

Before we start ...

- Our theme this month is using non-auto modes
- But why is this important?
 - Non-auto modes allow you to create the picture you want, rather than the picture the camera chooses

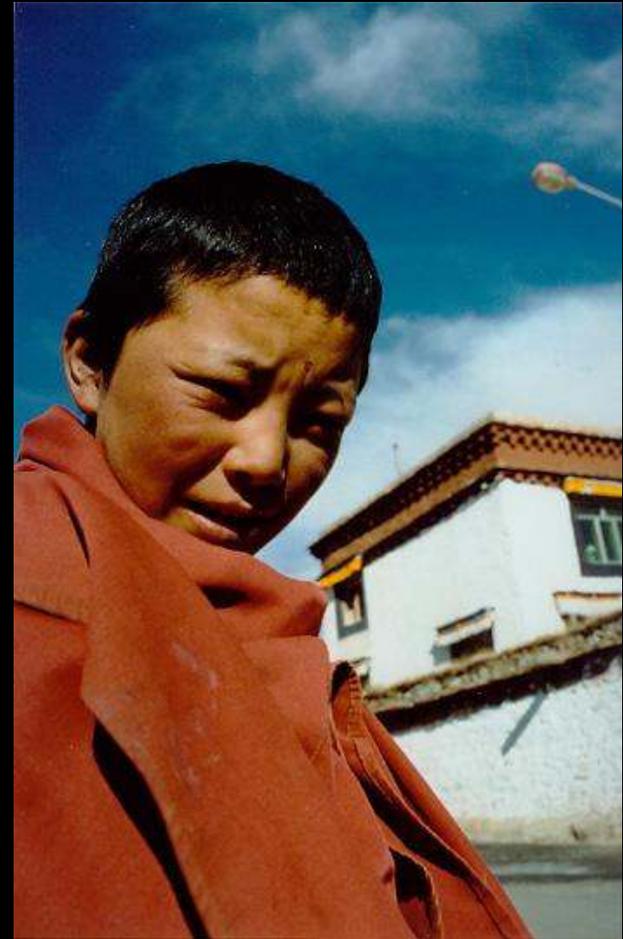
Shutter speed is important

- In auto mode, will your camera choose to freeze the water or smooth it out?



Aperture is important

- Will it choose the background to be in or out of focus?



ISO is important

- Will it allow a high enough ISO to capture the Milky Way?



Focus point is important

- Will it allow you to focus on just the deer and not the bushes in front?



Creative Control

- Will it allow you to take pictures like this?



Creative Control

- Or this?



Creative Control

- Or this?



Creative Choices

- Shutter speed, aperture, ISO and focus point are choices you can employ to create the picture you want to make.
- Auto mode might get these right some of the time, but if you take control, you can make the image you want all the time.
- Some kinds of images, though, need the right camera equipment ...

How to Choose the Right Camera

- In choosing a camera, you have to decide
 - How much weight you are willing to carry around
 - Camera
 - Lenses
 - Accessories (e.g., tripod)
 - How much setting of controls you are willing to do
 - Do you really want to “point and shoot” ?
 - Do you want to take creative control via A, S and M modes?
 - Do you want out of camera jpegs or are you willing to process RAW images?
 - Do you want to create prints? If so, how big?
 - Do you want to post directly to Facebook, Instagram, etc.?
 - How much are you willing to spend?
- You need to be honest in answering these questions or you will end up with the wrong camera

Types of Cameras

■ Point and Shoot Cameras

- Small and light
- Limited zoom range
- Touch-sensitive screens
- Built-in sharing options

■ Phone Cameras

- Convenient
- Great connectivity
- Built-in sharing options
- Image processing apps



The Creative Spark: Making Art with Your iPhone Information

Instructor: Robert Eckhardt

February 4-5, 2017

Where does the workshop take place?

We'll be using a meeting room at the Hofsas House Hotel in Carmel, California, and venturing into the nearby town and beautiful surrounding area for our field sessions.

When does the workshop begin and end?

The workshop goes from 8:30 a.m. to 5:00 p.m. on both Saturday, February 4th, and Sunday, February 5th, with an optional field session after dinner on Saturday evening.

Transportation

Participants must provide their own transportation to and from Carmel. During the workshop we'll walk to some field locations, and may also carpool to other spots.

Equipment

You'll need a relatively recent iPhone with enough storage space to capture a bunch of photos. An iPhone 6 or 6 Plus or more recent model is recommended, though an iPhone 5s is okay. A laptop is recommended for downloading photos and learning how to organize your photos off the phone. We'll send you a complete list of things to bring before the workshop.

Experience

Any level of iPhone experience is welcome in this workshop. Some basic knowledge of photography and composition is helpful.

Meals

The workshop tuition includes lunch on both days. Other meals are not included.

Lodging

We've reserved a block of rooms at a discounted rate at the Hofsas House Hotel in Carmel for this workshop. We'll send you more information about your lodging options when you register. Lodging is not included in the workshop tuition.



Home » Smartphone and Point & Shoot Techniques to Make Your Travel Photos "POP" - Joshua Tree National Park Association

- Map & Directions
- Fitness Levels
- Registration Info
- New Classes
- Instructor Bios
- Calendar

Smartphone and Point & Shoot Techniques to Make Your Travel Photos "POP"

Date/Time:	Sunday, November 13, 8:30 AM - 5 PM
Meet at:	Joshua Tree Visitor Center, Joshua Tree
Fees:	\$60 JTNPA/INSTITUTEDESERT member, \$70 non-member
Instructor:	Diana Shay Diehl, Photographer, Educator
Hint Level:	Easy

Come learn how to take better photographs with your cellphone camera in a new course offered by the Desert Institute. Professional photographer and teacher, Diana Shay Diehl, who has spent over 30 years capturing images from film to digital, will focus on basic approaches to photography while making extraordinary images from the 'ordinary'. You will learn how to overcome the limitations of cellphones, produce better images as prints and for sharing on the Internet as well as learn how to 'see' better within a frame. Composition, the rule of thirds, exposure, and shutter speed will be discussed, as well as how to post-process your images in your own devices. Examples of post-printing options will also be shared. This course will include a trip into the park for an exclusive tour of Keys Ranch and a walk about with Diane with over-the-shoulder counseling on how to improve your photography.

■ 2017 Date Festival Photo Competition will have a smart phone category

Types of Cameras (continued)

■ Travel Zoom

- Pocketable in size
- Long zoom range
- Built-in GPS and/or Wi-Fi
- Some manual exposure control

■ Super Zoom

- Very long zoom range
- 'DSLR-style' design
- Large rear LCDs - often articulated
- Electronic viewfinder (often)
- Full manual exposure control



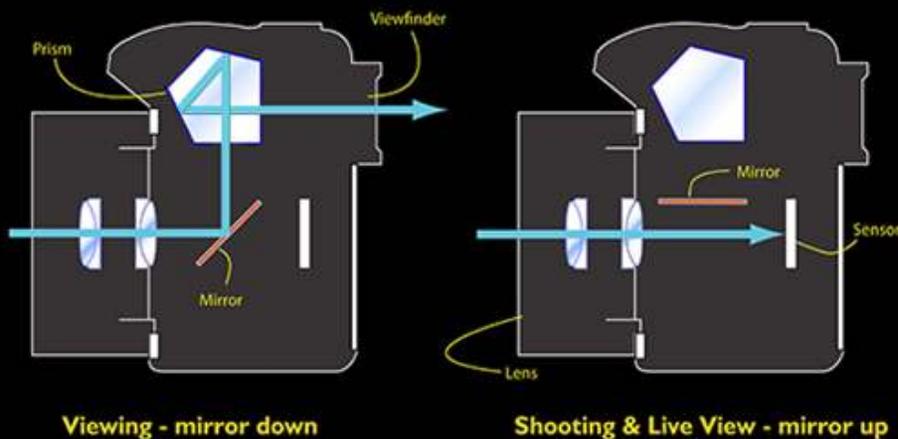
Types of Cameras (continued)

- **Enthusiast**
 - Fast, good-quality zoom lens
 - Full manual exposure control
 - Large rear displays - often articulated
 - Built-in Wi-Fi and/or GPS
 - Accessory ports for extra flashes etc.
 - High-quality construction
 - RAW mode



Types of Cameras (continued)

- Digital Single Lens Reflex Cameras (DSLR)
 - Interchangeable lenses
 - Optical viewfinder via a mirror
 - Bigger and often much heavier
 - Wide selection of lenses available
 - Full manual control and RAW images
 - More complicated than point and shoots
 - More expensive



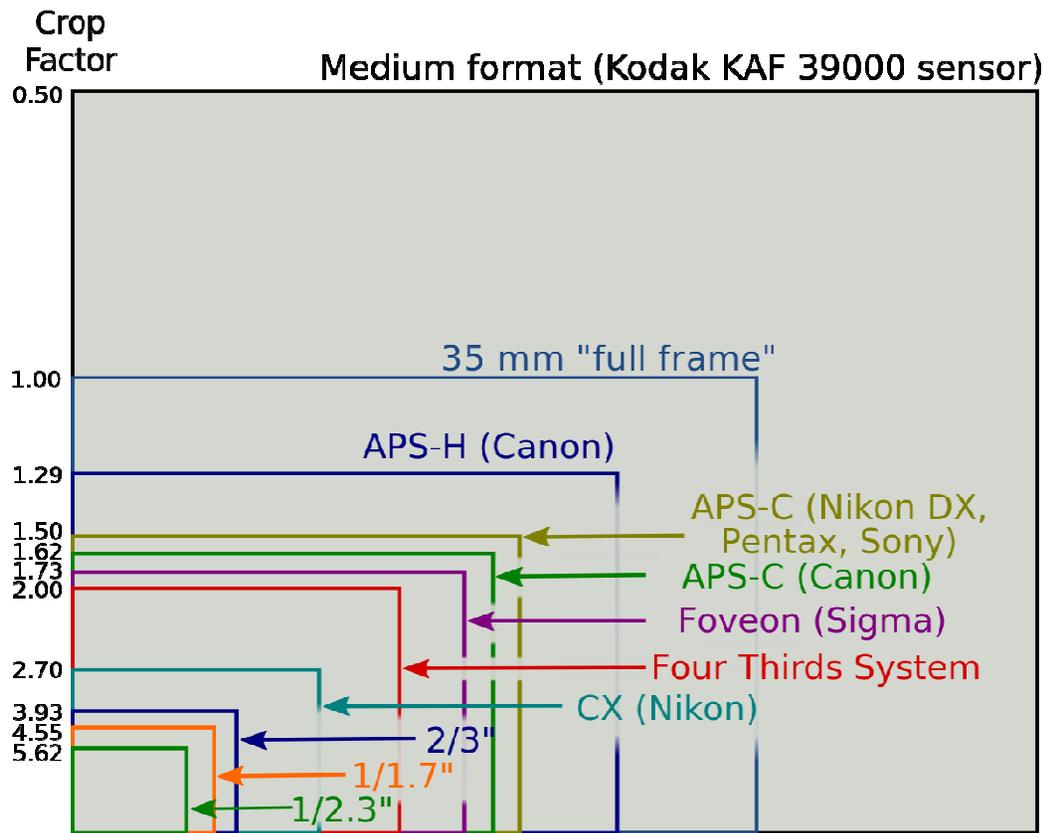
Types of Cameras (continued)

■ Mirrorless Interchangeable Lens Cameras (MILCs)

- Electronic Viewfinder
 - No mirror
 - Lighter and smaller than DSLRs
- Performance on par with DSLRs
- Fewer lens choices than DSLRs
- Rangefinder style
- DSLR-style



Tradeoffs: Sensor Size



Digital Camera Sensor Size Comparison

Tradeoffs: Lens Speed and Range

- Fast apertures (f/2.8) are better
 - Allows more light in
 - Usually indicates better lens quality
- 28—100 (35mm equivalent) zoom range is a good general purpose spec
 - 24mm on wide end is better
 - 5x, 10x, etc. don't tell you enough



24—100
f/1.8—2.8



24—120
f/1.8—5.7

Tradeoffs: Size, Controls

- More buttons allow easier control
- Viewfinder is easier to use than rear LCD in bright light (or if you need reading glasses)
- Some cameras have better thought out menu systems



Tradeoffs: With ILCs, You are Choosing a System



Shopping

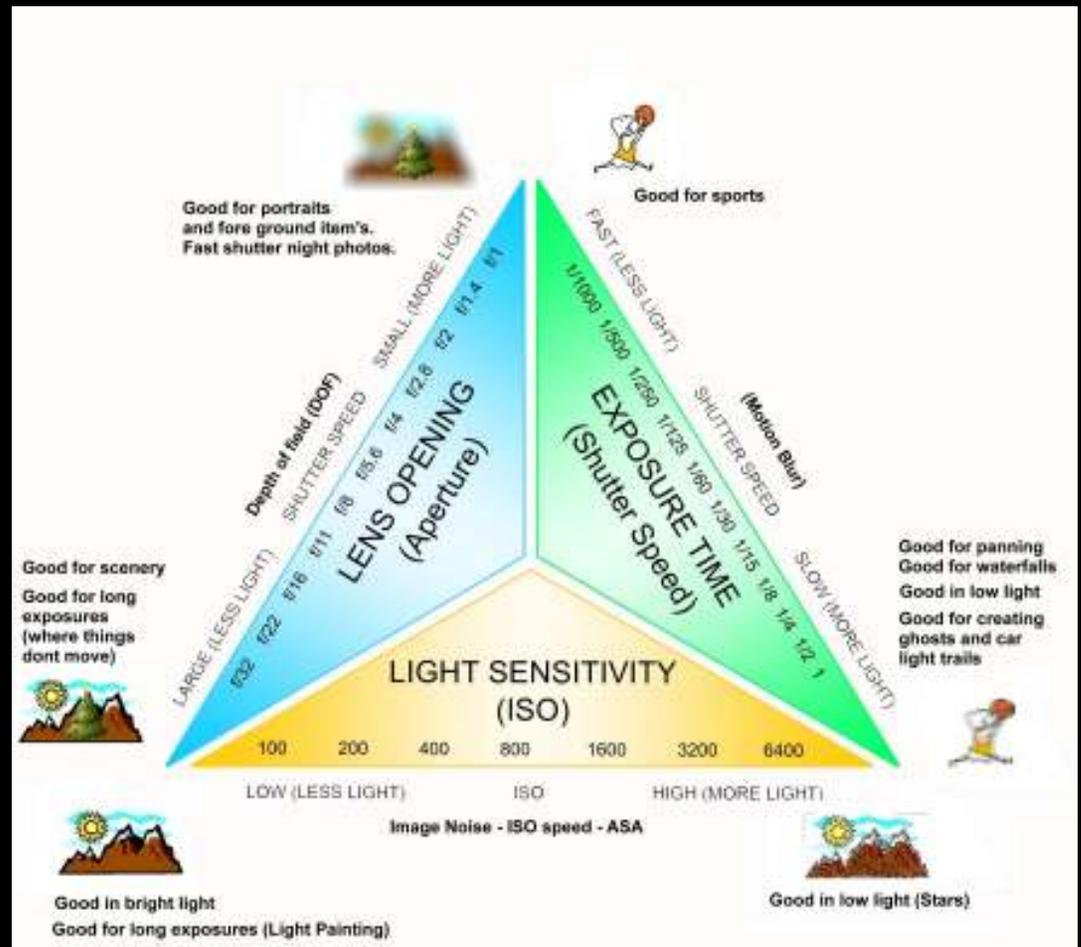
- Read reviews to narrow down your choices
 - www.dpreview.com
 - www.steves-digicams.com
 - bhphoto.com, adorama.com, amazon.com
- Read the PDF manual from the manufacturer's website
- Try to handle the camera
 - Costco, BestBuy, Target, Walmart, Camera West
 - Borrow a friend's camera
- Buy it from a store that allows returns
 - But you can always sell your camera if you outgrow it or when a newer/better camera becomes available

Using Non-Auto Modes

- As the examples demonstrated, cameras have three basic settings:
 - Shutter speed: how long your camera lets light fall of the sensor
 - Aperture: how big an opening there is in your lens for light to travel through
 - ISO: the effective sensitivity of the sensor to light

Exposure Triangle

- To create a picture that is not too bright or too dark, you or your camera must adjust these settings to account for the amount of light falling on your subject
- Changing one means you need to change one or both of the others

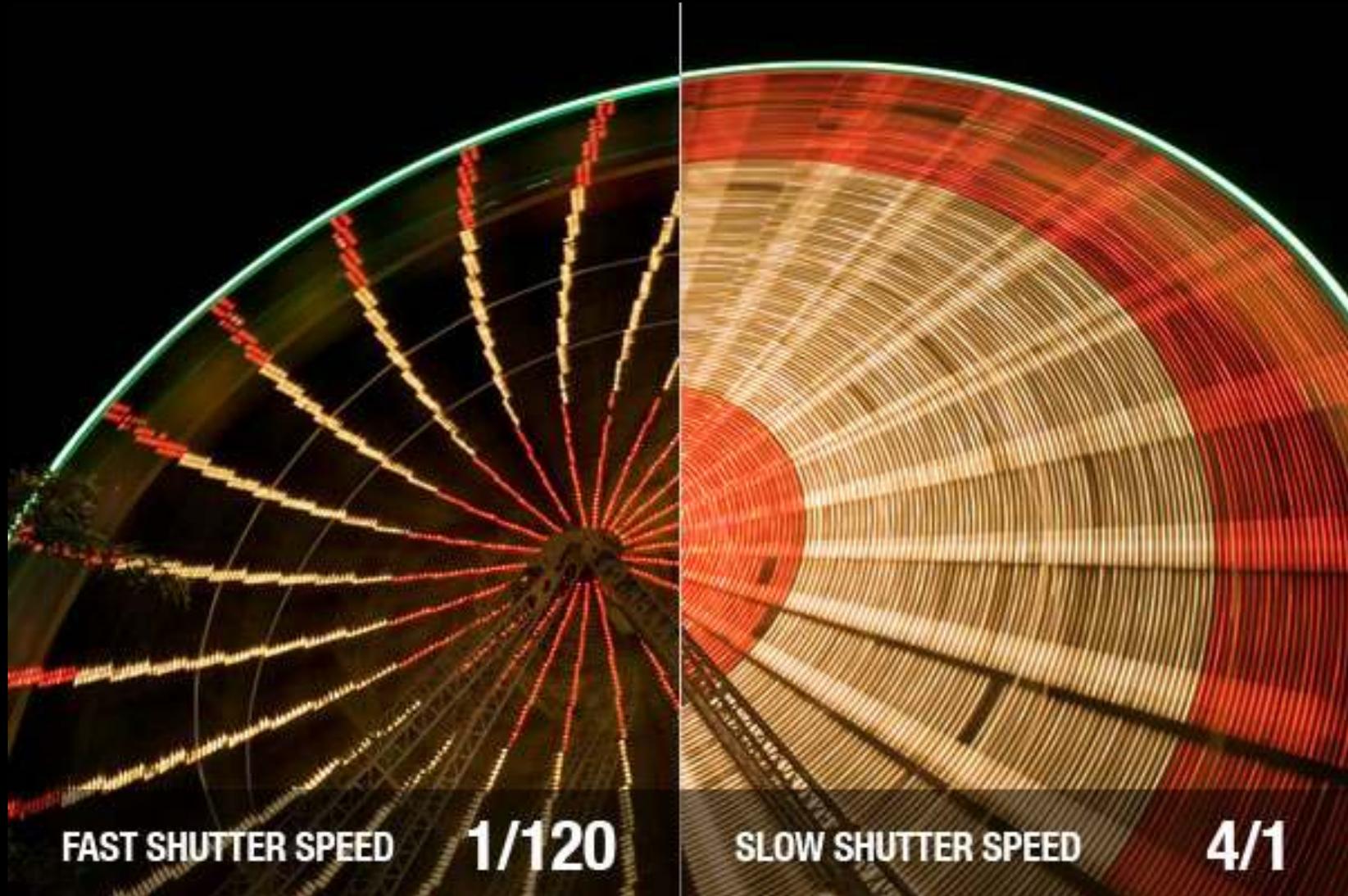


Shutter Speed



- A camera's shutter determines when the camera sensor will be open or closed to incoming light from the camera lens. The shutter speed specifically refers to how long this light is permitted to enter the camera. "Shutter speed" and "exposure time" refer to the same concept, where a faster shutter speed means a shorter exposure time.
- Shutter speed's influence on exposure is perhaps the simplest of the three camera settings: it correlates exactly 1:1 with the amount of light entering the camera. For example, when the exposure time doubles the amount of light entering the camera doubles.
 - A halving or doubling of the amount of light is called a "stop"
- The shutter speed also gives you control over how motion is recorded. If the shutter speed is faster than the subject or background moves, then the image will be tack sharp. If the shutter speed is slower, then you'll get blurred images.

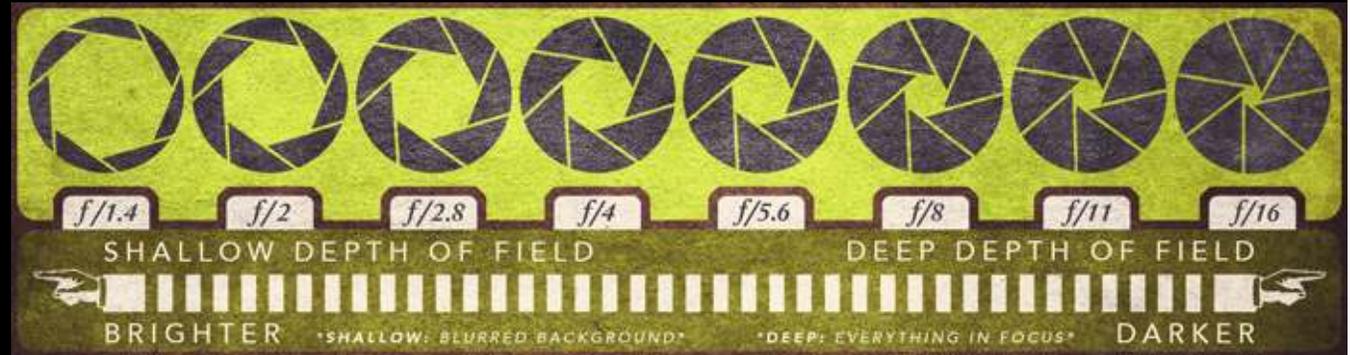
Shutter Speed Example



Typical Shutter Speeds

Shutter Speed	Typical Examples
1—30+ seconds	Specialty night and low-light photos on a tripod
2—1/2 second	To add a silky look to flowing water Landscape photos on a tripod for enhanced depth of field
1/2—1/30 second	To add motion blur to the background of a moving subject Carefully taken hand-held photos with stabilization
1/50—1/100 second	Typical hand-held photos without substantial zoom. The general rule for sharp hand-held photos is a shutter speed of 1/focal length. For sensors smaller than full frame, the shutter speed should be faster: $1/(\text{focal length} * \text{crop factor})$
1/250—1/500 second	To freeze everyday sports/action subject movement Hand-held photos with substantial zoom (telephoto lens)
1/1000—1/4000 second	To freeze extremely fast, up-close subject motion

Aperture



- A camera's aperture setting controls the area over which light can pass through your camera lens. It is specified in terms of an f-stop value, which can at times be counterintuitive, because the area of the opening *increases* as the f-stop *decreases*. In photographer slang, when someone says they are "stopping down" or "opening up" their lens, they are referring to increasing and decreasing the f-stop value, respectively.

Aperture Example

LARGE APERTURE = SHALLOW DOF **F/2**

SMALL APERTURE = DEEP DOF **F/16**

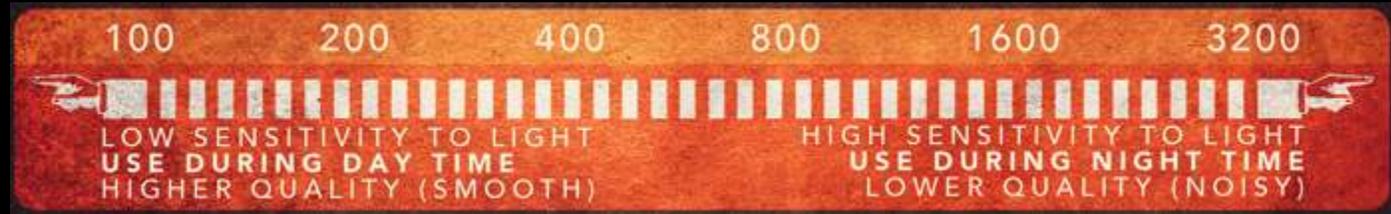


Aperture's Effect on Exposure

Aperture Setting	Relative Light	Example Shutter Speed
f/22	1X	16 seconds
f/16	2X	8 seconds
f/11	4X	4 seconds
f/8	8X	2 seconds
f/5.6	16X	1 second
f/4	32X	1/2 second
f/2.8	64X	1/4 second
f/2	128X	1/8 second
f/1.4	256X	1/15 second

- An interesting thing about the aperture and the f-numbers is that it doesn't matter the focal length of the lens as long as the f-number is held constant.

ISO



- The ISO speed determines how sensitive the camera is to incoming light. Similar to shutter speed, it also correlates 1:1 with how much the exposure increases or decreases. However, unlike aperture and shutter speed, a lower ISO speed is almost always desirable, since higher ISO speeds increase image noise. As a result, ISO speed is usually only increased from its minimum value if the desired aperture and shutter speed aren't otherwise obtainable.
- Common ISO speeds include 100, 200, 400, 800, 1600 and 3200, although many cameras also permit lower or higher values. With compact cameras, an ISO speed in the range of 50-200 generally produces acceptably low image noise, whereas with digital SLR cameras, a range of 50-3200 (or higher) is often acceptable.

ISO Example



Camera Exposure Modes



- Most digital cameras have the following standardized exposure modes: Auto (□), Program (P), Aperture Priority (Av), Shutter Priority (Tv), Manual (M) and Bulb (B) mode. Av, Tv, and M are often called "creative modes" or "auto exposure (AE) modes."
- Each of these modes influences how aperture, ISO and shutter speed are chosen for a given exposure. Some modes attempt to pick all three values for you, whereas others let you specify one setting and the camera picks the other two (if possible). The following table describes how each mode pertains to exposure:

Exposure Modes

Exposure Mode	How It Works
Auto (□)	Camera automatically selects all exposure settings.
Program (P)	Camera automatically selects aperture & shutter speed; you can choose a corresponding ISO speed & exposure compensation. With some cameras, P can also act as a hybrid of the Av & Tv modes.
Aperture Priority (Av or A)	You specify the aperture & ISO; the camera's metering determines the corresponding shutter speed.
Shutter Priority (Tv or S)	You specify the shutter speed & ISO; the camera's metering determines the corresponding aperture.
Manual (M)	You specify the aperture, ISO and shutter speed — regardless of whether these values lead to a correct exposure.
Bulb (B)	Useful for exposures longer than 30 seconds. You specify the aperture and ISO; the shutter speed is determined by a remote release switch, or by the duration until you press the shutter button a second time.

Pre-Set Modes

Exposure Mode	How It Works
Portrait 	Camera tries to pick the lowest f-stop value possible for a given exposure. This ensures the shallowest possible depth of field.
Landscape 	Camera tries to pick a high f-stop to ensure a large depth of field. Compact cameras also often set their focus distance to distant objects or infinity.
Sports/Action 	Camera tries to achieve as fast a shutter speed as possible for a given exposure — ideally 1/250 seconds or faster. In addition to using a low f-stop, the fast shutter speed is usually achieved by increasing the ISO speed more than would otherwise be acceptable in portrait mode.
Night/Low-light 	Camera permits shutter speeds which are longer than ordinarily allowed for hand-held shots, and increases the ISO speed to near its maximum available value. However, for some cameras this setting means that a flash is used for the foreground, and a long shutter speed and high ISO are used to expose the background. <i>Check your camera's instruction manual for any unique characteristics.</i>

Use AE Modes to Take Control of Your Photography

- One highly practical advantage to digital photography is that it costs next to nothing to experiment with the camera's controls, so go out there and shoot away. You want to become increasingly proficient with all three elements of the exposure triangle, so that you can make adjustments on the fly and know exactly what the resulting effect is going to be.

Shutter Priority

- Used to control the amount of motion blur in your photo
 - Set mode dial to S or Tv mode
 - Use main dial on camera to choose shutter speed
 - Camera will choose aperture (and ISO if auto-ISO is set) for a proper exposure



- Shutter speeds for various image types

SHUTTER SPEED CHART

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FULL STOP	1/2 STOP	1/3 STOP	SAFE SHUTTER SPEED	LIGHT	TYPES OF SHOOTING
1/2000	1/2000	1/2000			BIRDS IN FLIGHT 1/2000
	1/1500	1/1600 1/1250			
1/1000	1/1000	1/1000			ACTION SPORTS 1/500 - 1/1000
	1/750	1/800 1/640			
1/500	1/500	1/500			STREET PHOTOS 1/250 - 1/500
	1/350	1/400 1/320			
1/250	1/250	1/250			LANDSCAPES 1/125 - 1/4
	1/180	1/200 1/160			
1/125	1/125	1/125			PANNING CARS 1/15 - 1/60
	1/90	1/100 1/80			
1/80	1/80	1/80			WATERFALLS 1/8 - 2 sec
	1/45	1/50 1/40			
1/30	1/30	1/30			BLURRING WATER 0.5 - 5 sec
	1/20	1/25 1/20			
1/15	1/15	1/15			FIREWORKS 2-4 sec
	1/10	1/13 1/10			
1/8	1/8	1/8			STARS 15 - 25 sec
	1/6	1/6 1/5			
1/4	1/4	1/4			STAR TRAILS 15 min and up
	1/3000	0.3 0.4			
0.5	0.5	0.5			
	0.3	0.6 0.8			
1	1	1			
	1.5	1.3 1.8			
2	2	2			
	3	2.5 3.2			
4	4	4			
	6	5 6			
8	8	8			
	10	10 13			
15	15	15			
	20	20 25			
30	30	30			

Aperture Priority

- Used to control the depth of field in your photo
 - Set mode dial to A or Av mode
 - Use main dial on camera to choose aperture
 - Camera will choose shutter speed (and ISO if auto-ISO is set) for a proper exposure



Factors Affecting Depth of Field

- Aperture
 - Bigger aperture causes smaller DOF
- Focal Length
 - For same subject distance, the longer the focal length, the shallower the DOF
- Focus Distance
 - For same aperture and focal length, the closer the focus distance, the shallower the DOF
- Sensor size
 - The bigger the sensor size, the shallower the DOF



Verizon 4:09 PM 93%

Depth of Field | Field of View | Angle of View

Calculate: ⓘ

DoF | Distance | Aperture | Focal Len.

DoF: 8' 5.8" Far 10' 3"

Near 1' 9.1" 1' 2.9" 7' 2.8"

Distance:

3' 300'

Aperture: f/8 >

Focal Length:

17 40

Canon EOS 5D ⓘ
Canon EF 17-40mm f/4L USM ⓘ

Exposure | Lens | Flash | Equipment | Settings

Manual Mode

- Used to control both the motion blur and the depth of field in your photo
 - Set mode dial to M mode
 - Use main dial on camera to choose shutter speed and back dial to choose aperture
 - Camera will choose ISO for a proper exposure if auto-ISO is set. If auto-ISO is not set, you have to choose the correct ISO for a proper exposure



ISO

- There is no ISO mode, it is just a setting on your camera
 - You can set it to a specific value (e.g., 100)
 - You can set it to Auto
 - This gives your camera more leeway when using the S (Tv) and A (Av) modes
 - For example, if setting $S = 1/100$ would require a bigger aperture than your lens has, the camera can increase the ISO to get a proper exposure with the biggest aperture your lens has