

## The Holy Trinity - Aperture, Shutter Speed and ISO

Aperture, shutter speed and ISO all

- Work in conjunction with one another to obtain an image that is "correctly" exposed.
- Affect the way an image looks.

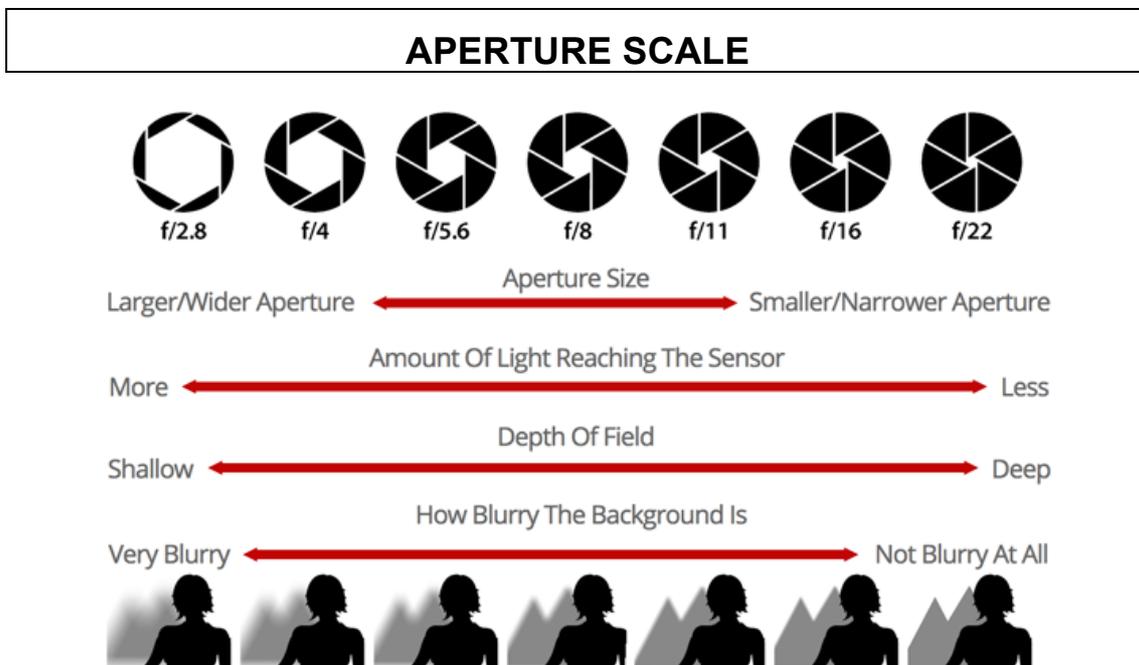
When you set your camera to a Programme or a Programme "Icon" Mode the camera makes the decision as to the appropriate choice of each to hopefully get a correctly exposed image.

If you choose any other exposure mode (aperture or shutter priority, manual) you take control to a lesser or greater degree.

### Aperture, depth of field and brightness

The Aperture is the opening in a lens through which light passes to enter the camera.

*Tip - Think about how your eyes work. As you move between bright and dark environments, the iris in your eyes either expands or shrinks, controlling the size of your pupil. In photography, the "pupil" of your lens is called aperture.*



Each step shown above represents a halving of the amount of light that reaches the sensor as you move from left to right. Each doubling or halving as we move one way or the other is referred to as "one stop"

**depth of field - reminder** - The area in front of and behind a subject that appears acceptably sharp in an image; is affected by aperture, lens focal length and how far the subject is from the camera.

Generally speaking the larger the maximum aperture on the lens

- the more expensive the lens and
- the physically larger (and heavier) it will be compared to a lens of the same focal length but with a small maximum aperture

### Shutter Speed, capturing movement brightness and image quality

The shutter is effectively a curtain that opens and closes to allow light to reach the light sensitive medium

The shutter speed is the duration for which the curtain is open. The duration can be made longer or shorter to allow more or less light to reach your camera sensor (or film)

### SHUTTER SPEED SCALE

1/8000 1/4000 1/2000 1/1000 1/500 1/250 1/125 1/60 1/30 1/15 1/8 ¼ ½ 1 2 4 8 15 30



Each step above represents a doubling of the amount of light that reaches the sensor as you move from left to right. As with aperture, each doubling or halving as we refer one way or the other is referred to as "one stop"

### ISO, image quality and brightness

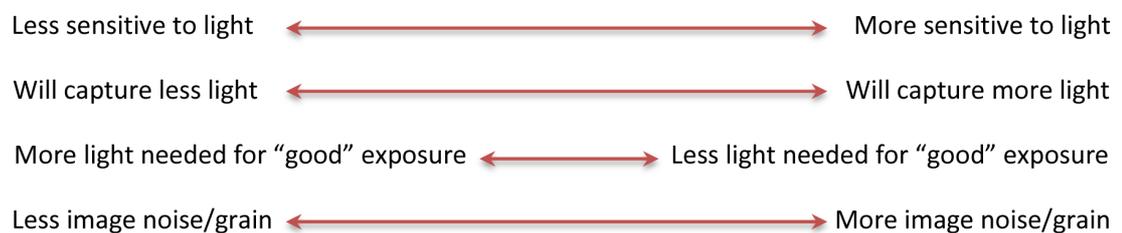
A numerical representation of the sensitivity of a digital sensor to light.

With film ISO was predetermined and fixed for each particular film type.

With digital sensors, the ISO can be varied.

### ISO SCALE

50 100 200 400 800 1600 3200 6400

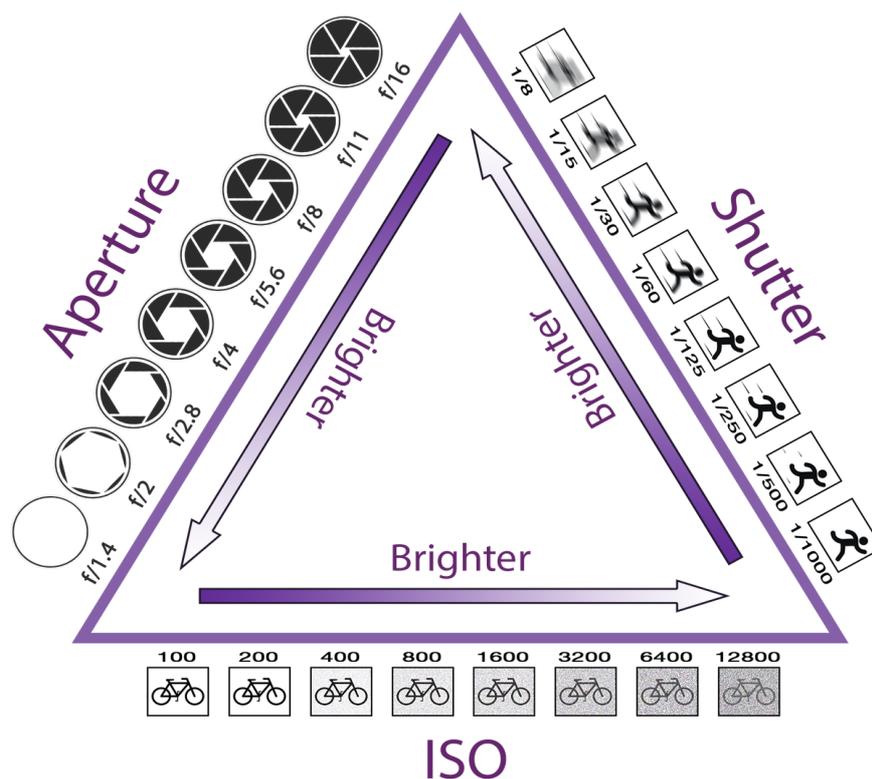


You may have already guessed... ..each step above represents a doubling the sensitivity of the sensor as you move from left to right. As with aperture and shutter speed, each doubling or halving as we move one way or the other is referred to as "one stop"

Nowadays typical ISO's up to 800/1600 ISO will provide very acceptable image quality with most cameras for most usages - and depending on the camera higher ISO settings as well.

### The big things to remember

1. If you change any of aperture, shutter speed and/or ISO it will affect the exposure, so as one increases/decreases the amount of light reaching the sensor (or its sensitivity) one or both of the others will have to be adjusted in the opposite direction to come back to a correct exposure.



2. In addition to affecting brightness each affects different aspect of an image:
  - **Aperture** affects depth of field - the part of an image that appears acceptably sharp
  - **Shutter speed** affects how movement is captured and image quality
  - **ISO** affects image quality.