Photography Basics

An Introduction to the Exposure Triangle

EXPOSURE

Exposure is **the amount of light that reaches your camera's sensor**, creating visual data over a period of time.

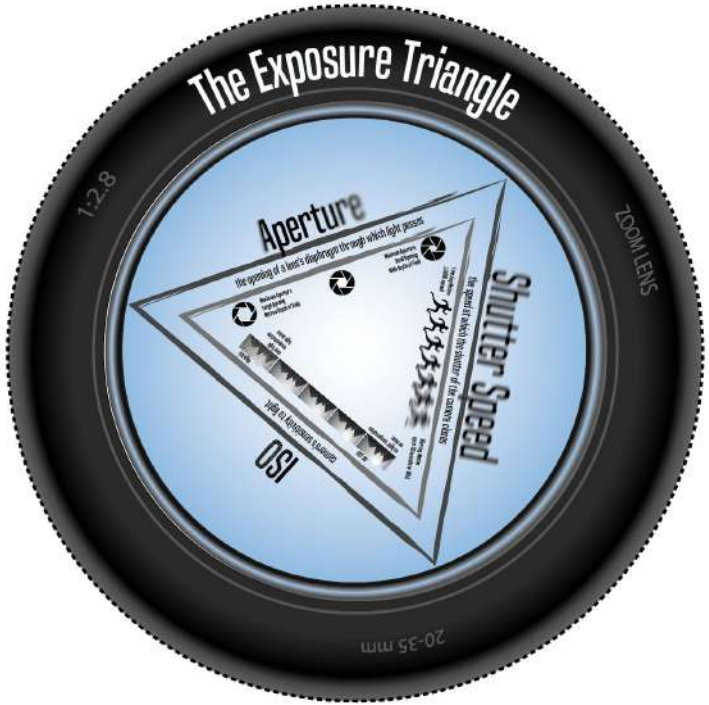
Exposure Facts

- A properly exposed photo has bright white highlights, dark black shadows and a range of values in between

What affects exposure?

1. Aperture - how wide or narrow the lens diaphragm is
2. Shutter Speed - how fast or slow the shutter closes
3. ISO - how sensitive the camera is to light

The Exposure Triangle



Aperture, shutter speed, and ISO make up the three sides of the exposure triangle.

Aperture - the opening of the lens diaphragm through which light passes

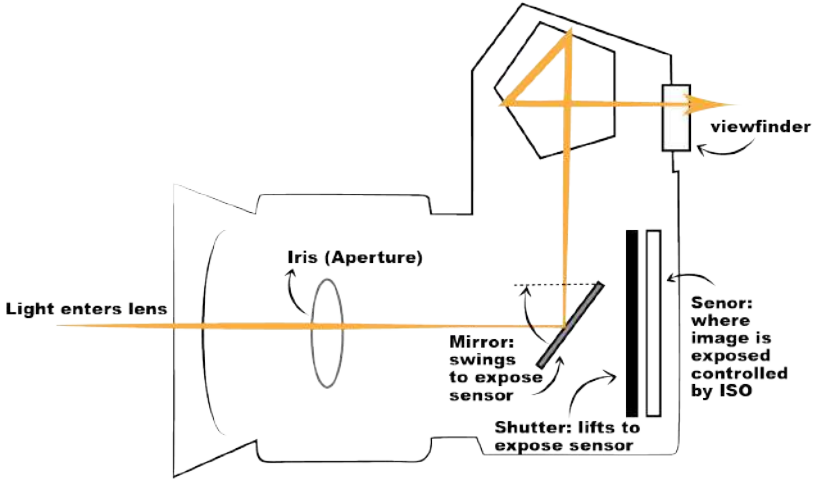
Shutter Speed - the speed in which the shutter of the camera closes

ISO - the camera's sensitivity to light

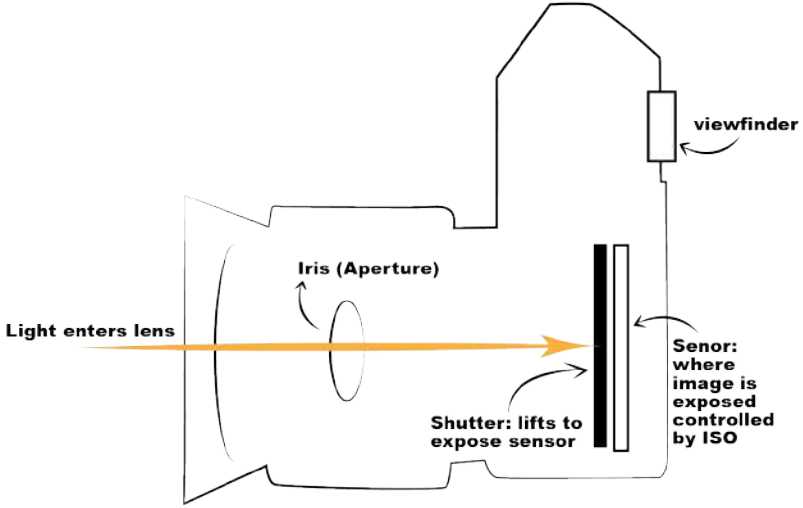
Camera Diagrams

The two major types of cameras on the market today are DSLR and Mirrorless. They primarily work the same way. The major difference is the lack of a mirror in the mirrorless; which means that the camera's viewfinder is a digital representation of what the image will be and does not rely on light refraction.

DSLR Camera



Mirrorless Camera



APERTURE

APERTURE

the opening of the lens diaphragm through which light passes

https://www.youtube.com/watch?v=YojL7UQTVhc

Aperture Facts

- Controlled by the lens on the camera
- Measured in F stops
- Range Varies: F1.4-F22
- Controls depth of field

What is an F Stop?

1. F-stops in photography measure how much light enters your lens and how bright your exposure is.
2. By changing the aperture of the lens you change how much light enters the camera

APERTURE RANGE

Wide/Maximum Aperture

- Refers to lowest F number
- Allows the most light to pass
- Gives the narrowest depth of field in a photo

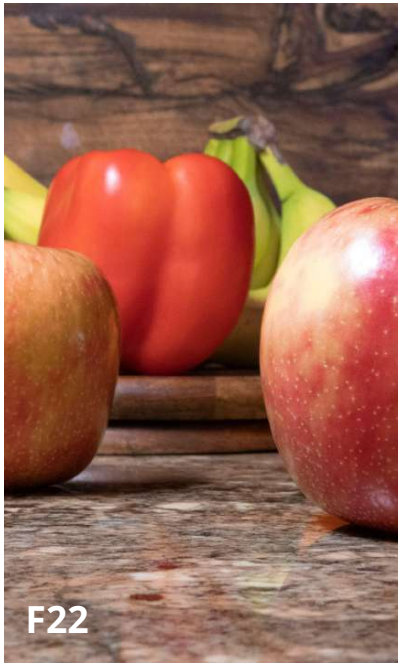
Narrow/Closed Aperture

- Refers to highest F number
- Allows the least light to pass
- Gives the widest depth of field in a photo

What is Depth of Field?

The zone within a photo that appears sharp and in focus.

Aperture controls Depth of Field and is measured in F stops.



SHUTTER SPEED

SHUTTER SPEED

The speed at which the shutter of the camera closes

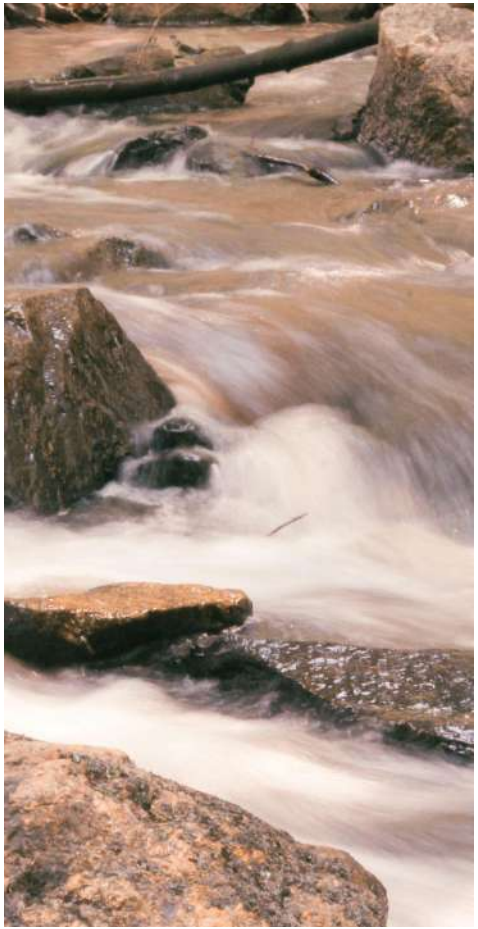
https://www.youtube.com/watch?v=YojL7UQTVhc

Shutter Speed Facts

- Controls whether motion is frozen or there is motion blur in a shot
- Measured in seconds (“) and fractions of seconds
- Range Varies: 30 seconds to 1/4000+
- Bulb refers to having the shutter open as long as the photographer depresses the shutter release

Shutter Speed Techniques

1. Freezing motion - setting the shutter speed faster than your subjects movement to freeze the motion of the subject
2. Shutter Drag - setting the shutter speed slower than the subject to show the blurred path of the subject
3. Zoom or Camera Blur - using a slow shutter speed while physically moving the camera to add motion effects to the subject
4. Panning - Panning is a photographic technique that combines a slow shutter speed with camera motion to create a sense of speed around a moving object. It is a way to keep your subject in focus while blurring your background.



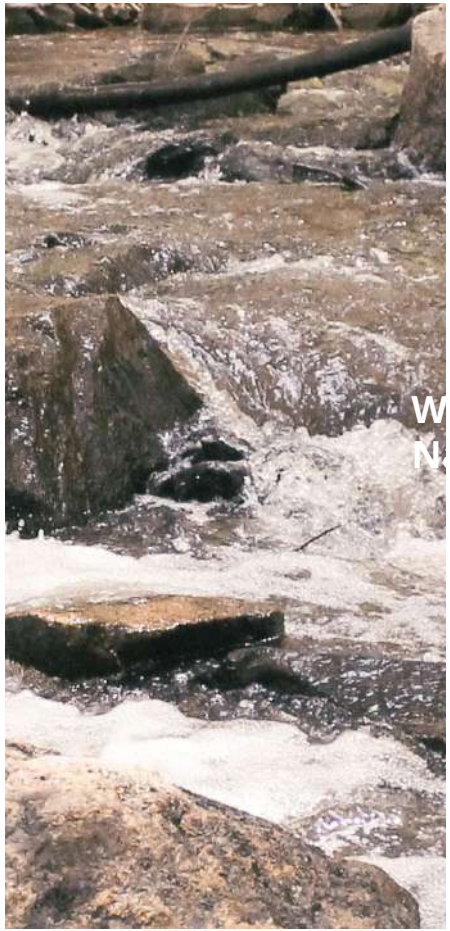
SHUTTER SPEED RANGE

Slow Shutter Speeds

- Refers to speeds slower than the subject is moving
- Will show directional blur of subject
- Amount of blur is related to how much slower the shutter is
- This technique is often referred to as **Shutter Drag**

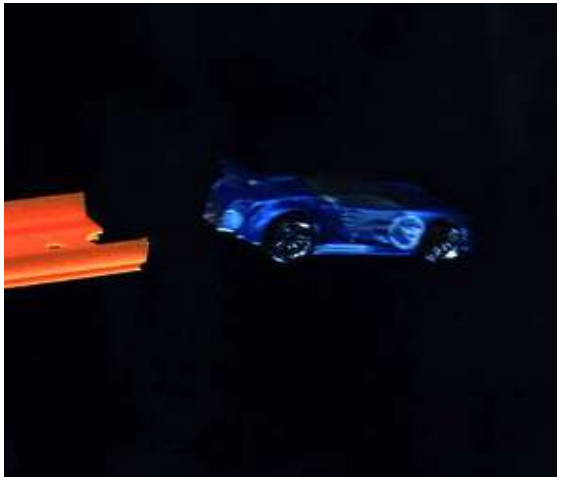
Fast Shutter Speeds

- Refers to speeds faster than the subject is moving
- The motion of the subject is clear
- Referred to as **Freezing Motion**



SHUTTER SPEED RANGE

It is important to remember that if you want to freeze or blur the motion of a subject you must understand how fast the object is moving and set your shutter speed either faster (to freeze) or slower (to blur). It is not about memorizing numbers!



Object moving much faster than the shutter speed

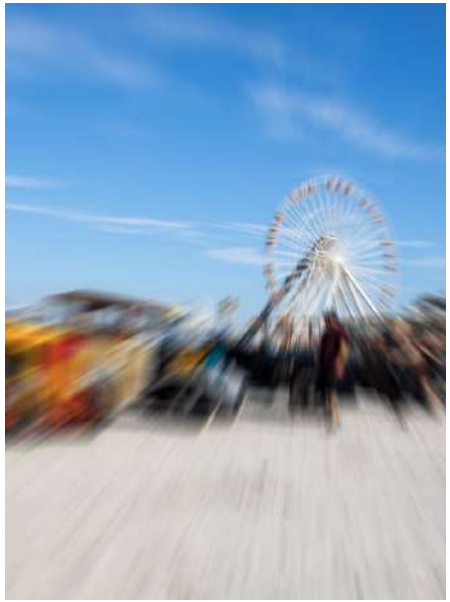
Object moving slower than the shutter speed

Shutter Speed Techniques

Freezing Motion:
shutter moving faster than the subject

Shutter Drag:
shutter moving slower than the subject

Creative Blur:
intentionally moving camera while the shutter is open



Panning:
moving camera at the same speed as subject to blur background

ISO

ISO

ISO **refers to your camera's sensitivity to light**. The higher the ISO, the more sensitive your camera sensor becomes, and the brighter your photos appear. ISO is measured in numbers.

https://www.youtube.com/watch?v=q8cj9Lj9w-g

ISO Facts

- Is the only one of the three parts of the exposure triangle that does not deal with actual light
- Artificially brightens a picture using the cameras sensor
- Ranges from 100 - 25000+
- Should always be set for the minimum amount to get the shot you want

When you need ISO

1. In low light situations - like indoors or at night
2. When you need a very wide depth of field or a very fast aperture, or both.

ISO RANGE

ISO is mostly situational. On a bright and sunny day shooting outside you shouldn't need any added light sensitivity from your sensor, so an ISO of 100 should be appropriate. As there is less light available or if you need a very fast shutter speed or a narrow aperture, you may have to raise the sensitivity of your sensor by raising the ISO number.