Photography Basics

"You don't take a photograph, you make it." – Ansel Adams

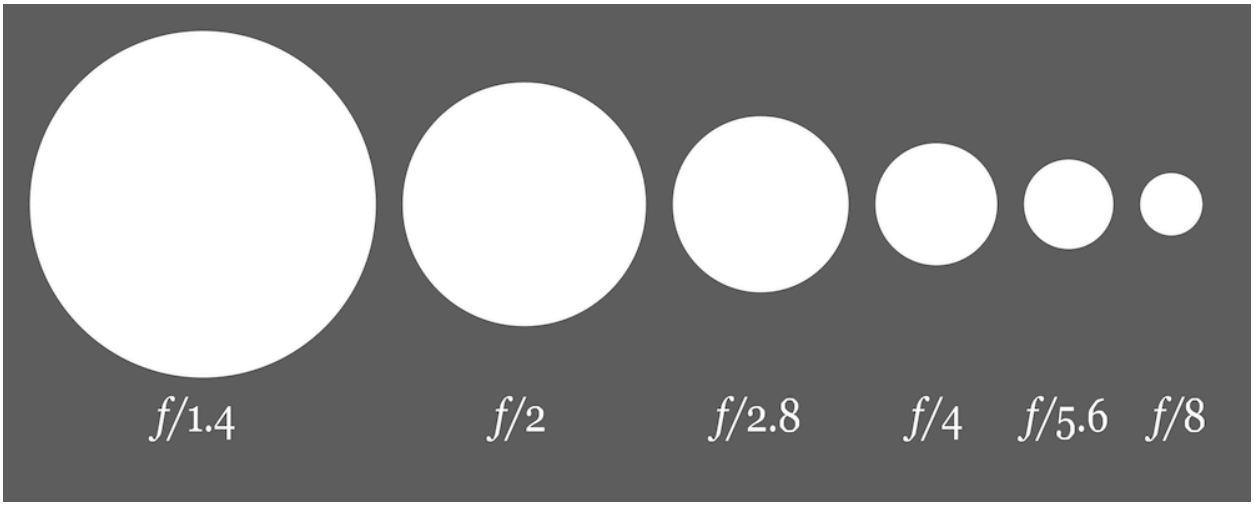
photography **n.** the art or practice of taking and processing photographs; etymology from Greek *photos* and *graphos*, **light writing**

Every camera contains the same three pieces: a **shutter** that opens to allow in light, an **aperture** that controls the amount of light allowed in and **film or a sensor** that is sensitive to light.

Shutter speed is measured by the period of time the shutter stays open. The difference between periods is often shorter than humans can detect and are measured in minute fractions of a second. An example of a common **shutter speed** is 1/160 of a second.

Light tip: Longer shutter speeds allow more light to enter the camera. A shutter speed below 1/60 of a second can cause objects to blur as they move in front of the sensor.

Aperture is measured by the width of the opening. The width is expressed with an **f-stop** number. A typical f-stop number is f/8. For the curious, 'f' is the focal length of the lens, which is measured in millimeters, divided by the width of the opening. Because of this inverse relationship, smaller numbers are used for bigger openings.



Apertures on most lenses go as small as f/22. Lenses that can open wide are often more expensive. The lowest apertures in common lenses are often around f/1.4.

Light tip: Open apertures allow more light to enter the camera quickly. It is easier to take photos in dark environments with a wide aperture.

Film or sensors are measured by their sensitivity to light. Sensitivity is measured in terms of **ISO**. The lowest ISO setting is usually 100. Companies that make cameras are

continually improving their sensors to allow for more light sensitivity. A common high ISO on cameras today is 3200.

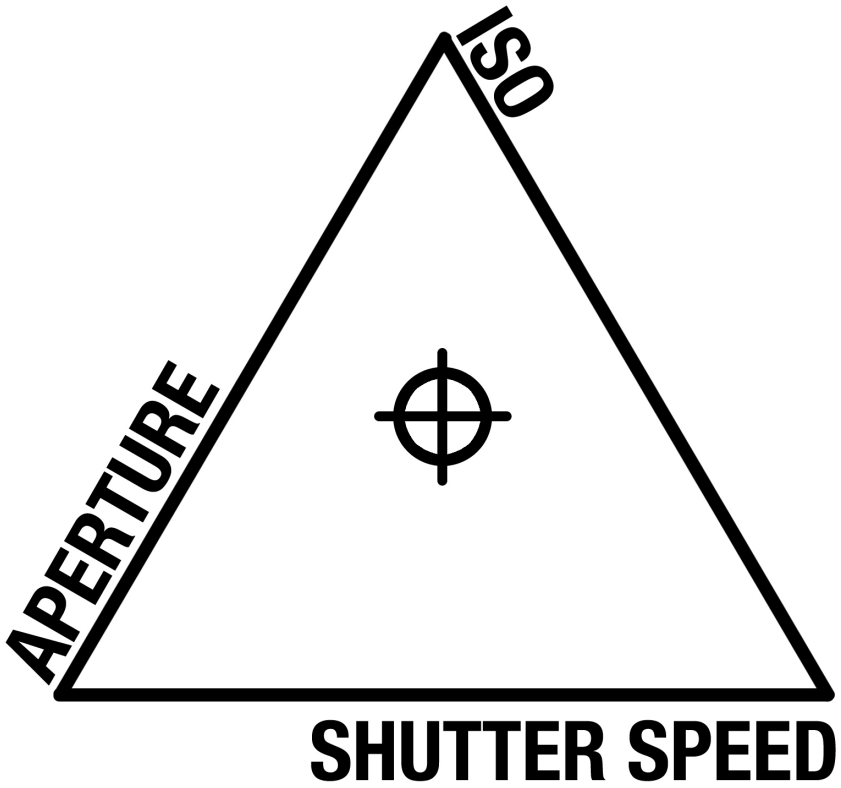
Light tip: High ISOs will lead to grainy or noisy photos. Most cameras available today begin to see noticeable distortion around ISO 1600.

The Exposure Triangle

When taking a photograph, the goal is to achieve a **proper exposure**, but a proper exposure can also be a matter of artistic opinion.

In most cases, a proper exposure clearly shows all parts of the image without the blur of slow shutter speeds or loss of photographic detail because of **underexposure** or **overexposure**.

A good way to think of this is to envision proper exposure as a triangle:



The right combination of aperture, ISO and shutter speed will achieve a proper exposure, the center of the triangle. But many variations of all three, depending on the light conditions and the photographer's intent, could also result in a proper exposure.

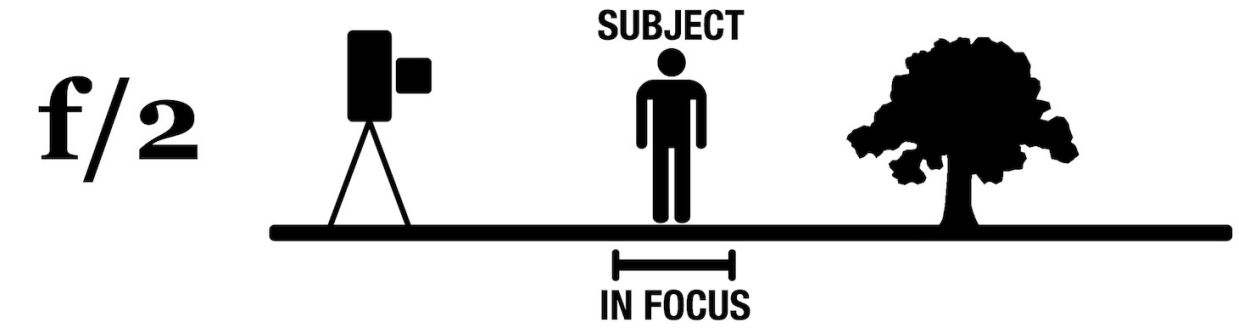
The only rule is that if one variable changes, it is likely that you will have to shift another side of the triangle to keep the shape intact and retain a proper exposure.

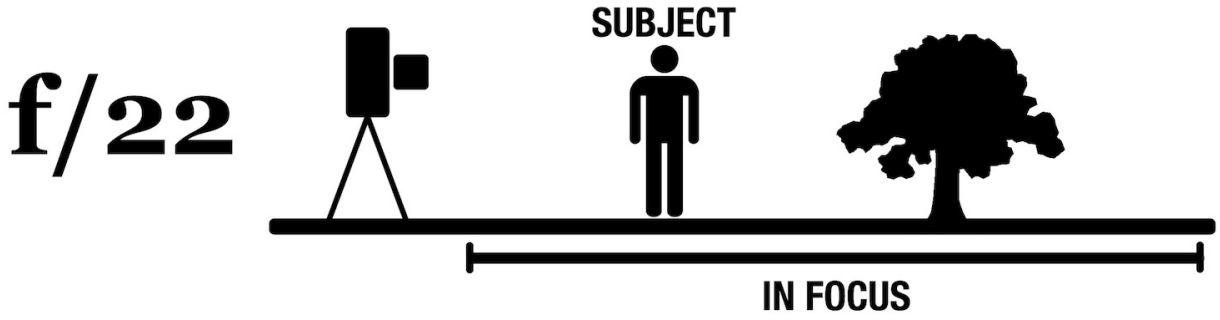
The Other Side of the Triangle

So, why would you change your aperture or shutter speed when you have already achieved a proper exposure with the triangle? This is where the fun begins.

All three sides of the triangle have secondary characteristics that allow photographers more control over their images.

Aperture can be used to control a photograph's **depth of field**. That's how photographers refer to the amount of the picture that is in focus. As the f-stop number decreases, so does the depth of field. It works like this:



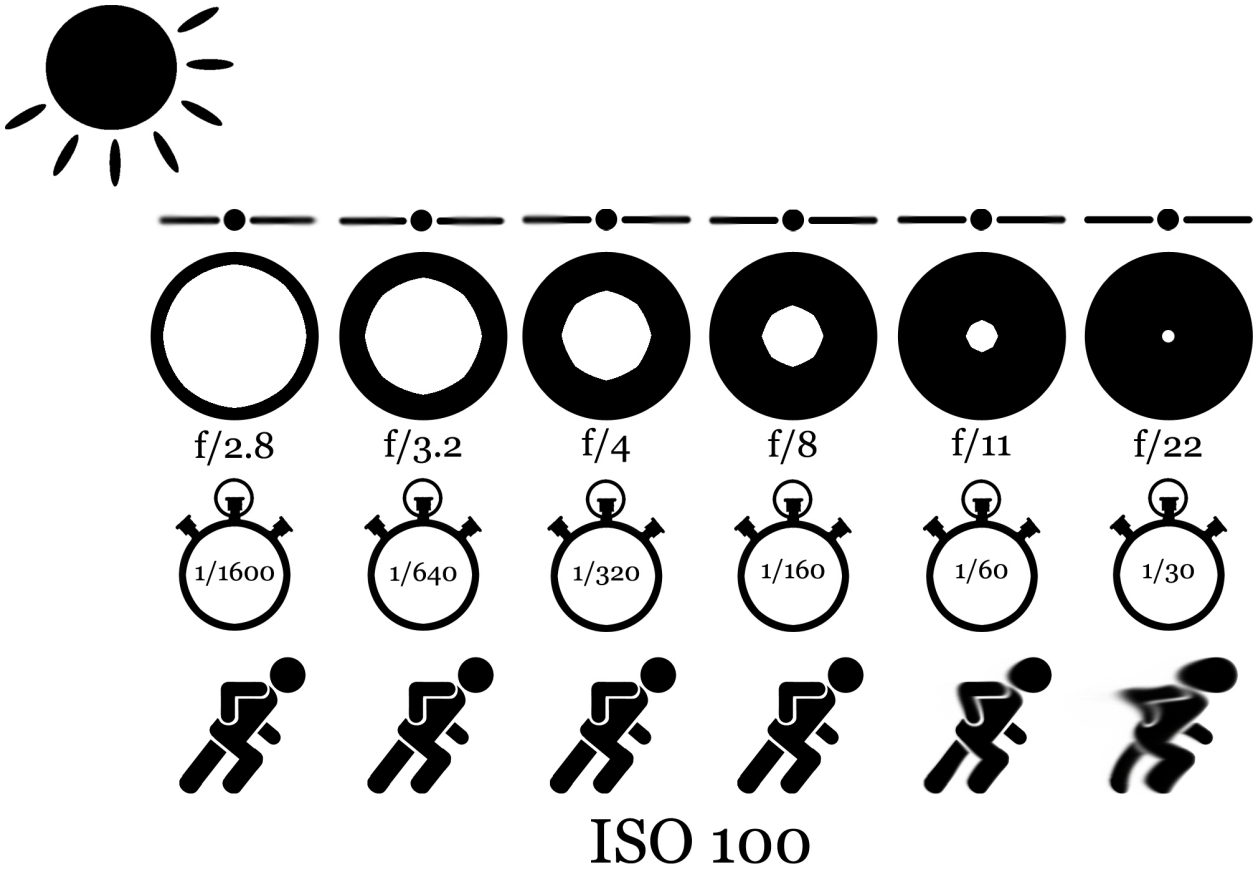


Shutter speed can be used to **blur** subjects to create a sense of motion. However, there are relatively few instances when this is desirable. Every effort should be made to keep your shutter speed above 1/60 of a second in order to avoid blurry pictures.

ISO can be adjusted to compensate for shifts in aperture and shutter speed allowing the photographer to achieve a proper exposure. You should always keep your ISO setting as low as possible for the current lighting conditions.

Adjusting these three variables in creative ways is part of the difference between taking a picture and making a picture.

Here's an example of how the three sides of the triangle relate to each other in daylight:

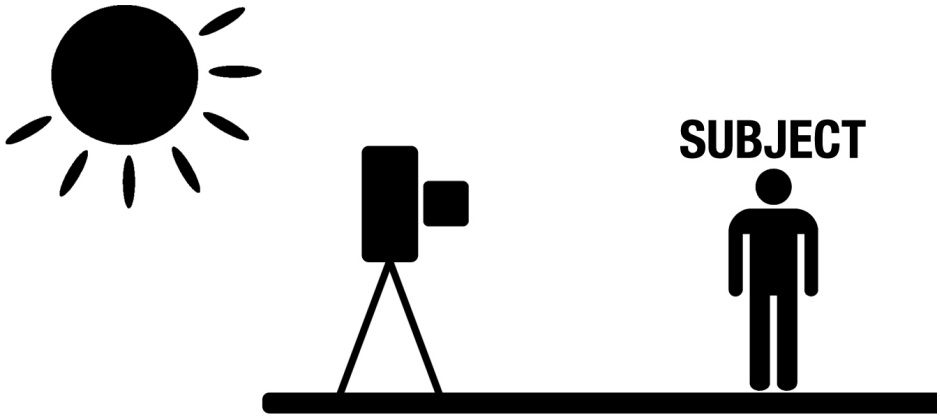


Most cameras these days have sophisticated instruments built in that will select these variables for you. Part of becoming a good photographer is learning how to take control of your camera and the three legs of the exposure triangle.

Avoid the blur: When shooting in dark situations, even the slight shake of your hands or the motion of your breathing can make a good photo blurry. Try propping your elbows against your rib cage. Exhale and then push the shutter button.

Challenging Situations

The best method is always to place yourself between a light source (the sun, a lamp, a streetlight) and your subject. The light will shine on your subject and create an even light. That picture is a snap.



When you can't help it or you want to have a backlit photo, the best option is almost always to adjust your settings for the **bright part of the photograph**. This will **underexpose** the darker parts of your photo.

Photo editing programs have the ability to adjust exposure. It is always easier to turn up the lights on a photo than turn down the lights. **Overexposing** a photo causes an irretrievable loss of detail.

Speaking of those photo programs there are **three things you can never fix later.**

• A blurry photo.
• An overexposed photo.
• An out-of-focus photo.

Get it right the first time.

Avoid the blur: The only way to find the light and the good picture is to keep your head on a swivel. Always be aware of where the light is coming from. Always be aware of what's going on around you. Like a ninja…

Focus

Both dSLR and point-and-shoot cameras have the ability to analyze and image and obtain focus automatically. These sophisticated instruments can usually be trusted to focus for you. Sometimes it may be difficult to obtain focus in dark situations. You can switch to manual focus for more control.

Focus tip: dSLR cameras will often focus on what's in the center of the frame. Often, for the best composition, you don't want to put your subject in the center of the frame. Try

pushing the shutter button halfway to obtain focus then recomposing the photo for a more interesting look.

Working with dSLR Cameras

dSLR cameras give you the option to have the camera choose all settings for you. This is called full auto or program (**P**) mode.

The next step is to choose to control one arm of the triangle and let the camera do the rest. If you want to control the shutter speed, in order to achieve a blur effect, use the mode labeled **Tv**. If you want to control, the aperture and, thus, your depth of field, use the mode labeled **Av**.

Experienced photographers often use manual (**M**) settings to gain maximum control over how their photos look. With practice, you will start to gain an instinct for the proper settings in certain light conditions.

Stand up: It's important to take a photo like you mean it. Stand with your feet apart, in front of and behind your body. Lean into the photo. This will make you more intent and keep you steady.

How to Take Good Photos

• **Take more photos.**

• **Look at more photos.**

• **Hunt the light.** Put yourself in a favorable light situation. Ask your subject to step outside. The best light is in the hour before sunset and after dawn.

• **Get a new perspective.** A great photo shows you something you haven't seen. It challenges the way you view the world. Everyday, we see the world standing up and facing forward. Try taking a photo from near the ground. Try holding the camera over your head. Better yet, climb a ladder.

• **Zoom with your feet.** Many cameras have zoom lenses or zoom switches. Forget about them. The best cameras show us a whole scene from far away or the details of a story from close up. Walk there, you lazy bum.

• **Have fun.** Taking a photo only takes 1/1000 of second. Make it the best 1/1000 of second you had that day.