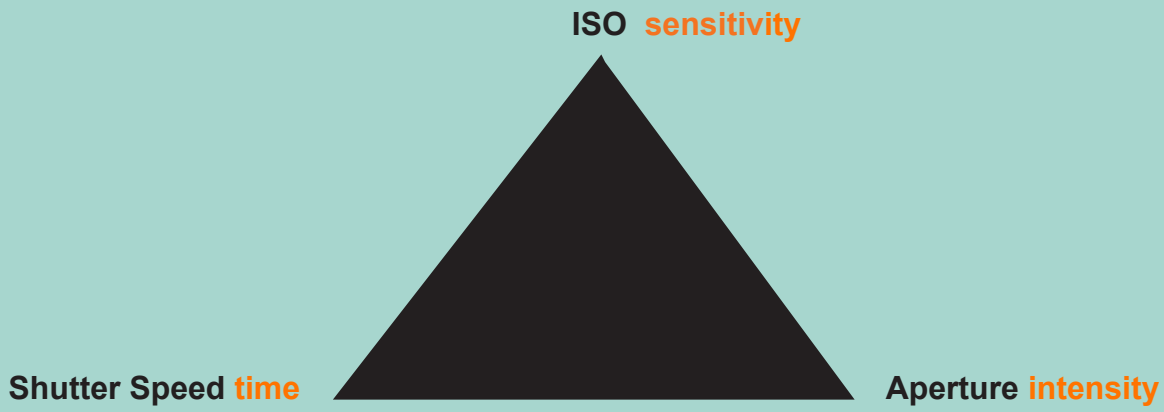
THREE LITTLE WISHES PHOTOGRAPHY

ISO, Shutter Speed and Aperture

When you take a photograph, the photo sensors are exposed to light.
There are three parts to exposure: The ISO, shutter speed and the aperture.

- **The ISO controls the the amount of light by the sensitivity of the sensor.**
- **The shutter speed controls the amount of light by the length of time.**
- **The aperture (the size of the lens opening) controls the amount of light by the intensity via a series of different sized openings.**



ISO International Standards Organisation

The ISO camera settings will tell the camera how much light it needs to be able to produce an image.
In other words, it is the amount of light needed to create a photo.

It also means that the higher the ISO number, the faster the shutter speed you can use in low light situations using the same aperture. See examples below:

ISO number	Shutter speed increase in exposure
ISO 100	f5.6 aperture at 1/30 sec shutter speed.
ISO 200	f5.6 aperture at 1/60 sec shutter speed.
ISO 400	f5.6 aperture at 1/125 sec shutter speed.
ISO 800	f5.6 aperture at 1/250 sec shutter speed.

The difference between each setting is equal to one stop.

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100 ISO

Benefits:

- Low noise & fine resolution.
- Good Colour Saturation.
- Good Tonal Graduation

Disadvantages:

- Not very sensitive.
- Needs to be used with a fast lens or tripod in very low light.

Best Uses:

- Studio.
- Still Life with a tripod & natural light.
- Outdoors on a bright day.

200 ISO

Benefits:

- Good noise/sensitivity balance.
- Acceptable sharpness, colour and tone.
- Can be used with a good range of apertures and shutter speeds.

Disadvantages:

- Slightly less quality capable by camera.
- May not be fast enough in low light or action scenarios.

Best Uses:

- General hand held shooting.

400 - 800 ISO

Benefits:

- Very Sensitive.
- Can be used with fast shutter speeds, smaller aperture numbers. Example f:5.6 or long lenses (300mm +).

Disadvantages:

- Grainy Noise start to appear in the picture.
- Speckled colors in shadow areas.

Best Uses:

- Sports. Low light situations with no flash.
- Indoors.

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Shutter Speed

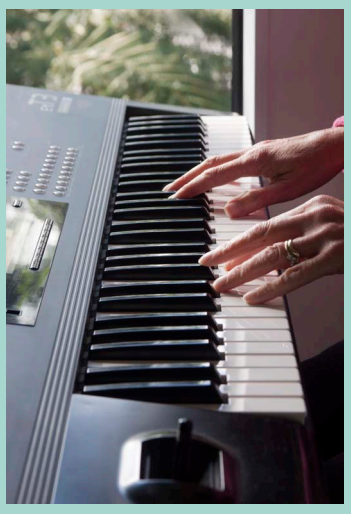
The purpose of the shutter is to control the length of time light reaches a sensor. Shutter speeds are measured in fractions of seconds, minutes and sometimes many hours.

1/1000 sec
1/500 sec
1/250 sec
1/125 sec
1/60 sec
1/30 sec
1/15 sec
1/8 sec
1/4 sec
1/2 sec (0.5")
1 sec (1")

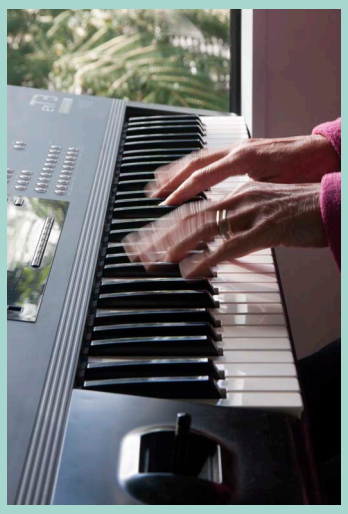
The difference between each setting is twice or half as long, depending upon the direction the control is turned.

The difference between each setting is equal to one stop.

Example:
The difference between shooting at 1/60 second and changing to 1/30 second results in twice the amount of light reaching the sensor.



1/60sec



1/30 sec

1/30th second is considered the cut off point where one can sucessfully hand hold a camera without causing camera shake or subject movement blurred

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Apertures or “f:stops” What are these?

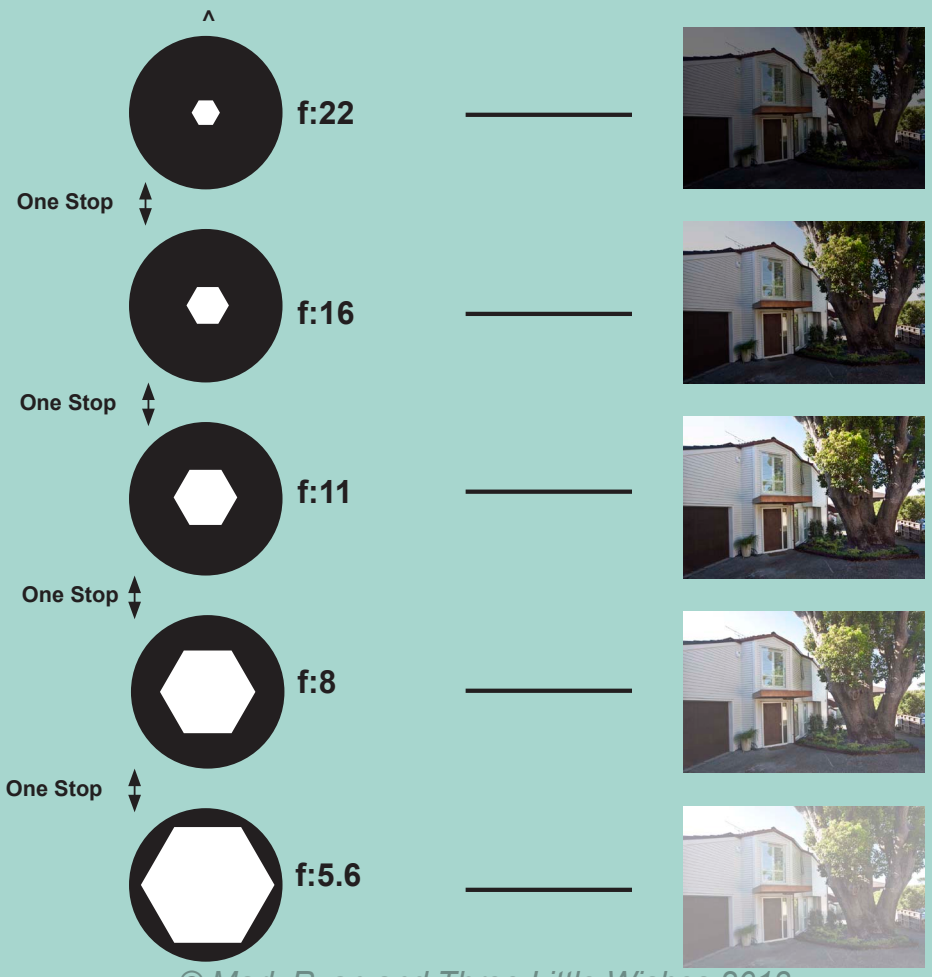
**An aperture is an opening. Much like the opening of our eyes (the pupil).
The larger the opening the more light is allowed in. The smaller the opening, the less light is let in. The pupil adapts to bright or low light.**

**Shown below are the most common apertures for a standard 18-55mm zoom lens.
The aperture controls the intensity of light reaching the sensor.**

The difference between each setting is equal to one stop.

This means each time the opening gets bigger, (eg.changing from f:11 to f:8) it allows X2 the amount of light into the lens and onto the sensor.

It also means as the opening gets smaller. (eg.changing from f:11 to f:16) it allows only half the amount of light into the lens and onto the sensor.



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These aperture numbers seem confusing, but they are simply based on a measured opening at the front of the lens.
This measurement is relative to the focal length of the lens.

For example:
A 100 mm lens with an effective opening of 50 mm at the front of the lens would make this a f:2 lens. (2 x 50 = 100) As illustrated below.

A 100 mm lens with an effective opening of 25 mm at the front of the lens would make this a f:4 lens. (4 x 25 = 100).

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