



4-H Filmmaking

Introduction to Video

What is video?

Video is the technology that captures moving images electronically. Those moving images are really just a series of still images that change so fast that it looks like the image is moving.

How does video work?

The details are complicated, but in simple terms the lens of the camera focuses an image onto a sensor, and the sensor converts the image into an electronic signal that is stored on tape, disc, harddrive, or memory card.

What's the difference between a video and a film?

Nothing, really - both basically mean "a movie." All movies used to be made on actual film, and many still are. But a movie shot on video is still "a film." Film as a technology is quite different from video - although they both do the same thing: capture moving images.

What about sound?

Video cameras usually record sound along with images. Almost all video cameras have microphones, but even though images and sound are usually recorded to the same tape, disc, or card they are two different types of information - so sometimes it helps to think of them separately. You might record a beautiful visual scene with terrible noise, but you know that you won't use the sound. Or you might record some beautiful sound with your video camera while the lens cap is on because you just want the sound.

Ok already, I just want to start making movies!

Making a finished movie is a lot more than just turning on your camera and shooting. For starters, to start editing your footage into a finished film you need a computer with editing software. Luckily all PC's come with Windows Movie Maker, and all Mac's come with iMovie.

To make a movie, you need a camera (also called a *camcorder*), and a computer to edit the movie.



If you've shot some amazing footage, and have a computer with editing software, you then need to get that footage into your computer, and *imported* into the editing software.

Doing this can sometimes be very complicated because there are many different kinds of computers and many different kinds of cameras – and they don't always work perfectly together.



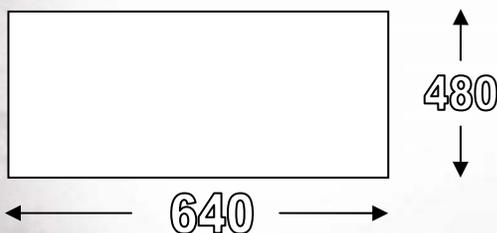
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Computers: since you will be finishing your film on your computer, it will help to know a little about your computer. Here are the most important things to consider:

- **Mac or PC?** This is important because the type of computer you have will probably determine the editing software you'll be using. PC's have Windows Movie Maker, and Mac's have iMovie, but there are other editing programs that work fine too.
- **Hard Drives:** Video takes up a lot of space on your computer's hard drive. Do you know how many gigabytes (GB's) your computer's hard drive is? Is it big enough? Each hour of video can use up to 12 GB's of hard drive space.
- **Connections:** Does your computer have firewire or USB? Does it have both? What about USB 2.0 or firewire 800? Does it have a memory card reader? What about a headphone microphone connection?

Cameras: Just like computers, not all cameras are the same and *not all footage is the same*. It will help to know what kind of footage your camera shoots in order to load it correctly onto your computer and import it into your editor. Here are the most important characteristics that you should know about your footage:

- **Frame rate:** the number of still images (or frames) recorded every second. Usually frame rate is expressed in frames per second (fps) and most video cameras record at 30 fps.
- **Resolution:** each frame/still image is recorded as thousands of tiny picture elements, called pixels. An image's resolution is how many pixels the image has. Resolution is usually expressed by numbers for horizontal and vertical: 640 by 480 means 640 pixels wide, by 480 pixels tall. Multiply the numbers and you get the total number of pixels. In this case $640 \times 480 = 307,200$.



Recommended: 640x480 or 720x480 for normal standard definition shooting and editing, and 640x480 or 320x240 for posting to the web.

Aspect Ratio: Do you want your images to look like a square? How about more rectangular? How about widescreen? Aspect Ratio is what defines the width and height of your images. The most common aspect ratios are 3:2, 4:3, and 16:9.



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Compression and Format: There are many different ways that the electronic signals from the camera can actually get recorded. To save space on tapes, discs, or cards camera's usually compress the video to make it smaller. The way a camera compresses the image data and records it is the recording *format*. Camera's usually only record in one or two formats. You may not be able to take something recorded in your camera and play it back in your friend's camera because the formats may be different.

Some common formats are DV, Mpeg 2, and Mpeg 4.

The important thing to remember is that your camera should use a format that your editing software can handle. Cameras usually only shoot in one format. Most editing software can handle many different formats, but they can't always handle everything – so double check! If your editing software cannot accept the format your camera records in you must use special software to convert the footage before you can edit it.

For example, if you have a DVD camcorder that records Mpeg 2, Windows Movie Maker may not be able to read it. In this case you must convert the footage using a program like Any Video Converter (see Any Video Converter instructions).

Media: Cameras record onto many different kinds of *media*. Some cameras record to tapes, while others record to harddrives. Some use DVD discs, and some use flash memory cards. DVD's and flash memory cards can usually be read directly by your computer, but with harddrive and tape based cameras the media stays in the camera and you connect the camera to the computer.

Connections: Again, make sure you know what type of connection your computer has. Does it have firewire or USB or both? Your camera should have the same type of connection. USB and firewire use two different types of cables, so make sure you have the right cables ready to connect your camera to your computer.

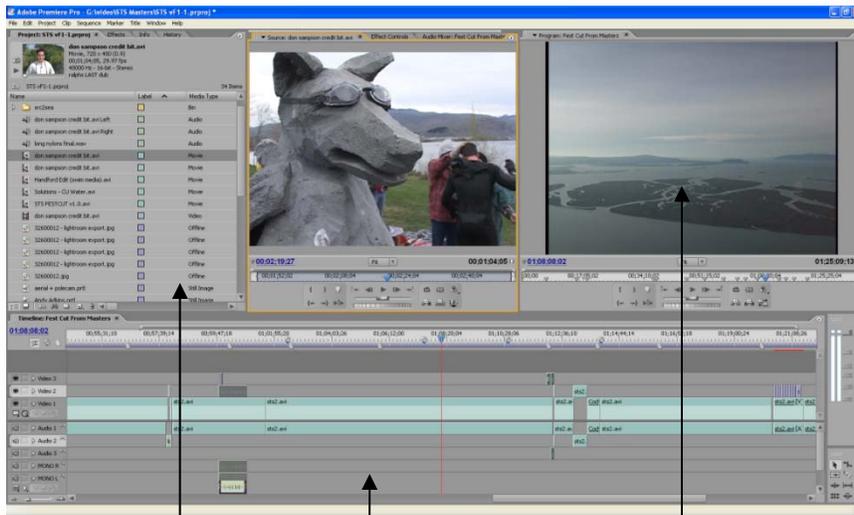
Ready, set... edit!

If you've made it through the complicated process of getting your footage from your camera to your computer you are finally ready to edit.

Just like with computers and cameras, there a huge number of editing programs so using them can be complicated. But luckily, most of them share some similarities. Most editors look something like this:



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Clip/File & FX Browser

Timeline

Viewer

Most editing programs have three main windows: a timeline (or sequence) window, a clip or file browser window, and a viewer window.

Coming soon to a theater near you?

Finishing and showing your film involves exporting your edited masterpiece to its own file – possibly in a different *format* than you shot it and edited it in. You may want to show your movie on a normal DVD, but you also may want to post it on the internet. Both of these processes are different and, as with most things in video making, there are lots of ways to do either. It depends a lot on what editing software you have, so search your editing software's help section for phrases like “exporting”, “delivering”, “finalizing”, “DVD”, “web”, or “internet.”