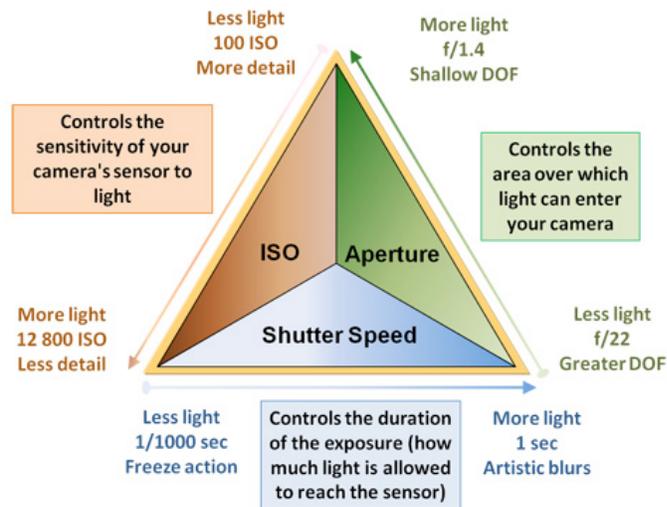


EXPOSURE TRIANGLE  
Photographic Workshop – Wild Ones – Sugar Grove Nature Center



### **Introduction**

With a modern digital cameras set to automatic modes, many things happen when you press the shutter.

Lens is focused

Light sensors measure the light and then the following are set according to parameters specified in different program modes:

- ISO speed (light sensitivity of the digital “film” sensor)
- Shutter speed (length of duration of the exposure)
- Lens aperture / f-stop (how much light is allowed through the lens)

In most circumstances, the resulting images are quite good, and the electronics in each new generation of digital cameras are increasingly sophisticated. However, photographers need to understand the Exposure Triangle in order to capture images that meet their expectations.

Be sure to read in the instruction manuals for your digital cameras how the different program modes manipulate ISO, shutter speed, and f-stop to suit certain photographic situations. In addition, most simple digital cameras let you have some control over the ISO setting

Many also have “exposure compensation” settings that allow you to make images that are lighter or darker than the regular automatic setting. . *Since I prefer images slightly darker and richer, I always leave the exposure compensation set to negative 0.7 on all of my digital Nikon cameras.*

Single-lens reflex (SLR) and more expensive compact cameras have settings for ISO speed, “aperture priority,” “shutter priority, and full manual control. Creative photographers need to make full use of these options.

### **Shutter Speed**

The shutter speed is the period of time that light is allowed to reach the film or digital sensor. This is typically a fraction of a second, such as 1/30, 1/60, 1/125, 1/250, 1/500, 1/1000. Slower shutter speeds are best for low light conditions, while high works best in bright light and to stop action.

### **Aperture / f-stop**

The aperture is the diameter of an iris diaphragm in the lens that controls the amount of light passing through the lens. It is analogous to the iris of an eye. The numbers used are called f-stops, and each step to a *higher* number lets in *half* as much light as the preceding. The normal range is: 1.4, 2, 2.8, 4, 5.6, 8, 11, 16, 22, 32.

The aperture controls depth-of-field, with low numbers having shallow depth-of-field and high numbers having greater depth-of-field.

### **ISO**

In film, ISO is the speed of a film, that is, how sensitive the film is to light.

Examples in increasing sensitivity: 25, 64, 100, 200, 400. .

In digital photography, ISO is the sensitivity of the image sensor. The range is much greater: 64, 200, 400, 800, 1600, 3200, 6400.

The lower the ISO number, the higher the image resolution (allows for larger enlargements), the better the color, and the finer the grain / noise. A higher ISO number allows the camera to stop action in low light conditions.

### **EXERCISES**

1. Take a series of photos of the same subject in the same light conditions by varying the setting for ISO speed.
2. Set a camera on a tripod and frame a subject that has depth. Set the ISO to a low setting, such as 64 or 100. Take a series of photos with the camera set to “shutter priority” and taking an image with the shutter speed at 1 second, 1/15, 1/60, 1/125, 1/250, 1/500, 1,000 (or whatever range your camera allows).
3. Repeat with camera set to “aperture priority” and changing the aperture (f-stop) from 4, 5.6, 8, 11, 16, 22, 32 (or whatever range your camera allows).

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