SPD 1.2 course tracker:

- Mark Attendance
- Update Blog Progress Tracker

Due Dates

- Blog Post Draft - This Wednesday 12/5
- Final Assessment - Next Mon 12/10
- Final Product - Next Wed 12/12

Color and Design

What colors did you choose for your app/website and why did you choose them?

If you don’t have any, which colors will you use?

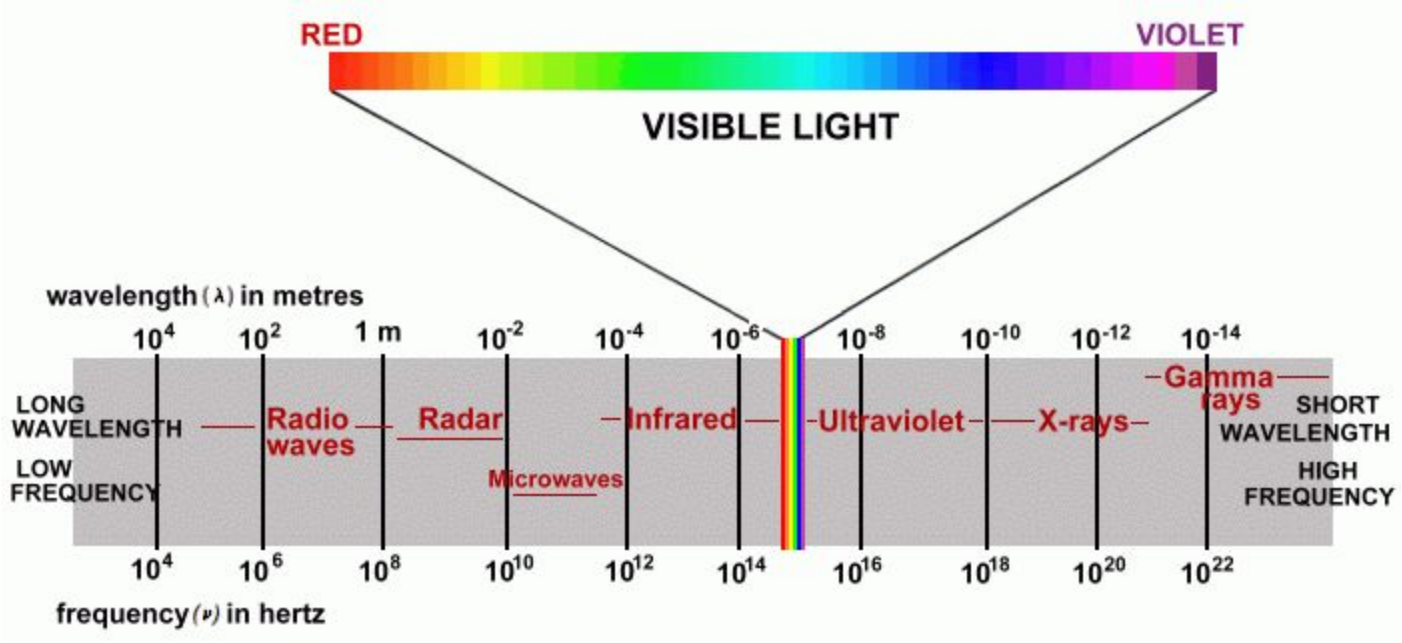
What is color?

Color: the property possessed by an object of producing different **sensations on the eye** as a result of the way the object reflects or emits light.

If color is light, **what is light?**

Light is **electromagnetic radiation** within a certain portion of the electromagnetic spectrum.

- **Wikipedia**


RED
VIOLET
VISIBLE LIGHT
wavelength (λ) in metres
10^4
10^2
1 m
10^-2
10^-4
10^-6
10^-8
10^-10
10^-12
10^-14
LONG WAVELENGTH
LOW FREQUENCY
Radio waves
Radar
Microwaves
Infrared
Ultraviolet
X-rays
Gamma rays
SHORT WAVELENGTH
HIGH FREQUENCY
10^4
10^6
10^8
10^10
10^12
10^14
10^16
10^18
10^20
10^22
frequency (ν) in hertz

How do humans see color?

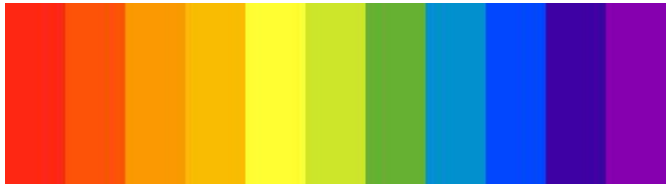
(Some humans see more color than other believe it or not. Listen to this great podcast to learn more: http://www.radiolab.org/story/211119-colors/)

Humans see a narrow frequency of electromagnetic radiation as light. We describe it as color.

We see a range of color from **red** to **violet**.

We often describe color as a **circle** or a **wheel** where violet wraps around to red again.

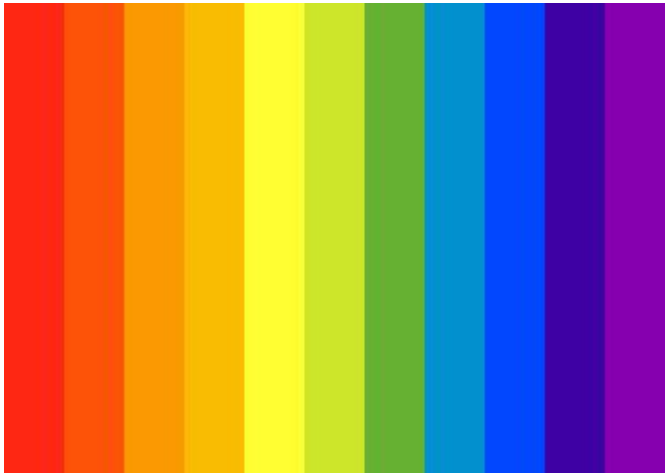
Really, it's **linear** and our perception runs out at either end.



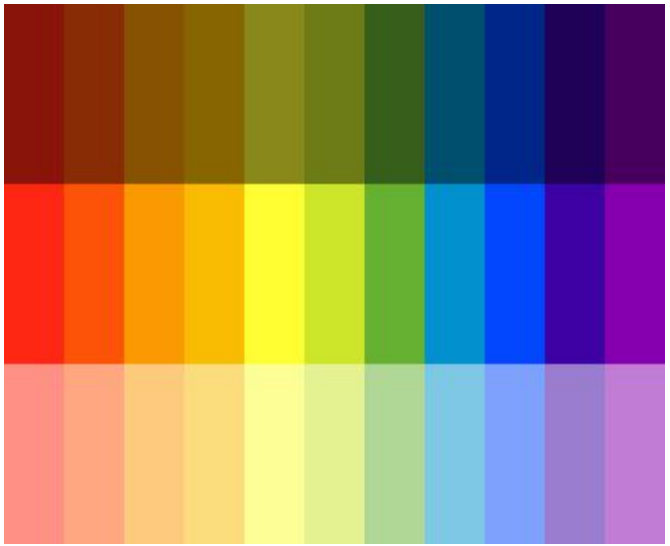
Qualities of color

(Describing colors)

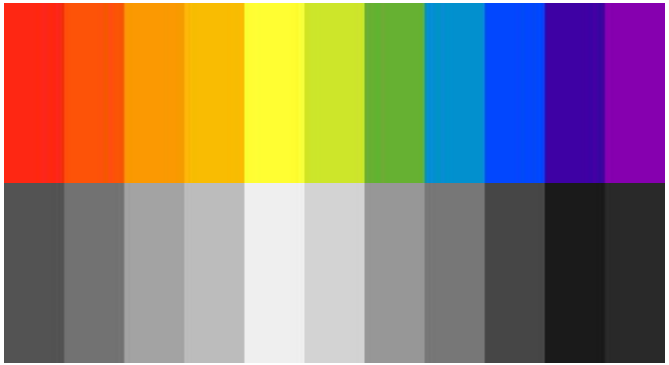
Hue



Saturation



Value



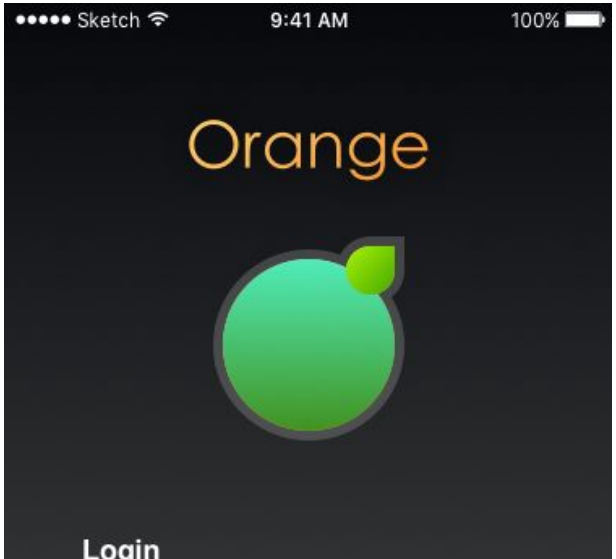
Colors also have a “temperature”

- **Warm** - red, orange, yellow
- **Cool** - Blue, violet, purple

Color Association

Sometimes things should just be the color they are.

https://www.limebike.com



Emotions of color

(Psychology)

How does this make you feel?

1. **Active**
2. **Excited**
3. **Hungry**
4. **Sleepy**

1

How does this make you feel?

1. **Active**
2. **Healthy**
3. **Hungry**
4. **Peaceful**

2

How does this make you feel?

1. **Confident**
2. **Healthy**
3. **Sleepy**
4. **Strong**

3

How does this make you feel?

1. **Assertive**
2. **Healthy**
3. **Sensitive**
4. **Strong**

4

How does this make you feel?

1. **Assertive**
2. **Creative**
3. **Passionate**
4. **Physical**

5

How does this make you feel?

1. **Assertive**
2. **Free**
3. **Strong**
4. **Warm**

The Emotion of Color

https://visual.ly/community/infographic/business/color-emotion-guide

The Meaning of Color

https://www.blackbeardesign.com/understanding-color-the-meaning-of-color/


Uber


lyft

Color Psychology

(to be taken with a grain of salt...)

- Women don't like **gray**, **orange**, and **brown**. They like **blue**, **purple**, and **green**.
- Men don't like **purple**, **orange**, **brown**. Men like **blue**, **green**, and **black**.

Color Psychology

(to be taken with a grain of salt...)

- Use **blue** in order to cultivate user's trust.
- **Yellow** is for warnings.

Etsy

Color Psychology

(to be taken with a grain of salt...)

- **Green** is ideal for environmental and outdoor products.
- **Orange** is a fun color that can create a sense of haste or impulse.

Etsy


NIKE

Color Psychology

(to be taken with a grain of salt...)

- Black adds a sense of luxury and value.
- Use bright primary colors for your call to action.

Color Analysis

15 min

1. Pick a website, brand, or logo
2. Analyze the color choices
3. Write down your analysis
4. Share in breakouts

How well do you know your brands?

What’s the brand?

1

What’s the brand?

2

What’s the brand?

3

What’s the brand?

4

Why so much blue?

Blue is safe, it’s neutral, trustworthy and confident.

What’s the brand?

5

What’s the brand?

6

What’s the brand?

7

Color Models

To create systems that work with color we need a model to describe how color behaves.

Subtractive color

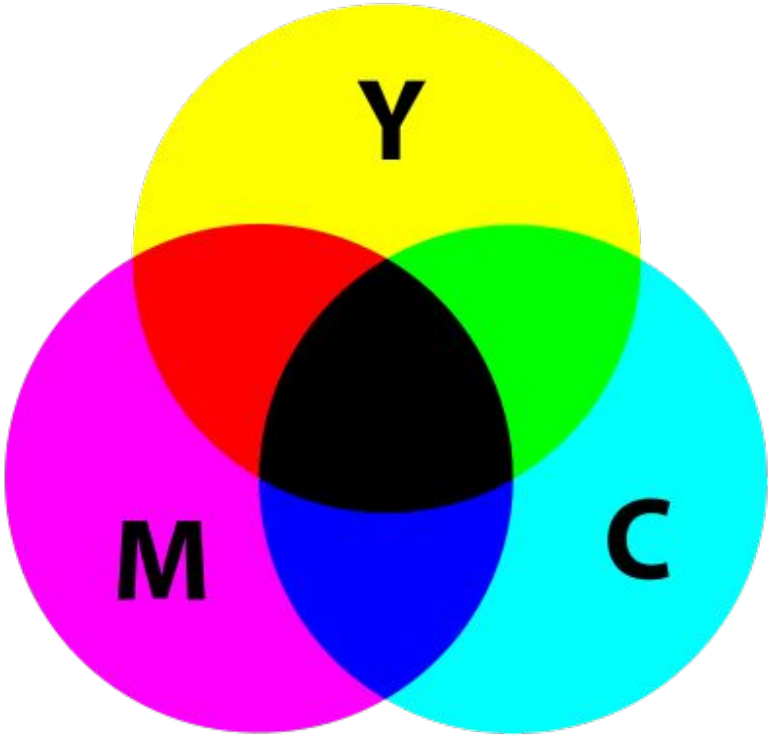
A subtractive color model explains the mixing of a limited set of **dyes**, **inks**, **paint pigments** or natural colorants to create a wider range of colors, each the result of partially or completely **subtracting** (that is, absorbing) some **wavelengths of light** and not others.

- **Wikipedia**

Subtractive color

The subtractive model explains the color you see when some **frequencies of light are absorbed** as light bounces off a surface.

Used for print color on paper or canvas.

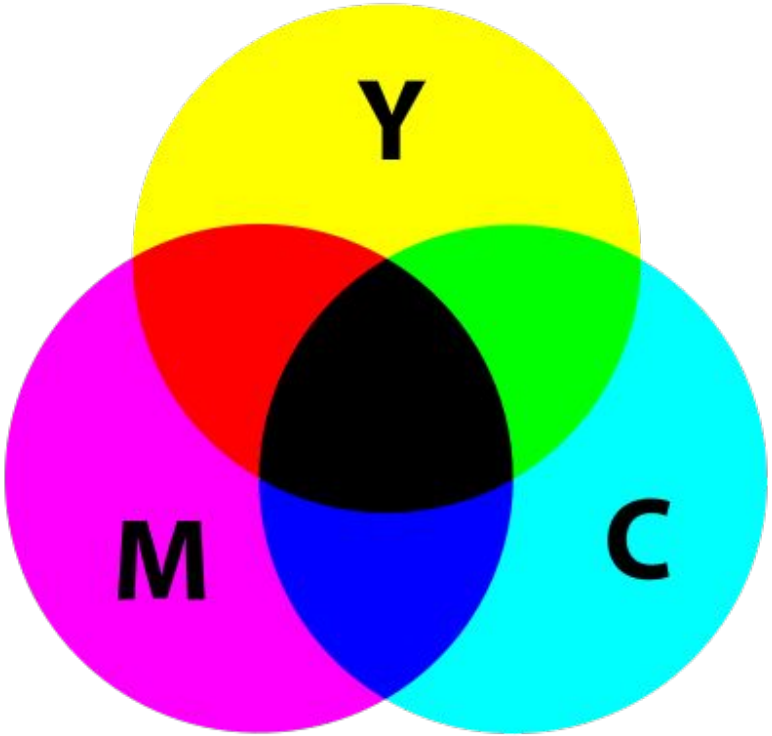


CMYK

This model is used in printing.
Most color printers use the colors:

- **C**yan
- **M**agenta
- **Y**ellow
- **B**lack

This is referred to as CMYK color.



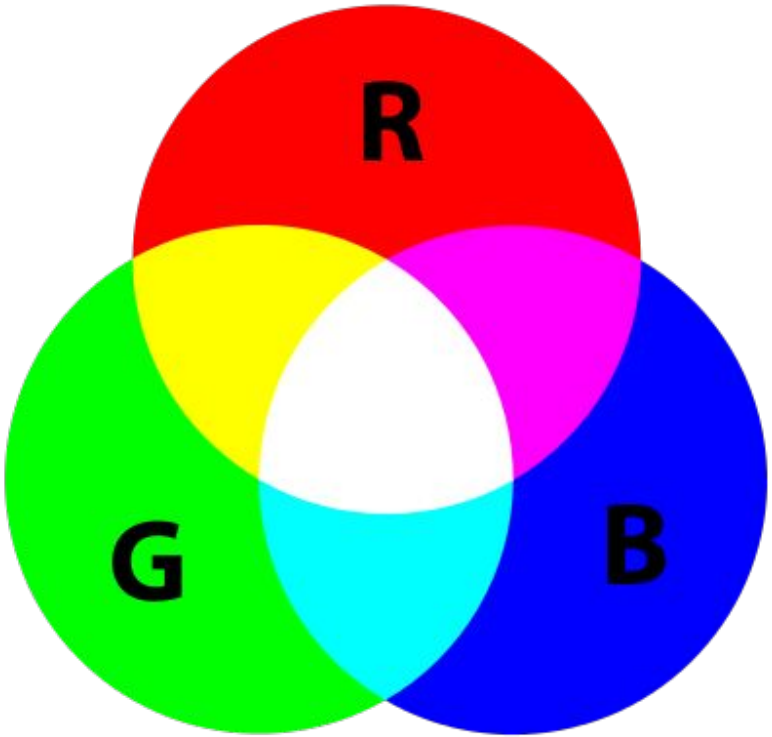
Additive color

Additive color is a method to create color by **mixing** a number of **different light colors**, with shades of red, green, and blue being the most common primary colors used in additive color system.

- **Wikipedia**

Additive color

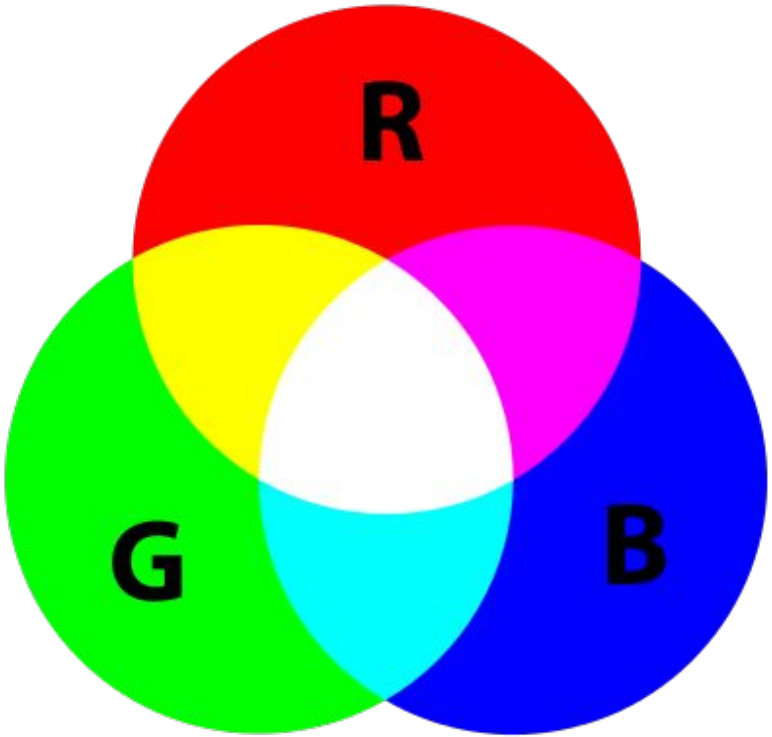
Additive color starts with black and works to white. Imagine starting with an absence light and adding light. You'd begin in the dark and things would get lighter as you add color.



RGB

Additive color is a model that explains **color as mixing light**.

This is why we use it to model color on the computer screen!



24 bit Color

With 24 bits you can display millions of colors.

With this system you have **8 bits** of **red**, **8 bits** of **green**, and **8 bits** of **blue** which is **24 bits.**

(2^8 * 2^8 * 2^8)

or

256 * 256 * 256 = 16,777,216

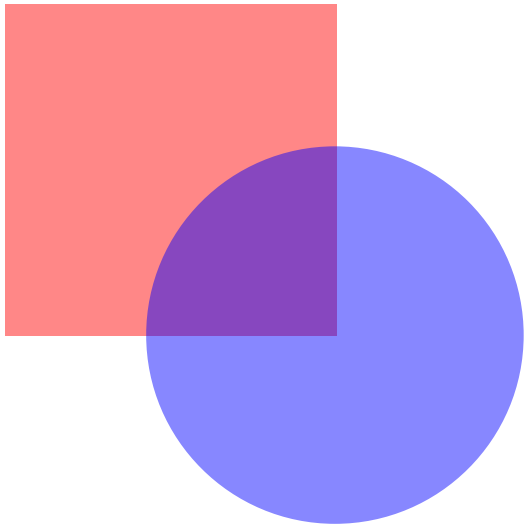
That's 256 levels of each: **red**, **green**, and **blue**.

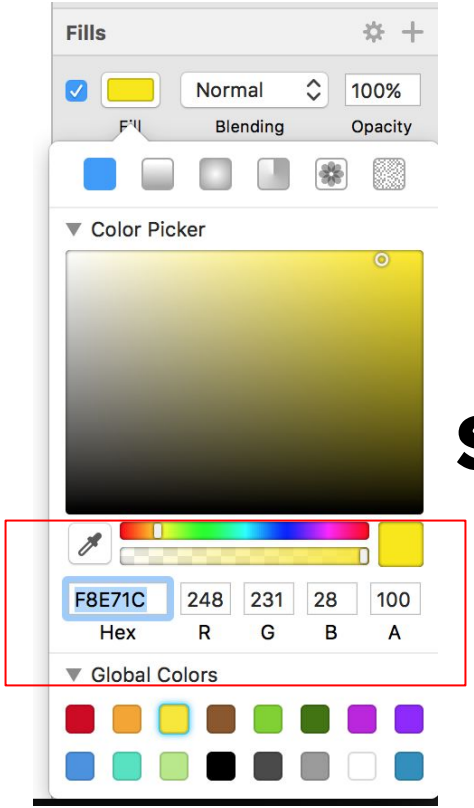
32 bit Color

32 bit color adds **transparency** with 8 bits of alpha

With 32 bits you can 8 bits of transparency to 24 bit color.

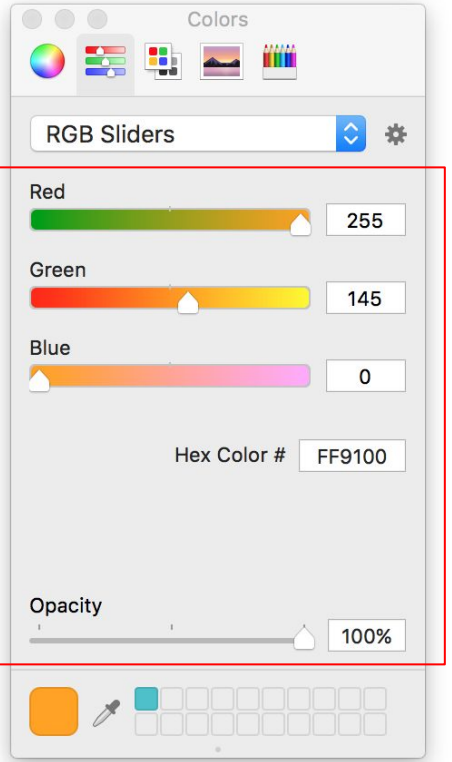
8 bits + 8 bits + 8 bits + **8 bits** = 32 bits





Sketch

Xcode



Some code samples CSS

```
// CSS

body {

  background-color: rgba(255, 146, 0, 1);

}
```

Some code samples Swift

```
let redorange = UIColor(
    red: 255/255,
    green: 146/255,
    blue: 0/255,
    alpha: 1)
```

UIColor takes RGBA values in a range of 0.0 to 1.0.

To convert from values given in the 0 to 255 range divide by 255.

255, 146, 0

This easier than:

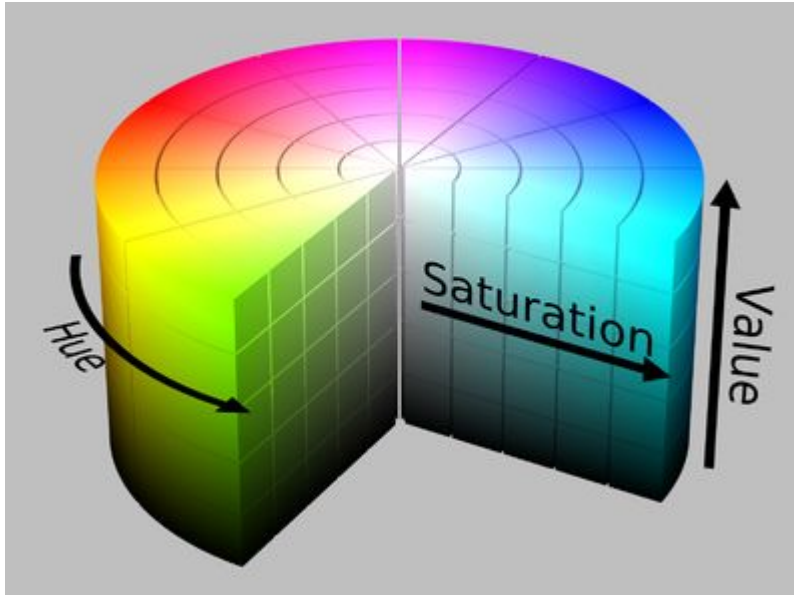
```
    green: 0.5725490196
```

HSB

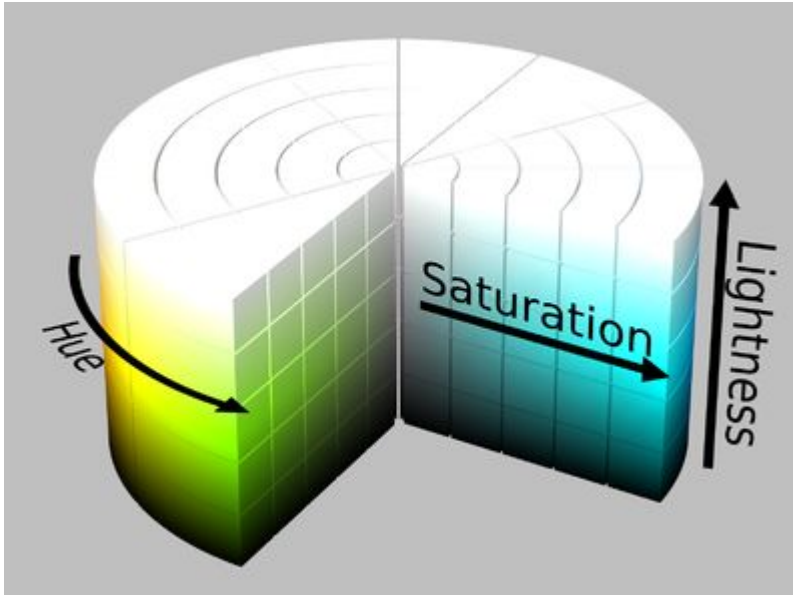
HSV, HSL

HSB, HSL, and HSV

These color models provide an alternative system for defining RGB colors.



HSV

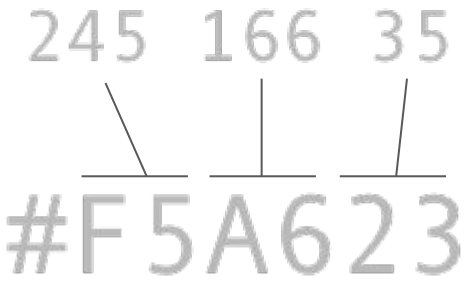


HSL


Color Picker
F8E71C
Hex
248
R
231
G
28
B
100
A
RGB
Global Colors
Color Picker
FF920E
Hex
33
H
95
S
100
B
100
A
HSB
Global Colors

Hex Color

HEX color values




```
body {
  background-color: #F5A623;
}
```

Primary and Secondary colors

Primary

Red 255,0,0 #ff0000

Green 0,255,0 #00ff00

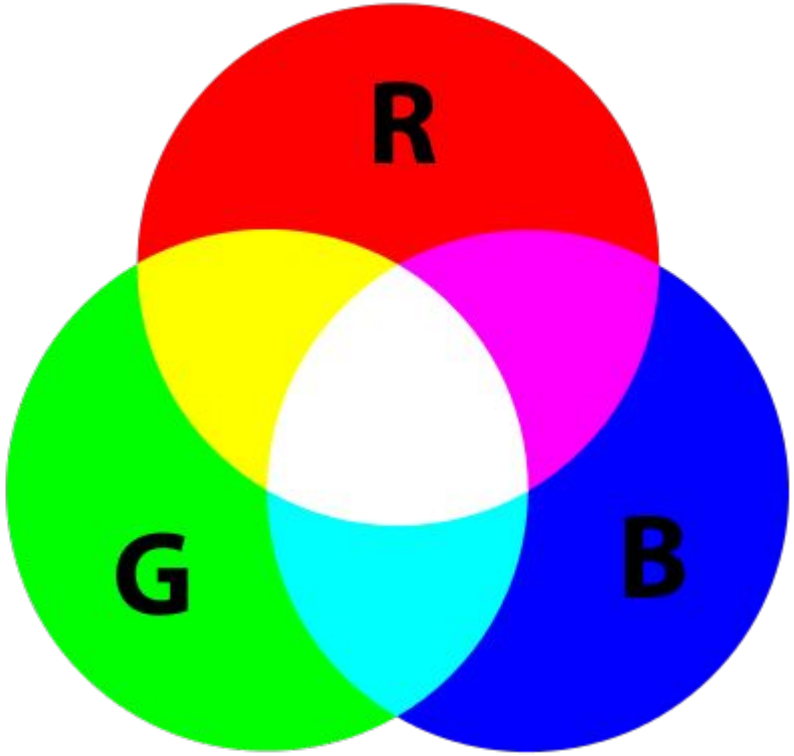
Blue 0,0,255 #0000ff

Secondary

Magenta 255,255,0 #ff00ff

Cyan 0,255,255 #00ffff

Yellow 255,255,0 #ffff00

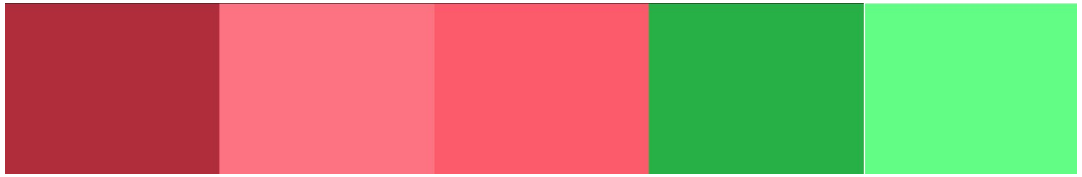


Color Systems

https://color.adobe.com/create/color-wheel/

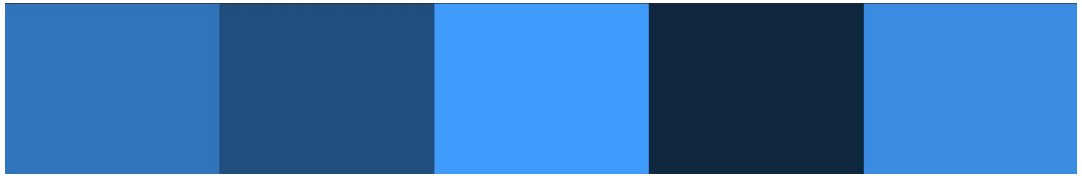
Color systems help you choose colors

Analogous colors



Complementary colors

Monochrome colors



Triads

Color Schemes

https://medium.com/@Adoriasoft_Com/mobile-app-design-14-trendy-color-schemes-2669b5bb77d3

http://paletton.com/#uid=53m0-0kllllaFw0g0qFqFg0w0aF

http://colormind.io

https://mycolor.space/?hex=%23845EC2&sub=1

https://uxplanet.org/vibrant-colors-in-web-design-20-visually-impactful-websites-to-inspire-you-bc7988da1e95

Future Class Activity

Guess the color