Video formats

Resolution :

Frame is composed of picture elements. Conventional TV screens are made up of horizontal set of picture elements commonly called as lines. The picture elements were sent as "sine" signals. The number of lines and the number of the above signals put together were called as "Resolution".

Video is basically a sequence of images displayed or flashed in a pattern (rapidly) just like we do in animation. The number of frames per second (fps) called as "frame rate"; were used to measure the quality of video or picture motion. Higher frame rates results in smoother motions.

- **NTSC** (National Television System Cornating System (**PAL**) is used in Europe, Australia, Middle East and Ammittee) is the video standard used in America and Japan. Phase Altesia.
- NTSC video usually runs at 30 fps (with 525 lines, 6MHz spacing) , whereas PAL runs at 25 fps (with 625 lines, 5 MHz spacing).
- NTSC video images usually runs in 720 X 486 pixel ratio while PAL video images frames are always 720 X 576 pixels.

Pixels is way of measuring resolution. The number of pixels in an image is sometimes called "Resolution". Each pixel is a sample of an original image, and combination of these will make up the actual image.

Pixels per inch (ppi) is used as a measure for specifying the image quality; especially in digital monitors or photography. Most books and magazines requires 300 ppi for photo quality. Dots per inch (dpi) is more or less similar, but differs in that they were used in printers as a measure of number of dots to be printed.

The basic resolution and pixel description were shown below

Resolution - Megapixels (MP)

- (640 X 480) - 0.3MP; VGA video
- (1024 X 768) - 0.8MP; XGA video; 4:3 aspect ratio
- (1280 X 960) - 1MP,
- (1366 X 768) - 1MP, common laptop display
- (1600 x 1200) - 2MP; UXGA video
- (2048 X 1536) - 3MP; QXGA

Common *aspect ratios* for display

- 4:3 - Old computer monitor standard
- 5:4 - (1280 X 1024 displays)
- 16:10 - (1280 X 800; 1680 X 1050 dispalys)
- 16:9 - widescreen (1920 X 1080; HD video standard; best for computer displays)
- Emerging aspect ratio displays : 256:135 - (4096 X 2160; famously called as 4K standard)

16:9 aspect ratio is considered the best display for applications like games, movies, computers, TV/DVD and more. 720p with 1280 X 720 (0.9 MP) and 16:9 widescreen aspect ratio is the most common used video/movie format.

Standard-definition television (SDTV)

- 576i (720 X 576); i refers to splitting into two fields- here 288 lines
- Enhanced-definition television (EDTV)
- 480p (720 X 480)
- 576p (720 X 576)

p refers to progressive scan

High-definition TV (HDTV)

- 720P (1280 X 720)
- 1080i (1920 X 1080) - split into 540 lines
- 1080p (1920 X 1080)
- Ultra-high-definition tv (UHDTV)
- 2160p (3840 X 2160)
- 4320p (7680 X 4320)
- 8640p (15360 X 8640)
- Full hd measures 1080p; 1920X1080 pixel (2.1MP) with widescreen aspect ratio of 16:9
- Blue-ray discs are able to hold HD content.

Some online resources :

- More about resolution sizes - here
- check detailed picture formats - here
- More about display standards - here

Color Technology

All the display screens uses three basic colors, popularly called as additive primary colors. They are Red, Green and blue (RGB). Add RGB in different proportions to get a broad array of colors and a perfect combination of these three pure colors adds up to white color.

- RGB input devices - TV, Video cameras, image scanners and digital cameras
- RGB output devices - CRT, LCD, LED, OLED displays, plasma, computer and mobile phone displays, video projectors.

On the other hand CMYK is used in color printing technology and is referred as "substractive colors". CMYK stands for cyan, magneta, yellow and black (Key); because when CMY was mixed, we get black (but not true; thats why it's called key). CMY were usually called "*primaries*" while RGB, were called as "*secondaries*" because by the use CMY combinations, we will get RGB colors.
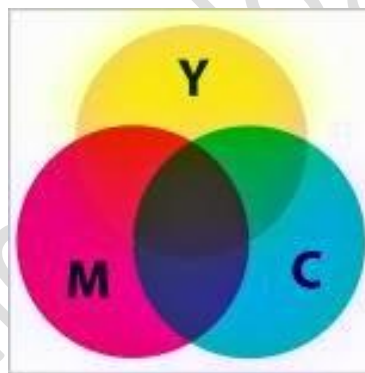
CMYK pic. - http://en.wikipedia.org/wiki/CMYK_color_model

RGB pic. - http://en.wikipedia.org/wiki/RGB
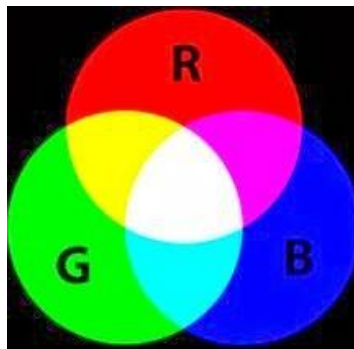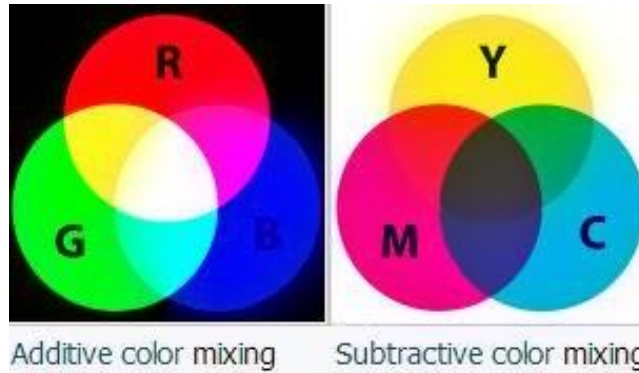
difference between RGB and CMYK from wiki

If RGB values are zero (0,0,0)- (least), result will be black
RGB Value 255 (255,255,255) - (maximum), result will be brightest white.
RGB - (255,0,0) - Red
RGB - (0,0,255) -Blue
RGB - (255,255,0) - Yellow

Remember that RGB (used in photography, electronic monitors or displays using "lights") usually uses white color as additive combination to deliver color visual in black background (black monitors) where as in CMYK, white is the background (printing paper) and black results from combination of these color "inks".

Other online resources

- More RGB color codings - here
- List of colors - here
- numerical values for different colors of RGB - here
- Something about complementary colors - here

References :

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