

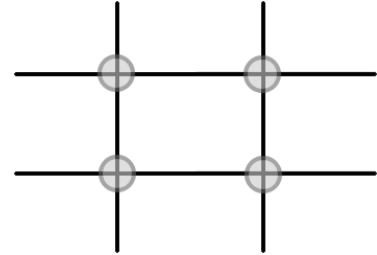
# All About Images

## Working with Images

Image skills will be introduced through the digital camera with a finished personal image used on the project title slide. Another photo of a book will be cropped and inserted on the reading slide. The information below is provided primarily as a resource to understanding photo and image processes. While using the camera and creating images for our project, we will develop skills and understanding of many of these key elements.

## Camera and Composition Tips

- **Rule of Thirds** (*use as a guideline, not a rule*)  
Divide the frame (canvas) into a "tic-tac-toe" grid. Try to place subject on line or on where horizontal and vertical lines intersect.  
Visit: <http://kidsvid.hprtec.org/vidtips/comp02.html> or <http://jl-site.com/Oklahoma/RuleofThirds.html> for more information.
- **Use the right orientation**
  - **Landscape**  
The "default" camera position. Be careful of overuse as your camera is built to use this format first. Works well for action, scenery, and group photos.
  - **Portrait**  
Name implies it is commonly use for taking photos of one person.
- **Common Problems for Beginners**
  - **Too much "head space".**  
**Cause:** Poor placement of subject. Photo suffers from large blank space in top grids.  
This can work for scenery, but not so good for family or group shots.  
**Solution:** Use the Rule of Thirds.
  - **Blurred Images**  
**Cause:** Camera is moving during the capture or auto-focus was not given time to "find" the subject.  
**Solution:** Use tripod or work to keep hand still when capturing. Allow camera to focus before shooting. "Zoom Shake": Zoom out and position yourself closer to subject.
  - **Backlighting: Subject Too Dark**  
**Cause:** Main source of lighting is behind the subject (windows, sun).  
**Solution:** Fill with flash or use preset exposure setting. Try repositioning so subject is facing the light.
  - **Greenish Tint**  
**Cause:** Florescent and some other types of lighting can give a greenish tint to images.  
**Solution:** Use flash or camera preset exposure setting.



## The Camera

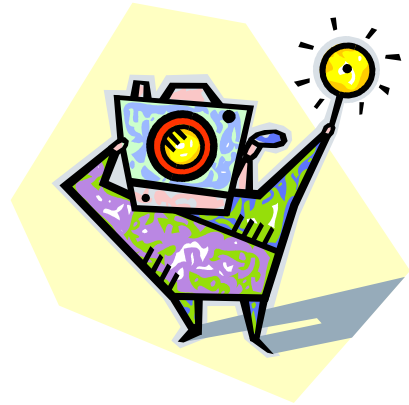
### Setup and Menu

- **Auto/Manual**  
Beginners will use auto feature exclusively. In fact, low-end cameras generally don't even have manual settings.
- **Image Size and Resolution**  
Unless you are planning on printing your photos, use a lower quality setting for your photos (800x600).
- **Do not use a still camera for video.** Video is extremely low quality.
- **Auto scene** can be helpful if shooting in certain conditions for a longer period of time. Many cameras have settings for a variety of indoor and outdoor settings.



## Using the Flash

- Know the functional **range** of your flash. Most flash units work well from **5-12 feet**. Results are often uneven with zoom.
- **Red Eye**. Result of pupil reflecting the flash. A major problem for consumer cameras with flash mounted close to lens. Red Eye reduction feature is very helpful.
- **Zaps batteries in a hurry**. Many consumer cameras tend to overuse the flash. Learn your camera and when the flash is necessary. Turn off flash feature if not needed.



## Using the Zoom

- Zoom can help to pull in background.
- **Do not use digital zoom**. Quality depreciates noticeably vs. optical zoom.
- Careful if used with flash. Your subject can be out of effective flash range.

## Lighting

- When on location check the lighting first to find the best spots for photos.
- Lighting should be **in front of subject** (to your back as you shoot the subject).
- **Careful of shadows** (trees, hats, surroundings, your own shadow).
- Careful of fluorescent lights as well as some other light sources (sodium).
- Flash is usually best for 5-15 feet.

## Power Reminders

- **Always have a backup battery** pack with you.
- Dim or **turn off LCD screen** between shots - careful of using screen to show pics. Some cameras allow you to set a screen dim time. Use viewfinder, if available, to save power.
- **Omit flash** when possible.

## Low Battery Warning

- Power on rechargeable batteries goes below minimum useable levels within a couple shots.
- Alkaline batteries provide more distance between low battery warning and unusable range.
- Try to time your **battery replacement** when on location so that you don't miss important moments. Change batteries between acts of a play, when walking from point to point, or during a short break in activities.

## Tips

- Know your camera - take hundreds of shots and vary camera settings. You may find it helpful to also list the location and conditions of each shot or group of shots.
- Try different angles (low, high) and view (landscape, portrait).
- Solid bright colors look best.
- Keep hand steady when pushing photo button.
- Use a tripod when possible.
- Auto Settings: Allow time for camera to set focus by pressing and holding record button lightly.
- Purchase extra media cards (128-256 MB) so that you are not limited to just one card.
- Have additional battery charger so that you can use camera while battery is charging.
- Menu: Set up "series" naming of files so that you won't get duplicates.
- May need to occasionally reformat media card.
- Make sure image size suits intended use. For general use try 800x600.

## Image Transfer/Capture (Camera to Computer)

*Note: the once popular Sony Mavica with 3.5" floppy is becoming a dinosaur. Avoid purchasing any camera that uses floppy media for photos. Quality of images is low and many computers no longer have floppy drives.*

### Direct Connection Camera to PC (not recommended)

- A USB cable connects directly from camera to computer.
- Some cameras can be powered or even recharged from the USB.
- If camera is NOT powered by USB, then remember to turn off when done capturing.
- Some cameras require additional software or drivers on the computer.
- Problem with this type of connection is that you can't use your camera when downloading images to your computer.

### Media Reader (highly recommended)

- A separate USB device with a slot for your media card on one end and USB (to computer) on the other (cost is about \$25).
- Allows you to quickly cut/paste images from camera to computer.
- Suggested that you keep it attached to one computer for fast transfers.

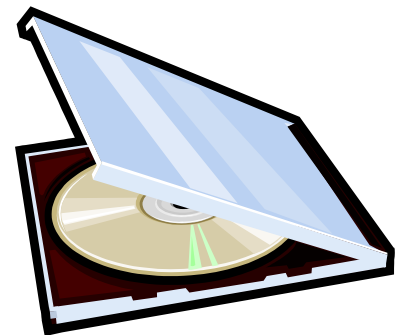


### Tips

- Best to transfer (cut and paste) entire card contents to a folder on your computer all at once.
- Try to view and format files while they are still fresh in your mind (rename, rotate, delete).
- When done viewing and formatting, make files "read only" so you don't write over originals.

## File Management

- Full quality images take up a lot of hard drive space.
- Delete poor quality and unusable images immediately.
- Save archived images to CD or DVD and then delete.
- **NEVER write over your originals** - make all originals read only.
- Make sure you can see the file "extension" (.jpg, .gif, .png). Arrange you computer folders in **Details** view.
- Names of files describe subject and make linear sense ("boybike01", "boybike02", "boybike03").
- Use Windows Picture viewer to rotate image as needed.
- After altering image, **Export** and/or **Save As** and have name reflect the change:
  - describe pixels ("boybike01 800", "boybike01 240")
  - append with letter ("boybike01A", "boybike01B")
  - describe alteration ("boybike01 darker", "boybike01 sharp", "boybike01 BW")



## Optimization (Office tools, Fireworks)

- Refers to the process of creating the **best quality image and file size for the intended use**.
- Most optimized images are JPG or GIF format.
- Print Optimized is 150 pixels per inch.
- Screen or Web optimized is 72 pixels per inch.
- Images can now be optimized from Word and PowerPoint by using the **Picture** tool bar (below).



Compress Pictures

# Common Image Types

## *Uncompressed Format (Lossless)*

Best quality but with large file size. Avoid using these formats for all your images.

- **PNG (Portable Network Graphic)**  
Commonly used as the **file format for Macromedia Fireworks**. This is a fairly new standard that is widely accepted in graphics community, but little used by the public. Excellent quality and scalability combined with smaller file size than others in this category.
- **BMP (Bitmap)**  
An early standard that is gradually being replaced by PNG format. Excellent quality on all images, but extremely large file sizes. Many older scanners use this as default save format so be careful in using it. **Do not use this format** unless requested by someone you are working with.
- **TIF/TIFF (Tagged Image File Format)**  
Similar to Bitmap, but generally of much higher quality. Can be used for a number of purposes, but generally TIFF images are used for print purposes by graphic designers. TIFF images have large file sizes. Some high end cameras have TIFF as a quality option.

## *Compressed Formats (Lossy)*

These formats sacrifice some quality with much smaller file size. If you have a PNG, BMP, or TIFF file consider **optimizing** it using one of the formats below. These two formats are used for web graphics.

- **JPG/JPEG (Joint Photographic Experts Group)**  
Format used for photos or images with shadows. Essentially takes a high quality image and then "blurs" it somewhat to achieve a smaller file size. Images are NOT scalable. Quality is controlled by percent of original. Many select 85% as a reasonable choice for smaller, web-based photos.
- **GIF (Graphic Interchange Format)**  
Format used for draw and limited color objects. Color pallet is limited to 256 colors so not suitable for photos. If you can create the image with colored crayons, then this is the format to use. Quality and size is controlled by the number of colors used so an image with 256 colors might have a file size twice that of an image with 128 colors. With GIF you can identify a color that is transparent (most often white). This is a great format for images using text and for scanned text documents.

## *Image Sizes*

Why be concerned? Many users have very large hard drives so image size is not crucial. However; if you have to save or use graphics in a network, then large files take time to open and save across the network. A PowerPoint slideshow with 15 photos could be 15MB in size (more space than on 10 floppy disks!). The same slideshow with properly sized and optimized images would be less than 500K (fits on floppy with room to spare).

**Size of images is measured in pixels.** Typical high quality image from a digital camera is 1600x1200. Many schools have monitors set to view 800x600 so that means you'd need two monitors side by side to view this image.

- On your camera menu select the size that fits in with the intended use of the image. In many instances 800px or even 600px will create a great image for use in slideshow or on the web.
- **Resize your image to fit the use.** Most users just insert an image and then make it smaller by grabbing a handle and dragging the size. This makes the image smaller, but does NOT affect the file size. A 1600x1200 photo resized to 160x120 will still have a file size of 680K versus a file size of 10K if resized and then exported in a graphics program prior to use in Word or PowerPoint.
- **Be aware of pixels not scale.** Don't confuse image size with zoom or scale. Web browsers and graphic programs auto-scale (percent) to display images on the monitor. You might find that a 1600x1200 image is scaled to 25% to fit on a web page or application window.

## Some Common Image Sizes:

- 800x600 (largest size used for full screen purposes)
- 400x300 (nice size to feature in Word doc or PowerPoint slide)
- 240x180 (medium size for a column or one side of PowerPoint slide)
- 160X120 (small size good for wrapping text in a short article or on a web page)

## Batch Processing

- Some graphics programs such as Fireworks have a batch process. This lets you change the qualities of many images within a folder in just one step.
- **Use the percent (%) feature** as you will generally have a mix of images (landscape, portrait). For example, you might want to take a folder of photos and make them 50% of original size.
- **Save new files in a subfolder** or other location. Do NOT replace the originals with the batch processed files.

## Image Quality

- You can make images smaller, but they lose quality quickly when enlarged (jagged look due to pixelation).
- Try not to make images smaller by more than 50% at one time (*1600 to 800 is OK, 1600 to 160 NOT OK*)
- Do NOT lose your originals by writing over them with a smaller file. Once you write over a 1600px image with a 400px image you can't go back. Make originals **Read Only**.
- When working with complex graphics keep the file in the application default file (PNG for Fireworks, PPS for Photoshop).
- JPG's lose quality every time they are saved.

## Printing: Dots per Inch (DPI) or pixels per inch

- Photo quality is 600-1400+dpi (many printers max is 600)
- Common Printing (text) is 150-300dpi
- Screen or Web is 72-90dpi
- In addition to image size, many graphic programs also give **Print Size** property to an image. An improper matching of image to print size may account for very large file sizes (common with scanned images).



## Bitmap vs. Vector

### Bitmap (Raster)

- The pixel or dot is the lowest denominator
- Many files and graphic programs are Bitmap only
- JPG, GIF, BMP are common files
- Most widely used format

### Vector

Common programs are Macromedia Freehand and Flash and Adobe Illustrator.

- Elements are based on mathematic formulas.
- Provides for wide degree of scaling when compared to bitmap format.
- Generally used for print or very high end graphic design.
- Flash (Shockwave) files make use of this format because of its scaling ability and small file sizes compared to raster format.
- Newer, high-end graphics programs take advantage of both formats (Macromedia Fireworks).