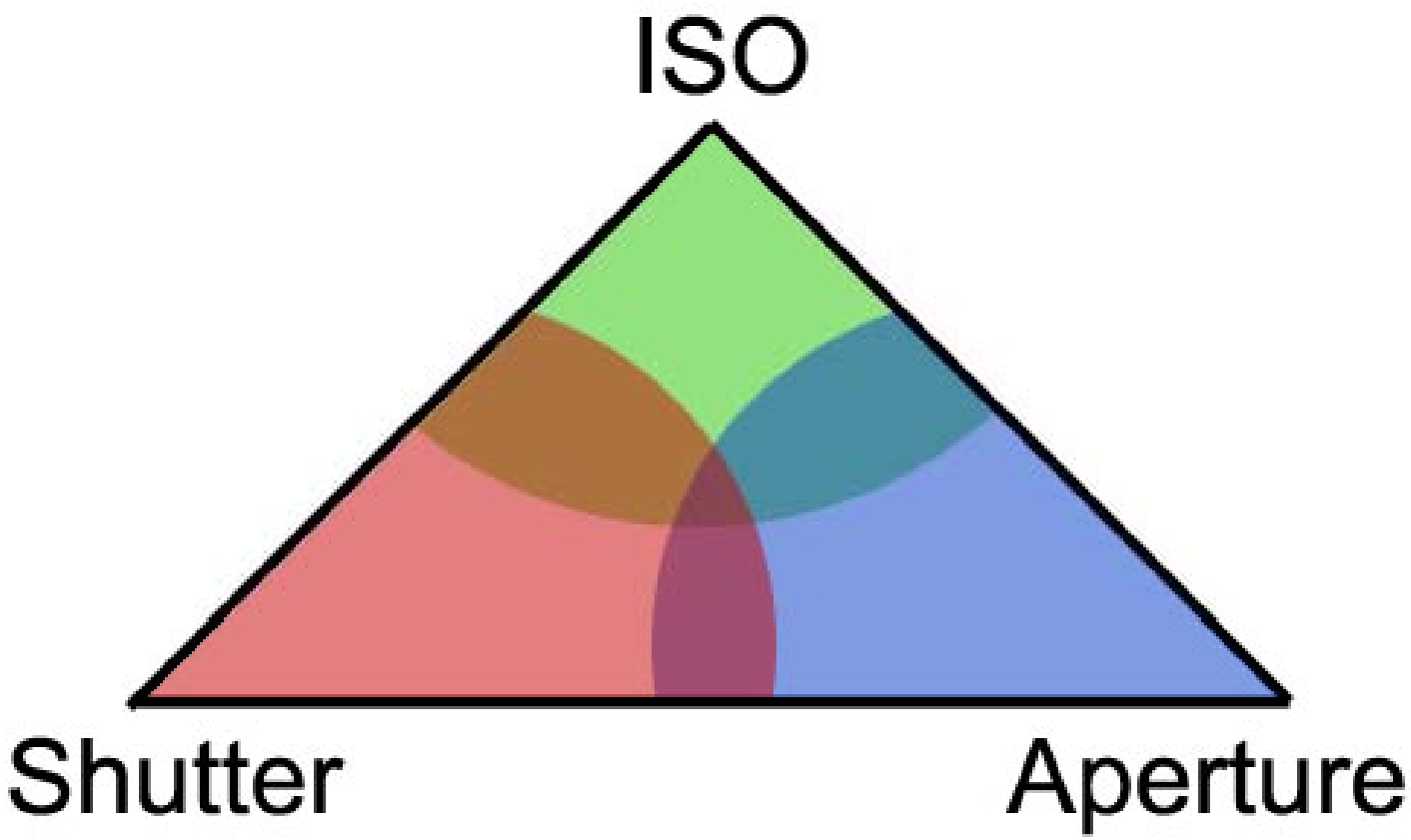
Mastering Your Digital Camera

The Exposure Triangle



The **ISO** setting on your camera defines how sensitive it is to light. Normally ISO 100 is the least sensitive setting on your camera and as the ISO numbers double, so does the light sensitivity of the sensor. 200 is twice as sensitive as 100, 400 half that of 800, etc.

Therefore, if you used the same settings for aperture and shutter speed increasing the ISO setting will increase the exposure (brightness) of the photo you take and this can be very useful in certain situations.

You might ask, “Why don’t I just use the highest setting all of the time?” **Noise**. Simply put, noise is the grainy effect that can occur where some of the pixels in an image do not get recorded correctly and appear as speckles in a photo.

Therefore, we want to use the lowest ISO possible.

The **shutter speed** is the length of time that the shutter is open, allowing the sensor to be exposed to the light. The longer the shutter is open, the more light will be let it. Shutter speed is measured in seconds or fractions of seconds so it's not really a "speed" at all. It's a time. Short exposure times are referred to as "fast" and long exposure times are "slow."

Shutter speed is mostly used to control two aspects of photography…

- Camera Shake – Even with image stabilizer that the modern digital camera has, you can still move the camera white the shutter is open causing the image to be blurred. If your focal length is 60mm, use a shutter speed of 1/60 sec. or faster. Focal length 200mm, minimum shutter speed 1/200. Simple.
- Motion Blur – This is where an aspect of the scene you are photographing moves while you have the shutter open. The moving aspects will be blurred while the stationary objects will be sharp. Generally a shutter speed of 1/20 sec. or slower will give motion blur, but it really depends on how fast the subject is moving. You can create lots of creative photos with this effect such as panning, blurred people, motion blur, silky water, etc.

What is **Aperture**? Aperture is the size of the opening in the lens when a picture is taken.

When you hit the shutter release button of your camera, a hole opens up that allows your camera's image sensor to catch a glimpse of the scene you're wanting to capture. The aperture that you set impacts the size of that hole. The larger the hole the more light that gets in, the smaller the hole the less light.

Aperture is measured in 'f-stops,' f/2.8, f/4, f/5.6, f/8, etc. Moving from one f-stop to the next doubles or halves the size of the opening in your lens (and the amount of light getting through). Keep in mind that a change in shutter speed from one stop to the next doubles or halves the amount of light that gets in also – this means if you increase one and decrease the other, you let the same amount of light in – a very handy thing to keep in mind.

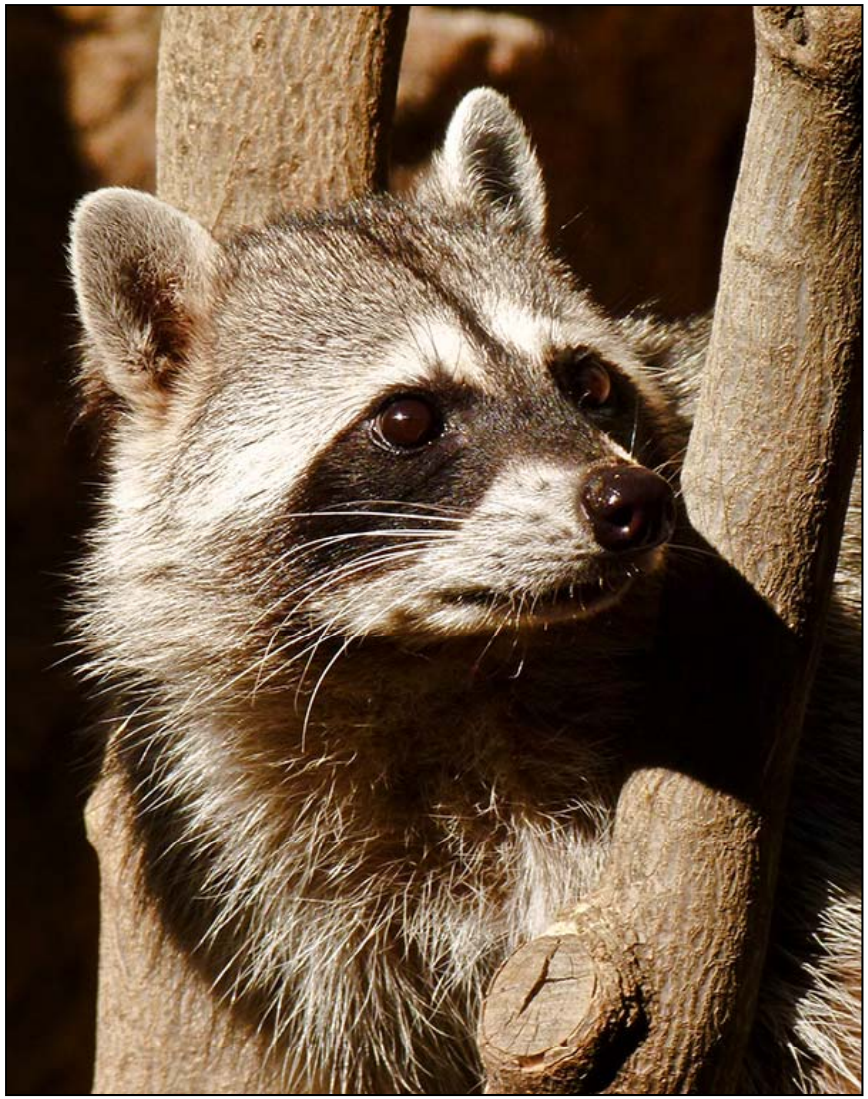
One thing that causes a lot of new photographers confusion is that large apertures (where lots of light gets through) are given f/stop smaller numbers and smaller apertures have larger f-stop numbers. So f/2.8 is in fact a much larger aperture than f/8.

Aperture has a big impact up depth of field. **Depth of Field** is that amount of your photograph that will be in focus. I personally think that depth of field is the most important thing to understand to achieve creative photographs. When I was shooting with a film SLR, I shot in aperture priority and I still do with my digital cameras.

Large depth of field means that most of your image will be in focus whether it's close to your camera or far away. Small (or shallow) depth of field means that only part of the image will be in focus and the rest will be fuzzy.

A large aperture (smaller number) will decrease depth of field while small aperture (larger numbers) will give you larger depth of field.

So what does all of this mean? It's background information that you should know to understand your camera's shooting modes. The point here is to allow you to study the settings the camera chooses in a particular situation and give you some experience when the need comes for you to choose these settings manually or for a particular situation.



Settings on Top of the Dial

Auto (**A**) – All the settings are chosen automatically based on the subject and the light available. In most of the cameras in case of low light the built-in flash automatically fires to compensate for the low light. (This is what I hope you will decide not to use as you learn more in this workshop.)

 **Portrait** – It keeps the main subject in clear focus and the background is out of focus with shallow depth of field.

 **Landscape** – The flash is turned off, a small aperture is used for a high depth of field to keep the maximum part in focus. Best for what the name suggests.

 **Macro** – It sets to take close-up shots of small objects, flowers and insects. Lens can be moved closer to the subject than in other modes. Hold the camera steady or use a tripod.

 **Sports** – High shutter speed to freeze action. Especially meant for dynamic motion shots. The flash is turned off. While the high shutter speed can compensate for a moving subject, it really doesn't matter much if you're on the run because the motion of the camera is way higher in the perspective than the object in focus. But that's still the best mode to shoot in if you're on the run. Gives sharp picture if you had the camera to your kids. Most of the cameras use continuous focus in this mode since a moving subject goes out of focus as you compose.

 **Night Scene** – It sets the camera to take long shots in low light with slow shutter speed. Use of tripod is highly recommended. This works better than auto mode most of the time because auto doesn't provide a long enough exposure required for a night scene.

Programmed Auto (P) – The camera sets shutter speed and aperture. These come in a pair of different values so if you choose to use a higher shutter speed, the camera will automatically set the aperture to a larger value to compensate for the low light.

Aperture Priority Mode (“**A**” or “**Av**” on the dial)– In this mode you as the photographer set the aperture that you wish to use and the camera makes a decision about what shutter speed is appropriate in the conditions that you’re shooting in.

The main impact that aperture has on images is with regard to Depth of Field (DOF). As a result most people use Aperture Priority Mode when they are attempting to have some control in this area. If they want a shallow DOF (subject in focus but background blurred) they’ll select a large aperture (f/2.8 for example) and let the camera choose an appropriate shutter speed. If they want an image with everything in focus, they’d pick a smaller aperture (f/8). In this the camera would choose a longer shutter speed.

When choosing an Aperture keep in mind that the camera will be choosing faster or longer shutter speeds and that there comes a point where shutter speeds get too long to continue to hand hold your camera (usually around 1/60). Once you get much slower you’ll need to use a tripod.

Shutter Priority Mode ("**Tv**" or "**S**" on the dial) – In this mode you as the photographer choose the shutter speed that you wish to shoot at and let the camera make a decision as to what aperture to select to give a well-exposed shot.

Most people switch to shutter priority mode when they want more control over how to photograph a moving subject. For example, if you want to photograph a racing car but want to completely freeze it so there's no motion blur, they'd choose a fast shutter speed (say at 1/2000) and the camera would take into consideration how much light there was available and set an appropriate aperture. If instead you wanted to photograph the car but have some motion blur to illustrate how fast the car is moving, you might choose a slower shutter speed (1/125 or less) and the camera would choose a smaller aperture as a result.

Keep in mind that as the camera chooses different apertures it will impact the Depth of Field in your image. This means if you choose a fast shutter speed to freeze your fast moving object that it will have a narrower DOF.


TIBHAR
SMASH

One more selection on your dial – **SCN** which stands for “scene.”

When you set your dial on **SCN** a menu should come on the screen showing several other options. My camera has seventeen other settings besides the ones on the dial. Among the most useful are:

Sunset – This setting allows you to take vivid pictures of the red color in the sun.

Hi-Speed Burst – This is a convenient mode for shooting rapid movement or a decisive movement. Be aware that when you use this mode, your files will be much smaller. When I shoot rodeo photographs, I use the Sport mode on the dial and the Burst mode on the menu. I get crisp, sharp photographs of fast-moving subjects with this combination.

You should refer to your manual for the settings that your camera will take.