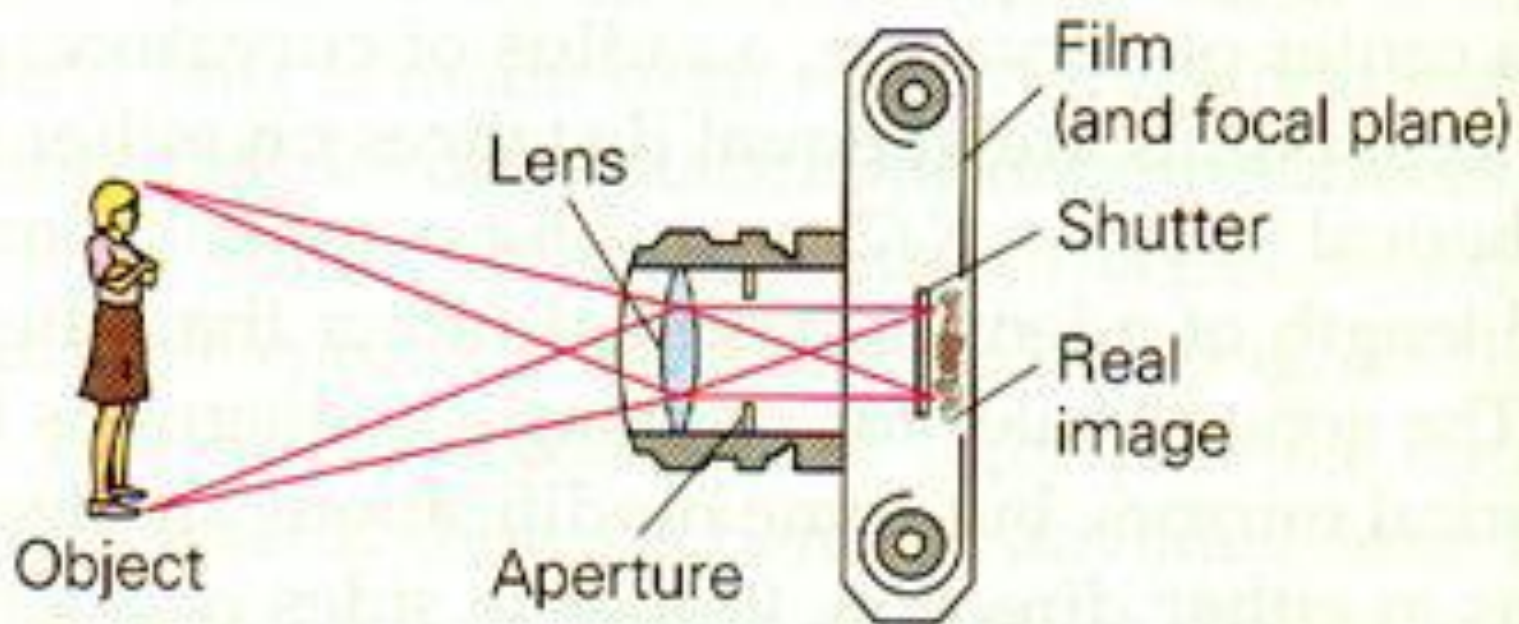


An Introduction to

**Photographic Exposure:
Aperture, ISO and Shutter Speed**



EXPOSURE

Exposure relates to light and how it enters and interacts with the camera.



Too much light



Too little light

EXPOSURE

The Window = a Metaphor for the Exposure Triangle



How much light do I need?

light meter, usually built in to the camera

EXPOSURE

The Window = a Metaphor for the Exposure Triangle



How much light do I need?

light meter, usually built in to the camera

how to control the amount of light reaching the sensor?

EXPOSURE

The Window = a Metaphor for the Exposure Triangle



How much light do I need?

light meter, usually built in to the camera

how to control the amount of light reaching the film?



EXPOSURE



There are 3 main elements that need to be considered when playing around with exposures: 'the exposure triangle'.

EXPOSURE

The Three Elements are:

ISO – the measure of a film sensitivity to light.

APERTURE – the size of the opening in the lens when a picture is taken

SHUTTER SPEED – the amount of time that the shutter is open.



A change in one of the elements will impact the others.

EXPOSURE

The Window = a Metaphor for the Exposure Triangle

Imagine your camera is like a window with shutters that open and close.

APERTURE is the size of the window. If it's bigger more light gets through and the room is brighter.

SHUTTER SPEED is the amount of time that the shutters of the window are open. The longer you leave them open the more that comes in.



Now imagine that you're inside the room and are wearing sunglasses. Your eyes become desensitized to the light that comes in (it's like a low **ISO**)

EXPOSURE

The Window = a Metaphor for the Exposure Triangle



There are a number of ways of increasing the amount of light in the room.

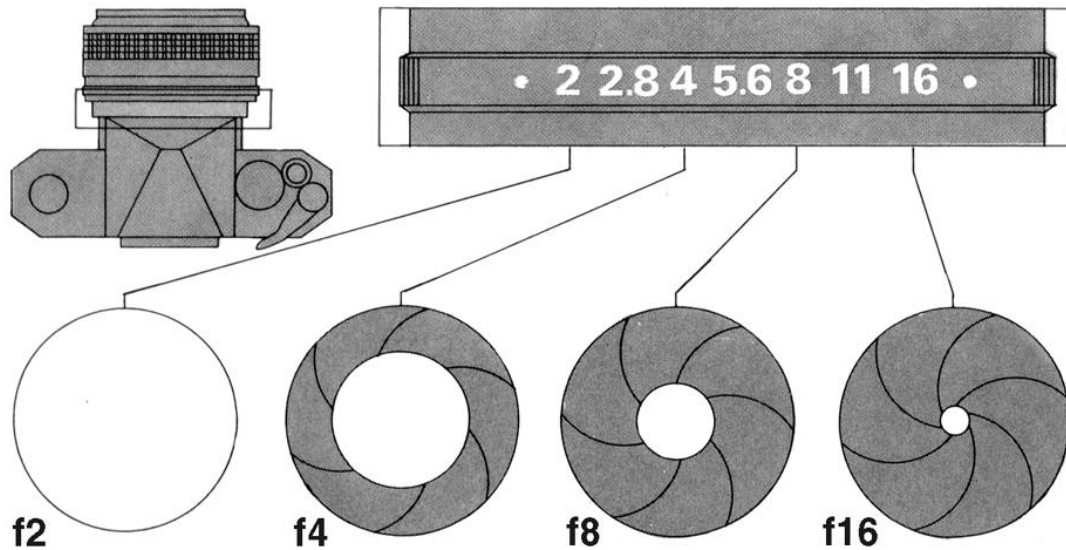
You could increase the time that the shutters are open (**decrease Shutter Speed**)

You could increase the size of the window (**increase aperture**)

Or You could take off your sunglasses (**make the ISO larger**)

APERTURE

What is Aperture? Aperture is 'the size of the opening in the lens when a picture is taken'



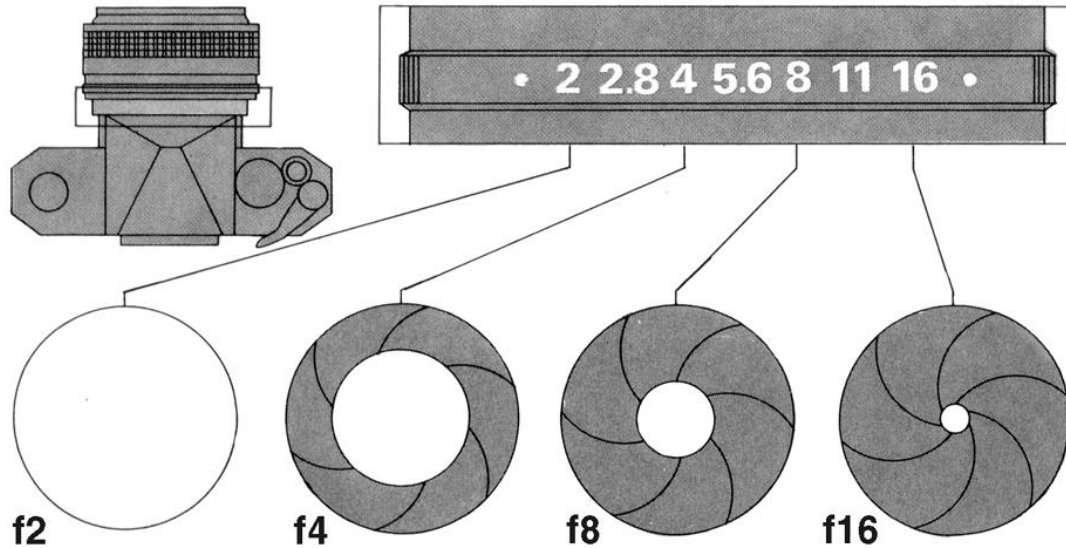
The larger the hole – the more light that gets in.
The smaller the hole – the less light that gets in.

APERTURE

Aperture is measured in F-STOPS

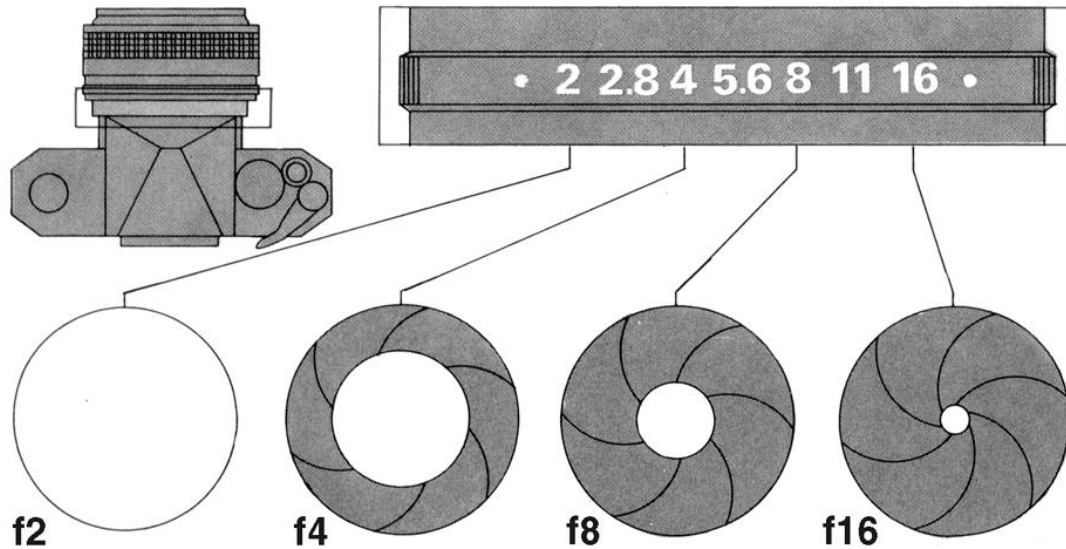
You'll often see them as a F/NUMBER

For example: **f/2.8; f/4; f/5.6; f/8; f/22** etc.



Moving from f-stop to the next **double** or **halves** the size of the amount of opening in your lens.

APERTURE



Large apertures (where lots of light gets through) are given f-stop smaller numbers. Smaller apertures (where less light gets through) have larger f-stop numbers.

So f/2.8 is much larger aperture than f/22

DEPTH OF FIELD (D.O.F) AND APERTURE

Depth of Field (DOF) is that amount of your shot that will be in focus.



Large Depth of Field means that most of your image will be in focus. Like this picture, where both the foreground and background are largely in focus – is taken with an aperture of $f/22$



DEPTH OF FIELD (D.O.F) AND APERTURE

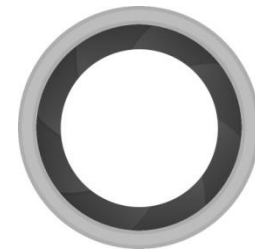
Depth of Field (DOF) is that amount of your shot that will be in focus.



Small (or Shallow) Depth of Field means that only part of the image will be in focus and the rest will be fuzzy. This is a very Shallow Depth of Field and was taken with an aperture of $f/2.8$

DEPTH OF FIELD (D.O.F) AND APERTURE

Depth of Field (DOF) is that amount of your shot that will be in focus.



ISO

What is ISO?– In film Photography, it is the indication of how sensitive a film is to light.

You will see them on films (100,200,400,800 etc) The **lower the number, the lower the sensitivity** of the film and the finer grain in the shots.

Higher ISO settings are used in darker situations, however the cost is a noisier shot.



ISO

100 ISO

3200 ISO



ISO

100 TO 400 ISO – are generally accepted as 'normal' and will give you lovely crisp shots (little noise/grain)



SHUTTER SPEED

What is Shutter Speed? **Shutter Speed is ‘the amount of time that the shutter is open’**

In Film Photography, it is the length of time that the film was exposed to the scene.



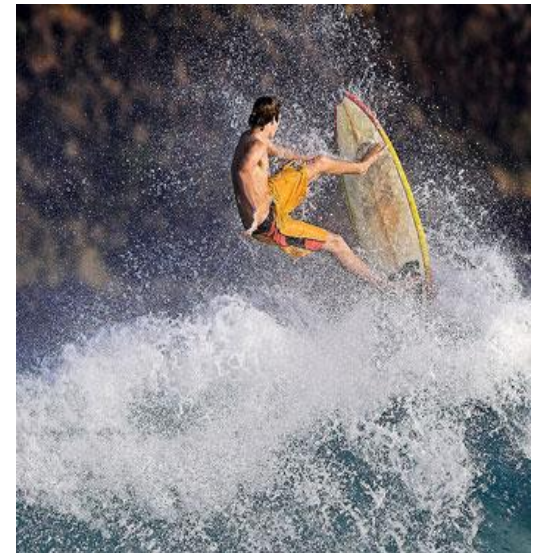
SHUTTER SPEED

-Shutter Speed is measured in seconds – or fractions of seconds.

-The bigger the denominator the faster the speed = $1/1000$ is much faster than $1/30$

-Shutter Speeds mostly double (approximately) with each setting:

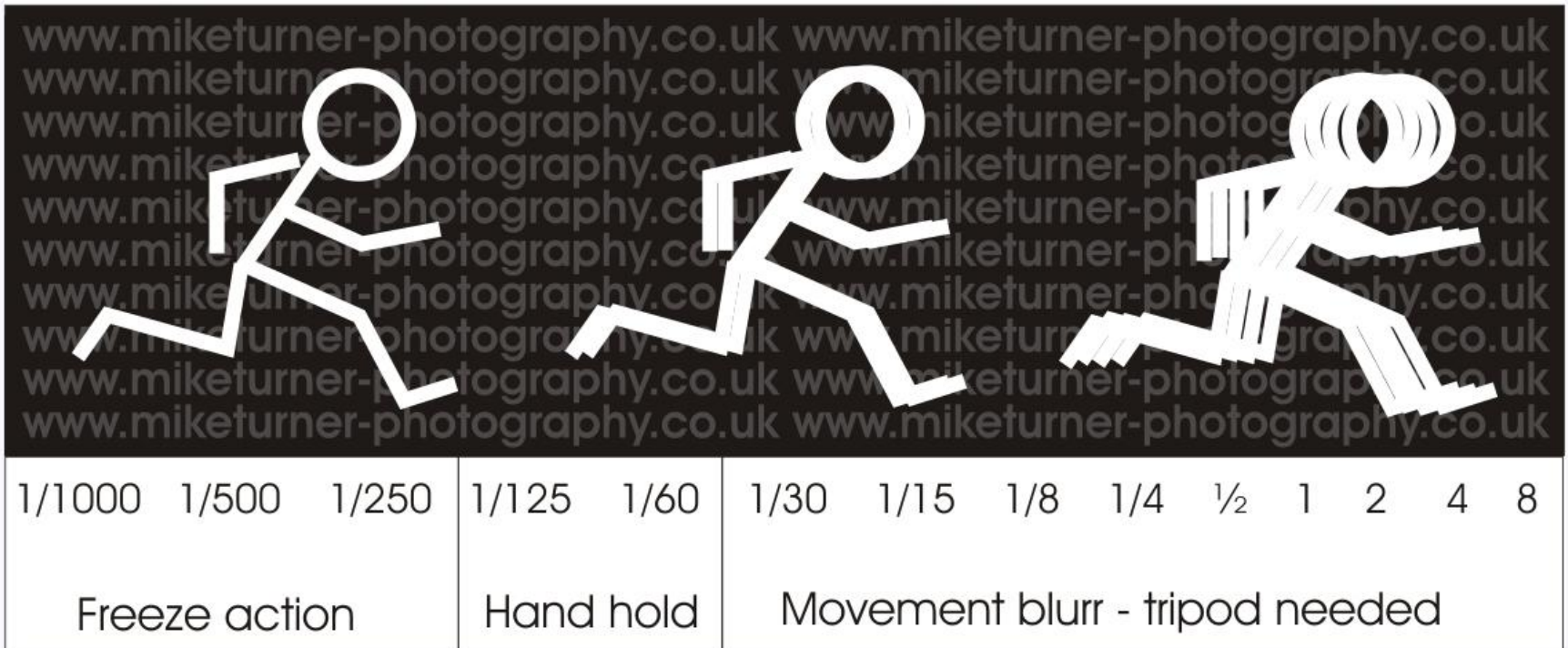
Shutter Speeds like this = $1/500$; $1/250$;
 $1/125$; $1/60$; $1/30$; $1/15$; $1/8$ etc



SHUTTER SPEED

- In most cases you'll probably be using shutter speeds of 1/60th of a second or faster. (This is because anything slower would be difficult to use without getting camera shake, causing blur)

Shutter speed



SHUTTER SPEED

Slow Shutter speeds and **Very low Shutter Speeds** that are measured in seconds (e.g. 1 second, 10 seconds, 30 seconds etc), are used in very low light situations, and when you're going after special effects or capturing a lot of movement in a shot. Some camera's give you the option to capture 'B' or 'Bulb' mode. This mode will keep the shutter open as long as you hold it down.



SHUTTER SPEED



BRINGING IT ALL TOGETHER

Remember thinking about Shutter Speed in isolation from the other 2 elements of the Exposure Triangle (aperture and ISO) is not a good idea. **As you change the Shutter Speed you'll need to change one or both of the other elements to compensate for it.**

For Example – if you speed up your shutter speed one stop (from $1/125^{\text{th}}$ to $1/250^{\text{th}}$) you're effectively letting half as much light into your camera. To compensate for this, you'll need to increase your aperture one stop (from F16 to F11). The other alternative would be to choose a more light sensitive ISO rating (from ISO100 to ISO400)

BRINGING IT ALL TOGETHER

ISO

50 100 200 400 800 1200 1600

SHUTTER SPEED

2 1 ½ ¼ 1/8 1/15 1/30 1/60 1/125 1/250

APERTURE

1.8 2 2.4 4 5.6 8 11 16 22