

f/stop and shutter speed...

In 'the old days', you had control over shutter speed and f/stop and were stuck at one ISO (ASA) for the entire roll of film unless you rewound and put in another roll. With Digital, you can change ISO and any time by the push of a button. A slow ISO gives the best quality image on digital as it did on film and, the same goes for a high film speed (poorer quality) and digital ISO. The reason the digital gets degraded is that for the higher ISO, the electronic signal is amplified and the noise of the image sensor is amplified right along with it! Newer digital cameras have greatly improved their High ISO quality by reducing sensor noise. So, what we are left to play with is the f/stop and the shutter speed.

1) What is an f/stop and why do I need one?

Iris like the eye that controls the amount of light entering the lens.

f/stop is a ratio between opening of the f/stop (diameter) and distance to film/sensor plane, so f/4 would have 4 diameters of the opening between the opening and the film plane. f/22 would have 22 diameters. This is really handy as it means that an f/4 wide angle should give exactly the same exposure as an f/4 telephoto at a set shutter speed.

The f/stop can control Depth of Field (i.e. what is and isn't in focus) aperture open/f/2.8 less DOF, closed down/f/16 aperture maximum DOF

Selection controls sharpness of the lens (!) most lenses are sharpest two to three stops closed from open AND not so sharp closed down (f/22-f/32) test your lenses to determine where the sharp and not so sharp points are...

2) Depth of Field

Controlled by aperture

Controlled by distance from subject

Controlled by lens selection: wide vs. telephoto (technically, any lens with the same subject size, has the same Depth Of Field be it 17mm or 300mm. But we rarely if ever use them that way.)

4) Shallow Depth of Field

Large aperture (f/2.8)

Close to subject

Long lens

5) Maximum Depth of Field

Small aperture (f/22)

Far from subject

Wide angle lens

Use the Hyper Focal Distance of the lens to get as much as possible into focus.

Shutter Speed...

Why go High/Fast?

High to overcome camera shake

High to stop motion, though stopping too much motion can look false like a helicopter's blades stopped while it is in the air...

When going for minimum DOF you may need a fast shutter speed.

Why go Slow/Low?

Show motion blur with camera stable and object moving

Show motion blur with camera following the action so subject is mostly frozen, but background is blurred.

Time delay on tripod for low light photo