

Buying a Digital Camera

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Objective

- Understand the various advertisements you see and hear in the media
- Decide which features to look for in a camera
- Decide which camera will meet your needs

What Is The Best Camera?

- Nikon -D2Xs, 12.4 MP - \$5,000



lens not included

- Canon EOS-1DS Mark II, 16.7 MP - \$7,000



lens not included

Questions to ask

- Who is the camera for?
- What is the users level of skill with a camera?
 - Beginner, Intermediate, or Advance
 - Point and Shoot user or someone who like the camera functions
- Have they used a Digital Camera before?
 - If so, what issues did they have?
- What are you going to use the camera for?
 - Photos for the family album
 - Photos for web site or email
 - Photos for large blowups (Greater than 8X10)
- What is the age of the user?
- How much do you want to spend on the camera?

Different between Film and Digital Cameras

- **Batteries**
 - Digital: Uses a variety of battery types and requires frequent replacement
- **Recording the picture**
 - Digital: Uses a fixed, light sensitive silicon chip. There are two kinds:
 - CCD and CMOS. The chip determines the frame size and light sensitivity of the camera.
- **Framing the shot**
 - Digital: Uses and optical viewfinder as well as and LCD

Different between Film and Digital Cameras

- Snapping the shot
 - Digital: Varies depending on the image size, file format, media type, memory available for temporary storage, sensor type and speed of auto focus
 - In general digital is slower than film.
- Storing Pictures
 - Digital: Stores image as a digital file on reusable memory cards or disk
 - Number of photos depends on the size of the memory on the size of the file (photo)
- There are three common file formats:
 - JPEG - Small and fast and has some file compression
 - RAW - Larger more flexible for post capture retouching
 - TIFF- Larger file and can slow down shooting and fills up media

The Camera

Lens

- Zoom

Optical Zoom

- Optical zoom is the zoom of the lens. The lens changes focal length and magnifications as it zooms in on the object. The image quality stays high throughout the zoom.

Digital Zoom

- Digital zoom simply crops the image to a smaller size and then enlarges the cropped portion. Digital zoom results in significant loss of quality and is not useful.

Watch out for ads such as this: “12X total zoom”. This could mean 3X optical and 4X digital.

The Camera

- **Zoom Lenses**

- A) Retractable Zoom lenses**

- These zoom lenses retract into the camera body

- Advantage: Compact, portable and better protected
 - Disadvantages: Usually does not accept filters or add on lenses
 - Zoom limited to 2X or 3X
 - Lenses extension may increase start up time

- B) Fixed Zoom**

- These zoom lenses are fixed to the camera body and do not retract into the camera body.
 - Advantage: Zooms can range up to 12X
 - Lens is usually threaded to accept lenses and filters
 - Disadvantages: Camera design is bulkier than then retractable
 - Camera controls may be more complicated than the user wants

The Camera

- C) Interchangeable lenses
 - Digital SLRs can use the same lenses as film SLRs.
 - This is for the more serious user
 - Advantage: Delivers the best quality
 - Provides the most flexibility
 - Disadvantages: Expensive
 - Lenses tend to be big and heavy
- D) Recommendations:
 - Look for a zoom with at least a 3x or 4x zooms.
 - What does 4x mean?
 - $35\text{mm} \times 4x = 140\text{mm}$
 - 35mm to 140 mm

The Camera

■ Shutter Lag

- This is the time from when the shutter is pressed and released the shutter fires.
- Digital cameras have a greater shutter lag than film cameras.
- Some cameras offer a burst mode to help deal with this problem. If this is important to you, you may want to look for a camera with the burst mode option

The Camera

■ LCD

- The LCD (liquid crystal display) has two functions, it is used to display the photo and it displays camera functions.
- When using the camera viewfinder to frame your shot you do not always capture the shot you take. The LCD monitor displays exactly what the camera lens sees.
- On DSLR you cannot use the LCD to as a viewfinder.
- LCD size varies by camera and maker and vary from 1.8 inches to 3 inches
- LCD pointers:
 - The LCD drains the camera's batteries.
 - Not all LCDs can be seen in bright light.

The Camera

- **Viewfinder**
 - The viewfinder is used to compose the photo, but as stated above you do not always get exactly what you see.
 - The viewfinder does save battery power over the LCD.
 - In some cameras you cannot use the viewfinder if you have add on lenses
 - In DSLRs you have to use the viewfinder
 - Not all of the Point-and-shoot cameras have viewfinders

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"More pictures of your kids. Wow, they've really grown since yesterday."

The Camera

■ Flash & Red Eye

- Most of the cameras offer some type of flash that will work when the camera senses that there is not enough light. Some cameras offer a Red-Eye reduction feature, where the camera fires off three or four short flashes before the full flash. The short flashes are set to constrict the eye so you don't get the red eye. Most of the time these functions don't help.
- Points to remember:
 - The more flash shots you take the quicker you will use up your batteries.
 - Most flashes are only helpful for about 10 feet from the camera.

The Camera

- Shooting Modes and Preset

- Automatic

- The Automatic function sets the shutter and aperture for the camera. This is what is often referred to as “Point and Shoot. All of the cameras offer this function.

- Additional Modes or Presets

- The next level up in cameras offers the additional modes with functions such as Landscape, Close-up, Action, and Night shots. These are nice functions to have. They offer more versatility.

Advance Modes

- The more advance cameras offer Manual, Aperture Priority, and Shutter Priority. These functions are only for the serous user.

The Camera

- Batteries

- Digital cameras use one of two types of batteries: standard AA or proprietary Lithium-ion. Lithium-ion batteries are usually rechargeable.

Issues:

AA Batteries:

AA batteries are cheaper and easy to find if you need new batteries. They do not last as long as the Lithium-ion.

You can purchase rechargeable AA batteries

Lithium-ion

- Last longer and are rechargeable, but they are expensive and they are not readily available if you should need new ones.

Tips:

Always have extra batteries

Try to save power, buy limiting the use of the LCD

Turn the camera off when not in use

The Camera

■ Resolution or Megapixels

- Megapixels refer to the number of sensors the camera uses to record picture quality. The more Megapixels the larger the print you can make and the more detail (called resolution) the camera captures.
- Consumer cameras range in capacity from 1.3 to 12 Megapixels.
- Here is where the question, “What are you going to use the camera for?”
 - Photos for the family album (4x6 prints) only need a 1MP or 2MP camera.
 - Photos for web site & email only need a 1MP camera.
 - Photos for 5X7 and 8X10 prints only need a 3MP camera.
 - Photos for prints larger then 8x10 will needs a camera of 5MP or higher

For most people a 3 Megapixels camera is more then enough.
With 3 MP you can produce a photo quality 8x10 photo.

The Camera

- Resolution or Pixels
 - Megapixels vs Photo size

	2MP	3MP	4MP	5MP
Photo Quality	5X7	8X10	11X14	12X16
Acceptable	8X10	11X14	12X16	16X20

The chart is from “Digital Photography Pocket Guide” Second Edition, Oreilly

The Camera

- Memory

- Digital cameras depend on memory to store the photos. If you run out of memory you will not be able to take photos. The types of memory that the cameras use vary by camera manufacture.

- CompactFlash, Secure Digital/MultiMediaCard (SD/MMC), SmartMedia are more common types of memory found in today's cameras.

Note: Many camera manufactures are not including memory cards as an item in box. You will need to purchase a memory card.

The Camera

- Memory

The chart below is an approximate number of photos using highest quality JPEG files.

	6 MP	8 MP	10 MP
512 MB Memory	140	130	80
1 GB Memory	280	260	160
2 GB Memory	560	520	320
4 GB Memory	1120	1040	640

The chart is from Outdoor Photographer, October 2006

The Camera

■ Camera Size

- Digital cameras come in all sizes. The general rule of thumb is the smaller the camera the less features it has and the harder it is to work for someone with larger fingers.
- The larger cameras tend to have better lenses, more battery capacity and are easier to hold steady.
- The size, weight and easy of operations are something the user needs to try out.

The Camera

- Image Stabilization
 - Image Stabilizations helps to decrease vibrations from camera shake.
 - Camera shake is common with the small cameras.
 - Each of the manufactures have their own name for image stabilization.
 - Nikon call it "Vibration Reduction"
 - Canon calls it "Optical Image Stabilizer"

The Camera

- Other functions of the digital camera
 - Wireless
 - Photo editing
 - Video recording
 - Some cameras can capture around 30 sec of video clips.
 - Not all cameras that shoot video will capture sound.
 - Voice recording
 - Some cameras will let you record brief voice commentary of the photos.

Note: Video and Voice recording will use large amounts of memory storage.

Buying a Digital Camera - Review

- Think about what you need in a camera?
- Optical Zoom is the one that counts, 3X or better.
- If Shutter Lag could be an issue, look for a camera with “Burst Mode”.
- Not all cameras have viewfinders.
- Do you need additional Shooting Modes & Presets?
 - Manual, Aperture Priority, Sutter Priority, Landscape, Close-up, and Action
- Do you want to be able to change lens?
- A lot of Megapixels are not always needed. Most people will be happy with 3 to 5 megapixels.
- Make sure you have memory cards and batteries.
- Image Stabilization could be beneficial.
- Consider the camera size.

Web Pages

- My Web Page:
 - <http://nbkaplan.com/digital/>



Questions?