Beginners' Guide to digital photography

Part 1: Know How

Know Your Mega Pixels

Sharper, crisper images

Know Your File Formats

Tell a .jpg from a .tiff

part one

Know Your Digital Cameras

There are 3 main varieties of popular consumer cameras on the market today. These start with the very basic systems such as those found in most mobile phones. Following these are compact varieties and, finally, come the more advanced amateur and professional range of DSLR (Digital single Lens Reflex) cameras.

Although mobile phone cameras are very convenient to use, the image quality will always be limited by the small size of their lenses and sensors.

Compact cameras are popular for their good balance between image quality and size. They also come in many types: from simple models to those that offer full manual controls and advanced features. The sensors in compact cameras are typically larger than those found in mobile phones but smaller than those of DSLR cameras.

DSLR cameras also have the ability to swap and change lenses in order to achieve different image results and shooting capabilities. Their size also allows them to house sensors that are much larger than those found in other types of cameras, resulting in better quality images.

Know Your Mega Pixels

Pixel, an acronym for picture element, is simply a dot. One megapixel equals one million pixels (or dots). But not all pixels are created equal. Even if two cameras have the same number of pixels, it does not necessarily mean that the size of their pixels is also equal.

You see, the size of the 'dot' varies depending on the size of the sensor. So basically, if a DSLR and a compact camera both state the same pixel value, the DSLR pixels will still be bigger than those of the compact.

When purchasing a new camera, it is important to consider the end use for your images. Generally speaking, if you take family snaps for upload to the web, store them for viewing on a computer or emailing them to friends you can get away with a camera with fewer megapixels such as a mobile phone. If you want to print photos up to 5x7 or even 6x8 inch then a 3-5 megapixel camera will suffice. If you're a keen amateur or professional photographer wanting sharp, crisp images printed at 8x10 or larger then you'll want a camera with 7 mega pixels or more.

Know Your File Formats

Image files may be stored in a wide variety of formats. How you choose to store them depends largely upon the end use of your images as well as how and where images will be stored.

Reducing the size of image files, or compressing, makes them more manageable, allows you to save more images to your camera's storage devise and allows you to download and display them more quickly.

During compression, data that is duplicated or which has no value is eliminated or saved in a shorter form, greatly reducing a file's size. When the image is edited or displayed, the compression process is reversed.

There are two forms of compression - lossy and lossless. The most popular lossy file format is jpeg whereas the lossless file format is tiff and Gif.

Lossless compression decompresses an image so its quality matches the original source. It doesn't provide much compression which results in less images being stored on your camera's storage device than if you choose a lossy form of compression. Although lossy compression does not uncompress images to the same quality as the original source image, the image appears normal if not enlarged too much.

As a rule, images destined for the computer, email or web are fine stored as lossy files whereas images that will be printed as enlargement are better stored as lossless files. One other option is to store your images as raw files. Raw format saves an image with all the original data however, be warned, not all imaging programs can read raw files. Make sure you have the right programs or raw converters before selecting this option.

Know Your Sensors

There are two main sensors available in cameras today. They are CCD (Charged Coupled Device) and CMOS (Complementary Metal Oxide Semiconductor).

Both CCD and CMOS image sensors convert light into electric charge and process it into electronic signals. Where they differ is in the way they process the image and how they are manufactured.

Each has unique strengths and weaknesses but advances over the last few years mean that, today, neither is categorically superior to the other.

The price of the camera is usually a good indication of the sensor size.

Know Your Settings

In photography, exposure is the total amount of light allowed to fall on the photographic medium, whether it be film or image sensor, when the shutter is pressed.

It is considered "correct" exposure when detail is present in both the highlight and the shadow areas of the image. In digital technology this is not always an easy thing to achieve when using the automatic settings. The metering systems can become 'fooled' when there are predominantly light or dark areas in a scene, resulting in loss of detail in the shadows or blowouts in the highlights.

In manual mode, the photographer adjusts the lens aperture and/or shutter speed independently to achieve the desired exposure.

When selecting the aperture priority setting, the photographer has the ability to control the depth of field in an image whilst at the same time, the camera automatically adjusts the shutter speed in order to achieve what the camera measures as correct exposure. Similarly, when you select the shutter priority setting, the photographer has control over how long the shutter is open for, whilst the camera automatically adjusts the aperture.

Controlling the aperture allows the photographer creative licence over what in the image is sharp and what is blurred: the wider the aperture, the shallower the depth of field. Taking control over this feature can come in handy when taking portraits against busy, distracting backgrounds.

By blurring the background the person becomes the centre of attention and is brought out of the image. Alternatively when taking close-ups, the photographer may choose to close the aperture down and give sharp detail throughout the entire scene. By controlling the shutter speed the photographer can either freeze motion or blur it.

The nature of exposure means that you have to sacrifice depth of field to achieve a faster shutter speed and vice versa. Again, when using these settings the cameras metering systems can be fooled and manual control over the shutter and aperture can produce more pleasing results. Exposure is a detailed topic which is why we have dedicated an entire section to it in the next issue.

Know Your Zoom

There is quite a bit of confusion surrounding optical and digital zoom. Optical zoom uses the lens (hence optics)) of the camera to bring the subject closer whereas digital zoom enlarges a portion of the image and the camera crops it and then enlarges it back to size, 'simulating' optical zoom. In so doing, you lose image quality. It is therefore better to use optical zoom if you have a choice, rather than digital.

Know Your Colours

Photographers are often frustrated with bluish or yellowish colour casts in their images. Casts are caused by the colour temperature of the light source you are using. All sources of light have a colour temperature which are measured in degrees Kelvin (°K). As a general guide, daylight has a colour temperature of 5500°K, domestic tungsten globes is 1900°K and fluorescent lights has a colour temperature of 6000°K. A low colour temperature shifts light toward the red whereas a high colour temperature shifts light toward the blue.

Adjustments to the white balance settings in your camera can resolve cast problems. Different camera models use different methods for adjusting white balance so it is recommended that you read the manual to learn how to adjust your own camera.

Know Your Exposure Metering

All cameras contain exposure metering systems. Some cameras contain just one and others have two or three options that can be selected separately.
In-camera metering systems work by measuring the reflected light from the scene you're photographing. The most common systems available include spot, centre-weighted and multi-zone.

Spot metering works by measuring the reflected light from a very small section of the image.

It can be useful to ensure that a particularly important section of the scene is exposed correctly. It is not influenced by other areas in the frame, which may result in these areas being too light or too dark.

Centre weighted metering systems measure reflected light from the centre area of the scene. This system works best with scenes that have similar reflective values, with neutral scenes or ones that have similar highlight or shadow values.

Multi zone metering systems measure the reflected light from a number of points within the scene. The system uses the results to calculate correct exposure. The number of points can vary greatly from camera to cameras. This method is quite often the default system used in popular consumer models. This system works well when the scene contains a combination of highlights and shadow areas.

Put Your Best Image Forward

You're invited to send in your best image – the one you're most proud of – to photo@dailyexaminer.com.au. The best images will appear in the next instalment of Beginners' Guide to Digital Photography, published on Monday 21st February.

Prize for the best image each week will be a 7" Digital Photo Frame. All photographs appearing in the paper will win the photographer 50 free 6x4 prints in store at Harvey Norman Grafton. At the end of the course, the best image will win the photographer a Panasonic Digital SLR twin lens camera Kit (DMC-G10KTWIN) VALUED AT $900.00. **ALL PRIZES COURTESY OF HARVEY NORMAN.**

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