JTC 372

Digital Imaging and Photoshop Basics

Today

- Digital Image Definition
- Photoshop
- Organization
- Color Theory/Modes
- Image resolution
- Tools
- Image formats
- Optimizing graphics
- HTML <img> tag

Digital Image

- Photos
- Graphics

Digital Image

- Composed of pixels - small, square dots on a display
- Photos
- Graphics

Photo vs. Graphic

- Photo
    - Real world color palette
- Graphic
    - Design or visual image
    - Restricted colors
- Optimization is different

Adobe Photoshop

- Graphics editor (with some text and vector graphics capabilities)
- Industry standard image editing program
- Originally designed for manipulation of print photos and graphics
- Also used for web photos/graphics
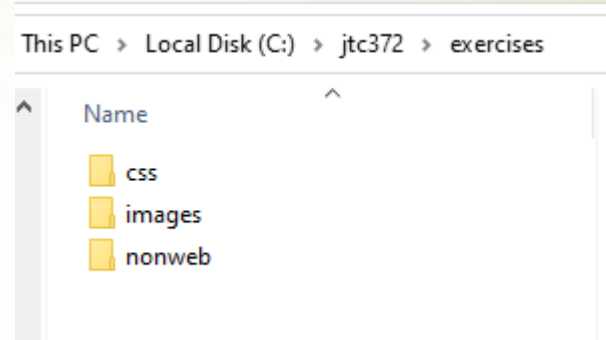- Powerful and deep
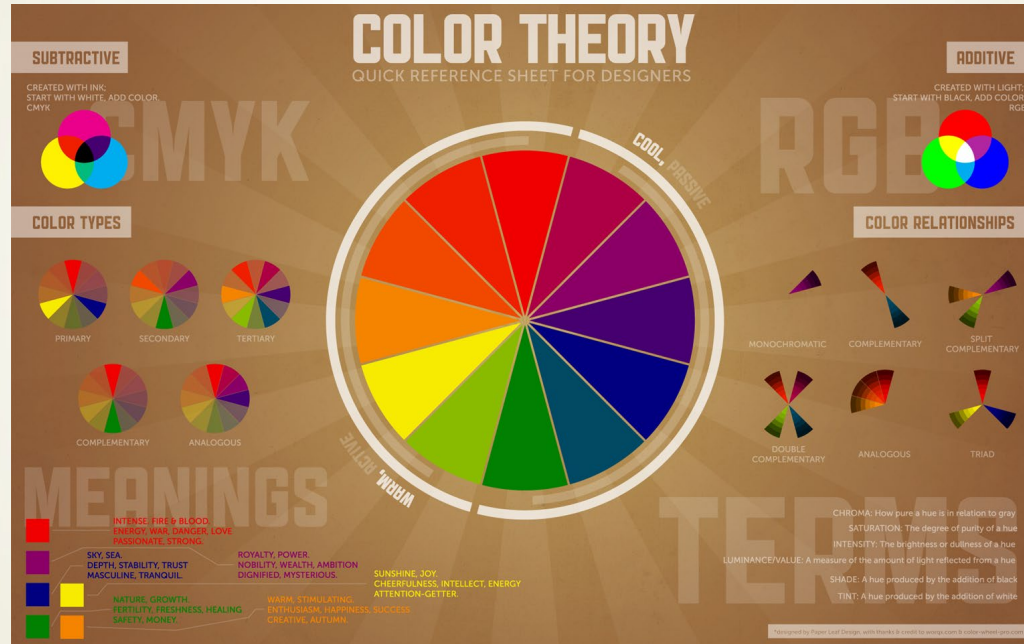- AI editing capabilities

Organization

/nonweb -

- Not for web files
- Original, non-optimized files, source files, etc.
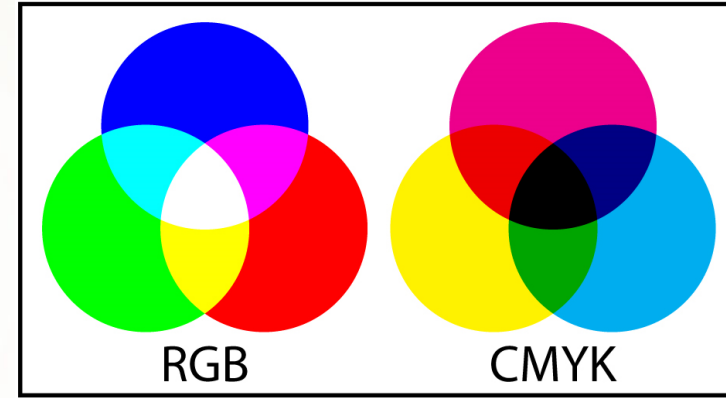- Never goes on the server

/images

- Optimized web images

This PC > Local Disk (C:) > jtc372 > exercises

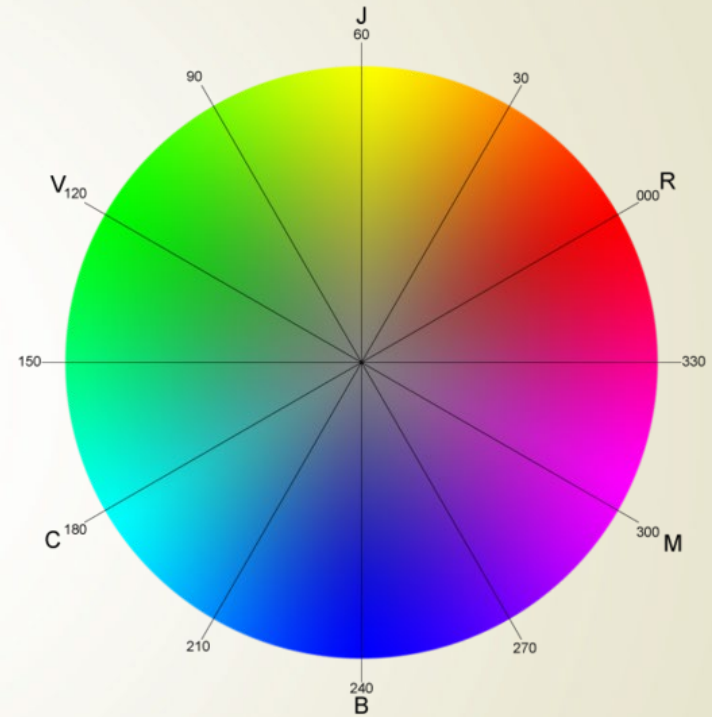Name

📁 css
📁 images
📁 nonweb

Color

Color Modes

- CMYK – Ink
  - Print mode
  - Ink colors - Cyan, Magenta, Yellow, Black
  - Inks absorb color, so subtractive

- RGB - Light
  - Screen Mode
  - Red, Green, Blue
  - Additive

RGB   CMYK

RGB Mode

- Typically used for screens
- Additive
- Colors are combination of Red, Green and Blue
- 256 values of each
- Total possible colors - 256 x 256 x 256 = 16,777,216
- Expressed as hexidecimal (hex) or decimal values

Hexidecimal Numbering System

Uses 0-9, A-F

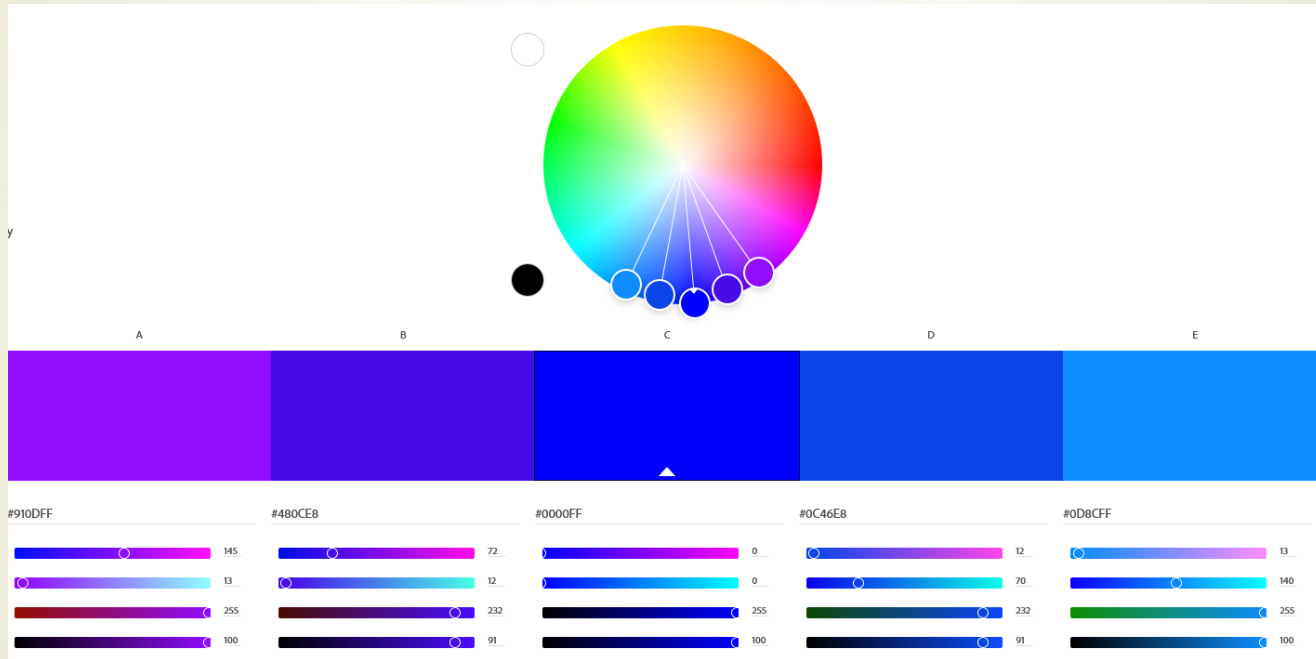- 09(H) = 09(D)
- 33(H) =51 (D)
- 66(H) = 102(D)
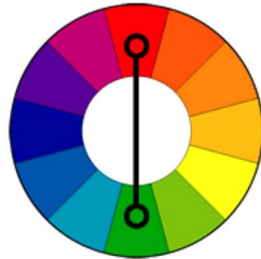- CC(H) = 204(D)
- FF(H) = 255 (D)

66ccff = RGB(102, 204, 255)

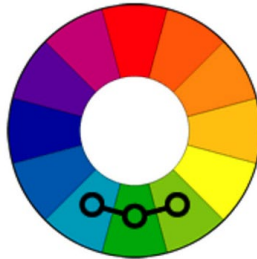| Decimal	Hex		Decimal	Hex
1	1		17	11
2	2		18	12
3	3		19	13
4	4		20	14
5	5		21	15
6	6		22	16
7	7		23	17
8	8		24	18
9	9		25	19
10	A		26	1A
11	B		27	1B
12	C		28	1C
13	D		29	1D
14	E		30	1E
15	F		31	1F
16	10		32	20

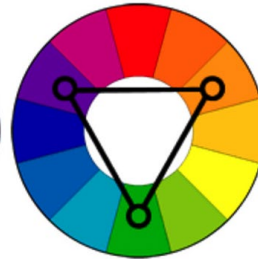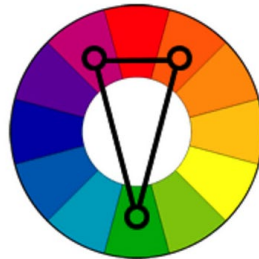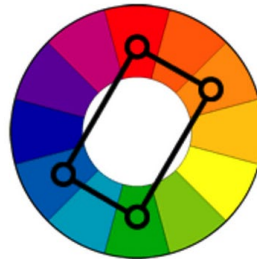# Adobe Color Wheel

Basic Color Schemes

Complementary

Analogous

Triadic

Split Complementary

Tetradic

Color Psychology

Color Psychology

Red
Excitement
Strength
Love
Energy

Orange
Confidence
Success
Bravery
Sociability

Yellow
Creativity
Happiness
Warmth
Cheer

Green
Nature
Healing
Freshness
Quality

Blue
Trust
Peace
Loyalty
Competence

Pink
Compassion
Sincerity
Sophistication
Sweet

Purple
Royalty
Luxury
Spirituality
Ambition

Brown
Dependable
Rugged
Trustworthy
Simple

Black
Formality
Dramatic
Sophistication
Security

White
Clean
Simplicity
Innocence
Honest

Operations

- Opening file
- Creating new file
- Toolbars - hidden tools
- Working with text - text tool, layer effect
- Working with layers - background vs transparent layer
- Foreground and background colors - sampling color
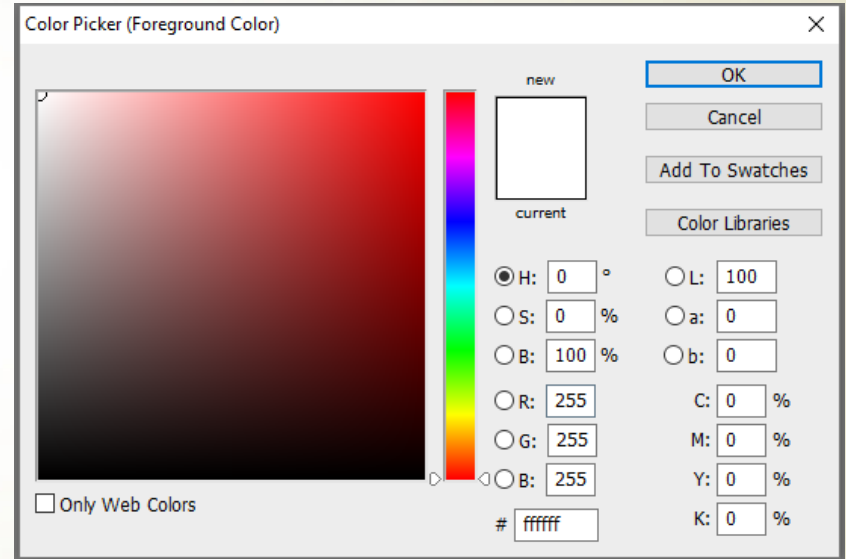
Digital Image Resolution

- Only the pixel value matters
- Ignore print resolution for web

Photoshop Color Picker

- Hex or Decimal
- Show example
- Hex usually used to specify colors in HTML/CSS

Antialiasing

- Compensates for issues with rendering curves and slants using square pixels
- Used when there is relatively low resolution

More Operations

- Zooming in and out
- Cropping to size
- Resizing
- Selection tools - marquee, lasso, magic wand, object selection
- Undoing - single and multiple actions

Image File Formats

Uncompressed

- PSD, TIFF
- Each pixel has red, green and blue value
- Save original graphics with layers preserved.
- File > Save as

Compressed

- JPG, GIF, PNG-8
- File > Export > Save For Web (Legacy)

Compressed Image File Formats

Lossy

- JPG

Lossless

- PNG-8

- GIF

PNG-8 Format

- For images with few colors (<256)
- Indexed - Color Table
- Lossless
- Replacement for GIF
- Now supports animation for modern browsers (not IE)

JPG Format

- Images with many colors (>256)
- Lossy algorithm
- Complicated (Discrete cosine blocks)
- Same number of pixels, not all same color
- Approximate 90% reduction
- Quality of compression (1-100)

Other formats

- PNG-24
- WebP
- SVG
- AVIF

- May cover some of these later in the semester

Optimizing Graphics

- Start from cleanest, closest to source file
- Size to correct size - do not resize in HTML unless responsive
- Eliminate dead space
- PNG-8 as GIF replacement

Format Summary

JPG

- No color limitations
- Lossy
- Loses fidelity
- Suitable for images with many colors such as photos

PNG-8

- Limits color table to 256 colors
- Lossless
- Suitable for images with <256 colors such as many graphics

HTML

\<img src="" alt="">

\<img src="images/lantern-circle.png" alt="Gold Hill Inn Lantern">

AI Editing Tools

- Currently in Beta in Photoshop
- Prompts
- Opt-in
- Magic eraser, e.g., cleanup.picture
- Upsampling
- Examples
  - Salida
  - Pittsburgh

Finished!