

# EXPOSURE BASICS

When taking a photograph, three elements combine to determine the exposure. In order to understand how a camera and flash works, it may be helpful to understand the relationship of these three elements. Notice that changing any of these three elements by one step will double (or halve) the exposure.

- **FILM SPEED**

Film is assigned an ISO number (International Standards Organization), which determines the “speed” of the film. The higher the ISO number, the faster the film. Faster film requires less light than slow film to make the correct exposure. The camera must be set to the same ISO as the film, or the meter will record the incorrect exposure. Most modern cameras do this automatically.

Every time the ISO number doubles, just ½ the amount of light is required to get the same exposure. For example, ISO 400 film requires just ½ the light of ISO 200 film. In this chart of common film speeds, every step to the next ISO cuts the amount of light required in half.

← SLOWER.....FASTER →						
25	50	100	200	400	800	1600

- **APERTURE**

For practical purposes, “APERTURE” and “*f* stop” mean the same thing, and they refer to the size of the opening in the lens. The bigger the opening, the smaller the aperture number, and the more light is admitted to expose the film. An increase of one *f* number step requires twice the amount of light to get the same exposure. For example, *f*11 requires twice as much light as *f*8. Here is a chart of *f* stops, although few lenses are capable of using them all.

← OPEN APERTURE.....CLOSED APERTURE →												
1	1.4	2	2.8	4	5.6	8	11	16	22	32	45	64

- **SHUTTER SPEED**

Shutter speed refers to the length of time the camera shutter is open when you take a photograph. It is normally a fraction of a second, such as 1/60, but is usually displayed on the camera as a whole number, such as 60. Therefore, the larger the number, the shorter the exposure. Every time the shutter speed number doubles, just ½ the amount of light is required to get the same exposure, and camera shutter speeds just about double with each step. Here is a shutter speed chart. “1” = 1 second, all others represent a fraction of a second.

← SLOWER.....FASTER →											
1	2	4	8	15	30	60	125	250	500	1000	2000

- **CONCLUSION**

These three elements have a direct relationship to each other. For example, you will get the same exposure at ISO 200, *f*8, 1/60 as you will at ISO 400, *f*11, 1/60 or at ISO 400, *f*16, 1/30.