

**Photography** Megapixels, ISO, and Image stabilising are some of the words just flying around on advertisements for cameras. But what do they all mean? This article answers questions I most commonly hear from beginners when they are first starting out with a Digital SLR, or those interested in upgrading in the near future.

### 1. What Are Megapixels?

A megapixel is one million pixels, the more pixels in a picture the more detailed it should be. So theoretically the more megapixels in a camera, the better it should be. It is well known that most new photographers always set out to look for the highest number of megapixels for their money. But beware; an important feature is also the sensor size of the camera. For example, a 6 megapixel full frame SLR would most likely still take better photos than an 8 megapixel phone which would have a tiny sensor.

At the time of writing (1/3/2010) it is almost fair to say that brand new SLR cameras rarely are sold with less than 8 megapixels.

Both these photos below have been taken using a 12.1 megapixel camera. One is from an SLR, the other one on a mobile phone, can you guess which is which?



### 2. What Is the ISO?

You might have heard photographers talking about their ISO. What ISO denotes is how sensitive the image sensor is to the amount of light present. For example, in solid daylight you should often never need to go over an ISO of 100. Whereas at night, when there is little light, you might have to set it to around 800.

The only disadvantage of having the ISO higher is that the images are subjected to much more noise.

When first starting out I would suggest using the Automatic ISO mode, which lets the camera choose the ISO.



### 3. What Is Shutter Speed?

You set your shutter speed in order to tell the camera how much light you want to enter into the camera. A shutter speed of 1/100th of a second is better for shooting high speed action, most commonly sports, whereas as a shutter speed of 30 seconds will allow you to capture photos of light streaks.

The shutter speed is often the most important part of the shot - if you are without a tripod you might find that you cannot go below  $\frac{1}{4}$  second without blurry pictures.

The truck below was shot with a shutter speed of  $\frac{1}{250}$  sec in order to capture the vehicle without any blur.



### 4. What Is the Aperture?

Aperture was the one thing I struggled with when first starting photography, even though it is very simple. The aperture lets more or less light into the camera, but even more importantly, the aperture sets the depth of field. When taking portraits you might want the background to be out of focus, so you simply select a larger aperture in order to do this.

In the image below the owl has a low (or shallow) depth of field - only the subject is in focus, everything behind it is out of focus. The higher the DoF, the more of the scene will appear in-focus.

In summary, as the iris opening decreases in size, the f-stop number increases. Its tough to understand at first but once you start playing around its quite simple.



### **5. How Do I Use These Altogether?**

Setting the shutter speed, ISO, and aperture can often be quite tricky for the new photographer, but most SLR cameras offer different automatic modes which allow a photographer to set just one of these things. The rest is then worked out by the camera.

I would recommend slowly getting used to each of these features, working your way up through the manual modes before trying to set everything.

I would also highly recommend either getting a subscription to a well written photography magazine, or going on a beginners photography course when you first start out. These will often save you countless months working out what each mode does.



## 6. What About a Flash?

A good photographer should be able to know when to use flash or when it is not suitable. Most cameras have a built in flash, but these are often restricting and only light the objects close to you.

If you can afford to purchase a flashgun, they offer so many more features and allow you to reflect the light off other surfaces such as ceilings and walls to get more natural light on a subject, rather than "hard light" from a built-in flash.



## 7. What Is Image Stabilisation?

Image stabilizing is simply a technique to reduce the blurring effects camera shake can have on an image. The image stabilizing is done automatically by the camera or lens.

Canon and Nikon prefer to put the image stabilizing technology in the lens rather than in the body of the camera, but other companies such as Sony place it into the camera body itself.

Currently there is no right or wrong, and it doesn't matter which one you buy. The only disadvantage of having it in the lens is that you often have to pay more money for the IS versions of the lens, for example canons L series lenses can often be \$500 more expensive for the IS version.

The best (and cheapest) way to stop motion blur is to simply use a tripod. This keeps the camera still and minimises any shake.

The image below was shot using a lens without IS or a tripod and, as you can see, there is a fair amount of blur.



## 8. Why Do I Need More Than 1 Lens?

The lens really depends on the situation, your budget, and your hobbies. Most cameras are pre packed with a standard 18-55mm or 18-80mm lens. For the average user these should be fine, but depending on what you like to shoot you might need a different lens. For example, a bird watcher would often need a telephoto lens in order to zoom right in to get a detailed picture.



## 9. What Is a Telephoto Lens?

A telephoto lens is a lens designed to photograph long distances - an average telephoto lens can be from 70-200mm or 100-300mm, some even go up to 500mm. The advantages are clear when photographing sports or wildlife in which you are unable to get near to your subject.

Often these lenses have a great depth of field and can also be used to capture some amazing portraits.

As you can see below, the shot on the left is shot at 70mm and the one on the right at 200mm. Both were standing in the same spot.



## 10. What Is a Wide Angle Lens?

Wide angles lenses are simply a lens which can photograph a wide area. Landscape photographers might prefer this in order to capture large fields or mountains. A wide angle lens tends to be around 12mm-24mm. The disadvantage is that they don't really double up as anything else.

This image was shot at 18mm and allows for a large amount of the scene to be captured.



### 11. What Is a Macro Lens?

Put simply, macro photography is capturing a subject at life-size or larger. A macro lens helps us achieve this, and a photographer interested in flowers or insects might use one in order to pick up more detail than the human eye can normally see.



### 12. What Is a Fisheye Lens?

Fisheye lenses take extremely wide hemispherical images, and are often used for panoramic photography or to make sport photography more interesting, for example skateboarding. Dedicated fisheye lenses are quite expensive and not very commonly used.

If you want to play around with fisheye images you can get cheap adapters for less than \$25 which attach to your current lens.



### 13. What Is a Prime Lens?

A prime lens is simply a lens with a fixed distance, for example 50mm. These lenses are very fast and often have very low apertures. Most beginner's have a negative view on prime lenses and think they are pointless compared to their 18-55mm kit lens.

Prime lenses teach you to move around and not just rely on your lens; you can often get a much better photo from moving a few steps than simply zooming in.

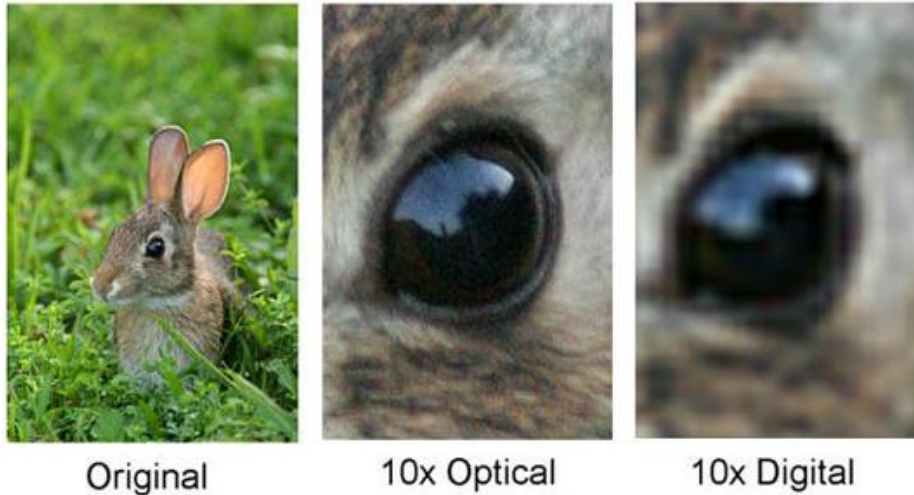




#### 14. What Is Digital Zoom?

A digital zoom is zooming in on a spot using software on the camera rather than using a lens. Often this makes the images very pixilated and there is a very noticeable loss of quality. Digital zoom tends to be found on compact cameras as they often do not have interchangeable lenses.

If you can zoom in optically it is always the best choice.



#### 15. How Do I Print My Images?

Often, big supermarkets or camera shops contain a printing department where you can plug in your camera, SD, flash card etc and then upload your photos to their system. You then select the size and then they will print them. They often charge less if you print more, so make sure you take a fair few images.

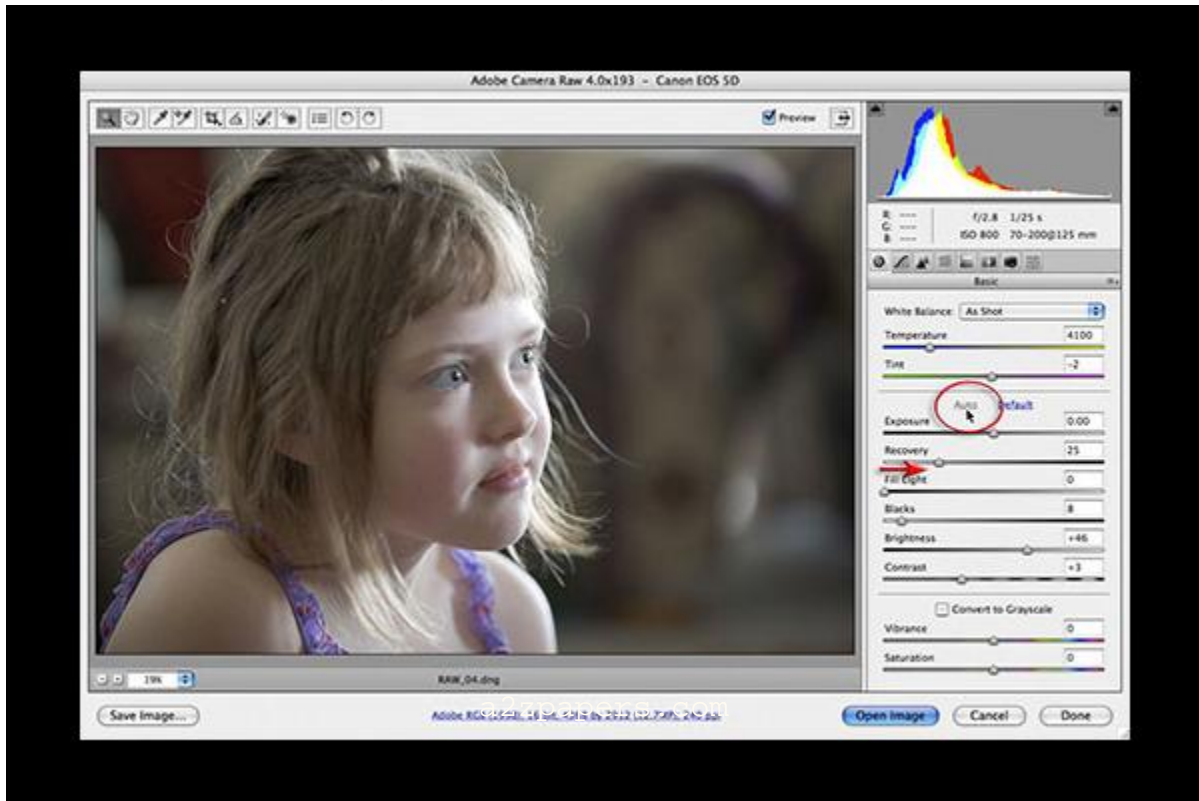
For the beginner and most photographers this is often better than buying an expensive printer (often more than the camera) and having to pay huge prices for ink cartridges.



## 16. What is RAW?

RAW is another mode you can shoot in, rather than JPEG. RAW offers many advantages over JPEG; it records all the details for exposure, white balance and more. It makes it easier to edit the photo afterwards if you do need to change anything.

Often RAW is a very rare mode to get on a compact camera but all SLR's can shoot it.



## 17. What Is Live View?

When purchasing a camera, you might come across the term “live view” this simply means that you view the image you wish to photograph on the camera's LCD screen, then you simply hit the shutter to capture that image. For some, this is preferable to looking through a viewfinder.



## 18. What About White Balance?

White balance is often ignored by most amateur photographers and just left on automatic. The reason we adjust white balance is to get the colors in your images as accurate as possible. Often the auto mode is good enough, but it can commonly get it wrong. You can set white balance manually, usually to:

- Tungsten - For indoor lighting, which cools down your photo.
- Fluorescent – For warming up your photo if under cool lighting.
- Cloudy – Tends to warm everything up.
- Flash – Warms up the cool light from your flash.
- Shade – This will warm things up slightly due to cooler light of the shade.

To the average "point and shoot" photographer, the auto mode is good enough, but keep in mind the other modes if your photos seem to have incorrect colour tints under different environments.

I took each of these photos from the same position and same settings apart from the white balance. I didn't use a flash (other than on the flash setting):



AUTO



Daylight



Cloudy



Tungsten light



white fluorescent light



Flash (with flash on)

### 19. What Is a ND Grad?

ND grad is a shorter way of writing neutral density gradient filter. These are placed in front of the lens in order to make sure areas are not over exposed. The most common use is in landscape photography when dealing with blue skies.

Often you might take a photo and return home to find the sky is just white. A neutral density filter is designed to stop light passing through it and therefore makes the image look perfect.

The same effect can be created in Photoshop, and a fair amount of people would argue that ND filters are frustrating to carry around. I would argue that it is fair better to get it correct in-camera than spend hours in post production fixing the images.

I used ND filters to darken my lens in order to use a high exposure time in the picture below.



### 20. What Is a UV Filter?

A UV filter is a brilliant piece of kit, which is again often overlooked by beginners. What it does is simply protect the end of your lens from dirt, water and scratches. For a small investment you can help protect your expensive lens.

Like all glass, it's worth buying the best one you can, a cheaper unbranded one from eBay may, in fact, reduce the quality of the images which your camera can shoot. I would recommend a Hoya, Cokin or LEE filter as they are currently the best on the market.