EXPOSURE COMPENSATION

Exposure compensation tells the camera that a photograph needs to be lighter or darker than the calculated exposure.
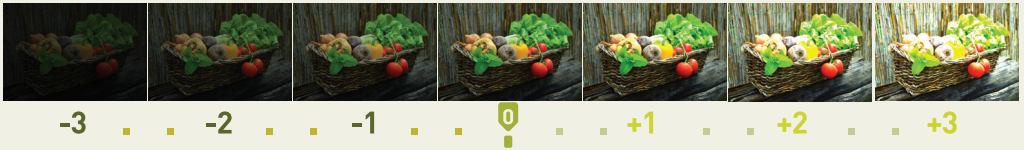
HOW IT WORKS

Most cameras have a button with this symbol on it.

Other cameras have a dial that you turn to change exposure.

These values are measured in stops, which can be half or double the amount of light recorded by the camera. So, a photograph shot at **+1** exposure compensation will have recorded twice as much light as a photograph shot at **0**.

–3   .   –2   .   –1   .   0   .   +1   .   +2   .   +3

EXPOSURE COMPENSATION IN DIFFERENT CAMERA MODES

A / Av APERTURE PRIORITY MODE

By default, in this mode, if you change the Aperture, the camera sets another proper shutter speed, and there is no change in the exposure level. Exposure compensation lets you change the shutter speed (and the overall exposure value) while staying at the same aperture.
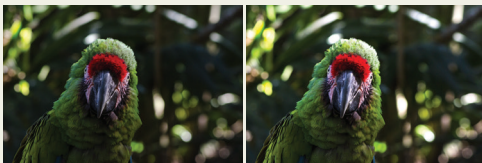
This is helpful when you you want to keep the depth of field, and can afford to have a small change in shutter speed.

S / Tv SHUTTER PRIORITY MODE

In this mode, exposure compensation changes the size of your aperture. You set a shutter speed, and the camera sets a proper aperture. Exposure compensation therefore changes the exposure by allowing you to change that aperture size.

To make sure that the subject movement is frozen, or blurred, the shutter speed was a priority, and a change in depth of field would not affect the result.

P PROGRAM MODE

In this mode, exposure compensation will change the Aperture and Shutter Speed equally, to meet the desired exposure compensation.

WHEN IT WON'T WORK

MANUAL
Unless, the camera is set to Auto ISO (some models).

AUTO
Since the camera has full control on the settings.

ADVANCED CAMERA EXPOSURE

EXPOSURE TRIANGLE

Proper exposure is achieved by 3 camera functions coming into balance: ISO, aperture and shutter speed. This is called the "Exposure Triangle."

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f/22

SMALLER
LESS EXPOSURE
EVERYTHING
IN FOCUS

≥1/4000

FASTER
LESS EXPOSURE
FROZEN MOTION

APERTURE (f/stop)

SHUTTER SPEED

!

When one point of the triangle is moved in one direction, another point of the triangle must move the same distance in the the opposite direction to maintain exposure.

LARGER
MORE EXPOSURE
BLURRED
BACKGROUND

SLOWER
MORE EXPOSURE
BLURRED
MOTION

f/1.2

≤1/30

ISO

100
LESS EXPOSURE
DARKER IMAGE
CLEANER IMAGE

6,400
MORE EXPOSURE
BRIGHTER IMAGE
NOISIER IMAGE

PRACTICAL EXAMPLE

FULL SUN - OUTSIDE

Initial camera settings:
ISO: 100
Shutter Speed: 1/125
f/stop: f/16

Situation:
The subject is fast moving, and you need to increase the shutter speed to get a sharp image.

Improved camera settings, as per the exposure triangle:
ISO: 100 | No change
Shutter Speed: 1/500 Move two stops up
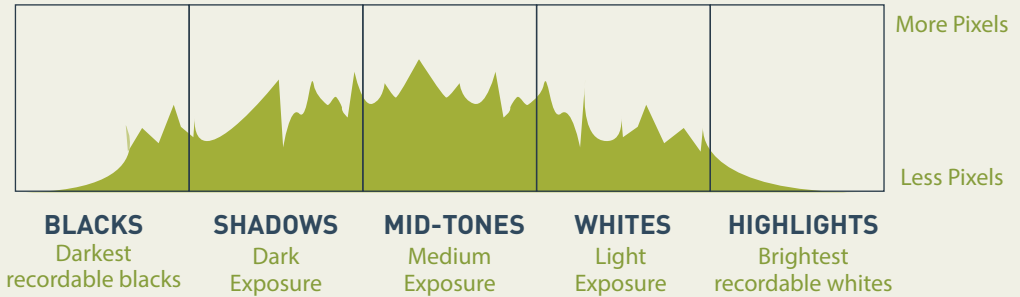**f/stop:** f/8 Move two stops down

ADVANCED CAMERA EXPOSURE

UNDERSTANDING THE **HISTOGRAM**

This tool will give you a tonal analysis of your image, and thus allows you to get the best exposures on your photographs.

HOW TO READ THE HISTOGRAM

More Pixels

Less Pixels

BLACKS	SHADOWS	MID-TONES	WHITES	HIGHLIGHTS
Darkest recordable blacks	Dark Exposure	Medium Exposure	Light Exposure	Brightest recordable whites

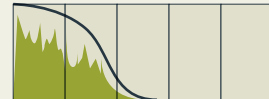## WHAT THE HISTOGRAM TELLS ABOUT EXPOSURE
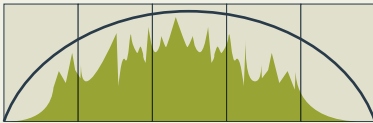
NEUTRAL EXPOSURE

This reading produces the safest exposure. Even when the tones look slightly brighter in camera, this can be easily post-processed.
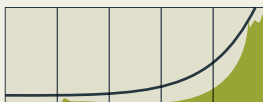

UNDEREXPOSURE

Try to avoid this reading. Use a wider aperture or a longer shutter speed. Underexposed photos are very hard to recover in post-processing.
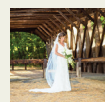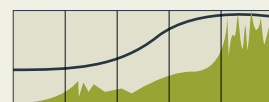

TO THE LEFT

This reading can produce an acceptable photo. Can be fixed in post processing, although it might induce noise into the photo.

OVEREXPOSURE

This setting eliminates many details in the image, by over-exposing the highlights. Use a lower ISO number to avoid it. Overexposed photos are very hard to recover in post.

TO THE RIGHT

This reading can be fixed in post-processing fairly easily. The images will be less noisy, but it can be easy to slide into overexposure

ADVANCED CAMERA EXPOSURE

LANDSCAPE EXPOSURE

Proper exposure for landscapes is difficult to master. There are several reasons for this. A landscape is generally far from the camera making it difficult to meter. The contrast range is likely to exceed the camera's ability to record all tones. Finally, the tonal value isn't likely an average setting.
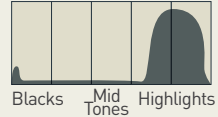
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WINTER SCENE / HIGH-KEY

◉ **EVALUATIVE METERING**

± **+3 STOPS** -in any shooting mode-

ISO LOW

Blacks — Mid Tones — Highlights

When first metered, the scene will be **underexposed**, making the whites look gray. This is why exposure compensation is necessary.
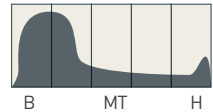
DARK SCENE / LOW-KEY

◉ **EVALUATIVE METERING**

± **-1/-2 STOPS** -in any shooting mode-

ISO LOW - MEDIUM

B   MT   H

When first metered, the scene will be **overrexposed**, making the shadows look gray. This is why exposure compensation is necessary.
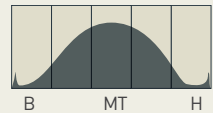
BRIGHT SCENE / FULL TONAL RANGE

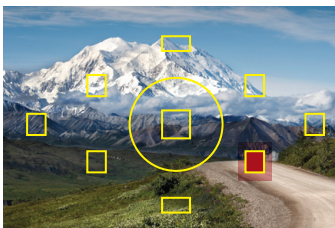◉ **EVALUATIVE METERING**

± **ADJUST ONLY IF NEEDED**

ISO LOW

B   MT   H

When first metered, the scene will be exposed with an **averaged** setting. Adjust the exposure compensation if needed.

DARK & BRIGHT SCENE / HIGH-CONTRAST

• **SPOT METERING**

± **EVALUATE ON SCENE**

ISO LOW
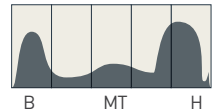
B   MT   H

When first metered, the meter will either **overexpose the highlights** or **underexpose the shadows**. Place the spot meter on a mid-tone area and use exposure compensation based on the area you wish to stand out.
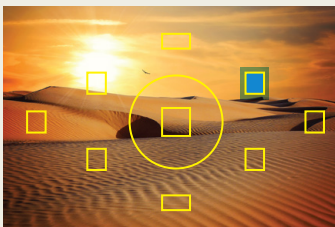
BACKLIT SCENE / LOW TONAL RANGE

• **SPOT METERING**

± **EVALUATE ON SCENE**

ISO LOW

B   MT   H

Place the spot meter on an area away from bright light sources or shadows. Adjust the exposure compensation if needed.

ADVANCED CAMERA EXPOSURE

PHOTOS IN LOW LIGHT

In low light, your options are the use of a wide aperture, higher ISO, slower shutter speed, use of an electronic flash, or possibly the use of a tripod or other camera stabilization.

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ELEMENTS

CAMERA
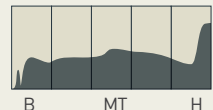When possible, the best option is a lens that offers an aperture of f/2.8 or wider. Image stabilization capability is a huge plus.

EXTERNAL FLASH
Important for photos of people or objects where deep shadows are a concern.

TRIPOD
In low light, it may be necessary to use a slower shutter speed, and using a tripod, or a monopod, will help steady the camera.

REMOTE SHUTTER RELEASE
With long shutter speeds, even pressing the shutter release button can cause blur. With a remote release, there's no need to touch the camera.

SETTINGS ESSENTIALS

A / Av APERTURE PRIORITY MODE
Using a large aperture allows more light in. Set the camera on Av mode and choose the largest aperture (f/stop) possible - or use Manual Mode.

SLOW SHUTTER SPEED
The longer the shutter is open, the more light comes in. However, it's also more likely to cause camera shake blur. To avoid this, a tripod and a remote shutter release are needed.

EXPOSURE COMPENSATION
When in an auto exposure mode (Av, Tv, or P), turning the dial to the positive numbers will help increase exposure.

HIGH ISO + RAW
Increasing the ISO is another way to boost the exposure. The increased noise can be fixed in post-processing, especially if shooting RAW.

SETTINGS GUIDE

INDOORS
Tripod: Generally not needed
Ext. Flash: Possibly
ISO: Mid to High
Aperture: Wide
Shutter Speed: Min 1/60th

HAND-HELD OUTDOORS
Tripod: Not needed
Ext. Flash: Possibly
ISO: Mid to High
Aperture: Wide to Mid
Shutter Speed: Min 1/125th

CITY LIGHTS
Tripod: Yes
Ext. Flash: Not needed
ISO: Low to Mid
Aperture: Wide to Med
Shutter Speed: Slow

STARS
Tripod: Yes
Ext. Flash: Not needed
ISO: Mid to High
Aperture: Wide to Med
Shutter Speed: Slow to Very Slow
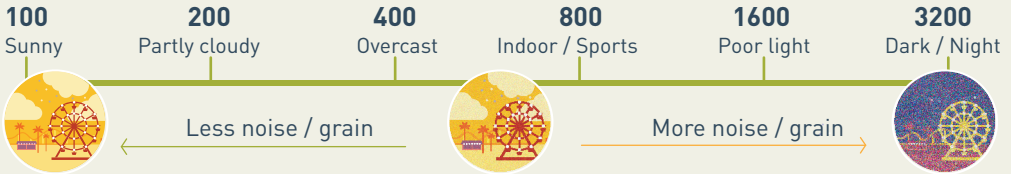
ADVANCED CAMERA EXPOSURE

MANUAL MODE

Manual mode requires the photographer to physically set 3 camera functions: ISO, f/stop and shutter speed.

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Perfect to print A5 size
14cm x 21cm / 5.83" x 8.27"

1 SET THE ISO

100	**200**	**400**	**800**	**1600**	**3200**
Sunny	Partly cloudy	Overcast	Indoor / Sports	Poor light	Dark / Night

← Less noise / grain   More noise / grain →

2 SET THE APERTURE

f/1.4   **f/2**   **f/2.8**   **f/4**   **f/5.6**   **f/8**   **f/11**   **f/16**   **f/22**

BRIGHTER
SHALLOW DEPTH OF FIELD
BLURRED BACKGROUND

DARKER
DEEP DEPTH OF FIELD
EVERYTHING IN FOCUS

3 CHECK CAMERA METER FOR PROPER EXPOSURE:

-2 | | -1 | | 0 | | +1 | | +2

Under   Over

4 ADJUST SHUTTER SPEED OR APERTURE UNTIL PROPER EXPOSURE

Fast shutter speed: freeze action   Slow shutter speed: blur motion

Underexposed reading

-2 | | -1 | | 0 | | +1 | | +2

Adjust the shutter speed or the aperture until the meter reads 0.

Proper reading

-2 | | -1 | | 0 | | +1 | | +2

Overexposed reading

-2 | | -1 | | 0 | | +1 | | +2

Adjust the shutter speed or the aperture until the meter reads 0.

5 FINAL CHECK

• Adjust exposure based on the subject:
Do you need to freeze action or increase the depth of field?

• Keep the camera meter indicating proper exposure:
Is the image too light? Move the camera meter towards underexposure (under 0)
Is the image too dark? Move the camera meter towards overexposure (over 0)
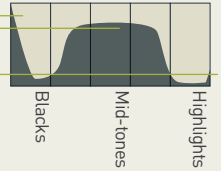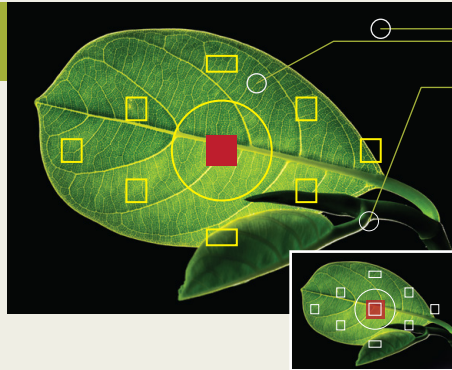
MASTERING BACKLIGHT

Backlighting a subject is one of the most dramatic lighting schemes that you can employ. However, it can be challenging to find the correct subject and then meter the lighting appropriately.

Perfect to print A5 size
14cm x 21cm / 5.83" x 8.27"

LIGHT THROUGH THE SUBJECT

- **The backlight source must be placed behind the subject,** it generally works best when there's little to no light hitting the background.

- This technique works with subjects that are translucent such as foliage, fabric, and windows.

- It creates a dramatic mood, especially in macro photography.

Blacks Mid-tones Highlights

SPOT METERING
Meter **just** the subject, not the background.

BACKGROUND & SUBJECT

- **The backlight source is behind the subject, and generally illuminating the background as well.**

- In most cases, an additional light source from the front will be needed, such as an electronic flash or a white bounce card.

- Good for portraits, or making a subject stand out from the background in midday light.

B   MT   H
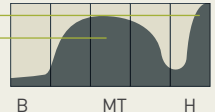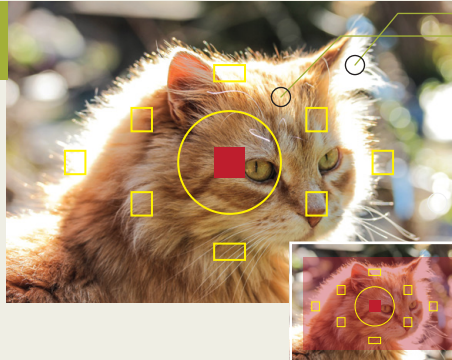
EVALUATIVE METERING
place the center of the meter frame on the most important feature of the subject.

SILHOUETTE

- **The backlight source must be behind the subject.**

- Manual mode is recommended.

- Excellent for high-drama effect.

- Avoid front light sources.

- Simple compositions work best.

B   MT   H
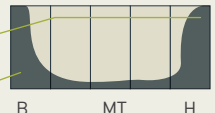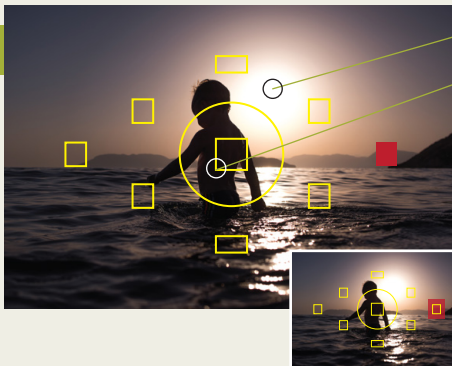
SPOT METERING
Place the spot meter on a mid-tone area of the background, making sure that the brightest part of the backlight source is outside of the metering frame.

ADVANCED CAMERA EXPOSURE

AUTO-FOCUS MODES

The auto-focus mode allows you to tell the camera how you wish it to react when focusing.

AF-A

AUTO-SERVO AF

When you select AF-A, you are giving the camera control over whether to select AF-S or AF-C. This selection works best when you have a camera with many focus points (50 or more).

AF-S

SINGLE-SERVO AF

In this mode, when the shutter-release button is pressed down halfway, **the focus is locked**. Use it when photographing stationary subjects, or when you wish to pinpoint exactly where the focus will be placed (such as a subject's eyes).

AF-C

CONTINUOUS-SERVO AF

When the shutter release is pressed halfway, **the camera focuses continously,** and then engages the "predictive focus tracking." This allows the camera to track the subject's movement, and it will predict the subject's position when the shutter is released. Use it when photographing fast moving subjects.
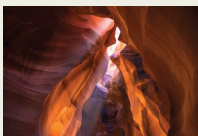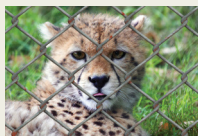

WHEN TO AVOID IT

If the camera can't read the subject automatically, it might focus on the wrong area. In these cases, it's best to use manual focus.
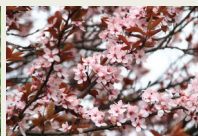

Low-contrast

Dominating geometric patterns

Subjects behind bars, fences, etc.

Too many fine details

Background is larger than subject

ADVANCED CAMERA OPERATION

BACKGROUND BLUR

This guide is only meant to give a visual reference to the factors affecting background blur. Therefore, the values you will see here may or may not be precise. The numbers are not meant to be used as exact measurements for camera settings.

APERTURE

| f/1.4 | f/2 | f/2.8 | f/4 | f/5.6 | f/8 | f/11 | f/22 |
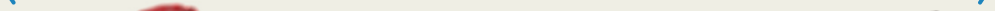
**SMALL f /stop NUMBER
MORE BLUR**
Large aperture opening
Shallow depth of field

**HIGH f /stop NUMBER
SHARPER / LESS BLUR**
Small aperture opening
Wide depth of field

FOCAL LENGTH

	TELEPHOTO	NORMAL	WIDE	ULTRA WIDE
FULL FRAME	above 50mm	50mm	28mm	16mm
APS-C	above 30-35mm	30-35mm	17-18mm	10-11mm
Micro 4/3*	above 24mm	24mm	14mm	8mm

Higher millimeter number
Longer focal length
Shallow DOF
More Blur

Lower millimeter number
Shorter focal length
Wide DOF
Sharper/Less Blur

DISTANCE

FOCUSING DISTANCE

SUBJECT CLOSER TO CAMERA
Shallow DOF / More Blur

SUBJECT FARTHER FROM CAMERA
Wide DOF / Sharper Background

BACKGROUND DISTANCE

BACKGROUND FARTHER FROM SUBJECT
Background out of focus

BACKGROUND CLOSER TO SUBJECT
Background In focus or slightly out of focus

ADVANCED CAMERA OPERATION

DEPTH OF FIELD

It's not only the aperture factor that will render more or less depth of field (DOF); other factors, like distance of the focal plane to the subject or the background, sensor size, and lens focal length, also add to the equation.

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🔴 Focus point   ▮ Closest DOF Window - slight blur   ▮ Furthest DOF Window - total blur

APERTURE*

The wider the aperture, the less depth of field (more blur).

f/2.8

f/11

f/22

Distance in ft.   2   6   10   14   18   22   26   30   34
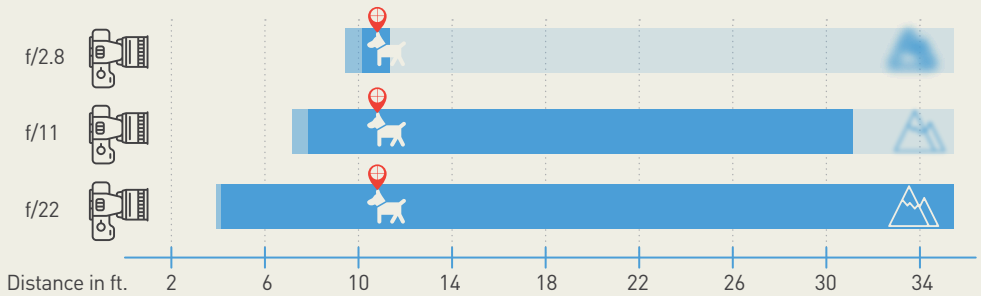
DISTANCE*

The closer the subject is to the camera, the blurrier the background will be at a given f/stop.

f/8

f/8

f/8

Distance in ft.   2   6   10   14   18   22   26   30   34
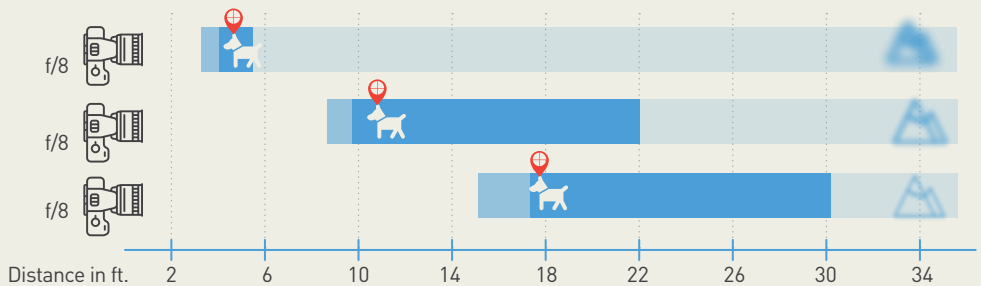
FOCAL LENGTH*

The wider the lens (shorter focal length), the more depth of field (more in focus).

28mm | f/8

50mm | f/8

200mm | f/8

Distance in ft.   2   6   10   14   18   22   26   30   34
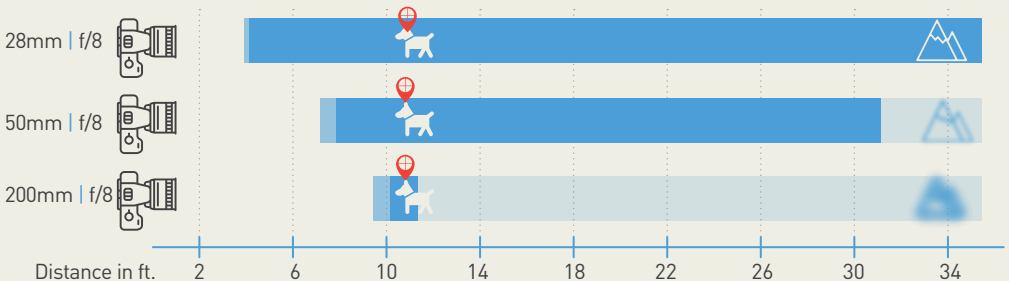
*Distances and other data are to be taken for reference only. The information may not be accurate for all cameras.

ADVANCED CAMERA OPERATION

DRIVE MODES

The choice of drive mode is an assist function of the camera. Most of the time you will use the single shot mode. However, there are situations where you will want to make use of the other options.

SINGLE SHOT
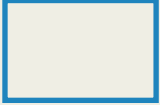
The default drive mode in most cameras. In this mode, you take a single photo each time the shutter release button is pressed.
• **USE IT FOR:** When you have time to compose a single photo. It also helps when there's little space left on the memory card and you're conserving memory.

CONTINUOUS/BURST

In this mode, the camera will take pictures continously as long as the shutter release button is pressed. **This mode has two options:**
LOW
The camera takes continous shots - but at a slower pace.
• **USE IT FOR:** Taking pictures of kids, or any subject in motion (but when there's no need to caption a large range of movement). Works best with slower memory cards.
### HIGH
The camera takes continous shots at a faster pace.
• **USE IT FOR:** Taking pictures of fast moving subjects, sports, birds, etc.

SELF TIMER

The camera adds a delay, from the moment the shutter release button is pressed, until the moment the picture is actually taken. The most common options are a 2 sec and a 10 sec delay. Some cameras offer customizable times and continous shooting self timer options.
• **USE IT FOR:** Group photos, selfie photos, and long exposure photography.

MIRROR LOCK-UP

You can lock the mirror up completely, leaving it in its open position, and not covering the sensor. In this position, the mirror will block the viewfinder, and you will not be able to see through it. Frame up and focus the shot before activating this function. This is for long exposures such as night photography.
• **USE IT FOR:** Minimizing vibration of the camera.

REMOTE

The wireless, or wired, shutter release accessory is also known as a remote release.
• **USE IT FOR:** Longer exposures where you do not want to "bump" the camera by pressing the shutter release button manually.

QUIET / SILENT

This mode works just like Single Shot mode, except the mirror that moves up every time you take a photo (and causes noise) moves up slowly, minimizing the noise.
• **USE IT FOR:** Weddings, in museums, or situations that require silence.

ADVANCED CAMERA OPERATION

RAW vs JPEG

A never ending debate in digital photography, these two file formats offer different options, especially in post-production and workflow.

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COMPARISON

RAW

- Uncompressed file format
- Each camera maker has a different filename extension
- Traditionally needs a viewing/editing program to be processed (some newer cameras offer processing in-camera)
- Large size
- Preserves the most amount of information about an image and contains more colors and dynamic range
- Has to be post-processed to get best results; the image looks dull without adjustments
- Gives extended control over exposure, colors, saturation, white balance, etc.

JPEG

- Standard file format
- The same filename extension in all cameras (.jpg)
- It's processed by the camera, so it can be opened/viewed in any program
- Smaller size image format
- Because it is compressed, certain information is removed from the image.
- Capable of displaying millions of colors in a highly compressed file
- Easily post-processed, but there will be a small loss in quality over time

RAW - Unprocessed
Original size: 32.3 MB

JPEG - Unprocessed
Original size: 9 MB

RAW - Processed
-coverted to jpeg for printing-
Size: 14.8 MB

WHEN TO USE IT

RAW

- Journalistic photography
- Image will be heavily processed: fashion, graphic design, etc
- Need perfect white balance and tones, or want complete control over the final look
- Image will be used for large prints

JPEG

- Everyday snapshots
- Shooting for immediate display
- Shooting for web
- Restricted memory space
- Rapid succession burst shooting

Most common camera manufacturers and raw filename extensions:

Canon: *.crw .cr2* | **Nikon:** *.nef* | **Kodak:** *.dcs* | **Sony:** *.arw .srf* | **Fuji:** *.raf* | **Samsung:** .srw

ADVANCED CAMERA OPERATION

WHITE BALANCE

The White Balance setting you choose will change the color in your pictures, making it warmer or cooler depending on the existing light.

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WHITE BALANCE OPTIONS

AWB AUTO AUTOMATIC / AUTO

The camera sets the white balance. It can be used for snapshots, although small variations in light may change the colors from shot to shot.

TUNGSTEN / INCANDESCENT

Designed for domestic lighting, since it adds cool tones to balance the color indoors. If used in other settings, the image will look very blue.

FLUORESCENT

Designed to be used under fluorescent lights, this setting adds tones in the warm-red range to the image. It's helpful to balance images that look too green.

DAYLIGHT

This option adds warm tones to the image to produce a final neutral-colored photograph. It balances your images when shooting under direct sunlight.

CLOUDY

Cloudy days naturally cast cooler tones. To balance the image, this setting adds warmer tones.

SHADE

Designed for open shade, in daylight. It adds more warm-orange than the Cloudy setting, and gives more natural-looking skin tones.

FLASH / AUTO FLASH

Designed to be used with a flash unit or the in-camera flash, this option adds warm tones to the image. Using this setting prevents skin tones from looking too cold/blue.

CUSTOM

Designed to let the photographer set the white balance based on the light temperature.

Some cameras offer more options, such as:

K: Lets you manually change the Kelvin value from 2,500 to 10,000.

Preset (PRE): For color matching with a white card.

WHITE BALANCE SITUATIONS

Domestic lights Candle flame	Bright skies Noon	Early morning Late evening	Built-in flash Electronic flash	Daylight overcast sky	Shade with clear sky

ADVANCED CAMERA OPERATION

APERTURE (f-stop)

The aperture (f-stop) controls the amount of light reaching the sensor through the lens. The aperture size will regulate the sensor's degree of exposure to light.

APERTURE SCALE

| f/1.4 | f/2 | f/2.8 | f/4 | f/5.6 | f/8 | f/11 | f/22 |

BRIGHTER
Allows MORE light in

DARKER
Allows LESS light in

DEPTH OF FIELD FACTOR

BRIGHTER
SHALLOW DEPTH OF FIELD
BLURRED BACKGROUND

DARKER
DEEP DEPTH OF FIELD
EVERYTHING IN FOCUS

depth of field

Out of Focus | In focus | Out of Focus

depth of field

Out of Focus | In focus
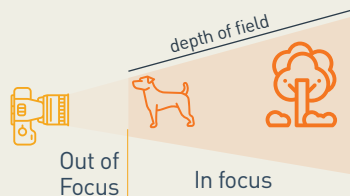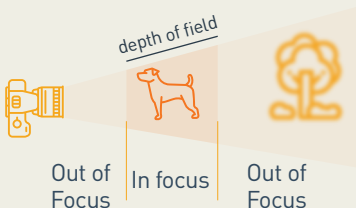
CREATIVE USES

f/1.4
Bokeh effect
Low light

f/2.8 - f/5.6
Portraits - Sports

f/8 - f/16
Landscapes

f/16 - f/32
Long exposure

CAMERA EXPOSURE BASICS

DSLR TERMINOLOGY

Even though each camera make and model is different, this guide will help you to easily identify basic parts and functions.

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Perfect to print A5 size
14cm x 21cm / 5.83" x 8.27"

DIOPTER
It allows you to customize the viewfinder so that you can see a clear focused image.

LENS ALIGNMENT MARK
Line up the matching dots to fit the lens into the mount, and then twist until it locks.

PICTURE REVIEW BUTTON

VIEWFINDER
The main source for viewing the scene and menu options

LCD WINDOW

SHUTTER RELEASE
When pressed, the shutter of the camera is "released", so that it opens to take a picture.

DEPTH OF FIELD PREVIEW
It helps you see potential depth of field

HOTSHOE
The mounting point on the top of the camera to attach a flash unit.

SHOOTING MODE DIAL
Sets the camera to your desired shooting mode.

BATTERY SLOT

TRIPOD THREAD

LCD CONTROL PANEL
Provides information on camera settings (ISO, white balance, battery power, number of pictures left, etc.)

CAMERA EXPOSURE BASICS

UNDERSTANDING ISO

ISO is the level of sensitivity of your camera to light. The lower the ISO number, the less sensitive it is to the light. The higher the ISO number, the more sensitive it is to the light.

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14cm x 21cm / 5.83" x 8.27"

CALCULATING ISO BY THE INTENSITY OF THE LIGHT SOURCE

ISO 100
Full sun and no shade

ISO 200
Shade, overcast day, or inside near a window

ISO 400
Deep shade or heavily overcast day

ISO 640-800
Early or late hours of the day: sunrise or sunset

ISO 800
Bright interiors

ISO 1000
Mid-level lighting condition, indoors or outdoors

ISO 1250
Low-light interiors or post-sunset

ISO 1600
Extremely low light

This cheat-sheet is for natural light, not electronic flash.

The noise factor of the ISO settings can vary widely depending on the camera model.

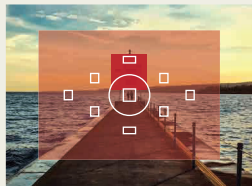## GRAIN / NOISE FACTOR

ISO 200

ISO 640

ISO 1000

ISO 1250

ISO 1600

CAMERA EXPOSURE BASICS

METERING MODES

These options tell the camera how to set the camera meter to evaluate the image area for tone value and exposure.

Evaluative / Matrix metering

The default mode in most DSRLs. It measures light across the whole frame, but places strong emphasis on the area around the auto-focus point in use at the moment. The camera applies its own exposure compensation, making it a good option when you need to grab a shot quickly.

Great for evenly lit scenes, with not a lot of variation in lighting.

Center-weighted average metering

This mode meters the light across the whole picture, like an old-fashioned evaluative mode. Yet it places greater emphasis on the center of the image. It doesn't take focus into account. It applies the same averaging pattern on every shot.

Great for portraits, since it leaves any highlights, or shadows, in the corners of the image out of the equation.

Spot metering

This is the most accurate- yet hardest mode to master. It reads the intensity of the light over a small circular area in the center of the image. It offers pin-point precision.

Great for scenes with varied lighting and when utilizing Manual Mode.

Partial metering

Measures the intensity of the light over a slightly larger circular area than in spot mode, making it easier to use.

Great for any scene where you want to read a more extensive zone than the spot mode, but more precise than evaluative matrix mode. You can generally move the metering zone around the viewfinder.
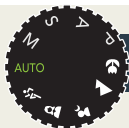
SHOOTING MODES

These options may tell the camera how to set the shutter speed and aperture, adjust ISO, set white balance, pop the built-in flash, or change other picture settings internal to the camera.

CAMERA MODES

AUTO	**Full automatic mode** The camera sets all of the settings automatically for a properly exposed and sharp image.
M	**Manual mode** The photographer sets the Shutter Speed, Aperture and ISO. The camera provides a meter reading.
S / Tv	**Shutter priority mode** The photographer sets the Shutter Speed, and the camera sets the proper Aperture. The ISO is set separately. Exposure is adjusted through the exposure compensation setting.
A / Av	**Aperture priority mode** The photographer sets the Aperture, and the camera sets the proper Shutter Speed. The ISO is set separately. Exposure is adjusted through the exposure compensation setting.
P	**Program mode** The camera pairs up an Aperture and Shutter Speed combination. The ISO is set separately. Exposure is adjusted through the exposure compensation setting.
	Macro / close-up mode The camera sets the ISO, shutter speed, and aperture to assist in macro photography.
	Landscape mode The camera sets the ISO, shutter speed, and aperture to assist in landscape photography. The built-in flash is turned off.
	Night portrait mode The camera combines the built-in flash and a slow shutter speed.
	Portrait mode The camera sets a wide/large Aperture to blur the background, and overrides other settings.
	Sports mode The camera sets a fast Shutter Speed to freeze action.

SHUTTER SPEED

Shutter speed is the length of time that the camera shutter is open to expose light into the camera sensor.

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HOW TO SET THE RIGHT SHUTTER SPEED TO GET SHARP IMAGES

1/4000-1/1000
Freezing fast moving objects

1/250 - 1/60
Everyday photos
Objects still or barely moving

1/30 -10"
Capturing motion with blur

SITUATIONS

1/4000
Very fast moving objects

1/1000
Fast movement, sports

1/500
People running or slow moving sports

1/250 - 1/60
Slow moving people, children

1/60
Slowest handheld setting for sharp images

1/30 - 1/2
Motion blur on consistently moving objects: waterfalls, rivers, cities

2"
Long exposure; fireworks

5"- 10"
Long exposure: painting with light, stars, milky effect on moving water

LONG EXPOSURE / CREATIVE EFFECTS

BLUR FACTOR

1/2000

1/250

1/20

1/2

CAMERA EXPOSURE BASICS

TAKING SHARP PICTURES

A sharp photograph results from several factors- all of which are of equal importance. These factors are: properly holding the camera, enough DOF, the lowest ISO setting possible, and a fast enough shutter speed to prevent camera shake.

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BEFORE SHOOTING

• PICK A MID-LEVEL APERTURE
f/5.6 to f/8 is a safe spot to give you enough depth-of-field (DOF) with most lenses.

• HOLD THE CAMERA STEADY
Make sure that your arms are always in a comfortable position, with your elbows resting on your sides, legs or a steady surface. If not possible, use a tripod.

• MIND THE ISO
Use a low to mid (200 to 640) ISO range to allow a good exposure, along with a proper shutter speed, and a mid-level aperture. A noisy image at higher ISO settings, **may seem** to appear unsharp.

• SHUTTER SPEED AND FOCAL LENGTH
When handholding the camera, the shutter speed shouldn't be slower than the focal length of the lens in use. This rule does not apply if using a tripod.

Telephoto - 70mm
Shutter Speed: 1/80 and faster

Wide angle - 28mm
Shutter Speed: 1/30 and faster

REFERENCE GUIDE*

● Not recommended   ● Depends on the situation   ● Recommended

HANDHELD - WITHOUT THE BENEFIT OF IMAGE STABILIZATION

Shutter Speed	1/10	1/20	1/60	1/125	1/400	1/1000	1/2500
15mm	●	●	●	●	●	●	●
28mm	●	●	●	●	●	●	●
50mm	●	●	●	●	●	●	●
200mm	●	●	●	●	●	●	●

Focal Length

HANDHELD - WITH IMAGE STABILIZATION

Shutter Speed	1/10	1/20	1/60	1/125	1/400	1/1000	1/2500
15mm	●	●	●	●	●	●	●
28mm	●	●	●	●	●	●	●
50mm	●	●	●	●	●	●	●
200mm	●	●	●	●	●	●	●

Focal Length

* This information should be taken as a general reference guide, since the results may vary depending on camera and lens models.

HOW TO HOLD THE CAMERA

A sharp photograph results from several factors- all of which are of equal importance. These factors are: properly holding the camera, enough DOF, the lowest ISO setting possible, and a fast enough shutter speed to prevent camera shake.
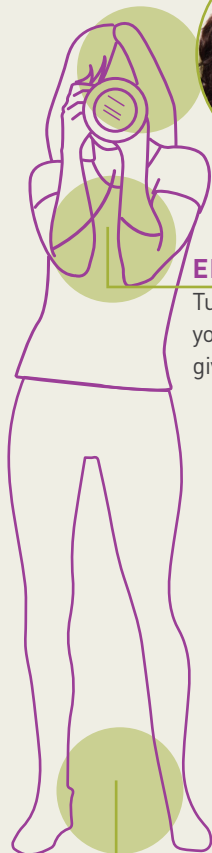
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EYEBROW TOUCH
Rest the viewfinder against your eyebrow to create more support.

HANDS
Use your right hand to grip the camera body and your index finger to press the shutter release. Cup the lens with your left hand, to create more support and stabilization.

ELBOWS IN
Tuck your elbows in, resting your arms on your sides. This gives you a sturdy support.

PORTRAIT
Turn the camera so the shutter release is at the top. Cradle the bottom of the camera with your left hand.

BREATHING
Breath out when taking a picture. Holding your breath in, creates a subtle shaking body motion.

LEGS
Legs should be shoulder-length apart to create balance. If you need to lean in, move one leg forward and bend the knees slightly.

KNEELING
Bring one leg up and rest your elbow on the knee. This basically creates a tripod-like shape.

LEAN IN
Use a wall, flat surface or even another person's shoulder to create support. This is helpful when using a slow shutter speed and a tripod is not available.

BASIC CAMERA OPERATION

LENS FOCAL LENGTH
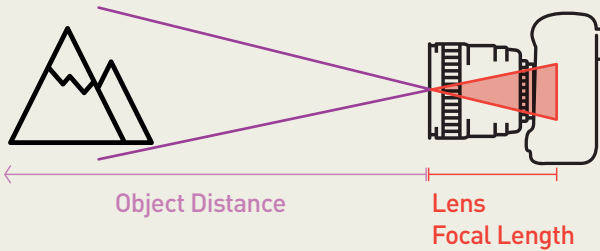
The focal length tells us the angle of view, or how much of the scene will be captured, and the magnification, or how large individual elements will be recorded.
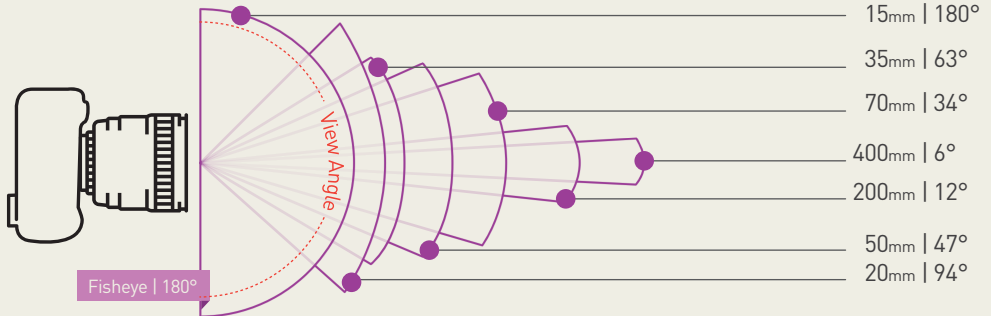
WHAT IT IS AND HOW IT WORKS

Object Distance

Lens Focal Length

Focal length is represented in millimeters (mm). It **is not the actual length of the lens,** but the optical distance from the point where the light rays converge to form an image of an object onto the digital sensor (or film) at the focal plane within the camera.
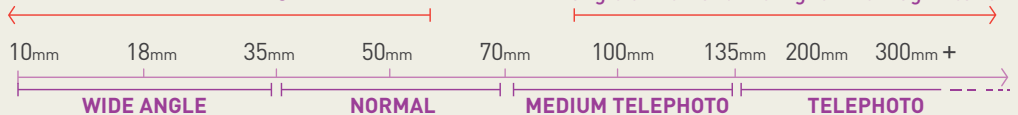
ANGLE OF VIEW EXPLAINED*

* Based upon a 35mm sensor size.

View Angle

Fisheye | 180°

15mm | 180°
35mm | 63°
70mm | 34°
400mm | 6°
200mm | 12°
50mm | 47°
20mm | 94°

CLASSIFICATION AND BEST USAGE

The shorter the focal length, the wider the angle of view and the lower the magnification.

The longer the focal length, the narrower the angle of view and the higher the magnification.

10mm	18mm	35mm	50mm	70mm	100mm	135mm	200mm	300mm +

WIDE ANGLE	NORMAL	MEDIUM TELEPHOTO	TELEPHOTO

Architecture, Landscape

Street, Portraits, Documentary

Nature, Wildlife

Nature, Wildlife, Sports

BASIC CAMERA OPERATION

SCENE MODES

The use of "scene modes" helps a beginning photographer understand camera settings by using pre-programmed information.

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MODE	DESCRIPTION	USES
BEACH / SNOW	This mode compensates the exposure based on the premise that the scene should be primarily light tones, and brightly lit, with highly-reflective surfaces.	For scenes with a lot of white or light colors in them
NIGHT SCENE	The camera self-adjusts the ISO to a medium-high setting. It also turns the flash off and sets a slow shutter speed, while exposing to preserve the highlights, and keeping the shadows detailed.	For night scenes without a central subject that needs special lighting
NIGHT PORTRAIT	This mode behaves just like Night Scene mode, except it usually turns on the electronic flash, red-eye detection, and, in some cameras, face detection.	For night scenes with a central subject that needs additional light
FIREWORKS	This is very similar to Night Scene mode, but it sets an even slower shutter speed to catch the trails of light from the fireworks.	Fireworks or moving lights with a dark background
LANDSCAPE*	In order to get as much of the scene in focus as possible, the camera will set the focal length to a relatively wide angle (if the camera has zoom control), with a small aperture, and will set the focus to infinity.	Daylight or very well-lit landscapes or cityscapes
MACRO/ PORTRAIT*	These modes allow close focusing with a large aperture to blur the background. The camera sets the ISO as necessary.	Small subjects and portraits
CANDLELIGHT**	This mode is a variation of Night Scene but usually disables the flash to preserve the ambiance of the light and adjusts the white balance toward the warm end of the light spectrum.	Low-light scene in with a subject illuminated by a soft, non-global light source
SUNSET & FOLIAGE	These two modes bump up the contrast and saturation settings and usually lower the ISO while setting a faster shutter speed. The saturation increase only affects the .jpg files.	Dawn or dusk scenes or scenes where it's important to emphasize the colors
SPORTS	To freeze fast-moving subjects, the camera will bump the shutter speed as high as possible, thereby raising ISO sensitivity to achieve a proper exposure. Many models also shift the camera to continuous drive and focus tracking.	Daylight or well-lit sporting events, fast-moving subjects, kids and pets in movement
MUSEUM	The camera turns off the flash and sets a relatively high ISO and a slow shutter speed.	Indoor scenes where the use of flash is not allowed
FOOD*	Combines Macro and Night Portrait mode settings, and may also bump the saturation up to bring out the colors of the food.	Indoor close-ups

* This mode is not recommended, since results are not guaranteed. Instead, try Aperture Priority Mode.
** This mode is not recomended. Instead, try Auto ISO and Shutter Priority Mode

Understanding composition, and how to apply it to the creation of a photograph, is without a doubt one of the most important skills for a photographer to master.

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STRAIGHT HORIZON LINE

A crooked horizon line (or any horizontal main line) can feel unnatural and cause a viewer to sub-consciously feel an imbalance. In general, horizon lines work best when they're straight.

Straight Line

Crooked Line

MOVING OBJECTS

Moving objects should enter, not exit the frame. The human eye will try to follow the supposed path of a moving subject. If the subject is moving out of the frame, it feels as if the photograph is incomplete.


Entering the Frame

Leaving the Frame

In this example, the athlete is either about to jump or just finished. Either way, the main action is not happening inside the frame.

RULE OF THIRDS

Divide the frame into nine equal sections by using 2 horizontal and 2 vertical lines. Place the main element of the scene at one of the intersection points. Placing the subject off-center often creates a more appealing composition.
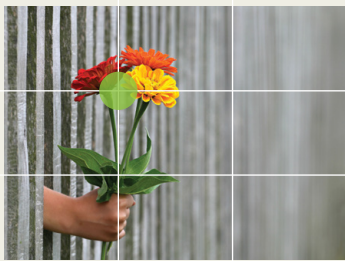
LEADING LINES

Leading lines help drive a viewer's eyes toward important elements, thus helping them to focus on the main subject. They can sometimes also add motion and depth.
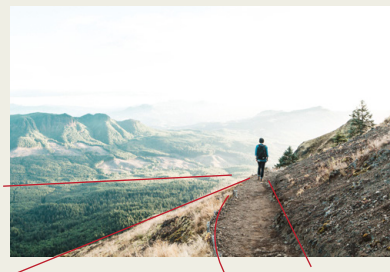
COMPOSITION
BEGINNER TOOLS – PART 2

Understanding composition, and how to apply it to the creation of a photograph, is without a doubt one of the most important skills for a photographer to master.

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USING FRAMES

Create a frame within a frame. Place elements around the edge of the composition so that they create a natural frame to the subject. This helps to isolate the subject and emphasize it as the main point of interest.

FOREGROUND INTEREST

Adding a foreground element helps to create a point of interest. With this technique, you can add a subtle path into the entire composition. Plus, it helps give a sense of depth to a scene.

PATTERNS AND REPETITION

Patterns are visually appealing and suggest balance and harmony. Repetition of elements can have the same effect. Adding textures can also create an attractive composition. You will score a great shot when you combine all three: pattern, repetition, and texture.

FILL THE FRAME - SIMPLIFICATION

Filling the frame helps the viewer focus on the smaller details of the subject, and by leaving little or no space around it, this can be a very effective way to convey a message, such as expression, markings, or architectural details.

COMPOSITION BASICS

COMPOSITION
INTERMEDIATE TOOLS – PART 1

Once you've developed an eye for some of the basics of composition, it's time to move on to intermediate level techniques. These techniques require a slightly higher level of competence.

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ORIENTATION

Orientation is also referred to as image flow. Every scene has a natural flow - vertical or horizontal. Train your eye to recognize strong lines that push the eyes in one way or the other. Using the wrong orientation is a common mistake with new photographers.

BALANCE

Placing the main subject off-center creates a more attractive composition, but, it can leave a void on the other side of the image. To balance the visual weight, place another element, of lesser importance, in the opposite space, making it smaller or out of focus.

COLOR SCHEMES

Complementary colors
Taking the color wheel as a base, complementary colors are those that sit on opposite sides of the spectrum. They are highly contrasting and create striking photos when combined.

Spot color
Sometimes a color - usually a saturated, warm color - will naturally stand out from its surroundings thanks to the lighting, composition, and surrounding colors.

DEPTH OF FIELD

One of the simplest ways to drive interest toward the main subject is to place it in sharp focus, while letting the background, and other objects, fall out of focus. For instance, in a portrait, if the eyes are the most important feature, they should be kept sharp, and then details, like hair, can be left slightly out of focus.
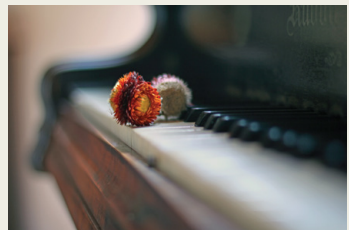
COMPOSITION
INTERMEDIATE TOOLS – PART 2

Once you've developed an eye for some of the basics of composition, it's time to move on to intermediate level techniques. These techniques require a slightly higher level of competence.

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CENTER & SYMMETRY

For their natural lines, symmetrical scenes work perfectly in centered compositions - not only vertically, but also horizontally, (especially when using reflections).

TRIANGLES

While horizontal lines and vertical lines suggest stability, triangles and diagonals create the opposite effect: dynamic tension. A scene with triangular subjects, or implied triangular shapes, will often appear more dynamic and energetic.
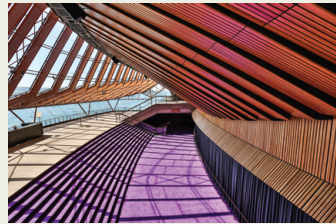

RULE OF ODDS

Objects, in even numbers, especially when evenly spaced, create a feeling of structure. Another way to create an attractive composition is to break this pattern. You can accomplish this by including an odd number of primary elements within your photograph.

NEGATIVE SPACE

Balancing the visual weight within an image (see part 1) creates a harmonious composition, but breaking this rule can also lead to very interesting, eye-catching images. Leaving an empty, or "negative", space around the main subject can make it stand out. Make sure the empty space is part of the composition.
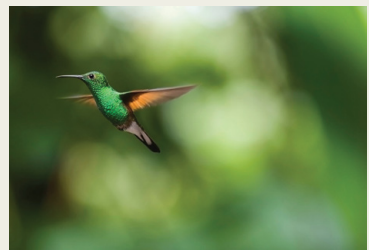
COMPOSITION PSYCHOLOGY

Composition is important to your photographs for several reasons. First, and foremost, it establishes a "path" through your image. However, it also can add mood or help tell a story. All three factors are key to great photographs.

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SYMMETRY

One half (top/bottom, left/right) of an image is identical, or almost, to the other. Naturally, the human eye aims for patterns and balance, and symmetrical images create a sense of harmony, control and proportion. The best way to get these shots is to place your camera as close to the center of your subject as possible (directly below a dome, or right in front of a model, or building, for example).

MOOD IN COLOR

Even though the perception of color is subjective to each individual, there are certain general guidelines that can help you achieve a certain message or mood, through the use of color.

WARM COLORS

Red is the color that grabs the most attention . If it occupies most of the frame, it can create feelings of anger, passion, or speed. If used as a detail, it will make that detail stand out. Yellow and orange, create a youthful, energetic vibe.


COOL COLORS

Cooler colors, (especially blue), bring a sense of calmness and peace. Green, because it's found in nature, creates a feeling of growth, and relaxation.
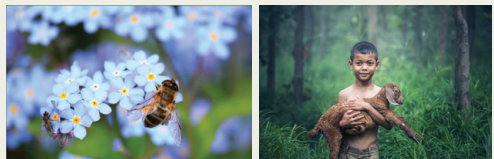
SHAPES

Every element in a photograph will have a shape. Some organic (curved, irregular) and some geometric (symmetrical, usually clean and straight). In the overall composition, we tend to look for balance in one of 3 basic shapes: Oval, square and triangle.

COMPOSITION BASICS
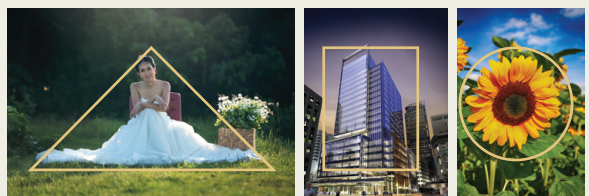
IN-CAMERA FLASH

Even though it has a bad reputation, the built-in flash, also known as "pop-up flash," can be very useful in a pinch. It can be minimally customized to improve the exposure.

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FLASH COMPENSATION

The camera doen't always choose the optimal flash power when firing the pop-up flash. Flash compensation is similar to exposure compensation, but makes the photographs brighter or darker by adjusting the intensity of the flash rather than the exposure.

To adjust the flash compensation, you will need to be in Manual, Aperture Priority, or Shutter Priority mode.
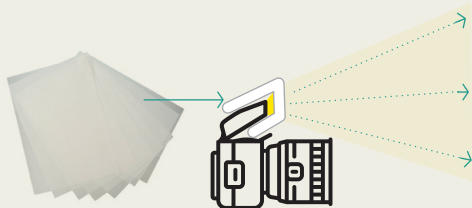
DIFFUSING AND BOUNCING

The smaller the area that the light originates from, the harsher that light source will be. This is why the pop-up flash can be harsh on the subject.
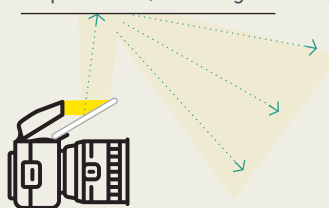
DIFFUSING

Diffusing increases the size of the light source, thereby softening it. A simple alternative is to hold or tape a tissue paper or a similar material to the flash.

BOUNCING

To bounce the light, place a small white card at a 45 degree angle in front of the flash. The light will hit the card, bounce to the ceiling, and spread out, creating a soft light.

FILL FLASH IN DAYLIGHT

Using the pop-up flash as a fill light helps lighten dark shadows, brighten colors, and create depth.

In bright situations, this technique gives the additional effect of darkening the background behind the subject.

KEEP IN MIND

The pop-up flash gets its power from the camera battery. Since it is sharing its power source with the other functions of the camera, its strenght is limited. Because of this, the built-in flash is not nearly as bright or far-reaching as one from an external flash would be.

BASIC CAMERA FLASH

PORTRAIT CROP GUIDE

There are a number of standard "crops" when creating portraits. They include the head shot, the head and shoulders shot, half body shot, and the full body shot. Each crop presents it's own concerns for the photographer and the model.

DO NOT CROP BENDING AREAS

Avoid cropping right on areas where the body bends, it creates awkward proportions and it is visually unpleasant.
In the example image (left), the areas in red should be avoided. Instead leave those areas inside the frame, or completely out.

FOLLOW THE RULE OF THIRDS

When framing a subject's face, make sure that the eyes meet one of the Rule of Thirds' line intersections. Avoid cropping edges of the face such as the chin.

SHOOT DIFFERENT WAYS

Give yourself options to edit later. Shoot from different angles and formats (vertical and horizontal). Use wider and tighter framing.

! CROP IN CAMERA

Plan your capture in camera, and shoot with a purpose. Cropping in post-production means losing resolution- since you're not cropping- as much as enlarging an area. When cropping tight, in camera, you'll have less depth of field, more blur in the background and this allows the subject to "pop" from the background.

Photo by: LG전자 – www.flickr.com/photos/lge

ADVANCED PEOPLE PHOTOGRAPHY

GROUP POSING GUIDE

There are a number of important factors to consider when creating group portraits. Most importantly, you do not want to simply "line up" your subjects if at all possible.

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AVOID STRAIGHT LINES
Align the members of the group mixing head heights. This adds a dynamic feel to the composition.

FRONT AND BACK
Place the smaller members (kids, shorter and smaller-framed people) in the front of the group and bigger people (taller, larger-framed) people in the rear.

CLOSENESS
Depending on the kind of group portrait that you are taking (family, business, sport teams, etc.), you will pose them accordingly. Try to always keep the members of the group close to each other. If it is a family or a group of friends, make sure they are touching and are connected physically. If it is a business group or a group of people not related, keep them close together making sure that there are no uneven gaps between each other.

! **BLINKING**
If there are members of the group who blink often, have the entire group close their eyes, count to three together, and then open their eyes and smile at the same time.

ADVANCED PEOPLE PHOTOGRAPHY

PHOTOGRAPHING WOMEN

There are a number of important factors to consider when creating portraits of women. A key consideration is posing. You may have perfect light and a perfect exposure, however, if the pose is awkward, you'll have an unhappy subject.

! CURVES
Have your subject angled away from the camera to create more visual curves. No part of her body should appear as a straight line. People are usually bending all parts of their body, if the model is standing too straight- she'll look stiff & uncomfortable.

ARMS
Arms and hands should be relaxed and away from the body. This creates a natural pose. Don't extend the hands forward, this can make them appear large.

NECK
Ask your subject to stretch her neck up slightly, bring her head forward, and her chin down slightly. This helps to avoid skin wrinkles around the neck that can cause unpleasant shadows.

LEGS
The subject should not be standing with her legs straight. Ask her to place more weight on one leg and the bend and relax the other. Crossing the legs also creates a pleasant visual line.
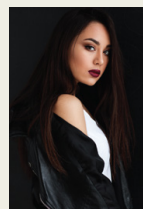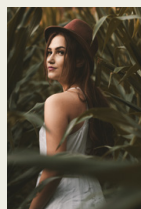
FRAMING WITH HANDS
Ask the model to place one, or both, of her hands around her face, either caressing it, or slightly resting her face onto them . This pose works best in close-ups, since it frames the face.

OVER THE SHOULDER LOOK
Creates a natural, enigmatic portrait. Ask the subject to look to different directions to create a natural look.

LYING DOWN
Having the model lie down adds a sense of intimacy to a female portrait. Positioning them so that the body extends away from the camera adds a slimming effect.

SITTING
When sitting, make sure the subject is bending her back slightly, and always keep one leg completely bent.

PHOTOGRAPHING MEN

There are a number of important factors to consider when creating portraits of men. A key consideration is posing. You may have perfect light and a perfect exposure, but if the pose is awkward, you'll have an unhappy subject.

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! SHARP ANGLES

Unlike female subjects, when working with a male model, it is recommended to emphasize lines and sharp angles (jaw, back, arms, etc).

SHOULDERS

Ask your subject to stand tall, and square the shoulders by pushing up slightly and leaning towards the camera. The subject should keep their core tight by breathing slowly and relaxing.

JAW LINE

Have the subject push their chin out and angle it down slightly. This helps by stretching the neck in a subtle way. Avoid pulling the chin back, as this can create the effect of a "double chin."

LEGS

The subject should not be standing with his legs completely straight. Ask him to place more weight on one leg and bend and relax the other.

HAND PLACEMENT

Good hand placement helps show confidence. It also makes the subject feel at ease. Ask him to try putting his whole hand in his pocket or leaving just the thumb out. Watch out for "stiff hands."

LEANING

This pose helps the subject relax and creates strong visual leading lines.

SITTING / ARMS

Ask your subject to extend one arm (or both), rest it on one leg while relaxing the other arm, and lean towards the camera. This helps by stretching the body, and it's a great pose to show clothing.

ONE LEG UP

This pose can be done in a sitting or standing position. If standing, have your subject rest the bending leg on a wall.

PLANNING A
FAMILY PORTRAIT SESSION

Family portraits require the photographer to be organized.
Groups, and especially large groups, will find it difficult to be
patient if the photographer is not prepared.

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SUBJECT APPEARANCE

CLOTHING

☐ Ask the members of the family to plan their outfits, even bring a change of clothes. As a general rule, it's more visually appealing if all the subjects dress in similar color tones.

☐ Avoid having extremely bright clothing or having only one member wearing brightly colored clothes, unless you're aiming for a specific style requested by the subjects. Avoid patterned clothing.

☐ Remind them to wear clothes they feel comfortable in (not too tight, short, warm, etc).

MAKE UP AND ACCESSORIES

☐ Keep it simple. Stay away from trendy makeup or accessories, as they will make the picture look very outdated once the fashion trend goes away.

EQUIPMENT

PROPS

☐ Bring (or ask the family to bring) toys and games that will entertain young children. This can help keep them engaged and bring out smiles and laughs from the entire group.

☐ If shooting outdoors, bring a towel or paper towels in case someone gets sweaty or dirty. A blanket is also helpful if there are going to be any pictures taken while sitting on the ground.

☐ Bring hair accessories for people with longer hair. A hair tie and a brush are helpful for windy conditions.

☐ Bugspray, a small portable mirror, and a duffle bag to store purses, shoes, etc. (so they don't get lost - especially if shooting outdoors) are helpful touches.

GEAR

☐ Using a tripod helps you frame the photo first, then take your eyes off of the viewfinder and engage the family members eye to eye. Creating a connection with the family is important.

☐ Unless shooting a large group, stay away from wide-angle lenses. A safe focal length is in the 50-135mm range.

> **!** There is an ideal time for outdoor family portraits: 45 minutes before sunset until 30 minutes after sunset. Sunrise is trickier, allowing only about a 20-minute window after the sun breaks the horizon.

INDOOR NATURAL LIGHT

When you first begin to point your camera at people, taking their photograph while utilizing indoor natural lighting is one of the easiest ways to get started. Always be mindful of your shutter speed and your ISO.

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ELEMENTS

CAMERA
When possible, use a lens that offers a large maximum aperture.

NATURAL LIGHT SOURCE
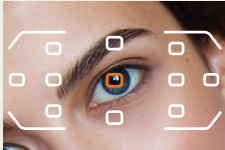Nearby windows, doorways, sliding glass doors, picture windows, bay windows, or open garage doors.

WHITE CARD / REFLECTOR
If the light source is too direct, it can create hard shadows. Bounce light back into the shadows.

SET THE CAMERA

IT'S ALL IN THE EYES
Focus on the subject's nearest eye to the camera. Lock the focus, and then compose your shot.

USE APERTURE PRIORITY
Set the camera to Aperture Priority mode or Manual mode. Use a wide aperture (f1.8 - f5.6 for 1 or 2 people; f5.6 - f11 for groups). Make sure your shutter speed isn't too slow.

MIND THE ISO

ISO = LOW is BEST

Once you've set your aperture, set the ISO to 100, and check the light meter. If the shutter speed is 1/125 or slower, then increase the ISO or use a tripod.

SHOOTING THE PORTRAIT

Placing the subject facing the light source will give you an even light that softens the features.

Posing the subject at an angle to the light will create a model-like mood and make their features stand out. For this angle, you may need a reflector to soften hard shadows.

BASIC PEOPLE PHOTOGRAPHY

OUTDOOR NATURAL LIGHT

When you first begin to point your camera at people, taking their photograph while utilizing outdoor natural lighting, is one of the easiest ways to get started.

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SETTING UP THE CAMERA

CHOOSE THE RIGHT LENS

Use a longer focal length lens, and try to fill the frame with your subject. Stay away from ultra wide-angle lenses, as they can distort the edges of the frame, and this will be noticeable when shooting groups of people.

M / Av

SHOOT IN MANUAL OR APERTURE PRIORITY MODE

When shooting portraits, one of the key elements is to take control of the depth of field. Taking photos outdoors means that there can be distracting elements in the background. Blur the background by using a wider aperture.

IDEAL TIME

The best outdoor natural light occurs from 30 minutes before sunset until 45 minutes after. Sunrise has a short window of opportunity - about 20 minutes.

TAKE THE SHOT

GROUP

APERTURE

Set the aperture between f/5.6 and f/11. These f/stops give you enough depth of field to keep the subjects sharp while letting the background blur.

POSITION

If possible, place the group into the shade, or put the sun at their backs and use a fill-in flash.

POSING

Study the example. Position the group so that the head heights vary. Group interaction is always pleasing. Position the subjects so that they are not looking off-frame. Another alternative is to have everyone looking at the camera.

INDIVIDUAL

APERTURE

Get close. Use a large aperture to keep the background blurred. Set your critical focus on the eye closest to the camera.

POSITION

Place your subject in the shade, or with the sun behind them, and use a reflector or a fill-in flash.

POSING

For headshots, stay close. Always keep an eye on the neck for squished skin. Keep the chin slightly up. For half-body shots, watch for slumping shoulders. For full-body shots, look for tense hands or stiff legs. Keep your subject relaxed.

LANDSCAPE CHECKLIST

Landscape photography is a fantastic way to begin your photographic journey, as it tends to be slow and methodical. This allows you time to carefully consider each step in the process.

☐ **SET ISO 100 / ISO 200**
The lower the ISO, the less noise you'll get. This will make the image appear sharper.

☐ **SHOOT AT f/8 - f/16**
In landscape photography, it is best to increase the depth of field by using a smaller aperture.

☐ **A / Av MODE or MANUAL MODE**
Using Aperture Priority Mode or Manual Mode.

☐ **USE A TRIPOD**
If you are using a lens with a focal length of 100mm or longer, or if your shutter speed drops to 1/125th or slower, and you do not wish to raise the ISO.

☐ **ACTIVATE MIRROR LOCK-UP**
This will reduce vibration-induced motion blur that can occur during longer exposures. Use for shutter speeds between 1/8th and 4 seconds. (For >4 seconds, it's not necessary.)

☐ **USE A REMOTE SHUTTER RELEASE**
This helps to avoid motion blur that can occur when pressing the shutter release button, especially at slower shutter speeds (1/30th or slower).

☐ **COMPOSE THE SUBJECT OFF-CENTER**
Create an interesting composition. Follow composition rules. Composition rules that are often used in Landscape photography are The Rule of Thirds, Leading Lines, and The Golden Ratio.

☐ **BE CAREFUL WITH LEADING LINES**
Make sure that the leading lines drive the viewer's eyes toward the focal point of your landscape composition and not away from it.

☐ **ADD FOREGROUND INTEREST**
Place a prominent object into the foreground. Especially if it is an object of a known size, this can add depth and drama to a landscape photograph.

☐ **FOCUS A THIRD INTO THE FRAME**
Pick an object that is approximately 1/3 of the way into your scene and place your critical focus at this point. Doing so provides the maximum depth of field for the entire scene.

☐ **USE EXPOSURE COMPENSATION IF NEEDED**
Shoot a test photo. If the histogram is "clipped" at either end, adjust the exposure with Exposure Compensation when using an auto mode or by changing the shutter speed in Manual mode.

☐ **CHECK THE HISTOGRAM**
Make sure that the curves for light tones and shadows are balanced with no clipping.

SPECIAL TECHNIQUES

LANDSCAPE CREATIVE TIPS

Be patient. Research for the best light, season, weather, etc. You may have to go to a location several times, on different days, or at different times of the day, to understand how the light interacts with the landscape. Light changes with the time of year- even in a few weeks. You may need extra effort to get the perfect shot.

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CATCH THE GOLDEN HOUR

Ideally, 30 minutes before sunrise until 10 minutes after and half an hour before sunset until 40 minutes after are the best moments to shoot landscapes. At this time of day, the contrast range drops, shadows deepen, textures become prominent, and the entire scene will taken on saturated hues of color.

USE PEOPLE

Adding people to a landscape photograph has several benefits: It emphasizes scale, creates a story, and helps the viewer relate by having a human element. Make sure to position the person so that they stand out from the surroundings (bright clothing, silhouette, etc).
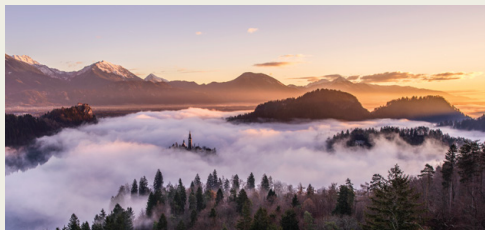

USE REFLECTIONS

When the landscape reflects on a surface like water, it adds symmetry, and enhances the the magnitude and dynamics of the scene. Calm days work better than windy days, since the water will give a smoother reflection on the glassy surface.

CHANGE YOUR POINT OF VIEW

We are used to seeing everything at eye level. Positioning your camera from a high point of view or near the ground gives a creative touch.

DON'T WAIT FOR THE GOOD DAYS

Often times the sky before or after a storm can give you dramatic light and unusual clouds. Cloudy days, fog, snow, and rain can create amazing photos.

SPECIAL TECHNIQUES

MACRO PHOTOGRAPHY

Macro photography requires specialized skills. However, the first step is your selection of proper equipment. You can't begin your journey of learning macro photography techniques without knowing what gear you'll be using to apply those techniques.

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MACRO LENS

- They are designed to shoot at a **close distance from the subject**, but they can also work as your day-to-day lens.
- A macro lens will have 1:1, or 1x magnification.
- The longer the focal length of the lens, the more working distance you'll have between the camera and the subject to achieve 1:1 magnification.

CLOSE-UP LENSES

- They are technically lenses, but work more like a filter. Just screw it onto the front of your lens.
- They work by **reducing the minimum focusing distance of your lens.** You can focus more closely to the subject.
- With these lenses, the longer the focal length of your main lens, the more magnification you will get.

EXTENSION TUBES

- They **increase the extension of your lens. The tube moves the lens forward,** further away from the camera's focal plane, and therefore closer to the subject. That creates more magnification and closer focusing.
- Depending on the lens, you can focus closer than a close-up lens, thus "almost" turning your lens into a macro lens.

REVERSED LENS RING

NORMAL LENS

REVERSED LENS

- They work by turning the lens around. This puts the front element of your lens now facing the camera body. This way the lens works in reverse: it magnifies the subject to almost 3x life-size reproduction depending on the lens.
- One side of the ring attaches to the front of the lens, and the other side attaches to the camera lens mount.
- It is one of the most affordable techniques. However, it does expose the rear of the lens to the elements.

SPECIAL TECHNIQUES

NIGHT PHOTOGRAPHY

Night photography requires proper equipment and some knowledge on technique. As you begin to explore night photography, pay special attention to your choice of lighting, especially the artificial light, as well as the light left in the sky.

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EQUIPMENT and SETTINGS

CAMERA

For some night scenes, like those with bright lights (cities, busy streets), you may need a lens hood to avoid unwanted lens flares.

TRIPOD

For night photography, you have to use a slow shutter speed. A tripod will help steady the camera and avoid blur created by camera shake.

REMOTE SHUTTER RELEASE / SELF TIMER

Pressing the shutter release button can cause camera shake. Using a remote release or the self timer helps you avoid this.

A /AV
APERTURE PRIORITY MODE

f/11 is a good place to start. Manual mode works well (if you are familiar with it). If you want more depth of field, close down the aperture.

CAPTURING MOTION

If you want to show movement, without blur, you need a faster shutter speed. This means a larger aperture and a higher ISO setting. For pictures with motion blur, you need to use a slower shutter speed. To keep the static objects sharp and in focus, you need to use a tripod and/or a remote shutter release. Architecture generally photographs best closer to dusk than in the dead of night.

GENERAL EXPOSURE GUIDE - at f/11

	ISO 100	ISO 200	ISO 400
Cityscape	20 sec	10 sec	5 sec
Scenes with reflections on water	30 sec	15 sec	8 sec
Neon signs	2 sec	1 sec	1/2 sec
Christmas lights - outdoors	20 sec	10 sec	5 sec
Average outdoor lighting - wide	20 sec	10 sec	5 sec
Floodlit scene - outdoors	30 sec	15 sec	8 sec
Landscape by full moon light	30 mins	15 mins	8 mins
Landscape at twilight	1 min	30 sec	15 sec
Candlelight - indoors	1 min	30 sec	15 sec
Traffic light trails	30 sec	15 sec	8 sec
Fair rides	15 sec	8 sec	4 sec
Bonfire flames	2 sec	1 sec	1/2 sec
Fireworks	2-60 sec	2-60 sec	2-60 sec

SPECIAL TECHNIQUES

BIRD PHOTOGRAPHY

Bird photography is challenging on many levels. As a beginning bird photographer, it's a good idea to practice the fundamentals of exposure and focusing on a fast moving object.

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CHOOSE THE RIGHT SHOOTING MODE
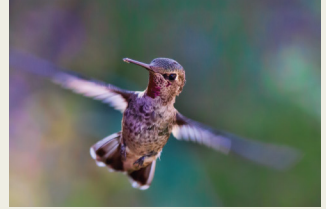
M
MANUAL MODE

ISO 200 and f/11 is a good place to start. Manual mode works best (if you are familiar with it) in situations where the birds are semi-still, for example, resting on a branch.


A/AV
APERTURE PRIORITY MODE

Start with an ISO of 200-400 and the widest aperture your lens has. This will allow a faster shutter speed to freeze the motion.

S/TV
SHUTTER PRIORITY MODE

Set the ISO to 100 and a slower shutter speed, 1/30" to 1/125". Adjust to a faster shutter speed depending on the level of blur that you want.

KEEP THE RIGHT FOCUS POINT

If your camera allows it, select the central focus point and the focus tracking mode. Keep the shutter release button half pressed as you follow the motion of the bird. Keep the focus on the same spot, and shoot when you like the composition or the background.
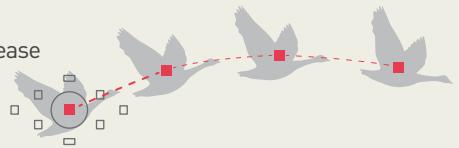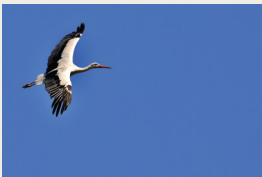
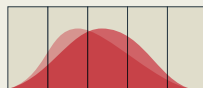## MIND THE BACKGROUND - CHECK THE HISTOGRAM

FOLIAGE BACKGROUND
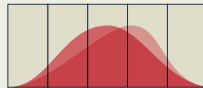
If the background foliage is in the sunlight, the histogram should peak toward the middle. If the foliage is in shadows, the peak will be off-center to the left. If not, move the exposure compensation one stop negative.

SKY BACKGROUND

Clear blue skies tend to show a centered peak in the histogram. If the sky is cloudy, the peak will slide off-center to the right. If not, move up one stop of positive exposure compensation.

SPECIAL TECHNIQUES

PHOTOGRAPHING MOVING WATER

Photographing moving water is an exercise in technique and aesthetics. In order to have a successful "moving water" shot, you want some aspect of the photograph to be sharp and in focus.

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FREEZE MOTION

USE A TRIPOD

FAST SHUTTER SPEED

Meter the scene and set the correct proper exposure. If the shutter speed is less than 1/250sec, use a larger aperture or increase the ISO until the shutter speed is fast enough.

* If the scene still looks blurry, you may have to wait until the lighting conditions are better.

BLUR MOTION

USE A TRIPOD + REMOTE SHUTTER RELEASE

SLOW SHUTTER SPEED

Meter the scene and set the proper exposure. If the shutter speed is more than 1sec, use a narrower aperture or decrease the ISO until the shutter speed is 1sec or less (depending on the scene).

* If the water is still not blurred enough and you can't decrease the aperture any further, you may have to wait until the lighting conditions become darker.

USING A NEUTRAL DENSITY FILTER
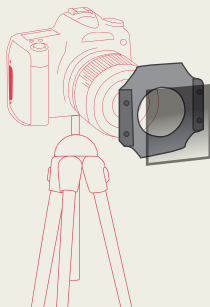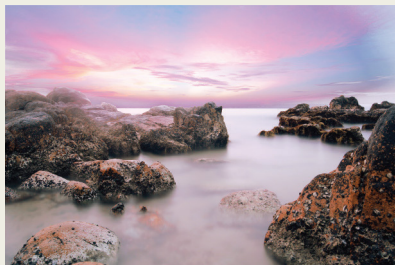
COMPOSITION COMES FIRST
It will be very hard to see the scene once the filters are placed. Compose the scene and then attach the filter.

FOLLOW THE CHART
Compose, meter and focus the scene. Attach the filter, and adjust the exposure as specified by the ND filter guide.

SPECIAL TECHNIQUES

PHOTOGRAPHING SUNSETS

A great sunset photograph typically requires three things: 1) A great sunset, which usually means some cloud cover; 2) A proper exposure in your camera; 3) Some type of foreground interest.

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BASIC SETTINGS

MANUAL MODE
This is the best option to have complete control over the shot. Set the ISO and aperture, and then adjust the shutter speed for a proper exposure. Slight underexposure often works best.

APERTURE
It is best to go with a smaller aperture such as f/11 or f/16. This way the image will be sharp from close up as well as off into the far distance.

SHUTTER SPEED
1/60 sec or faster is an ideal starting point. Take a test shot and then adjust the shutter speed once the aperture and ISO are set. If the shutter speed is slower than 1/30th, use a tripod.

ISO
Go low. ISO 100 will ensure clear images without any grain or noise. If shooting the afterglow, post sunset, use ISO 200, 400, or 640 as the light intensity drops.

GET THE GEAR - OPTIONAL
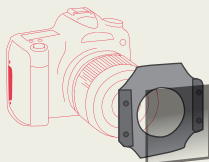
A graduated neutral density filter will help balance the exposure of the bright sunset against a backlit subject in the foreground (a portrait, an object, etc). The filter will help you capture detail in the foreground subject.

A tripod is helpful to slow the process down, get the horizon line straight, and help you check the corners of your frame for unwanted visual eye snags.

TAKING THE PICTURE

FOREGROUND OBJECT
Adding foreground interest gives depth to the image, adds context and dimension, and even helps to tell a story that engages the viewer.

THE ART OF METERING
Set your Metering Mode to Spot. Pick a mid-tone area away from the sun to take your meter reading, such as the green box highlighted in image **A**.
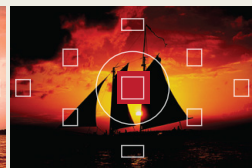
In example **B**, a dark area was the metering point. This made the camera overexpose the image. In example **C**, the sun was the metering point. This made the camera underexpose and darken the scene.

A

B

C

SPECIAL TECHNIQUES
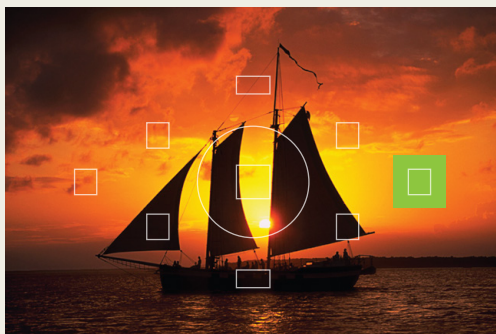
SOCIAL MEDIA - IMAGE SIZES*

When uploading photographs to the various social media websites-each site has it owns rules and guidelines regarding the file size. While these requirements can change- this list gives you an idea of how to size your images and what to look for.

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In red: Images you can upload and have full control on the size and cropping.

FACEBOOK
Cover photo	**1200 x 675 px** (displays 820 x 312px on destop and 640px by 360px on mobile)
Profile	**170 x 170px** (upload 340x340px to get better quality)
Shared link	**476 x 249px**
Timeline	**476 x up to 714px** (3:2 ratio)

GOOGLE +
Cover photo	**2120 x 1192 px** (min size is 480 x 270px)
Profile	**250 x 250px**
Newsfeed	**502 x 892px** (max height)

LINKEDIN
Cover photo	**1536 x 768 px** (max 2MB)
Profile	**130 x 130 px** (400 x 400px is recommended - max MB)
Shared Img	**520px wide** (400 x 400px is recommended - max MB)

FLICKR

Each photograph can be up to 200 MB.
Photos can be no more than 31.25 times wider than they are tall.
Native file formats are .JPEG, .GIF (non-animated), and .PNG
You can upload in any other format, the files will be converted to .JPEG

YOUTUBE
Channel cover	**2560 x 1440 px** (min 1546 x 423px)
Video thumbnail	**1280 x 720 px** (min 640 x 360px)
Channel icon	**800 x 800px**

TWITTER
Header photo	**1500 x 500 px**
Profile	**400 x 400px**
Tweeted Img	**1024 x 512px** (min 440 x 220px - Any height allowed / expands when clicked)

PINTEREST
Header photo	**160 x 160px** (upload 600 x 600px for best quality)
Pins	**736 height x infinity** (displays 236 x scaled height)
Board cover	Displays square img. Min 100 x 100px

* As of July 2017

SPECIAL TECHNIQUES