

Digital Imaging and Scanning

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Digital Images

Content

- Photographs
- Clip Art
- Screen Captures
- Animation

Devices & Tools

- Digital cameras
- Scanners
- Photo CDs
- Smarter, cheaper software

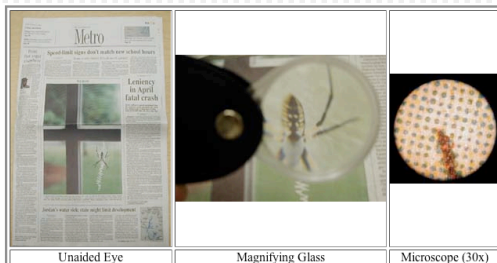
Digital Images: Properties

- Image Size & Resolution
 - Dimensions
 - Density
- File Formats
- Color
- Optimizing quality, file size

Web Graphics

- Web is low-resolution medium
- Low-resolution graphic files saved in GIF or JPG file format
- 72 ppi accepted standard
- Design for a wide audience
 - Unknown factors that apply to web design

Resolution



<http://www.ncsu.edu/sciencejunction/route/usetech/digitalcamera/>

Resolution

Print has DOTS
Screens have PIXELS

Picture Elements

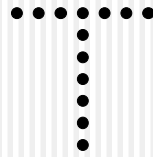
Pix + Els = PIXELS

Resolution Vocabulary

Print uses Dots Per Inch
(DPI)

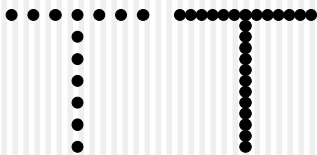
Screens use Pixels Per Inch
(PPI)

Print Resolution



7 DPI

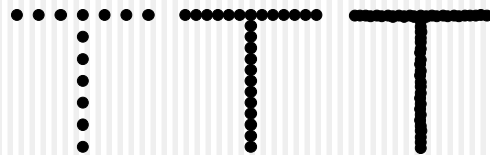
Print Resolution



7 DPI

13 DPI

Print Resolution

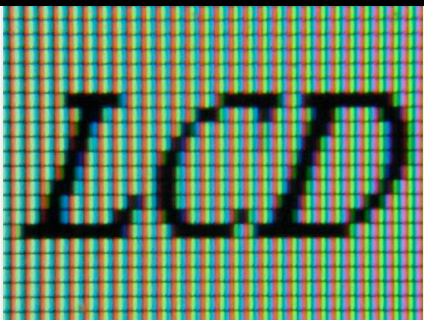


7 DPI

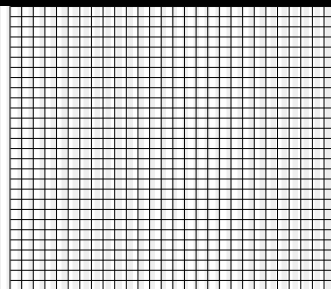
13 DPI

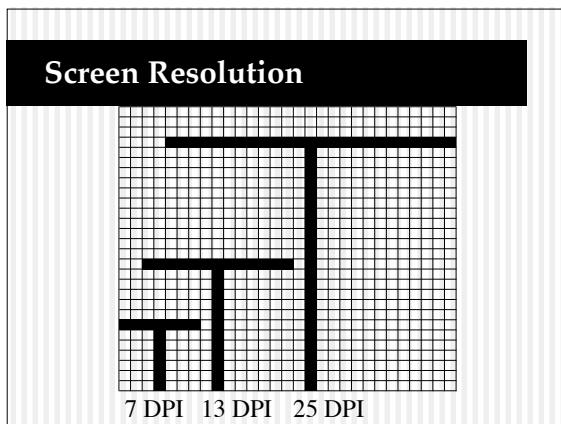
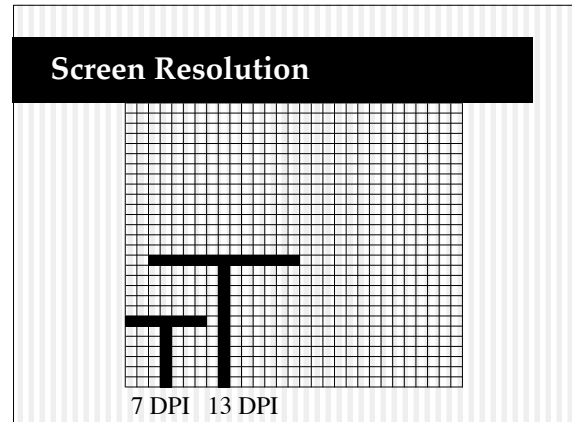
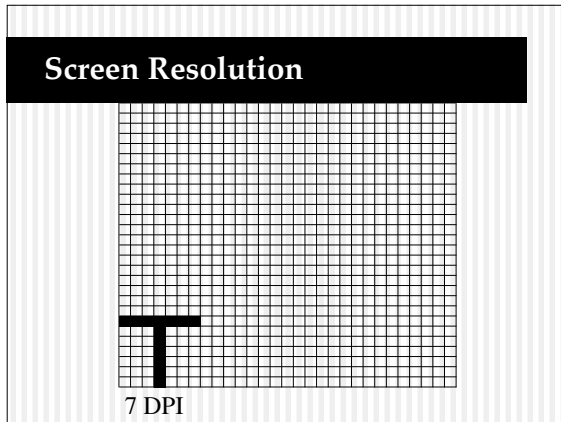
25 DPI

Screen Resolution

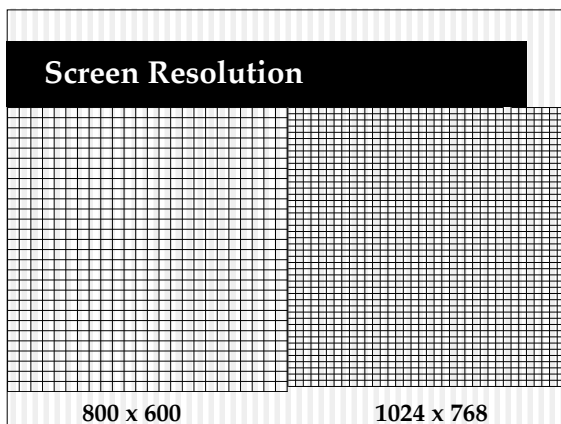


Screen Resolution





- ### Dimensions & Density
- Image Size & Resolution
 - Bitmap images (mosaic of pixels)
 - Pixels per inch (density)
 - Pixel dimensions (display size)
 - Monitor Size & Resolution
 - Image dimensions relative to monitor dimensions
 - Pixel dimensions (800x600, 1024x768)
 - Monitor resolution (ppi, density)



- ### Graphic File Formats
- GIF
 - Graphic Interchange Format (.GIF)
 - Maximum 256 colors (8-bit)
 - JPEG
 - Joint Photographic Experts Group (.JPG)
 - Millions of colors (24-bit)

Graphic File Formats: GIF

- GIF
 - Maximum 256 colors
 - Logos, icons, clip art, line art, buttons
 - Solid areas of color
 - Sharp edges, contrast
 - Row-by-row compression scheme
 - Supports transparency & frame-based animation



Graphic File Formats: JPEG

- JPEG (.JPG)
 - Up to millions of colors
 - Photographs, Paintings, Gradients
 - Blurred images
 - Compresses areas of blended colors
 - No native support for transparency, animation



Which format is best?

- | | |
|---|--|
| <ul style="list-style-type: none">• .GIF<ul style="list-style-type: none">– Solid, flat colors– Sharp edges, contrast– Transparent– Animated | <ul style="list-style-type: none">• JPEG (.JPG)<ul style="list-style-type: none">– Photograph– > 256 colors– Gradient, blended colors– Blurred image |
|---|--|



Scanning



Scanners

- Optical
- Capture text or images
- Converts into digital data
- Digital data can be
 - Reproduced (Printed)
 - Analyzed (Bar code)
 - Converted (OCR)

Types of Scanners

- Flatbed
- Sheetfeed
- Handheld

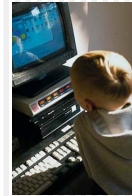


Terminology

- TWAIN
 - Interface between software and scanner
 - Technology
 - Without
 - An
 - Interesting
 - Name

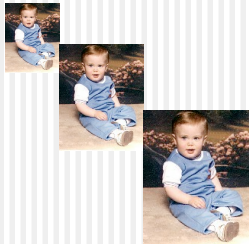
What to Scan

- Color Photo
- Text/Line art
- Printed Material
- Web Image



Scanning sizes

- 72 dpi
- 100 dpi
- 150 dpi
- 200 dpi
- 300 dpi



Remember:

The larger your ppi, the larger the image.



75 ppi



150 ppi

Scanning Process for Video

- Identify the size of the original
- Identify the size of the viewing screen
- Identify the desired size
- Compute the number of pixels necessary to make that image size on the screen

Example of the Scanning Process for Video

- Identify the size of the original - 6" by 4"



- Identify the size of the viewing screen - 640 x 800



More of the Example

- Identify the desired size - 640 x 400 dpi (fill left side)



- Compute the number of pixels necessary to make that image size on the screen

$640/6 = \text{about } 100$ need to scan at 100 dpi

Scanning Process

- Turn on scanner
- Open the software
- Place item on scanner
- Set "Device/Media" type
- Run *Preview*
- Adjust the crop box with the mouse
- Run *Scan*.
- Save the file.

Tips

- Make your scanning decisions based upon your output device.
- Planning makes your job easier
- You rarely need to scan at 300 dpi or higher.
- Scanning using an application program can be easier but may limit your choices.
- <http://www.scantips.com>
- <http://www.print.iastate.edu/Scan.html>

Questions?

