Basic Exposure

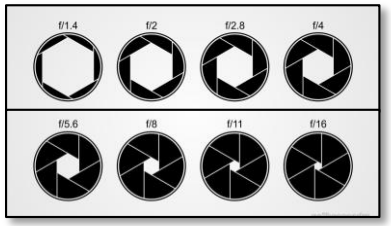
A well exposed photograph is something that we all strive to achieve when we pick up our cameras and head off out. But if you are new to all this it may seem like a lot to learn, below I have tried to explain the three basic elements of exposure.

Aperture

The Aperture is the opening in the lens through which light passes to reach the sensor where the image is captured. The size of this opening can be varied to allow more or less light to pass through and this size is given a number such as f2, f4, f8, etc. The number should really be expressed as a reciprocal ie f/2, f/4, f/8. This numbering scheme shows the relationship between the aperture size and the amount of light passing through so at f/4 only half of the light passes through that f/2 would allow – this is referred to as a *'Stop'*.

Depth of Field

The amount of the photograph that is acceptably in focus is directly affected by the aperture chosen the larger the number then typically more will be in focus. To get more of a landscape in focus you would typically use f16-f32. Alternatively to throw a background out of focus to isolate your subject you may use f2-f8.



The smaller the opening of the aperture the larger the number and subsequently more of the image will be sharp.

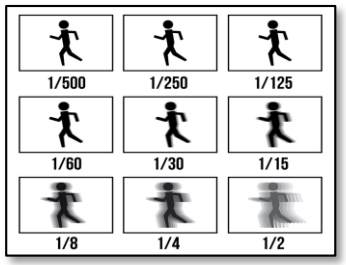
Aperture of f4 has thrown the background out of focus, isolating the bird.

Shutter Speed

The Shutter sits in front of the camera sensor and opens for a brief period of time to allow light to hit the sensor when the photo is taken. The speed of this action can be varied to allow more or less time for the light to pass through. This speed is often measured in hundredths or thousandths of a second – ie: 1/100, 1/200, 1/400. This numbering scheme shows the relationship between the shutter speed and the amount of light passing through so at 1/400 only half of the light passes through that 1/200 would allow – this is also referred to as a *'Stop'*.

Freezing movement

The amount of time that the shutter remains open will affect how still the subject appears to be in the image. Fast shutter speeds will freeze motion and slower speeds to show motion blur as the subject moves. How much motion blur is present is dependent on the shutter speed and also the speed at which the subject is moving.



The longer the shutter remains open the more motion blur will be present.

A fast shutter speed of 1/1000s has frozen the movement of this aircraft

ISO

ISO or the sensitivity of sensor is a kind of multiplier of the amount of light that has passed through the aperture and shutter. ISO100 is normally considered to be the base value. A setting of ISO100 effectively doubles the amount of light at the sensor by electronically amplifying the light, ISO400 doubles it again.

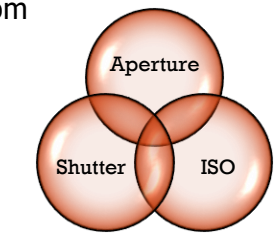
Noise / Clarity

Unfortunately as with all things there is a pay-off involved and as ISO is increased then the noise (or grain) in an image increases. Each camera has its own limits as to how high the ISO can be taken and how much noise is introduced.

Balancing the Exposure

The exposure of any photograph on a digital camera is dependent on the application of all of these three elements and the interaction between them. Each of them will affect the value of another.

As the Aperture is closed down by 1-Stop (ie: from f4 to f8) then either the Shutter speed must be slowed down by 1-Stop (ie: from 1/200s to 1/100s) or the ISO increased by 1-Stop (ie: ISO100 to ISO200) to maintain the correct exposure. Once you move away from the Program or Auto mode on your camera dial then you are fully in control of how these work and through practice you will better understand the relationships.



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