is to arrange a plate of food in a way that makes someone really hungry.

Step 1 - Setting Up

Food often looks its best right before it's ready to eat. You want to capture that moment when the food comes out of the oven or off the grill. Therefore you will need to do some preparation beforehand.

Start by gathering up some props. Find the plate you want to use. Many times a simple white plate is best because it will not distract from the food. If you are shooting a plate of barbecue chicken add a red and white checked napkin. If your food is already very colorful keep the layout simple. Just use a white plate.

Forks, spoons, cups, and saucers can add some extra interest to a photo. Just don't go overboard. Props are there to support the main dish not to overwhelm it.

Step 2 – Check your camera settings

Arrange your empty plate and other props near a window. Use your knowledge of window light portraits (Lesson #9) to pick the best spot for this. Then turn out all the interior lights. This will ensure that your food does not look orange from the incandescent lights in your home.



"WALL_FOOD_10492" BY MICHAEL STERN – CC BY-SA 2.0



"WALL_FOOD_10438" BY MICHAEL STERN – CC BY-SA 2.0



"WALL_FOOD_10294" BY MICHAEL STERN – CC BY-SA 2.0

Start with the camera settings to the right and take a photo of your arrangement. If the photo looks too dark or blurry, lower your aperture setting down to f/5.6 and try again. Take several pictures until you get the camera set just right. When the food is ready, substitute in the full plate and take your shots.

Step 3 – Use a reflector (Optional)

Use a reflector to lighten up the dark side of the food. You can purchase reflector's on amazon.com for \$10 to \$15 or just pick up a white foam core board at Wal-Mart.

Position the food between the window and the reflector. This will help to lighten up the darker side of the food.

Step 4 – Bokeh (Optional)



"WALL_FOOD_10010" BY MICHAEL STERN – CC BY-SA 2.0

We learned how to use bokeh in lesson #10. Bokeh happens when only a small part of your food is in focus. To achieve this effect start with the camera settings to the right. If the photo turns out too dark, raise the ISO to 400 or 800 and try again.

Remember: You need a small aperture number to achieve bokeh.

- Smaller "f" numbers give you wider apertures.
- Wider apertures give you a shorter depth of field.
- A short depth of field means less of the picture will be in focus.

Camera Settings:

Focus: Auto

Exposure Mode: Aperture Priority (A)

Aperture: f/8

ISO: 400

Flash: off

Camera Settings:

Focus: Auto

Exposure Mode: Aperture Priority (A)

Aperture: f/2.8 or the lowest aperture you have available

ISO: 200

Flash: off

Additional tips for great food shots



"GRILLED CHEESE SANDWICH" BY MIKE - CC BY-SA 2.0

Add garnish. This sandwich would look a little bland by itself. But the addition of the green garnish makes this picture stand out.

Use less food than you normally would. Take a tip from a high class restaurant. Sometimes a meal looks more appetizing when there is less on the plate.



"THE SPILL" BY KRISTINA ALEXANDERSON - CC BY 2.0

Brush on a little vegetable oil to make the food look moist and ready to eat. This trick can also be used to revive food that has been sitting a little too long.



"STRAWBERRY LUNCH" BY DANIELLE ELDER - CC BY 2.0

Show the first bite. Don't you really want a strawberry right now!



"FLOATING ISLAND CAPRESE SALAD" BY MIKE - CC BY-ND 2.0

Food can be messy. Be genuine and show your food spilling over the plate.



"BRUSHING OLIVE OIL ON CORN" BY JOHN CC BY-SA 2.0

Photo Assignment #11

Arrange a plate of food and take a picture of it

Things to remember:

- Arrange your props before the food is ready
- Set up your camera before the food is ready
- Use a reflector (Optional – but it really helps)
- Use Bokeh (Optional)
- Plan your photo below

Camera Settings:

Focus: Auto

Exposure Mode: Aperture Priority (A)

Aperture: f/8

ISO: 400

Flash: off

Plan your photo:

Subject: _____

Location: _____

Time of Day: _____

Lesson #12 – Sunsets

Sunsets are one of my favorite subjects. They can create an amazing array of colors from red to orange to purple to pink to blue. It may seem easy at first to take a sunset picture but I will share several tips in this lesson to make your sunset shots amazing.

Tip 1 – Put an interesting object in the foreground.

This is the most important tip in this lesson! When you look at a sunset you are probably paying attention to the sun and the colors of the sky. But if this is your main focus your pictures might be boring.

Instead you need to think about what is in the front of your picture. This is called the foreground.

Trees, piers, people, and even pieces of driftwood can make excellent foreground elements. Use rivers, lakes, and oceans to show the beautiful colors of the sky also reflected below.

The picture above has a tree and some buildings in the foreground but none of the shapes are very interesting. This picture could be improved by putting more emphasis on the tree by itself.

In the next picture the photographer focused only on one tree. The shape of the tree stands out. Which picture do you like better?

Remember: Always think about the foreground first!

Boring Foreground



"SUNSET OASIS" BY MICHAEL GIL CC BY 2.0

Interesting Foreground



"SUNSET AND TREE II" BY TAMBAKO THE JAGUAR CC BY-ND 2.0

Tip 2- Use Silhouettes

Silhouettes happen when an object or a person is lit from behind. We can tell that the objects in the picture to the right are electric poles because of their shape.

If you need a refresher on silhouettes look back at lesson #8.

Tip 3 – Partly cloudy days are the best

The best sunsets happen when there are a few clouds in the sky. If the sky is completely overcast you won't see much color. On the other hand if the sky is completely clear your pictures might seem lifeless and dull.

Sometimes stormy days end with an amazing burst of color. The clouds often thin out a little just before sunset to allow the sun to peek through. Remember to be careful if you are outdoors on a stormy day.

Tip 4 – Make sure the horizon is level

The horizon is where the sky meets the land, or in this case where the sky meets the water. Make sure your horizons are always level.

Compare the two pictures to the right. You might have to cover one with your hand to really see the difference.

The Rule of Thirds tells us to compose the picture so that about 1/3 of it is land and 2/3 is sky or vice versa. Try to avoid putting the horizon right in the middle.

Lesson #6 covered the Rule of Thirds.



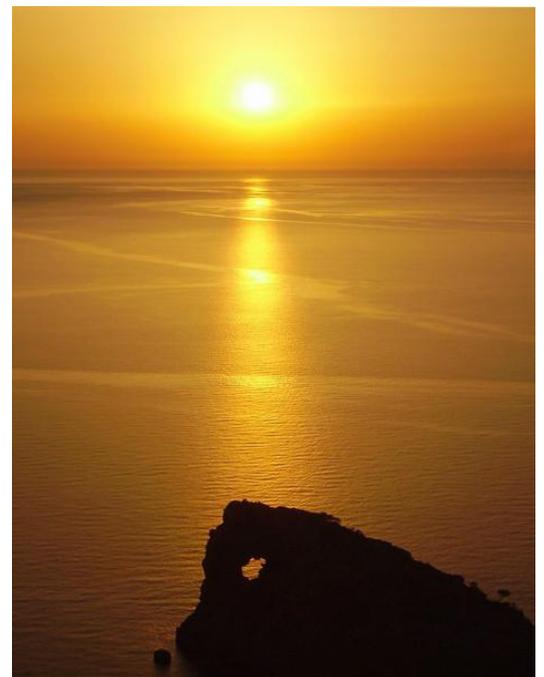
"SUNSET" BY SUSANNE NILSSON CC BY-SA 2.0

Not Level



ANGLE ADJUSTED

Level



"SUNSET" BY TOBIAS VAN DER ELST CC BY-SA 2.0

Tip 5 – Camera set up



Start in shutter priority mode. This will be the S on your mode dial. Shutter priority allows you to select the shutter speed while the camera selects the aperture.

Change your ISO setting to 200.

Sunsets only last about a half hour so you will need to arrive early at your location. Start with a fast shutter speed and gradually step down as the light fades. For example you could start with 1/500 then 1/250 then 1/125 then 1/60 and so on.

You will need a tripod below 1/60 because you won't be able to hold the camera steady. Camera movement will cause your pictures to be blurry. A small beanbag also makes a great support if you don't have a tripod.



When using a tripod don't press the shutter button with your finger. Instead use your automatic shutter timer to take the picture.

Even the small movement of pressing the shutter down can cause blur when you are shooting at slow shutter speeds.

Review

- Put an interesting object in the foreground
- Use silhouettes
- Partly cloudy days are the best
- Make sure the horizon is level



"BREAKING – CRONULLA SUNSET" BY LUKE PETERSON CC BY 2.0



"SUNSET" BY THANGARAJ KUMARAVEL CC BY 2.0

Photo Assignment #12

Take a picture of a sunset

Things to remember:

- Put an interesting object in the foreground
- Use silhouettes
- Partly cloudy days are the best
- Make sure the horizon is level
- Bring a tripod
- Plan your photo below

Camera Settings:

Focus: Auto

Exposure: Shutter Priority (S)

Shutter: Start with 1/500 then gradually step down as the light fades.

ISO: 200

Flash: off

Plan your photo:

Subject: _____

Location: _____

Time of Day: _____

Lesson #13 – Landscape

Landscape photos are the starting point for a lot of beginners. They seem easier because the subject does not move or get impatient like a person does. But you will learn in this lesson that light and weather changes how the scene looks. Sometimes it takes a great deal of planning to get a beautiful landscape shot.

Feelings

Landscapes can stir up certain feelings as we view them. Take a look at the picture to the right and think about how it makes you feel before reading any further.

I'm not sure why but this photo is comforting to me. I feel like I'm inside a warm farm house taking this picture while sipping a cup of hot chocolate. Did you feel the same way or did you think about a cold harsh winter?

There is no right answer here, just remember that landscapes can create feelings in your viewers. When setting up a shot you should think about the feeling that you want to convey. Then scout for a viewpoint or angle that best creates that feeling.

Think about your foreground first

When setting up a landscape shot we are typically thinking about the big picture. Just remember to place an interesting object in the foreground first.

This could be buildings, trees, water, flowers, people or even interesting shapes.

The picture to the right would be rather boring without the bridge in the foreground.



Find a focal point

Sometimes there are no foreground elements available. In that case you need to find another focal point.

The picture to the right does not really have a clear foreground element but it is still beautiful. I believe the focal point is the light shining on the hills which brings out the vibrant blues, greens, and yellows in the land.



The Rule of Thirds

You either need an interesting foreground or sky. Your shots can be dull without one of these. If the sky is clear place the horizon in the upper third of the picture. If the sky is full of dramatic cloud formations place the horizon in the lower third of the picture. And as always, make sure the horizon is level.

Horizon in upper third



Horizon in lower third



Break the rules

You may notice the horizon in the picture to the right is in the middle. Yes, this does break the rule of thirds but it clearly works well here.

The focal point is the contrast between the vibrant blue and green colors.

Take a moment and just stare at this picture. How does it make you feel?



"BLISS (VELES-LANDSCAPE)" BY MARJAN LAZAREVSKI CC BY-ND 2.0

Check the weather

Don't think you have to wait for a sunny day with perfectly clear skies to take landscape shots. In fact the opposite is true.

Just like with sunset pictures we want to see some clouds in the sky. Strange and dramatic cloud formations usually pop up right before or after a storm.

Remember to always stay safe in whatever weather you choose to shoot in.



Shoot during the Golden Hours

The golden hour happens twice a day. It starts right after sunrise in the morning and right before sunset in the evening.

When the sun is low in the sky it has a lot of atmosphere to go through. This warms up the color tones of a scene.

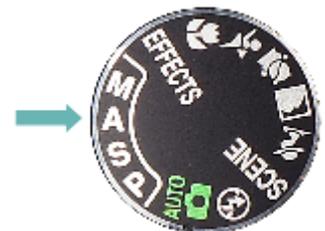
Your pictures will improve instantly when shooting during the golden hours.



Maximize your depth of field

Depth of field is a term that means how much of your picture is in focus. It is controlled by:

- Your aperture setting
 - Small aperture numbers give a small depth of field
 - Large aperture numbers give a large depth of field
- The distance to your subject
 - Small distances create a small depth of field
 - Large distances create a large depth of field



APERTURE PRIORITY (A) MODE

In landscape photography we typically want a large depth of field. Most of our picture should be in very sharp focus. Use Aperture Priority (A) mode to select an aperture of f/11 or higher.

Large aperture numbers will cause your shutter speed to be slow. Use a tripod at shutter speeds below 1/60 of a second so that your pictures are not blurry.

Photo Assignment #13

Take a landscape picture

Things to remember:

- How does the scene make you feel
- Find a great foreground element or focal point
- Use the rule of thirds
- Check the weather
- Shoot during the golden hours
- Maximize your depth of field
- Plan your photo below

Camera Settings:

Focus: Auto or Manual

Exposure: Aperture Priority (A)

Aperture: f/11

ISO: 100

Flash: off

Use a tripod

Plan your photo:

Subject: _____

Location: _____

Time of Day: _____

Lesson #14 – Stop Action

Freezing a moment in time is a very cool effect that only photography can achieve. This lesson is a bit more technical than the others. You will be required to make some manual camera settings. You will also need to plan your shot very carefully.

Step 1 – Pick the right spot to set up

Let's pretend that we are going to a motorcycle race.

We need to find just the right spot to set up. Maybe we could look for a place where the riders are jumping over a hill. Or we could find a curve where the riders will be leaning way over.



"WET DOG" BY BOB HAARMANS CC BY 2.0

Viewers will see movement in our pictures when we show something that cannot be achieved by standing still.

Step 2 – Use Shutter Priority (S) Mode

Your camera's shutter can be thought of like a curtain. When you open a curtain light comes flooding in. But when a curtain is closed the room is dark.

We typically only open a camera shutter for a fraction of a second. This is how we are able to stop motion.



"BOTH WHEELS LEFT THE GROUND" BY FLATTRACKERS AND CAFERACERS CC BY-SA 2.0

Set your camera to Shutter Priority (S) Mode. In this mode you will select the shutter speed while the camera selects the correct aperture.

If you select 1 second the shutter will stay open for 1 whole second. You will probably see some motion blur.

The picture to the right was taken at $\frac{1}{4}$ of a second. We can see the motion blur of three people walking by. We also see a lady in the background that was standing still for that quarter of a second.

We will be using much faster shutter speeds to freeze motion. A good starting point to stop the motion of most sports is $\frac{1}{1000}$ of a second.



"MOTION(LESS)" BY CARSTEN FRENZI CC BY 2.0

<i>Shutter Speed</i>	<i>Freeze these objects in motion</i>
1/4000 second	Hummingbird wings
1/2000 second	Birds in flight
1/1000 second	Fast cars, motorcycles
1/500 second	Bicyclists, runners
1/250 second	People walking, children playing, or slow animals
1/125 second	Moving objects will start to blur at this speed

Clearing up the shutter speed confusion

Most cameras do not show a shutter speed as a fraction. To save room on their screen they show $\frac{1}{500}$ of a second as 500. Don't confuse this for 500 seconds. When you get all the way down to 1 second the camera will show two apostrophes behind the number like this **1''**.

Remember: Your camera shows fractions of seconds as 250, 500, or 1000 while whole seconds are shown as 1'', 15'', or 30''.

Step 3 – Use Manual Focus



"LAMPLIGHT EQUESTRIAN CENTER" BY BOB HAARMANS CC BY 2.0

This step is going to require some practice and skill. Set your camera to manual focus. You will now have to turn a ring on the lens to focus. On most lenses you will turn the ring that is farthest from your face.

Focus on the spot that your subject will appear in. In the picture to the right you could focus on the wooden gate. Then you would snap the shutter button a fraction of a second before the horse jumps into position.

Remember to leave room in front of the subject so that viewers can imagine the subject is moving forward.

Step 4 – Adjust ISO to get a larger depth of field

An aperture of f/8 or above will give you enough depth of field to properly focus on a moving object. If your depth of field is too shallow it will be very difficult to focus.

After you have taken a picture check the LCD screen to find out what aperture your camera chose. If it is less than f/8 you will need to adjust it. Since you are shooting in Shutter Priority (S) mode you cannot directly adjust the aperture. Adjust the ISO instead.

Increase your aperture number by turning up your ISO. For example if your ISO is set to 200, change it to 400 or 800.

Review

1. Pick the right spot to set up
2. Use Shutter Priority (S) Mode
3. Use Manual Focus
4. Adjust ISO to get a larger depth of field



"WHEATON COLLEGE BASEBALL" BY BOB HAARMANS CC BY 2.0



"TIRED OF CARS?" BY ROLF KAEVYEA CC BY 2.0

Photo Assignment #14

Freeze a moving object with your camera

Things to remember:

- Pick the right spot to set up
- Use Shutter Priority (S) Mode
- Use manual focus
- Adjust ISO to get a larger depth of field
- Plan your photo below

Camera Settings:

Focus: Manual

Exposure: Shutter Priority (S)

Shutter: Start with 1/1000

ISO: 400

Flash: off

Plan your photo:

Subject: _____

Location: _____

Time of Day: _____

Lesson #15 – Panning

In the previous lesson we tried to stop motion. Now we will capture motion blur to convey a sense of movement. This is done by using a slow shutter speed and moving your camera along with the subject. The goal is to show movement by having a relatively sharp subject with a blurry background.

Moving your camera along with the subject is called panning. This will take some patience and a lot of practice. You are going to have many bad shots in this lesson but just keep trying until you get a keeper.

Subject is not sharp



"FAILED PANNING SHOT" BY FIONA CULLINAN CC BY-SA 2.0

Subject is sharp



"CHENNAI MARATHON" BY SIMPLY CVR CC BY-ND 2.0

What is a good panning picture?

Look at the pictures above. The picture to the left is all blurry. If nothing at all is sharp in the picture it may not be worth saving. The runner in the picture to the right is mostly in focus.

When people look at a picture with motion they will be annoyed if the whole thing is a blur. They need at least one small part of the picture to be in focus. This small part will hold their attention. It will catch their eye and give them an anchor to look at in the picture.

Step 1 – Find a willing subject

Find a friend who is willing to do a little running or bike riding for you. Ask them to move past you about 20 times.



"FIRST PAN SHOT" BY GREG KNAPP CC BY 2.0

Step 2 – Set a slow shutter speed

Set your camera to Shutter Priority (S) mode. Start with a shutter speed of 1/60 of a second. This will be shown as 60 on your camera.

The best shutter speed will be determined by several things:

- *Speed of subject*
 - Increase shutter speed for fast subjects
 - Decrease shutter speed for slow subjects
- *Distance to subject*
 - Increase shutter speed for close subjects
 - Decrease shutter speed for far away subjects
- *Focal length of your lens*
 - Increase shutter speed for long lenses (200mm)
 - Decrease shutter speed for short lenses (50mm)



“PANNING” BY VIJAY SONAR CC BY 2.0



“BLOOD SWEAT & GEARS BIKE RACE” BY JAMIE WILLIAMS CC BY-ND 2.0

Step 3 – Pre-focus

Set your camera to **manual** focus. Have your friend stand still at the exact place where you want to take the picture.

Focus on your friend while they are standing still. Once your camera is focused do not move your feet. Pretend they are glued to the ground.

Step 4 – Panning

As your friend moves past you have the camera up to your eye. Keep your feet still while rotating your torso. Try to keep your friend in the camera viewfinder at all times. Snap the photo when they reach the spot where you focused.

Remember to follow through just like a golf swing when you are panning. Keep moving even after you have taken the shot.

If you are having trouble...

<i>Problems</i>	<i>Solutions</i>
Subject is not sharp	Raise your shutter speed up to 1/125 of a second or move farther away from your subject.
There is no blur in the picture	Lower your shutter speed to 1/30 of a second or move in closer to your subject.
The blur is moving up and down	This is caused by camera shake. Practice panning smoothly without up and down movement. You can also put your camera on a tripod that has a rotating head.
If manual focus is causing you trouble	Raise your ISO. This will allow your camera to choose a higher aperture number which will give you a larger depth of field. If you have a camera that focuses very fast you can turn on "Continuous Autofocus". Remember to press the shutter halfway as you are panning.
The camera does not take the picture for about 1 second after you have pressed the shutter	This is called shutter lag. Older and less expensive cameras have this problem. Make sure you are in manual focus mode. Also, try switching to Manual (M) exposure mode. Check the aperture and shutter speed settings your camera is using and make the same settings when you switch to Manual mode. Practice pressing the shutter a half second before your subject is in place.

Remember: Two or three sharp elements will make your photo stand out. If nothing is sharp the picture will be hard to look at.

Panning pictures can be very difficult to get right. Just keep practicing and you will be rewarded with an amazing shot!



"MOTORBIKE – PANNING!!!" BY NATESH RAMASAMY CC BY 2.0

Photo Assignment #15

Take a picture using the panning technique

Things to remember:

- Find a willing subject
- Set a slow shutter speed
- Pre-focus
- Pan and shoot
- Plan your photo below

Camera Settings:

Focus: Manual

Exposure: Shutter Priority (S)

Shutter Speed: Start with 1/60

ISO: 200

Flash: off

Plan your photo:

Subject: _____

Location: _____

Time of Day: _____

Lesson #16 – Milky Water

This is one of my favorite photography techniques. The blurred water in the picture below contrasts against the sharp rocks. This gives a serene quality to an otherwise harsh scene. Places with a lot of water movement really stand out using this technique.

Shutter Speed: 30 seconds

The basic idea behind getting milky water is to use a slow shutter speed to capture the motion as a blur.

Step 1 – Use a tripod

A tripod is a must for this type of photo. You will be shooting at shutter speeds too slow for hand holding.

If you are planning to go much further with photography you will definitely need a tripod so go ahead and buy one now. You can start out with a \$30 tripod from Wal-Mart. This is what I used for



"ROCKS" BY THOMAS LETH-OLSEN CC BY 2.0

several years. It will not be the most sturdy or longest lasting tripod but it will get the job done.

If you want to start out with a higher quality tripod I recommend the Oben AC-1321 with BA-106A Ball Head. You can find this tripod on www.bhphotovideo.com for \$100.



"WF FANCIER 535 CARBON FIBER TRIPOD" BY F 5.6 CC BY-SA 2.0

Step 2 – Set a slow shutter speed

Set your camera to Shutter Priority (S) mode. Start with a shutter speed of 1 second. This will be shown on your camera as 1".

One second will be slow enough to blur most water. Set your ISO to 100 or the lowest setting available.

Look at the two pictures on the next page to see the difference between a fast shutter speed and a slow shutter speed.

Fast Shutter Speed: 1/50 of a second



Slow Shutter Speed: 2.5 seconds



Step 3 - Use a cable release or the self timer

At slow shutter speeds even the smallest movement will cause camera blur. Therefore you need to use a cable release or the camera's self timer to take the picture. If you try to press the shutter button with your finger your whole picture will be blurry.

Advanced Tip: Activate "Mirror Lockup" if your camera has it. The slap of the mirror can cause blur and mirror lockup will ensure this does not happen.

Step 4 – Use a Neutral Density Filter (Optional)

So far we have not discussed filters. Filters are pieces of glass or plastic you put on the front of your lens to affect the picture in some way.

A neutral density filter allows less light to enter your camera. It is called neutral because it does not change the color of your picture.

On bright days you may not be able to get your shutter speed low enough to blur water. If this is the case use a neutral density filter to reduce the light that enters your camera. I recommend Cokin filter systems.

Shutter Speed: 13 seconds



"PILLARS" BY THOMAS LETH-OLSEN CC BY 2.0

If you are having trouble...

<i>Problems</i>	<i>Solutions</i>
Water is not blurry	Lower your shutter speed. Your camera may not allow you to go low enough on a bright day. Either use a Neutral Density filter or wait until after sunset to take the picture.
Entire picture is blurry	Make sure the camera is on a sturdy tripod. Do not try to hand hold it. Use a cable release or the self timer to trip the shutter. Use "Mirror lockup" if your camera has it.
Picture is way too bright	Either use a Neutral Density filter or wait until after sunset to take the picture.

Pro Tips

- Fast water = shorter shutter speed required to blur (Try $\frac{1}{4}$ of a second)
- Slow water = longer shutter speed required to blur (Try 1 or 2 seconds)
- For a calm sea you need a shutter speed of 20 seconds or more. Shooting at 20 seconds during the day will require a neutral density filter to reduce the light.

Review

- Use a tripod
- Set a slow shutter speed
- Use a cable release or the self timer
- Use a neutral density filter (optional)



Photo Assignment #16

Take a picture using the milky water technique

Things to remember:

- Use a tripod
- Set a slow shutter speed
- Use a cable release or the self timer
- Use a neutral density filter (optional)
- Plan your photo below

Camera Settings:

Focus: Auto

Exposure: Shutter Priority (S)

Shutter: 1 second

ISO: 100

Flash: off

Plan your photo:

Subject: _____

Location: _____

Time of Day: _____