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Choosing a Digital Camera That's Right for You

Selection

When selecting a digital camera, the first thing you need to check is the old pocketbook. It's like buying a car. No one model is right for everyone, but if you consider it's purpose and your budget, you will find a car (or camera) that will suit your needs. Do you plan to just shoot family snapshots? Or perhaps you wish to capture sporting events or even wildlife. How about night shots of the city? Here are a few points:

- The cost of point and shoot digital cameras range from $100 to $1,000.
- Low-end cameras are appropriate for e-mail, webpages, and monitor viewing but not for prints.
- High-end cameras give exceptional quality pictures and often have. advanced camera features that allow you to exercise your creative control.
- Before you buy a camera, review the specifications to find out what the computer requirements are. Nearly every camera requires a USB (universal serial bus) connection on the computer.
- Always add in the cost ($50-$80) of a few accessories, such as extra batteries and upgraded memory cards.
- Beware the "lowest price" on the Inetrnet. Some of these companies strip down the camera then advertise them at that price. Neccesary items such as card readers, software etc, are then added on ala carte.

You'll have to find the right balance of cost, capability, and your comfort level. Watch the prices. When new models come out, the prices of older models are often lowered (just like cars), making them a good deal. One important thing to remember…like cars, cameras are investments that you do not buy everyday. So choose wisely!

Resolution = Picture Quality

Resolution is probably the key feature that will affect the cost of your camera. The higher the resolution, the greater the cost. Resolution will determine how big you can print and how much you can crop your pictures. For general picture-taking, I recommend a camera with a 2 to 3 megapixel resolution. Resolution is expressed by the number of horizontal pixels on the sensor multiplied by the number of vertical pixels. For example, resolution for a typical sensor might be as follows: 2,160 horizontal pixels x 1,440 vertical pixels = 3,110,400 pixels. Or in the language of digital cameras, 3.1 megapixels (mega equals million). The following is a guideline to megapixel and print size recommendation

Maximum print size

Camera Pixels	Capacity of CCD	Great	Good
307,000 pixels	640 x 480	3"" x 4"	5" x 7"
1.3 megapixels	1280 x 1024	5" x 7"	8" x 10"
3 megapixels	2000 x 1500	8" x 10"	11" x 14"
4 megapixels	2272x 1704	11" x 14"	20" x 30"

In addition to a camera's maximum resolution, review its other resolution settings. Many offer a range of settings, which can be convenient to fit more pictures on a picture card or save time making later adjustments. For instance, if you know you'll only e-mail a particular picture, you could set the resolution setting low and not have to resize the picture later.

Features

Features abound when examining all the different models and styles to choose from. Here are some features to consider:

- Sleek pocket cameras are easy to port around, and take on trips, but may have tiny, hard to find controls.
- Practical larger cameras have controls that are easier to find, but can be bulky.
- Generally, lenses made from glass are sharper and more damage resistant than lenses made from plastic. You should purchase a good glass lens.
- The larger the maximum aperture setting, the more capability you have in shooting in dark situations.
- A zoom lens adds great versatility. The greater the zoom range (2x, 3x, 4x) the greater its versatility.
- Digital zoom shouldn't be an important factor in choosing a camera. All a digital zoom does is electronically zoom into the picture, magnifying the pixels. In effect, it crops the picture as you take it, reducing resolution of the picture and the size you can print it.
- Some cameras offer nighttime, portrait, and landscape shooting modes. This comes in handy if you want
- Higher-end cameras offer manual modes to adjust settings. A must if you want to get creative.
- A flash is a must. One that can be turned on/off manually even better. One that has different settings to do fill flash is the best.
- Some cameras require you to have a separate mechanism to download your pictures similar to an external floppy drive. Others allow you to simply attach the camera. Something to consider when determining the portability of your downloading files.
- Batterries are your lifeblood. Some cameras take only NiCads or Lithium Ion batteries. Some take only Double AA (get the rechargeable kind,

these cameras eat them for lunch). Always buy an extra battery, with the most capacity you are willing to carry or afford.

- Purchase at least 128MB worth of storage media for a 2 or 3 megapixel digital camera and at least 256MB for a 4 megapixel digital camera.

There are a number of other extra features that cameras offer, but these are the basic ones you should look at. When choosing a camera that fits your need, I suggest that you check digital camera review websites. Look at the price range and megapixel you'd like to target. I also suggets looking at the most popular models. There's a reason why the buying public purchases certain models in droves. Here are some great sites:

http://www.digital-cameras-info.com/
http://www.imaging-resource.com
http://www.photo.net

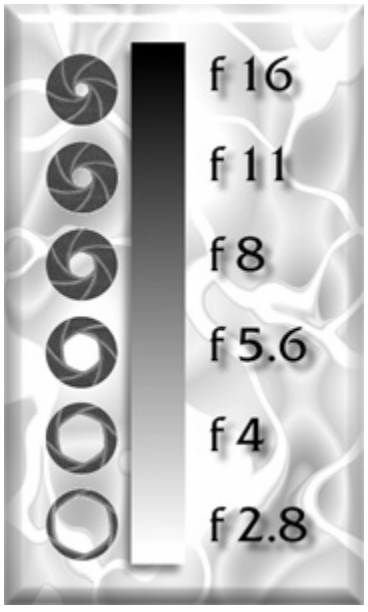
How Does It All Work

It's all about light

Photography whether digital or traditional is all about light. In fact photography means "*writing with light*". Light has several components that we will explore later today as we go out to shoot pictures, but first an explanation of how your digital camera captures light, and thus the images that we call pictures.

The aperture

The aperture is what we here in Hawaii call the "puka"or hole. The larger the aperture, the more light comes into the camera, the smaller the hole the less light comes in. Quite simple right? Well here's where it gets a little confusing… the aperture setting is measured in *f* stops, and the bigger the hole, the smaller the number, and the smaller the hole, the larger the number. The following diagram is an illustration of typical *f* stop settings.



Each one of these *f* stops allows exactly twice as much light in as the previous one if you are opening the aperture. In other words, from *f*8 to *f* 5.6, two times as much light is coming in. Now when you see a 2.8 flashing on your screen, just think, "wow this must be really dark! I have my aperture opened up quite a ways!"

The Shutter
The shutter is just that. Like a shutter on a window, it lets light in if it's open, and doesn't when it's closed. The shutter is measured in the amount of time it stays open in fractions of a second. This is called the called shutter speed. OK more numbers right? Here is an example of a range of shutter speeds, from 1 second all the way to 1/1000 of a second:

The faster the shutter speed, the less light gets in. The slower, the more light gets in. Seems simple enough. In bright, outdoor sunlight, the camera will probably be set at the higher end of the scale. At night when I want to take those city light pictures I may have to stay open for a full second. Now on to what happens when you actually click the shutter…

Say cheese!
When you press the shutter release button of a digital camera, a metering cell measures the light coming through the lens and sets the aperture and shutter speed for the correct exposure. When the shutter opens briefly, each pixel on the image sensor records the brightness of the light that falls on it by accumulating an electrical charge. The more light that hits a pixel, the higher the charge it records. Pixels capturing light from highlights in

the scene will have high charges. Those capturing light from shadows will have low charges.
When the shutter closes to end the exposure, the charge from each pixel is measured and converted into a digital number. The series of numbers can then be used to reconstruct the image by setting the color and brightness of matching pixels on the screen or printed page.
OK, so now you have a basic understanding about the two main controls of your camera. They work in tandem. Once you've metered your exposure correctly, if you adjust the aperture to a smaller setting thus letting in less light, the shutter would have to be adjusted to a slower setting to compensate to get a correct exposure. Sort of like the Ying and Yang of photography.

ISO
You can also set the image sensor sensitivity (ISO) to affect exposure. A high ISO (400) needs less light, a low ISO (50) needs more light for proper exposure. The ISO is directly correlates to the resolution setting. The higher the ISO, the lower the resolution. Common problem with current consumer digital cameras is that high ISOs introduce quite a bit of noise as to be mostly unusable.

White Balance
The image sensor in a digital camera does not "see" light the same way that film does. The sensor just receives light, generates an analog charge that must then be interpreted by software to digital pixels. This gives digital cameras the ability to adjust color in camera (instead of choosing a certain film type, then adjusting color in the lab with film cameras). What white balance allows a digital camera to do is to calibrate all the colors based on the color White. In trying to achieve the truest white, all other colors are adjusted accordingly. The better digital cameras allow you to calibrate the white balance using a white card. Ensure that your digital camera allows you to select different white balance setting for different situations, such as outdoors, cloudy, fluorescent, and tungsten.

The basic difference between a film and digital camera is you're your image is recorded using a light-sensitive sensor called a Charged Coupled Device (CCD), and then stored onto a memory card instead of film. The image is made up of hundreds of thousands or millions of tiny squares called pixels. Like the impressionists who painted wonderful scenes with small dabs of paint, your computer and printer can use these tiny pixels to display or print photographs. To do so, the computer divides the screen or printed page into a grid of pixels. It then uses the values stored in the digital photograph to specify the brightness and color of each pixel in this grid-a form. Sort of like of painting by number.

OK so now you have a pretty general idea how your camera works…now on too shooting…