Basic Photography Tips

Three Technical Elements that make a picture:

Aperture

Shutter Speed

ISO Value (Digital Camera Sensor Sensitivity)

These three elements are referred to as the Exposure Triangle.

Aperture

You will have numbers like this on your camera to indicate the aperture setting:

F22 / F16 / F11 / F8 / F5.6 / F4 / F2.8 / F2 / F1.4

What does this mean? Well, the aperture on a lens determines the amount of light that is allowed to get through it.

In the list above, at F22 the lens is at its smallest aperture and F1.4 the lens is wide open and will allow the maximum amount of light in that it has been designed for.

Therefore a **SMALL** number equals a **LARGE** aperture and a **LARGE** number equals a **SMALL** aperture.

Each number represents a double increase or decrease of the amount of light that is allowed to go through the lens.

Therefore at F11 you allow two times less light through than at F8, and at F5.6 you let in two times more light than at F8.

The aperture used also determines the depth of field of an image produced. In simple terms a large aperture such as F2.8 will give a smaller area that an image will be in focus or sharp, this is a shallow depth of field. A smaller aperture of F22 will give a much larger area of an image that will be in focus or sharp, this is a large depth of field.

Shutter Speed

The shutter speed on your camera controls the length of time that the light can travel through your lens to be on the sensor in the camera. This is known as the exposure time.

The exposure values on your camera will start at around 1/4000 second (short exposure time) and go up 30 seconds (long exposure time)

They are usually shown as follows:

1/4000, 1/2000, 1/1000, 1/500, 1/250, 1/125, 1/60, 1/30, 1/15, 1/8, ¼, ½, 1, 2, ... up to 30.

Like with the aperture values, the shutter speed also works on the same principle of doubling.

At a shutter speed of 1/250 sec. you will expose your sensor to 2 times more light that at 1/500 sec.

At a shutter speed of 1/125 sec. you will expose your sensor to 2 times less light that at 1/60 sec.

The faster the shutter speed, the more light s required for a correct exposure. The slower the shutter speed, the less light is required for a correct exposure.

The exposure time will determine how an image will look, if it will be blurred/shaken or sharp. A good example is that of a water fountain.

A short exposure of 1/2000 sec. will freeze the water so you will see all the water droplets in midair, showing the detail of each droplet. A long exposure of 1 second will show the water join together to show a stream or mist.

Thus, faster shutter speeds allow us to capture fast moving objects and freeze the action. Slower shutter speeds allow us to capture the motion or blur the object.

ISO Speed

ISO Speed is an old term for analogue film that represents the sensitivity of that roll of film. With digital cameras if is used to represent the sensitivity of the camera sensor.

You will probably have values ranging from 100 to 6400 arranged as follows:

100 / 200 / 400 / 800 / 1600 / 3200 / 6400

The numbers represent how fast the sensor will react to the light. A small number indicates an image will take longer to make than at a higher number.

Lower ISO values will give you the cleaner image. Higher ISO values will introduce digital noise to the final image, like grainy film.

The doubling effect is in use here also. The camera sensor is twice as sensitive to light at ISO 400 as at ISO 200, and half as sensitive to light at ISO 100 as at ISO 200.

How does it all go together?

Below is a table that will show how aperture, shutter speed and ISO values are used together to make the final image.

ISO Speed	Aperture	Shutter Speed
100	16	1/60
100	11	1/125
100	8	1/250
100	5.6	1/500
100	4	1/1000

Mathematically, all of the above will give a correct exposure (for my lighting conditions), but the resulting image will have different effects.

As you can see, with the ISO speed constant, the aperture and exposure time increase or decrease in connection with each other. If the aperture allows more light in, the shutter speed decreases to compensate to give the correct exposure.

If you increase the ISO value to 200 you make the sensor twice as sensitive to light. You can choose to modify the aperture and keep the shutter speed constant, or you can modify the shutter speed while keeping the shutter value constant.

ISO Speed	Aperture	Shutter Speed
200	11	1/60
200	8	1/125
200	5.6	1/250
200	4	1/500
200	2.8	1/1000

Or

ISO Speed	Aperture	Shutter Speed
200	16	1/125
200	11	1/250
200	8	1/500
200	5.6	1/1000
200	4	1/2000

The key to remember is that there are many different combinations of aperture, shutter speed and ISO that will create a correct exposure for any given natural lighting conditions. You just have to choose the right one to give the effect you are going for.