








SHUTTER SPEED	TYPICALLY USED FOR...	
1/4000 sec	Freezing extremely fast movement	
1/2000 sec	Freezing birds in flight	
1/1000 sec	Freezing motorcycles, cars and other fast vehicles	
1/500 sec	Freezing mountain bikes, runners and athletes	
1/250 sec	Freezing slow-moving animals or people walking	
1/125 sec	Panning motorcycles, cars and other fast vehicles	
1/60 sec	Panning mountain bikes close to the camera	
1/30 sec	Panning fast-moving cyclists at a distance	
1/15 sec	Panning runners, kids or moving animals	
1/8 sec	Blurring fast-flowing water close to the camera	
1/4 sec	Blurring people walking	
1/2 sec	Blurring slow-moving water	
1 sec or slower	'Milky' water effects	

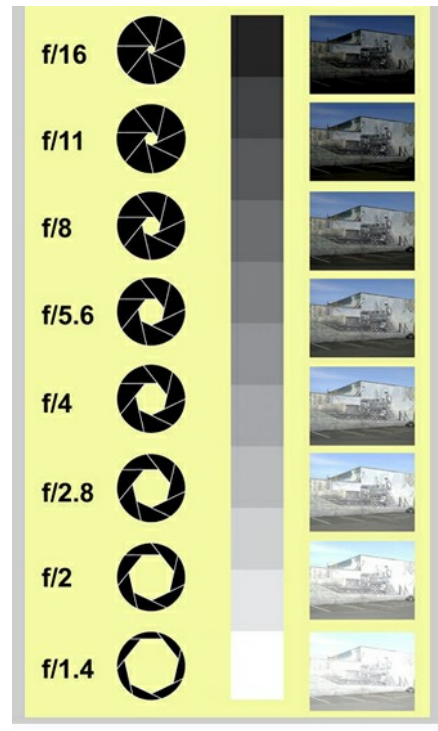



Diagram illustrating the relationship between aperture (f-stop) and depth of field. The scale shows f/16, f/11, f/8, f/5.6, f/4, f/2.8, f/2, and f/1.4. As the aperture opens (lower f-stop), the depth of field becomes shallower, resulting in more background blur. The diagram includes lens diagrams for each f-stop and a vertical bar showing the corresponding depth of field range. Sample photos on the right show a building with varying degrees of background blur.

### UNDERSTANDING THE ISO SCALE

These are the standard settings – the range available to you will depend on your camera



LOW → HIGH

50	100	200	400	800	1600	3200	6400	12800	25600	51200	102400	204800
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**LANDSCAPE**  
ISO50-200  
Low ISOs give the best quality, and using a tripod will mean you don't have to worry about camera shake.

**SPORT**  
ISO200-6400  
The key to sports is capturing the action. Noise is secondary, so use whatever ISO you need if the light is low.

**ASTRO PHOTOGRAPHY**  
ISO800-1600  
This allows a shorter exposure to reduce object movement across the sky.

**LOW LIGHT / CANDID**  
ISO3200-12800  
The most important things are to get sharp shots and preserve the atmosphere.

**TWILIGHT / WILDLIFE**  
ISO12800+  
Modern cameras have revolutionised low-light wildlife photography.


**NOCTURNAL**  
ISO51200+  
The sensitivity of many full-frame cameras means that you can now shoot things you can't see!

### WHEN TO INCREASE YOUR ISO


When all other exposure options have run out you can increase the ISO, or sensitivity

#### STRONG LIGHT PRODUCES A STRONG SIGNAL THAT DOESN'T NEED TO BE AMPLIFIED


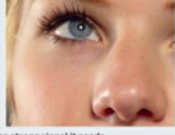
**STRONG SUNLIGHT**



Bright light produces a strong signal




This doesn't need amplifying, so the ISO can be left at its lowest setting


The image gets the strong signal it needs and shows little or no noise

#### LOW LIGHT PRODUCES A WEAKER SIGNAL AND AMPLIFYING IT WILL ALSO AMPLIFY THE NOISE


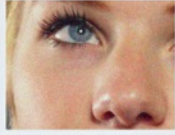
**WEAK CANDLELIGHT**



The signal from a very dim light source is very weak



The ISO has to be increased to produce a strong enough signal for the image

This also amplifies the background noise in the image, which is why high-ISO shots are noisy

ISO	Shutter	Aperture
low sensitivity	fast shutter speed	small aperture
ISO 50	1/1000	F32
ISO 100	1/500	F22
ISO 200	1/250	F16
ISO 400	1/125	F11
ISO 800	1/60	F8
ISO 1600	1/30	F5.6
ISO 3200	1/15	F4
ISO 6400	1/8	F2.8
ISO 12800	1/4	F2
ISO 25600	1/2	F1.4
high sensitivity	slow shutter speed	large aperture

