



**EXPOSURE**



**Exposure** is the amount of light collected by the sensor in your camera during a single picture.



Under exposed

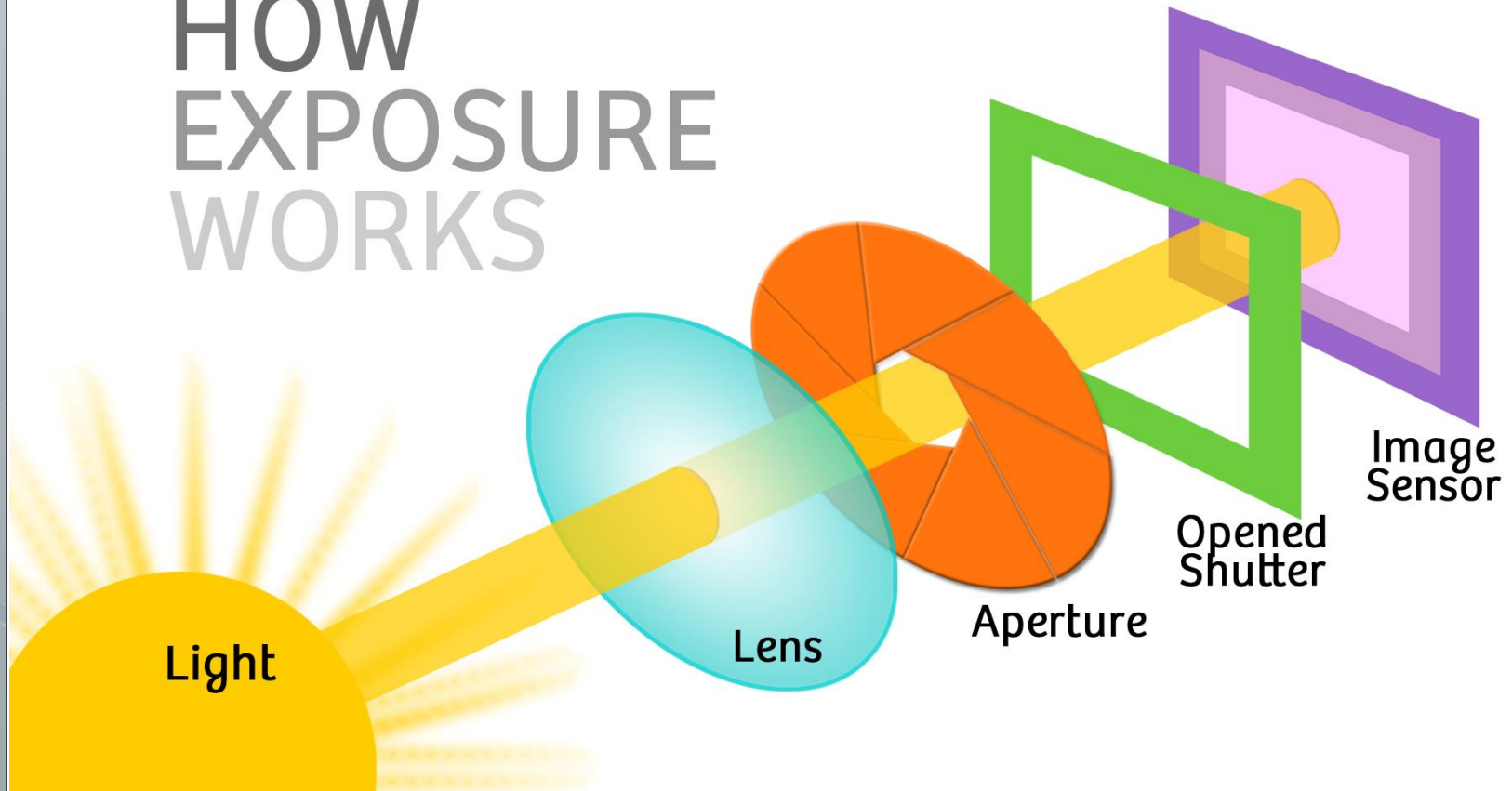


Normal from camera



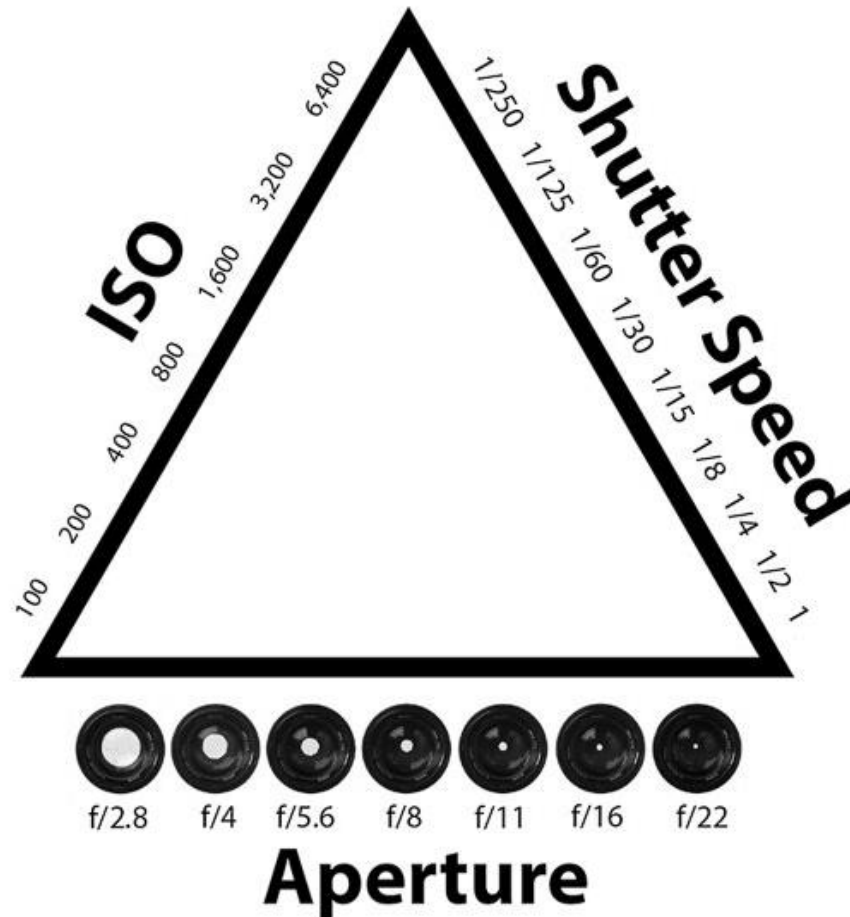
Over exposed

# HOW EXPOSURE WORKS



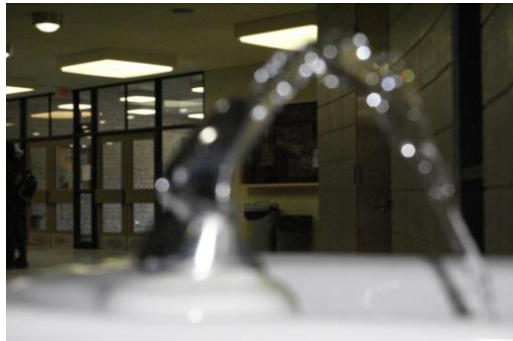
# The Exposure Triangle

The **exposure triangle** is a common way of associating the three variables that determine the exposure of a photograph.



# Shutter Speed

- Shutter speed is 'the amount of time that the shutter/curtain/door is open'.
- Shutter speed is measured in seconds - or in most cases **fractions of seconds**. The bigger the denominator the **faster the speed** (ie **1/1000** is much faster than 1/30).
- **Slow shutter speed** for **blur effect** (1/30, 1/60).
- **Fast shutter speed** to **freeze action** (1/250, 1/500)



1/30

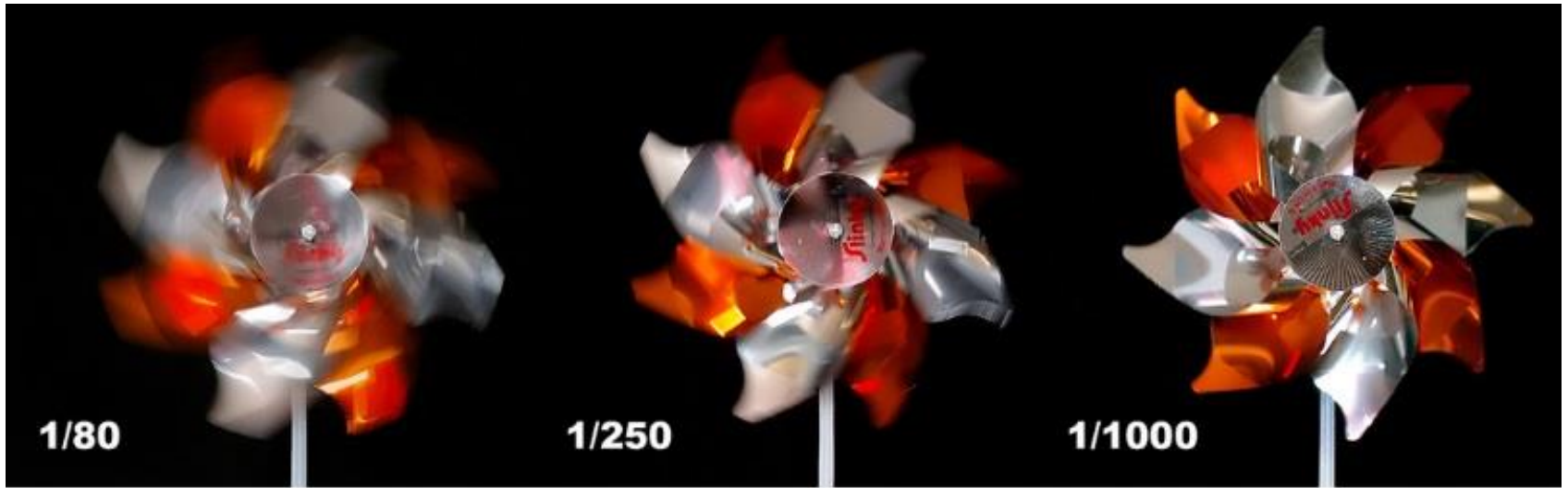


1/500

## Shutter speed



1/1000	1/500	1/250	1/125	1/60	1/30	1/15	1/8	1/4	1/2	1	2	4	8
Freeze action			Hand hold		Movement blurr - tripod needed								



**1/80**

**1/250**

**1/1000**

SLOW

SHUTTER SPEED

FAST



BLUR

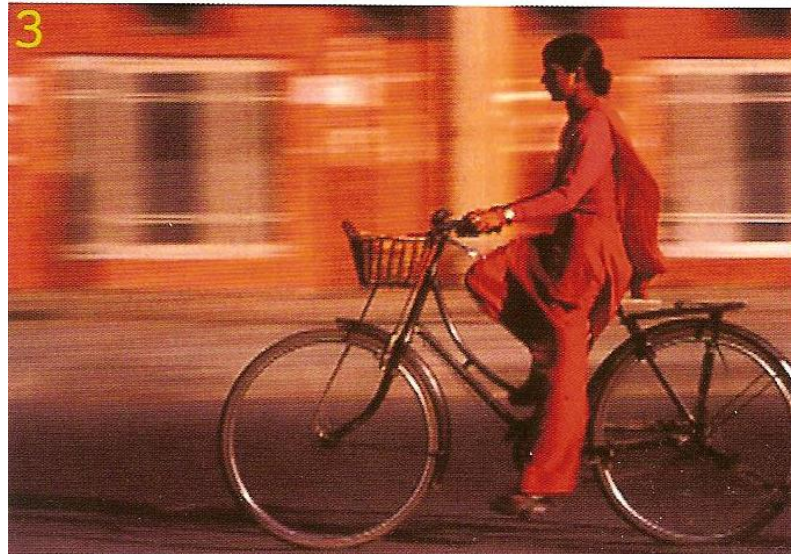
MOVEMENT

STOP

#2 Fast shutter speed to freeze action (1/250, 1/500).




#3 Slow shutter speed for blur effect (1/30, 1/60 second).







- 
- **In most cases you'll probably be using shutter speeds of 1/60th of a second or faster.** This is because anything slower than this is very difficult to use without getting camera shake. Camera shake is when your camera is moving while the shutter is open and results in blur in your photos.

- If you're using a slow shutter speed (**anything slower than 1/60**) you will need to either use a **tripod** or some type of image stabilization (more and more cameras are coming with this built in).

#### Correct posture

**Stabilize your upper body and take a position that keeps the camera from moving.**



# Tripods

When would you need it?

- when you want to eliminate noticeable camera shake.
- when taking night shots and sunsets
- using slow shutter speeds (1/60 or less)
- when you need to be flexible
- when you want to be in the picture

Do not leave tripod unattended.  
You don't want someone bumping into it.



Tripod



Monopod

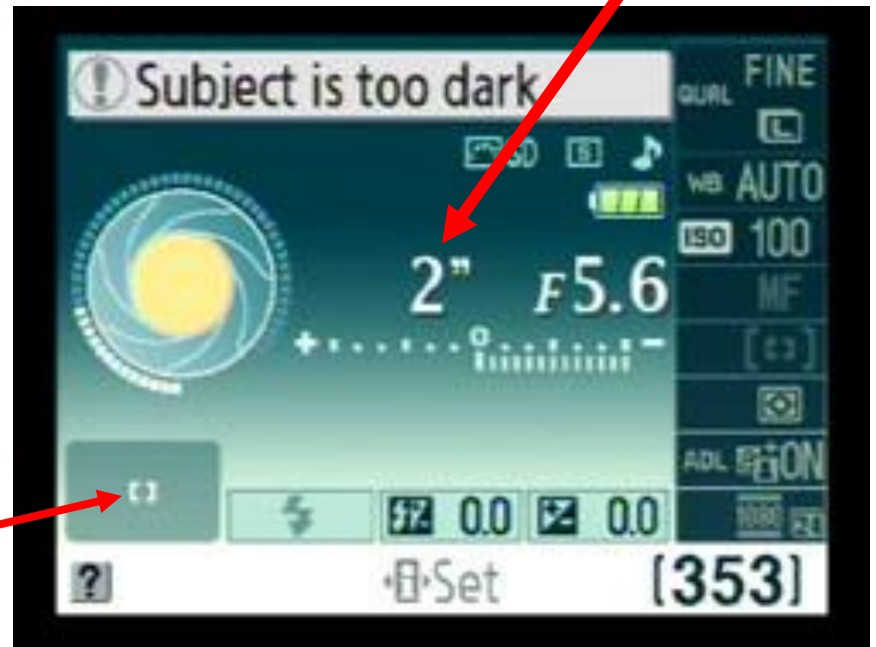


Gorillapod

# Mode S (Shutter Priority)



Shutter speed



Focal point – use arrows to change focal point

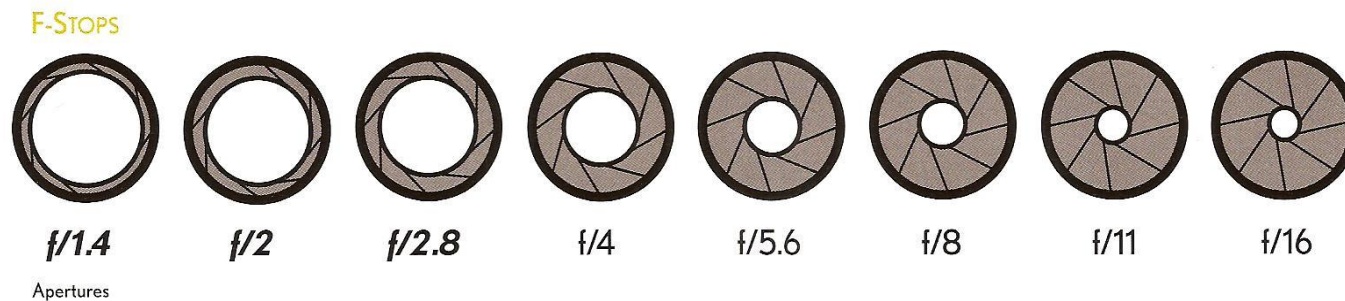
# Aperture



# Aperture

To achieve the correct exposure, the right amount of light must reach the camera's imaging sensor. Too little and you get very dark, underexposed shots; too much, and your overexposed pictures will be too light/bright. The aperture and shutter speed are the two settings that control how much light reaches the sensor—and they are **inextricably linked**.

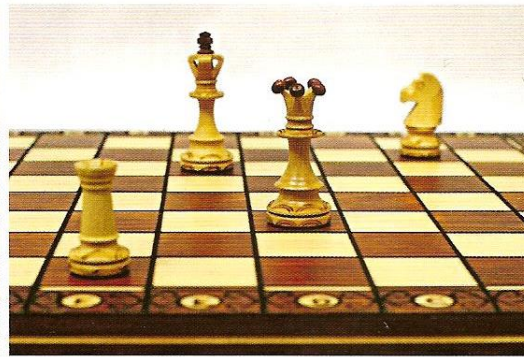
Aperture is the **hole in the lens** that lets light through to the sensor. The lens aperture, or hole size, is expressed in **f-stops**— $f2.8$ ,  $f4$ ,  $f5.5$ ,  $f8$ , and so on. The **lower the number ( $f2.8$ )**, the **wider the aperture**, and the more light that passes through. The higher **the number ( $f22$ )** the **less light** that passes through.







f/1.4 – narrow depth of field



f/5.6 – moderate depth of field



f/16 – large depth of field

### F-STOPS



f/1.4



f/2



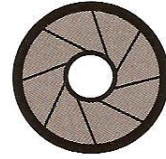
f/2.8



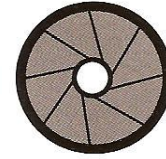
f/4



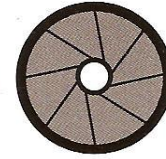
f/5.6



f/8




f/11



f/16

Apertures

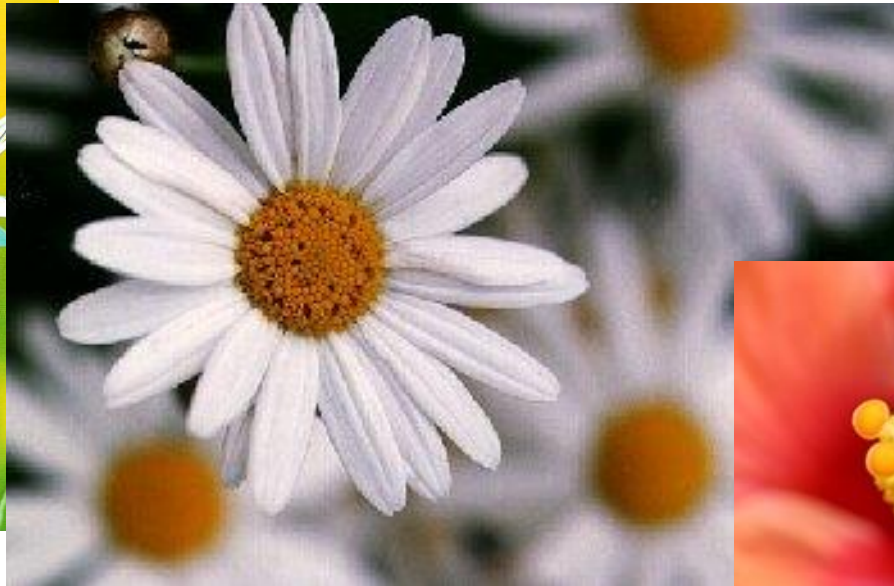
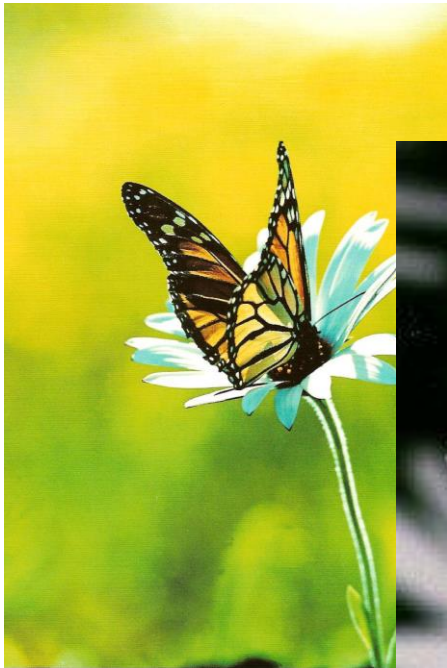
<http://www.lynda.com/Photography-Cameras-Gear-tutorials/aperture/71923/78470-4.html>



There are a number of results of changing the aperture of your shots that you'll want to keep in mind as you consider your setting but the most noticeable one will be the depth of field that your shot will have. So . . . aperture doesn't just affect light. A wide aperture reduces the “**depth of field.**”

# Depth of Field

- **Depth of Field means:** The area or 'zone' of a photograph, from front to back, which is in focus.
- Small/Little (or shallow) depth of field means that only part of the image will be in focus and the rest will be fuzzy. (Aperture: f1.4)

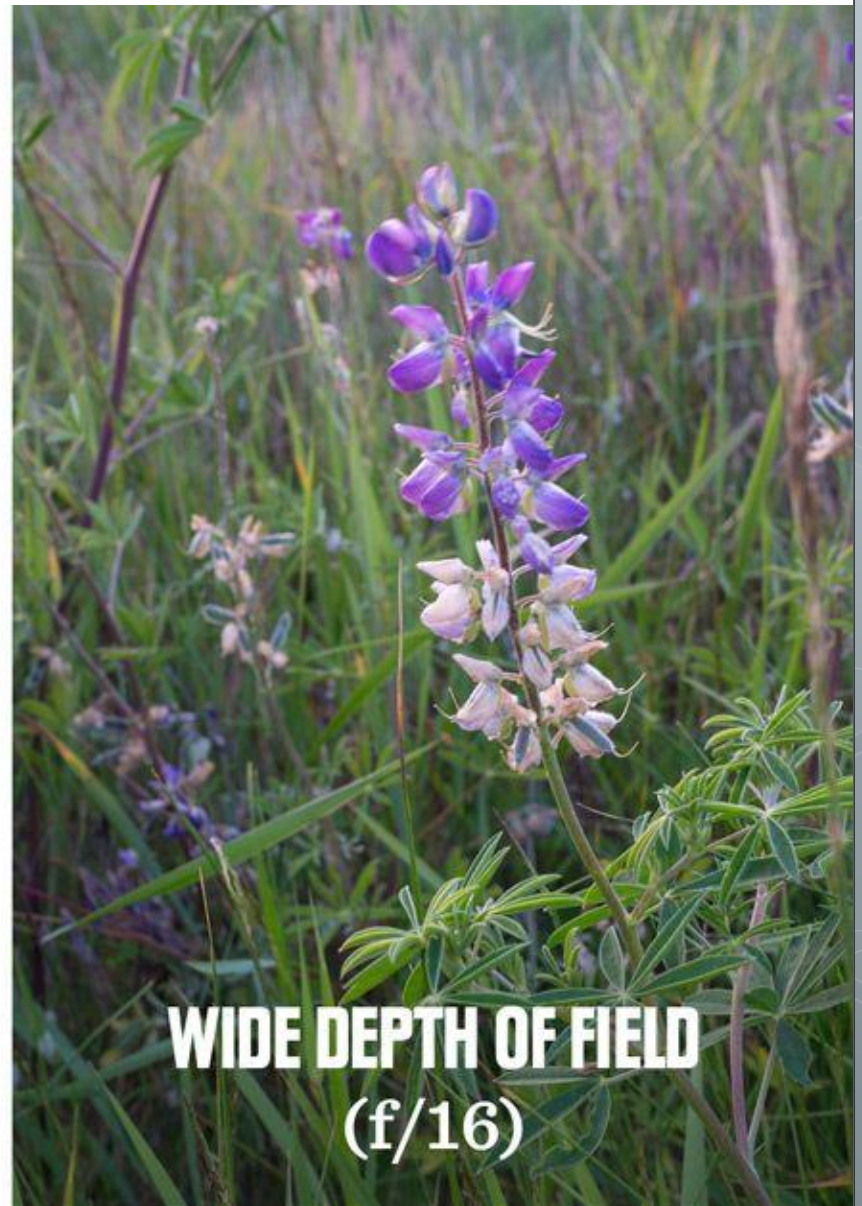
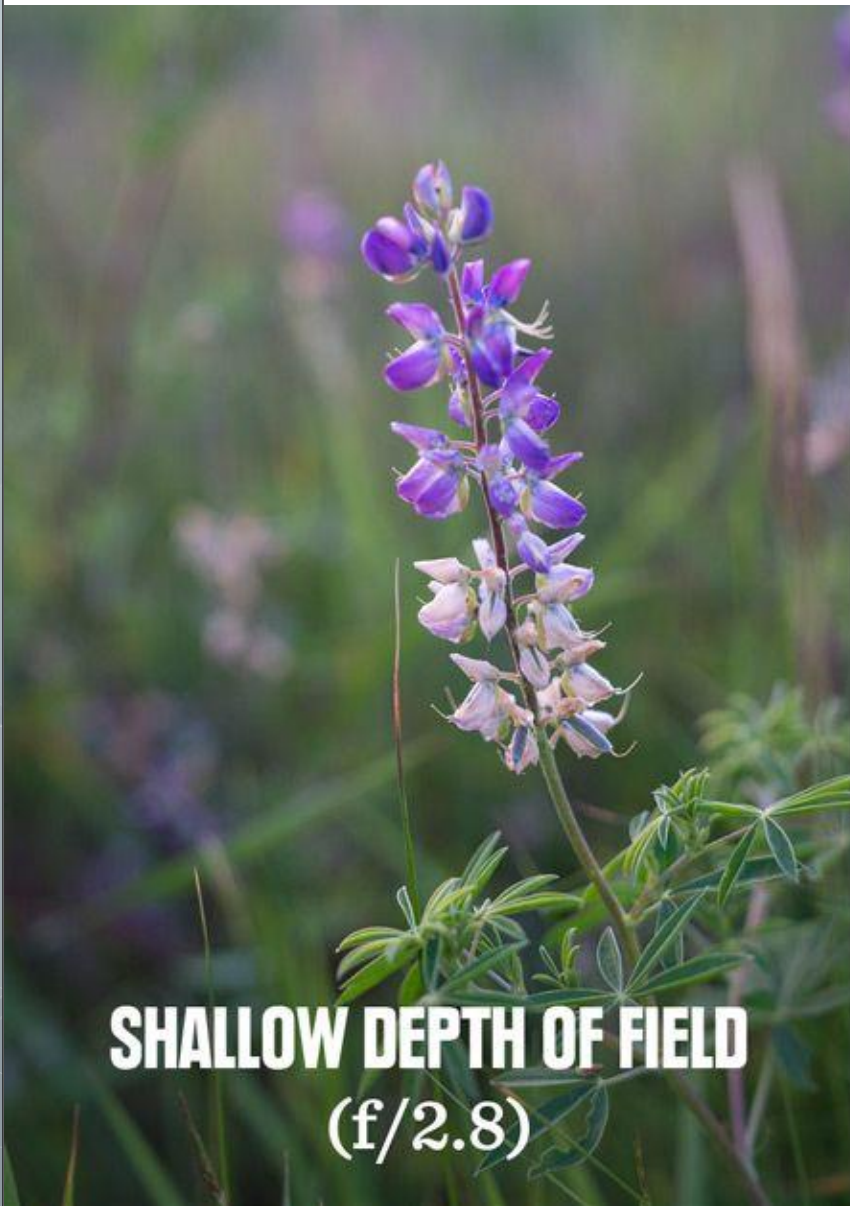


Little depth of field



Large or Greater depth of field = more sharp detail is visible/most of the image is in focus. (Aperture: f16)



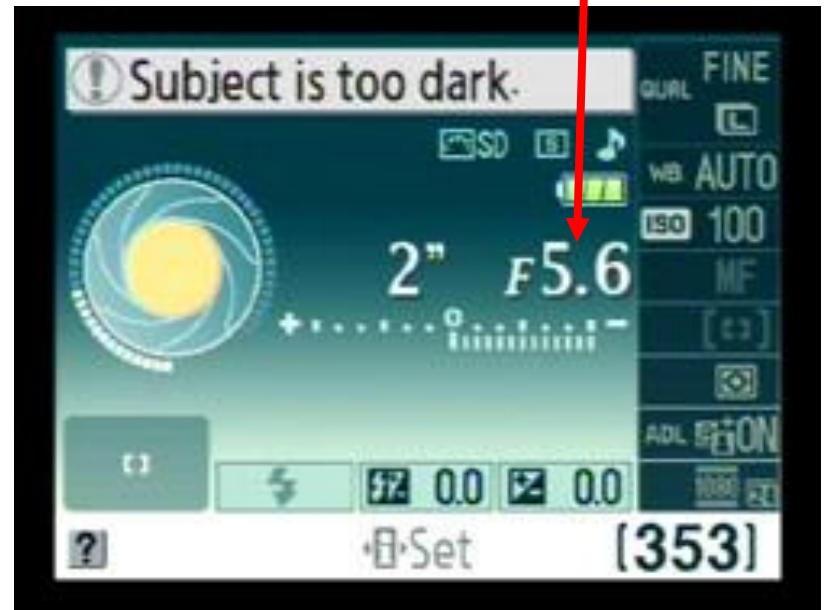


# Mode A (Aperture Priority)



change the mode dial to A

Aperture setting – measured in *f*stops



Mode Dial Setting



DATE ISO-A SD 10s GPS

Battery Life

Shutter Speed Setting



1/4000 F5.6

ISO Setting

Focus Points



AUTO +5.0 +5.0

Aperture Setting

NORM   
WB AUTO  
ISO AUTO  
AF-A  
[ ]  
ADL ON  
1080 120

Number of exposures remaining

[125]k

# WHAT IS ISO?

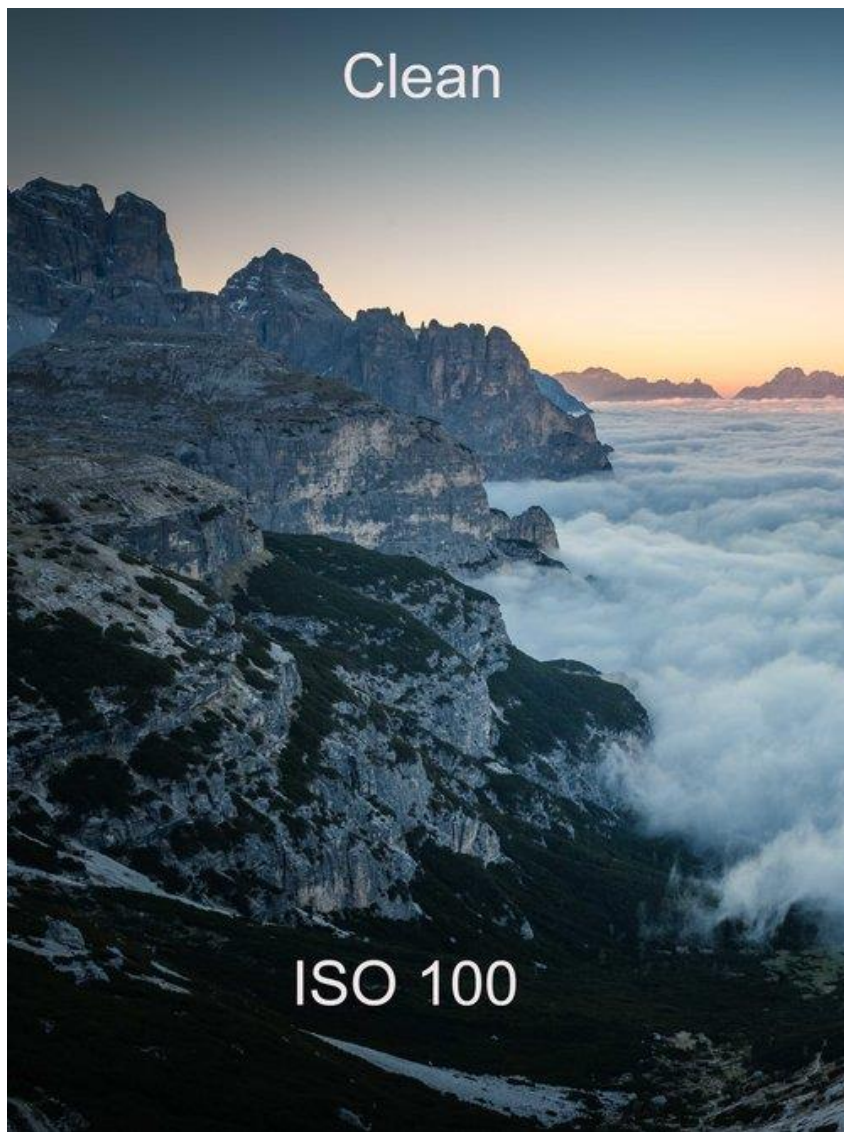




# ISO

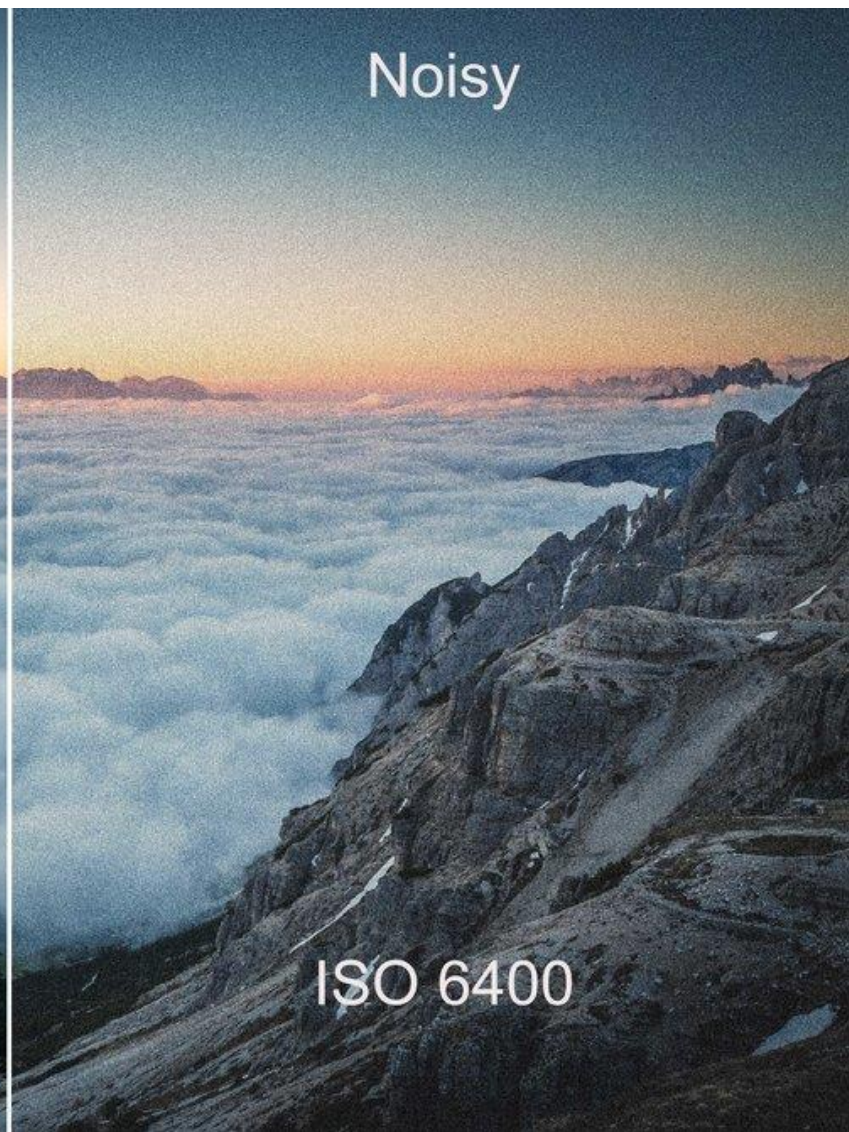
- ISO measures the sensitivity of the image sensor.
- The **lower the number (100, 200)** the less sensitive your camera is to light and the **finer the grain**. Generally used **outdoors**.
- **Higher ISO (1600, 3200)** settings are generally used in **darker situations** to get faster shutter speeds (for example an indoor sports event when you want to freeze the action in lower light) - however the cost is **noisier shots/coarse grain**.

Clean



ISO 100

Noisy



ISO 6400



**ISO 100**



**ISO 800**



**ISO 1600**



**ISO 3200**

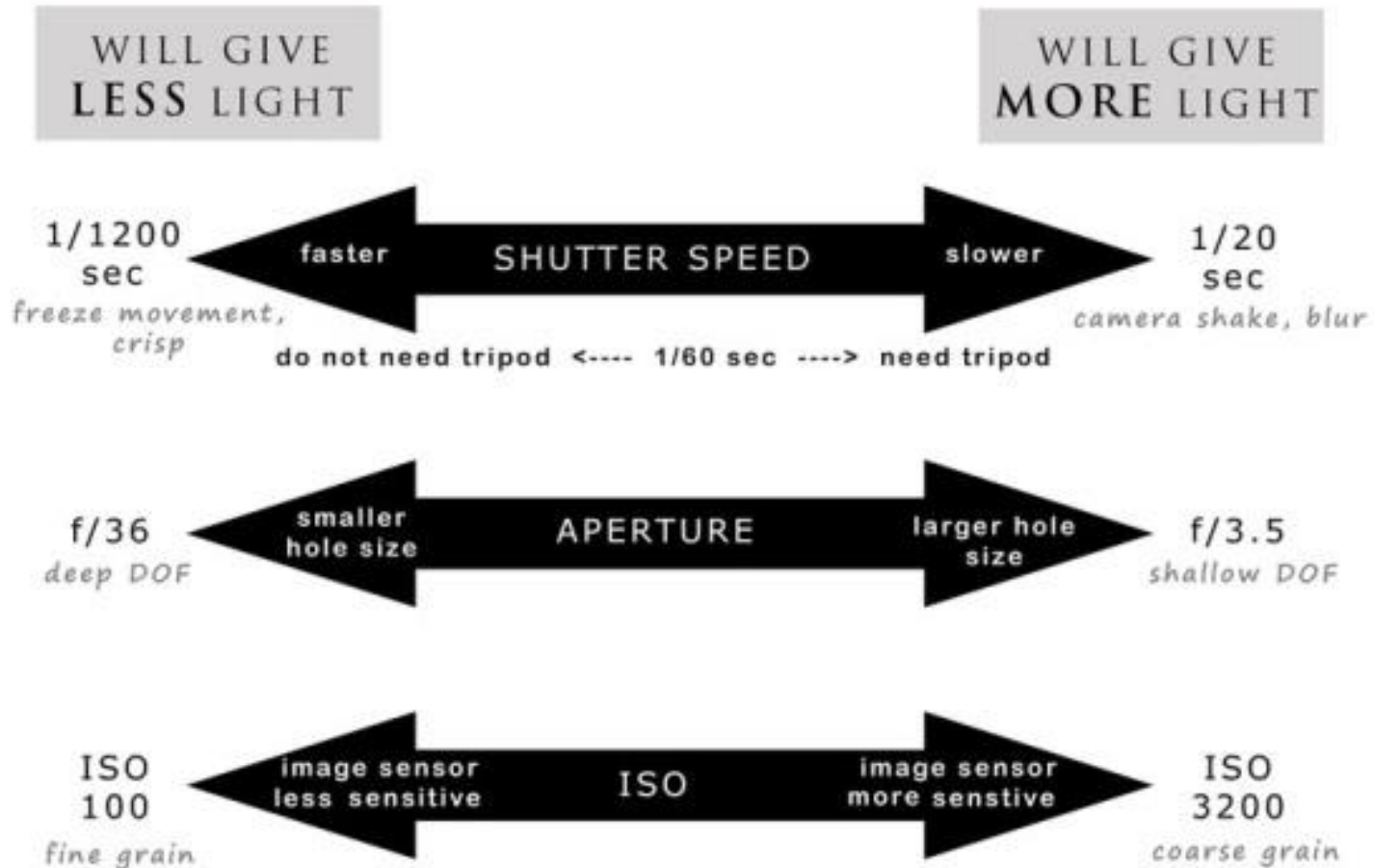


When choosing the ISO setting ask yourself the following four questions?

1. **Light** - Is the subject well lit?
2. **Grain** - Do I want a grainy shot or one without noise?
3. **Tripod** - Am I using a tripod?
4. **Moving Subject** - Is my subject moving or stationary?

- If there is plenty of light, I want little grain, I'm using a tripod and my subject is stationary I will generally use a pretty low ISO (100, 200) rating.
- However if it's dark, I don't have a tripod and/or my subject is moving I might consider increasing the ISO (1600, 3200) as it will enable me to shoot with a faster shutter speed and still expose the shot well. **Of course the trade off of this increase in ISO will be noisier shots.**

# Exposure Triangle Summary



# Ready for the Photography Test

Study:

- PowerPoints
- Should be able to read the information screen on your LCD monitor
- Photography Questions
- Camera parts - labelling