

# Photography Help Sheets

Phone: 01233 771915 Web: [www.bigcatsanctuary.org](http://www.bigcatsanctuary.org)



## Using your Digital SLR

---

### What is Exposure?

Exposure is basically the process of recording light onto your digital sensor (or film). It is the amount of light (through Aperture) that is recorded over a specific amount of time (from Shutter Speed). **Exposure** to light determines how light or dark an image will appear. Correct exposure is determined by three camera settings: ISO, Aperture and Shutter Speed (the "**exposure triangle**"). There is also another camera setting to consider:

### What is White Balance?

The human eye automatically compensates for different kinds of lighting; white looks white to us in almost any kind of lighting. A digital camera compensates for this by shifting the colours certain ways. For example, under tungsten (incandescent) lighting, it will shift the colours towards blue to compensate for the redness of this kind of lighting. The white balance is one of the most critical, and most underused, settings on modern cameras. Learn how to set it, and what the various settings mean. **When you use the manual controls and take your camera out of auto white balance mode, you have control over the way the camera will record the current colour temperature of the ambient light. You can introduce colour tints by deliberately setting the wrong white balance.** If you are not under artificial light, the "cloudy" (or "shade") setting is a good bet in many circumstances; it makes for very warm-looking colours, particularly in wildlife photography. If it comes out *too red*, it's very easy to correct it in software later on. "Auto", the default for most cameras, can work but may also produce images where colours are a little too cold.

### What is ISO ?

The International Organisation for Standardisation, develops and publishes International Standards. Specifically, photography standards are set for camera exposure meters which measure reflected or incidental light, or both, to determine photographic exposure for camera use.

**In Digital Photography** ISO measures the sensitivity of the image sensor. The same principles apply as in film photography – the lower the number the less sensitive your camera is to light and the finer the *grain* (*noise* in digital terms). For digital images, noise appears as random speckles and can significantly degrade image quality. Higher ISO 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 higher the ISO you choose the noisier the shots.

Set a slower ISO speed, if circumstances permit. This is less of an issue with digital SLR cameras, but particularly important for point-and-shoot digital cameras (which, usually, have tiny sensors and are more prone to noise). A slower ISO speed (lower number -100/200) makes for less noisy photographs; however, it forces you to use slower shutter speeds as well, which restricts your ability to photograph moving subjects. For still subjects in good light (or still subjects in low light) and if you are using a tripod (*not allowed at WHF*) with a remote release, use the slowest ISO speed you have.



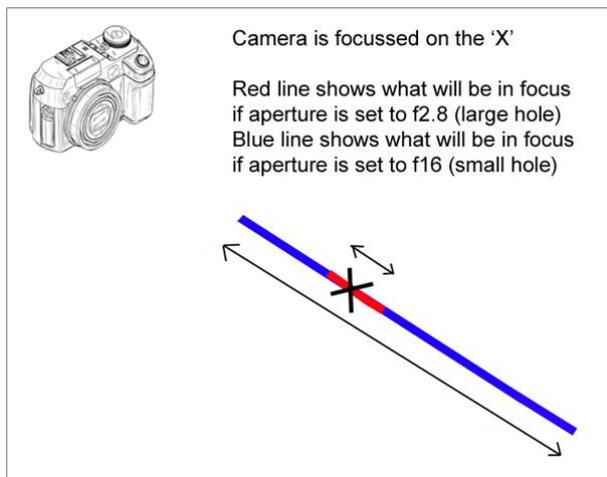
## What is Aperture?

Your Aperture, like the iris in your eye, “opens up” to let in more light or “closes down” to let in less. Your Aperture controls the Depth of Field in a photograph.

Remember the smaller the number the larger the “hole” and thus more light entering the camera to be recorded by your digital sensor. (*A good tip: “smaller number = smaller depth of field”*)

## What is Depth of Field?

The depth of field is basically the part of the image that is in focus in any given image. If the entire image is crisp and in focus then the image has a large (deep) depth of field. If only a small portion of the image is in focus while the remainder is blurry, then the image has a very shallow depth of field.



The **Depth of Field** is a measure of how much ‘depth’ of an image will be in focus.

There are **three things** that can change the depth of field:

- The aperture
- The focal length of the lens used
- How near the subject is to the camera

## What is Shutter Speed?

In the most basic terms possible, shutter speed controls the ability to demonstrate or stop motion in a photograph. It is the **MOMENT** that light is exposed (recorded) on your digital sensor (or film) and the length of the exposure. Basically, it is the amount of time your shutter stays open when you click the button. Shutter speed is set by fractions of a second. So if you are set at 1/1000 of a second, then your shutter will obviously be open for less time than if your shutter speed was set at 1 full second.

## Why Does Shutter Speed Affect Motion in a Photograph?

The longer your shutter stays open the more motion it will have time to record. The shorter the time your shutter remains open, the more motion it will freeze.



## How does Aperture and Shutter Speed Work Together?

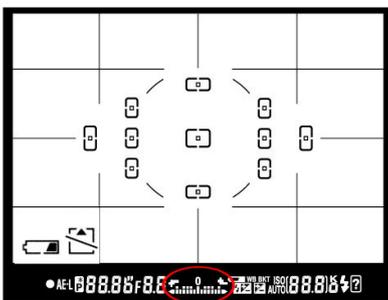
Shutter speed determines the amount of TIME your camera's shutter remains open, but if there was no OPENING allowing for light to enter and hit the sensor, then you would have no image. . . just black. The aperture determines (based on how widely it's open) the AMOUNT of light that is let in within the amount of time determined by the shutter speed.... Read it again and again and give it time to sink in.

Most people can hand hold their camera without introducing camera shake at the shutter speed that corresponds with the focal length of the lens. So for example: if you have a 50mm lens, then you will most likely be able to handhold your camera at shutter speeds of 1/60 or faster. If it's a 200mm lens then you're going to need to remain at 1/250 or higher.

Useful task: Put your camera on Shutter Priority and take 2 images of the same (or at least the same type) of moving object. For one image your goal is going to be to STOP motion and for another it will be to SHOW motion. If you're not clear on how Shutter Priority works: you put in the desired shutter speed, and the camera will select the appropriate aperture for the lighting conditions you're in. alternatively, in Aperture Priority, the camera will select the appropriate shutter speed for the lighting conditions you are in.

## What is Metering?

Metering is how your camera determines what the correct shutter speed and aperture should be, depending on the amount of light that goes into the camera and the sensitivity of the sensor. Today, every DSLR has an integrated light meter that automatically measures the reflected light and determines the optimal exposure. Camera meters are set to expose for 18% grey, this is the standard in photography. However, if you point a camera at a mostly white subject, say, snow, a white wedding dress or a giant pile of sugar, the camera meter will underexpose the image because it's trying to make the image grey. Likewise, it does the opposite for very dark subjects. Heavy shadows, a black-haired dog, or a black backdrop: the camera will overexpose these.



You can see the camera meter in action (in the viewfinder) when you shoot in Manual Mode. To denote over or under exposure, you will see bars running left or right, with a zero in the middle. (Nikon illustrated). The most common metering modes in digital cameras today are:

- Matrix Metering** or Evaluative Metering mode is the default-metering mode on most DSLRs. The entire frame is divided into multiple "zones", which are then individually analysed for light and dark tones.
- Center-weighted** Metering only evaluates the light in the middle of the frame and its surroundings. Compared to Matrix Metering, Center-weighted Metering does not look at the focus point you select and only evaluates the middle area of the image.
- Spot Metering** only evaluates the light around your focus point. Because the light is evaluated at the focus point, you can achieve a more accurate exposure on the Cat even when the animal is in the corner of the frame. It also works great for back-lit subjects.



## What is Autofocus?

### AF FOCUS POINT OPTIONS

Your DSLR offers a variety of autofocus points, which can be used in different ways – but which do you use, and when?

**Auto Area AF:** best for snapshots  
In Auto Area AF mode, you're leaving it to the camera to decide what to focus on. It will check all its focus points and choose either the object nearest to the camera or, on some cameras, any faces the camera detects in the scene. This mode is a good fallback for novices, but the camera will sometimes focus on the wrong thing.

**Single-point AF (51 points):** best for precision  
In single-point AF mode, you pick the focus point yourself. This gives the most control, provided you've got time to select the correct point (or you could use the 'focus lock' method, see overleaf). Single-point AF is ideal for relatively static shots where you've got a little more time to get set up.

**Single-point AF (11 points):** best for everyday  
If you have a camera with a large number of AF points, you have a sophisticated autofocus system at your disposal. But it can take too long to select between them. On DSLRs with 39-point or 51-point AF systems, you can restrict the number of AF points to 11 for quick manual focus point selection.

---

**Dynamic area AF (nine points):** best for action  
Dynamic area AF mode is designed to make the autofocus system more responsive and more reliable for moving subjects. You still select the focus point manually, but the surrounding AF points act as backups to keep the subject in focus if it moves briefly away from your chosen AF point.

**Dynamic area AF (21 points):** best for erratic action  
You can include more AF points in Dynamic area AF mode. Nine points offers greatest accuracy if you can follow your subject in the viewfinder, but for subjects which move more erratically, the 21-point option may be more effective. Try out the options to see which best suits your subjects.

**Dynamic area AF (51 points):** best for subject tracking  
You can use all the camera's focus points in Dynamic area AF mode. Some models offer 3D tracking, which uses information from multiple AF points to predict your subject's movement. This suits shots where you want to keep the camera framing the same while shooting a moving subject.

## FACTORS AFFECTING AUTOFOCUS

The photographic subject can have an enormous impact on how well your camera autofocuses—and often even more so than any variation between camera models, lenses or focus settings.

**The three most important factors influencing autofocus are the light level, subject contrast and camera or subject motion.**

High-end SLR cameras can have 45 or more autofocus points, whereas other cameras can have as few as one central AF point.

## What is Image Format?

A JPEG file is derived from the RAW file. The difference is that the manufacturer has done the processing for you. There is nothing to say you have to shoot RAW or JPEG. It is just a matter of choice. A RAW image is so called because it contains almost every detail the sensor captures. However there may be slight loss of data because of analog to digital conversion, as well as some slight manufacturer corrections. RAW files have greater dynamic range than the JPEG files. RAW file uses 12-bits or 14-bits per channel. This allows a dynamic range of 4096 ( $2^{12}$ ) or 16384 ( $2^{14}$ ) levels/tones per channel. JPEG uses 8-bit per channel and a dynamic range of 256 ( $2^8$ ) levels/tones per channel. Complicated? Yes!

Basically, a higher dynamic range helps in the post processing stage to bring out all the details in the scene and RAW offers more flexibility at the post-processing stage. You will however have less space on your memory card so be prepared. Should you decide to use JPEG, choose Fine quality and the Large size for the best quality image.

## What is a Histogram?

### Reviewing images with the histogram

Learn to look at the graph as you assess your shots

**Compensation**  
Use exposure compensation to shift the histogram left or right for your next exposure.

**Image preview**  
The thumbnail image of the shot is important when judging the histogram – as it shows you if the shot is meant to be dark or light!

**Settings**  
The histogram display also provides the settings used to take the shot, time taken, and file information

**Histogram**  
The shape and position of this black-and-white graph can give you instant information about the exposure of the shot, and of the contrast of the scene

**Dark to light**  
The graph plots the brightness of each pixel in the picture, from darkest on the left to brightest on the right. Vertical lines partition the graph into five segments, designed to make it easier to judge the position of the histogram graph

The histogram is a simple graph that displays where all of the brightness levels contained in the scene are found, from the darkest to the brightest. These values are arrayed across the bottom of the graph from left (darkest) to right (brightest). The vertical axis (the height of points on the graph) shows how much of the image is found at any particular brightness level. Black on the left. White on the right.

