Warna dan Kenampakan

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Kenampakan / Appearance

- Bentuk & ukuran
- Warna atau rona (hue)
- Gloss / kilau / kilap & karakteristik permukaan lainnya
- Kegelapan
- Volume
- Penampilan interior

Faktor yang berpengaruh terhadap persepsi kenampakan

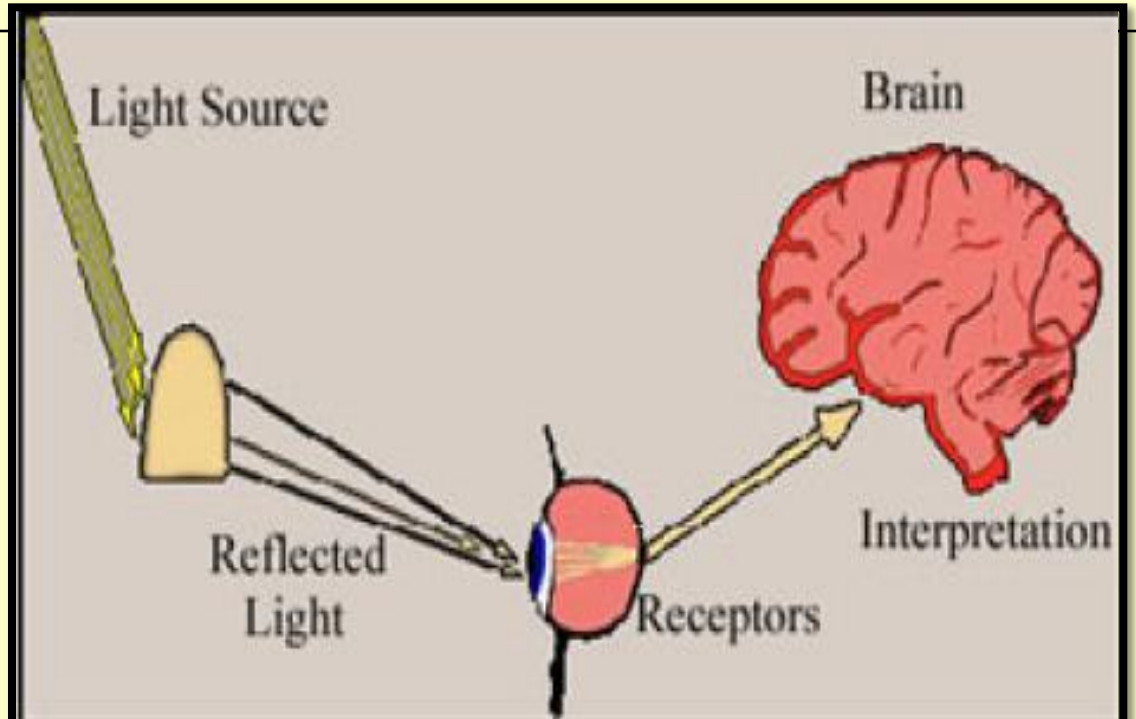
- Sumber cahaya
- Objek
- Lingkungan



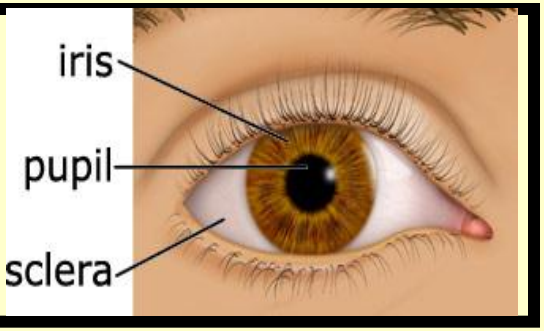
Seeing Mechanism

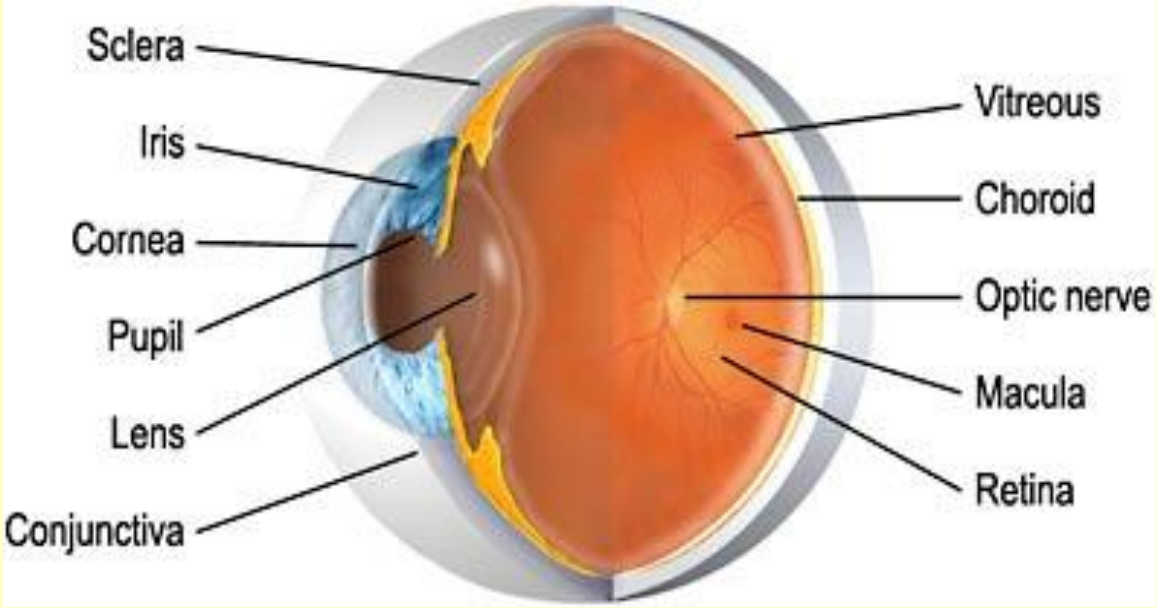
The Three Components:

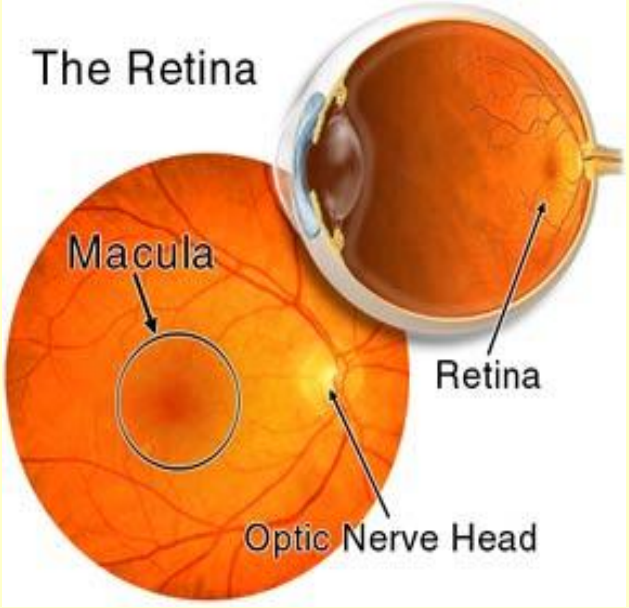
1) The Object; 2) Light; 3) Organ of sight



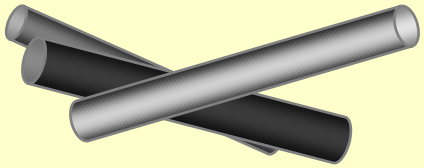
The Eye
Anatomy





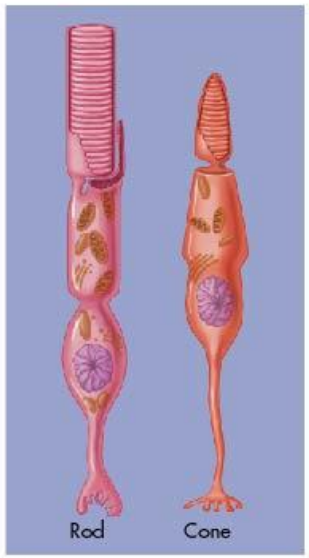


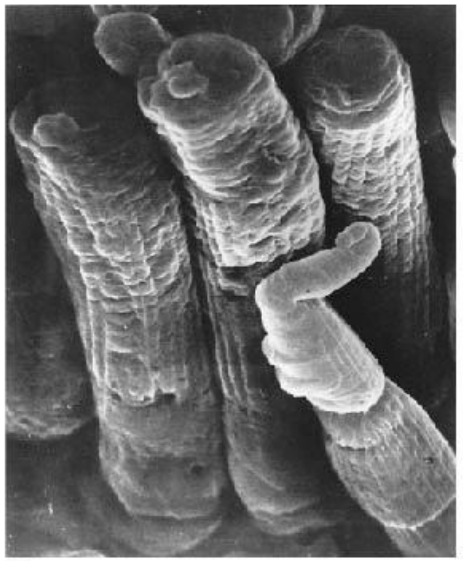
Color Perception

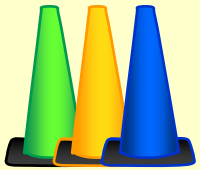


- **Rod cells**
  - Scotopic (gray scale/ abu-abu) vision, → brightness/kecerahan
  - Menafsirkan brightness, **not color**
  - Highest concentration on peripheral retina

120 Million Rods and
5 Million Cones per Eye





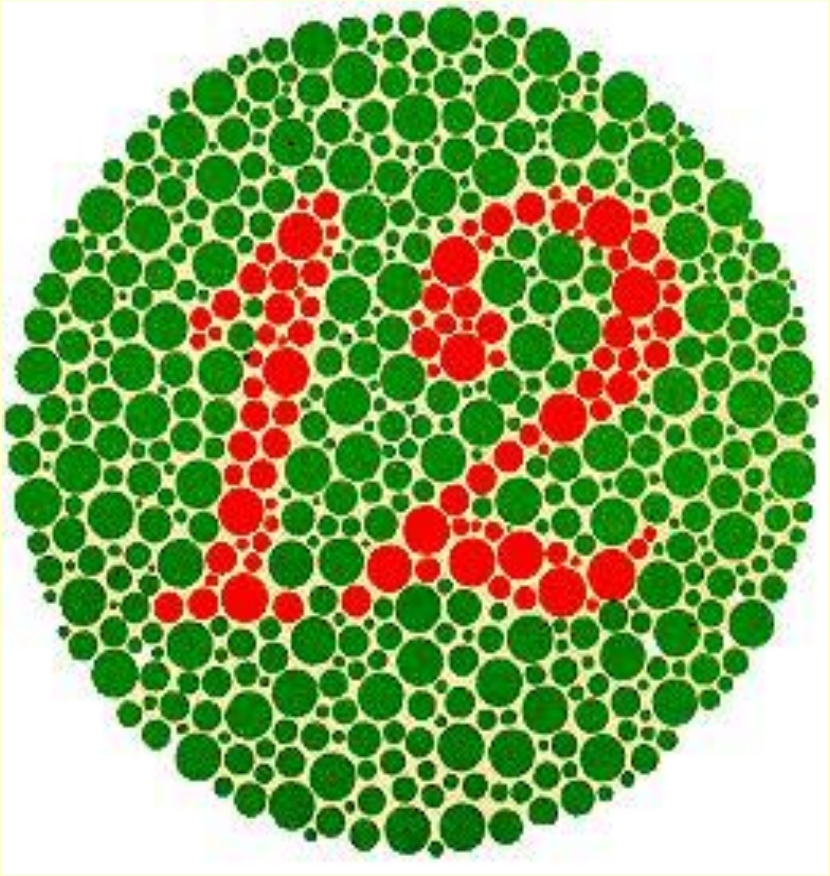


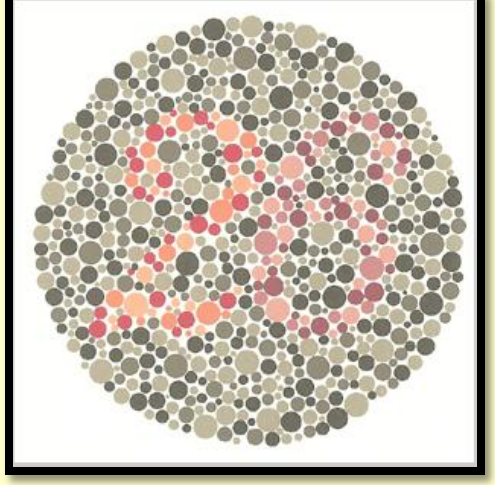
- **Cone cells**
  - Photopic (color) vision
  - Interpret color
  - More active under high light
  - Highest concentration on central retina (macula), most color perceptive area of eye

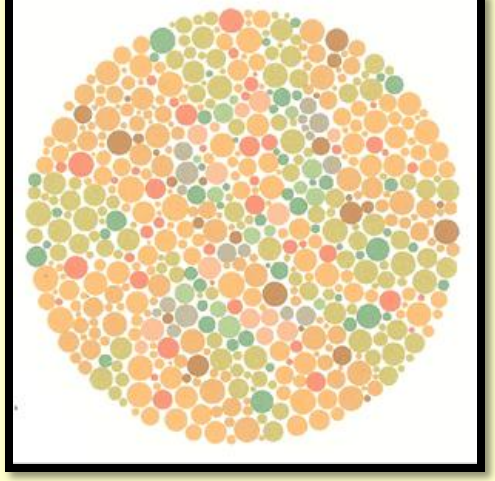
Light and Color

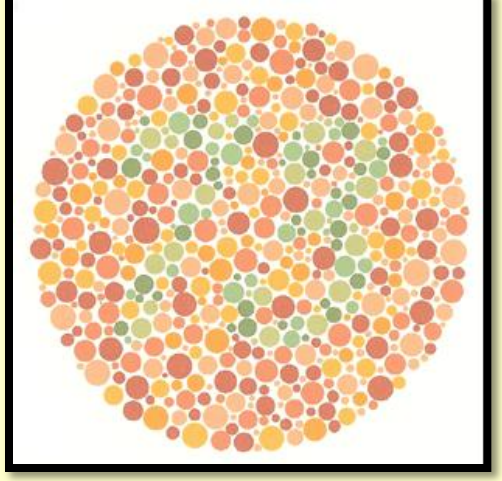
- Description of Light
  - Quality of light
- Description of Color
  - Hue, Chroma, Value
  - Munsell Color System
- Factors influencing perception
  - The eye (rods and cones)
  - Deceptive color perception/ persepsi warna yang menipu
  - Color Blindness

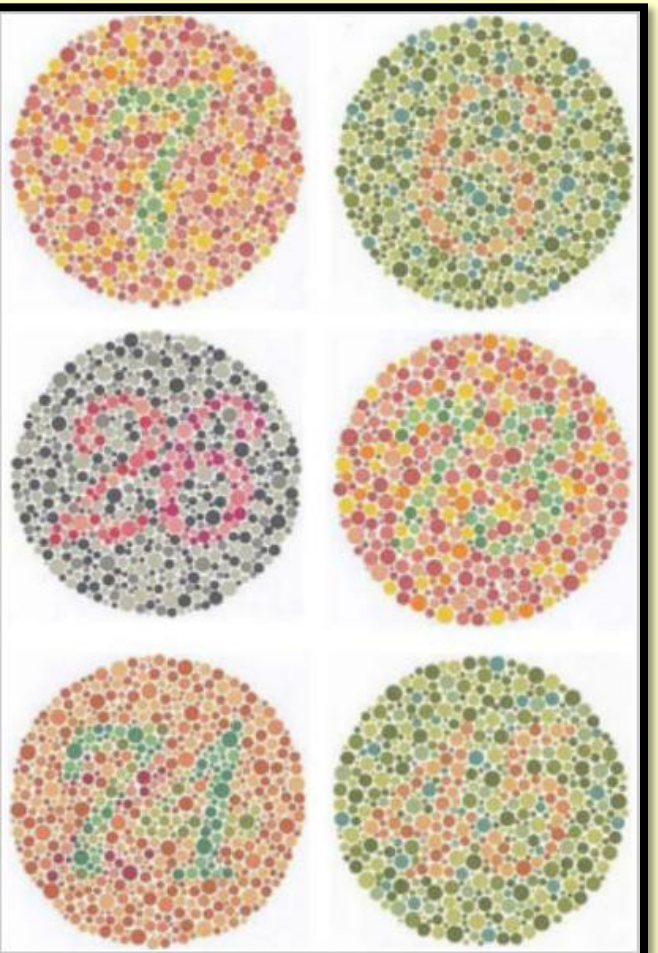
Ishihara Test (color blind test)

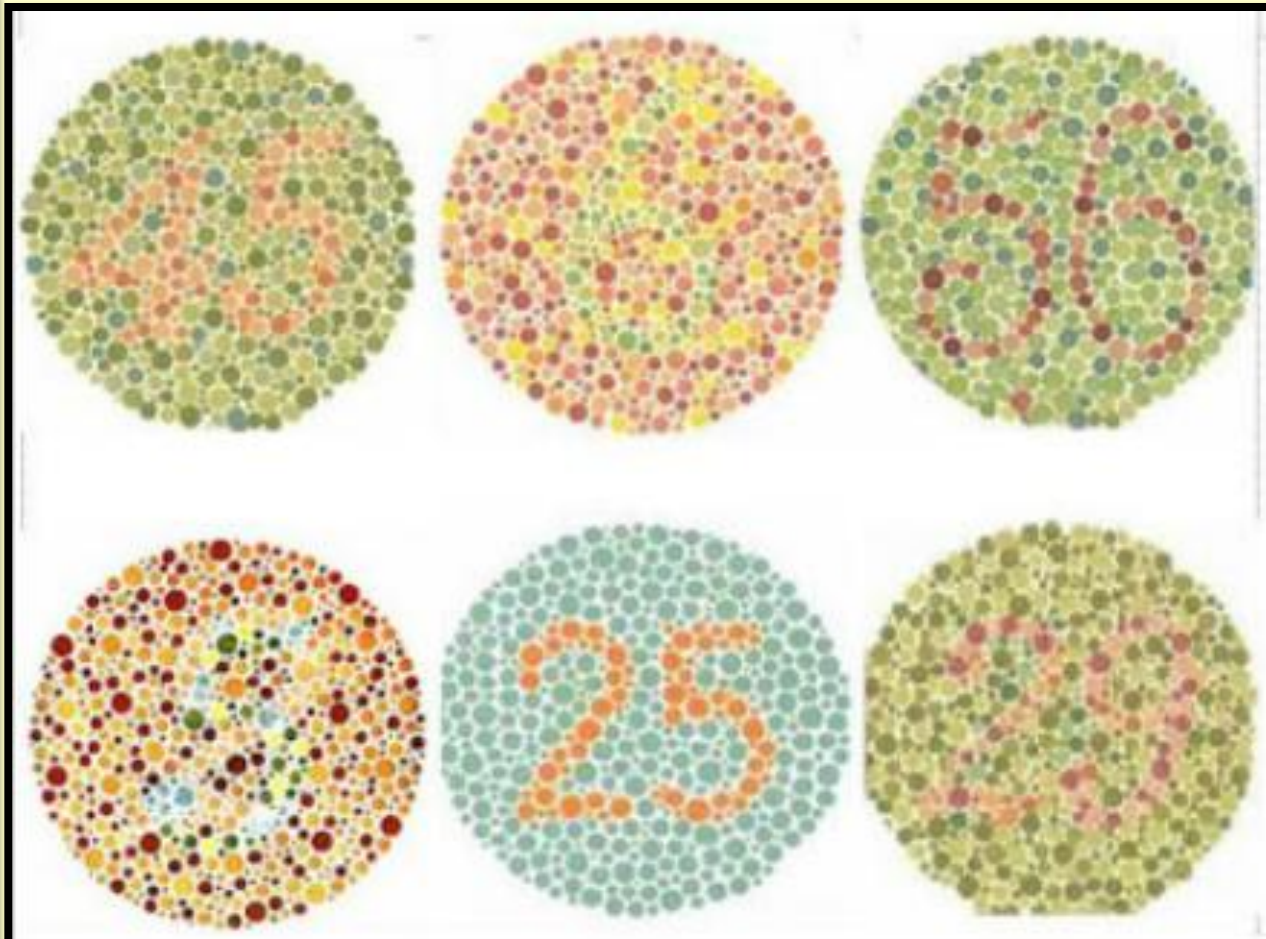











25

26

2

73

7 - 6

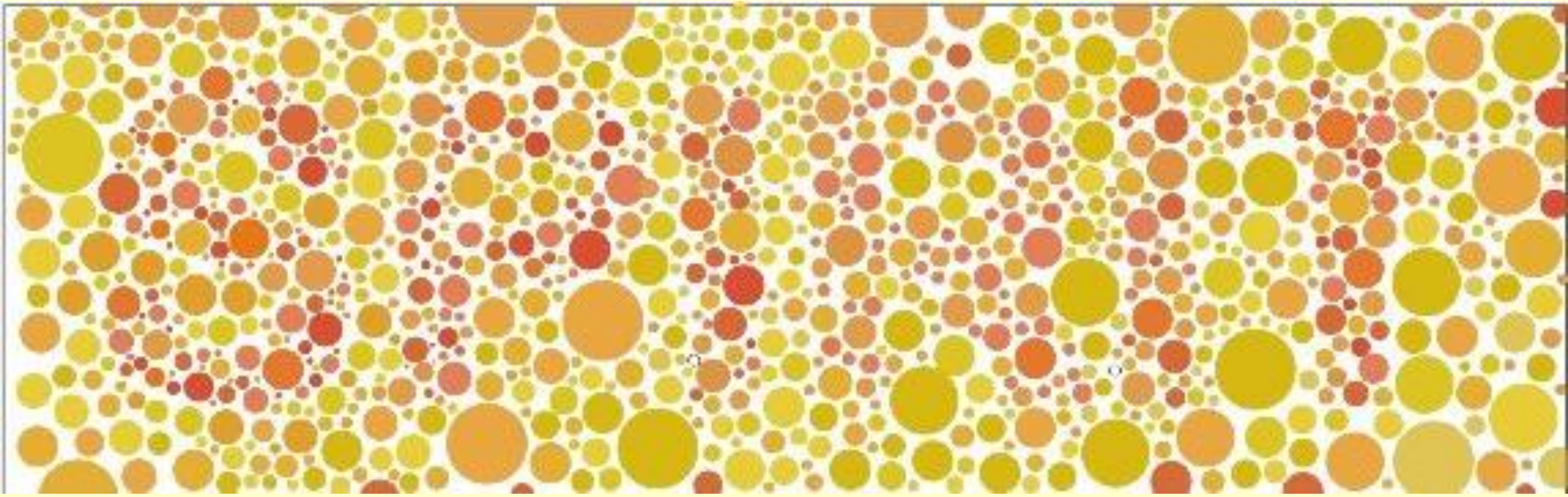
26 - 73

74 - 45

45 - 6 - 56

5 - 25 - 29

Tulisan apa ?



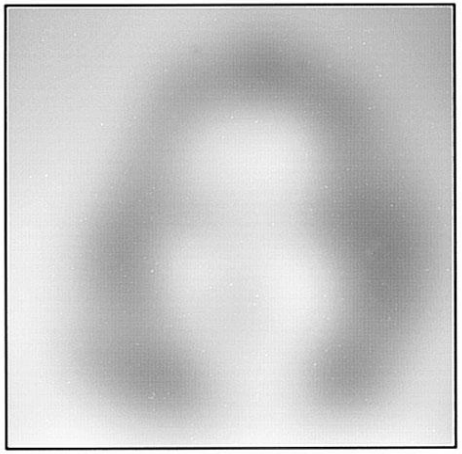
The lack of cones also affects visual acuity

TRANSPARENCY 43

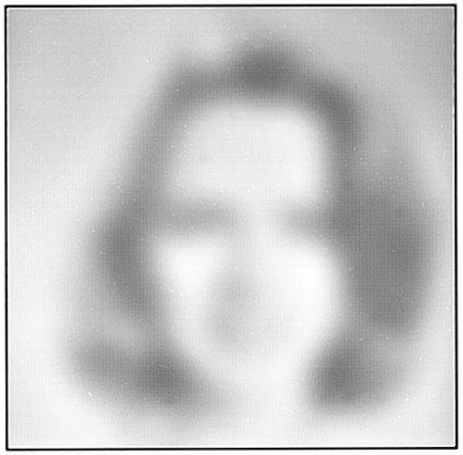
The Newborn Baby's Limited Focusing Ability

Newborn View

Adult View



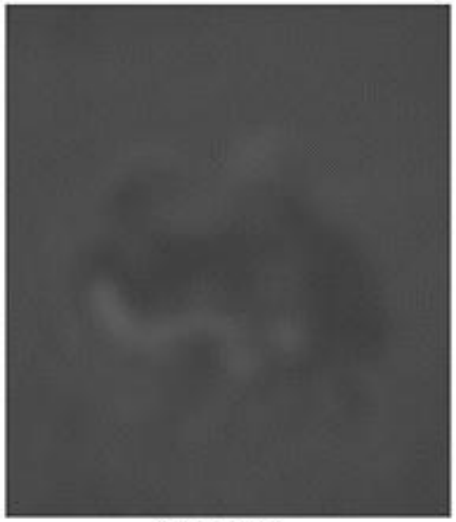
1 month



2 months

3 months

Adult



Newborn

1 month

2 months

3 months

4 months

Adult

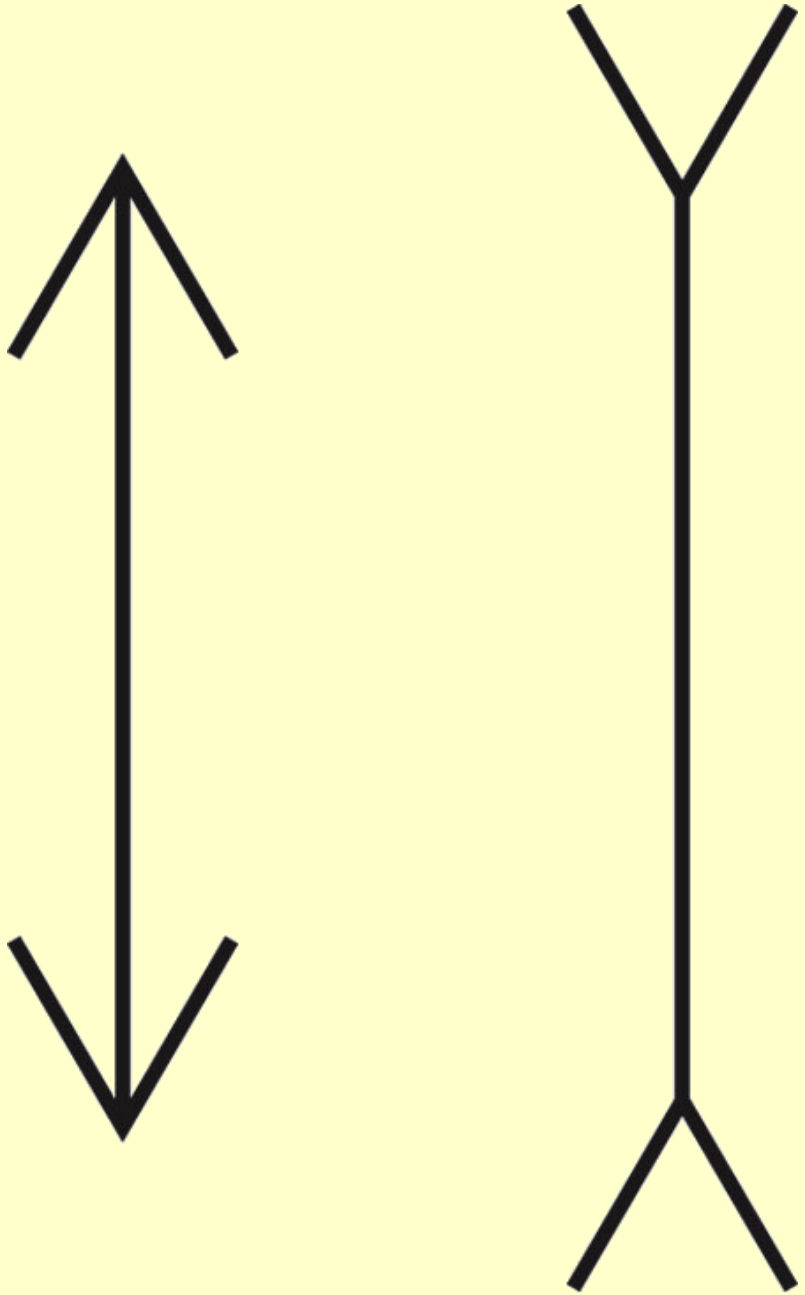


Figure 8.34 The Müller-Lyer illusion. Both lines are actually the same length.

Figure 8.35 According to Gregory (1973), the Müller-Lyer line on the left corresponds to an outside corner, and the line on the right to an inside corner. Note that the two vertical lines are the same length (measure them!).

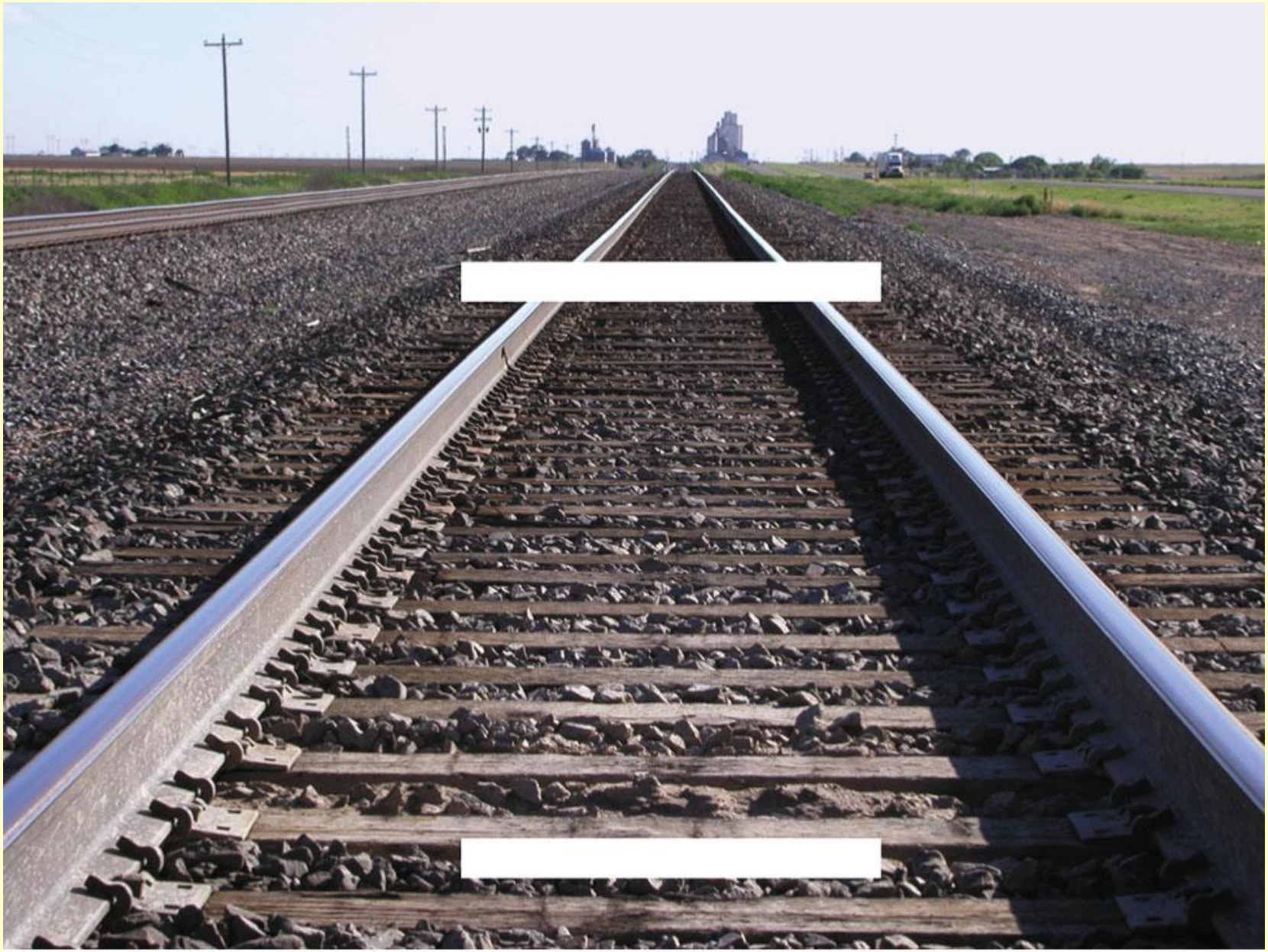


Figure 8.39 The Ponzo (or railroad track) illusion. The two horizontal rectangles are the same length on the page (measure them), but the far one appears larger.

Fig. 8-40, p. 187

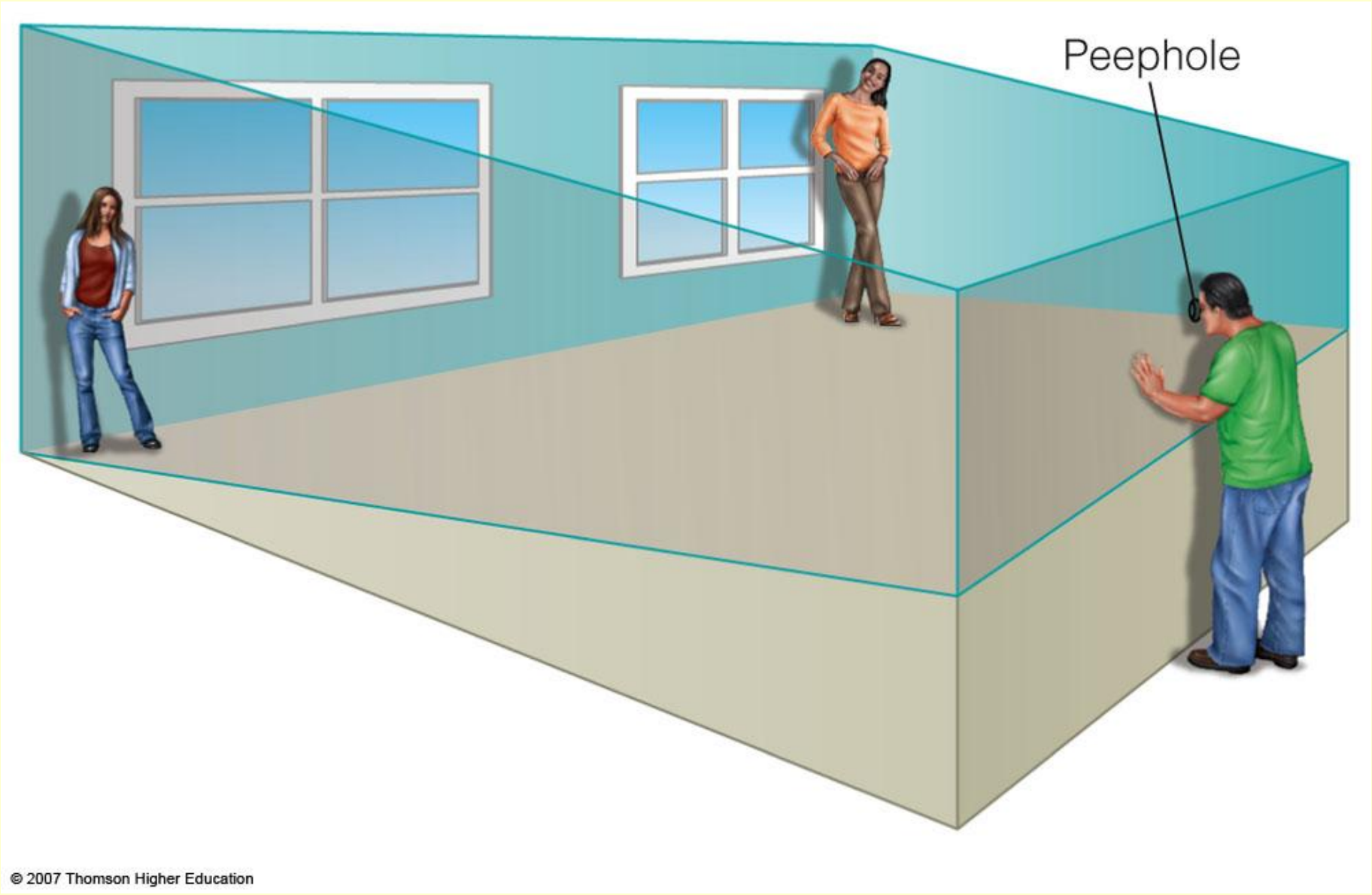
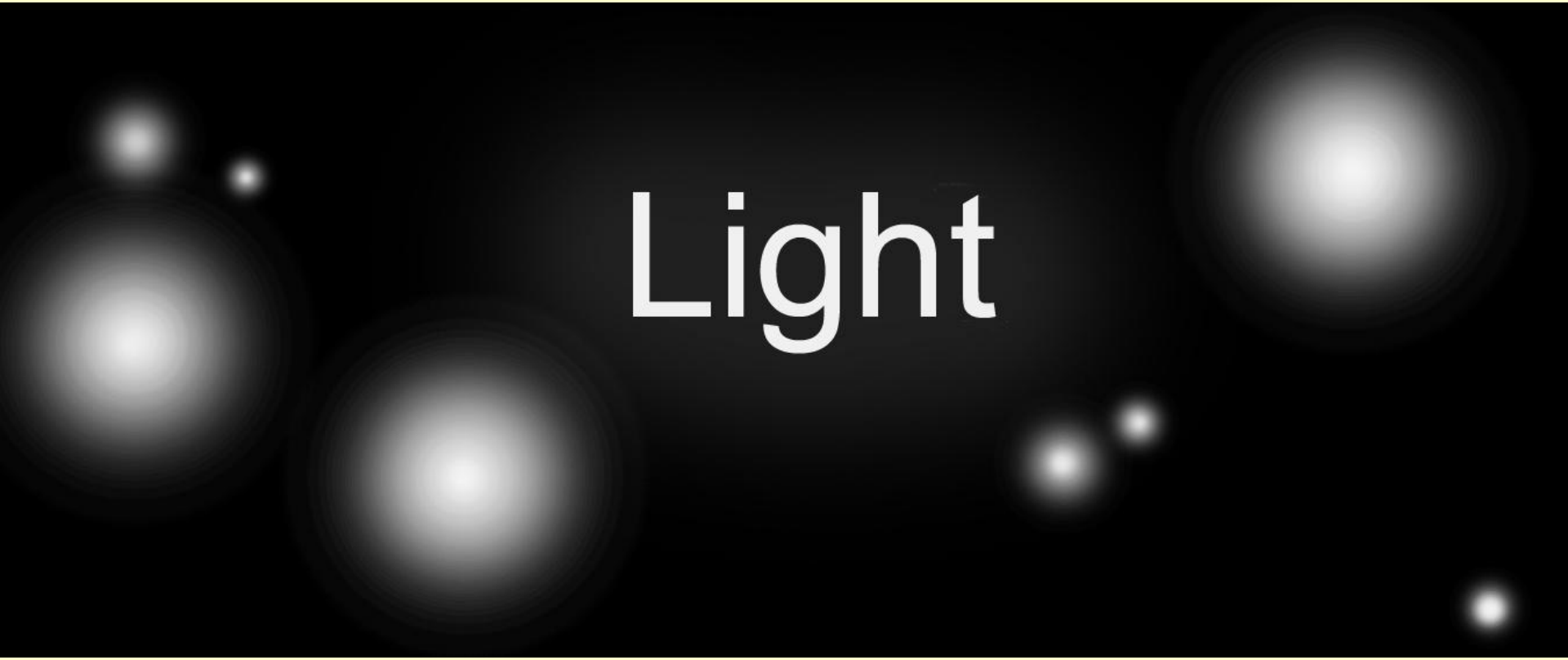


Figure 8.41 The Ames room, showing its true shape. The woman on the left is actually almost twice as far away from the observer as the woman on the right; however, when the room is viewed through the peephole, this difference in distance is not seen. In order for the room to look normal when viewed through the peephole, it is necessary to enlarge the left side of the room.

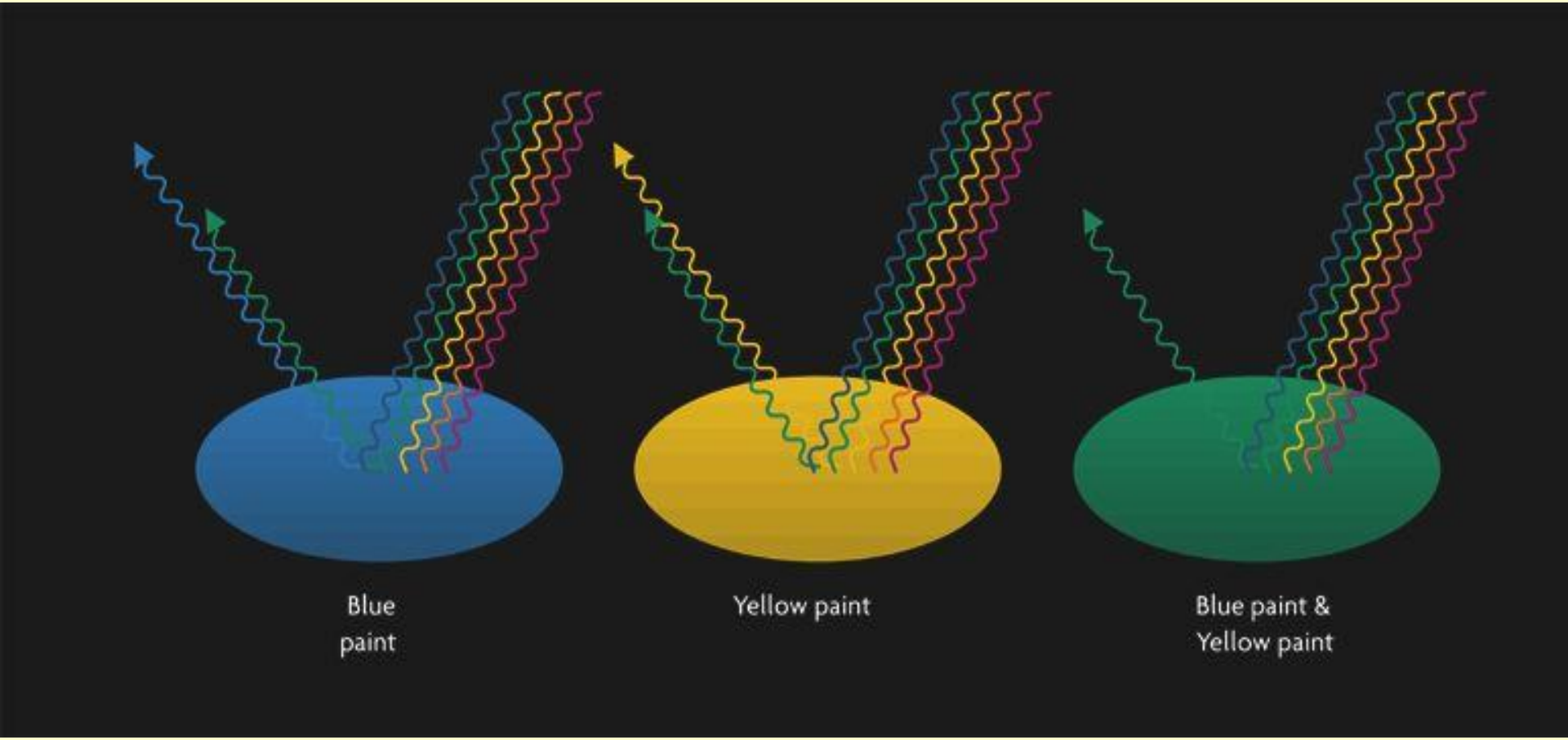
Fig. 8-40, p. 187



Visible electromagnetic energy whose wavelength is measured in nanometers (nm)

Without Light Color Does Not Exist

Objects absorb and reflect light

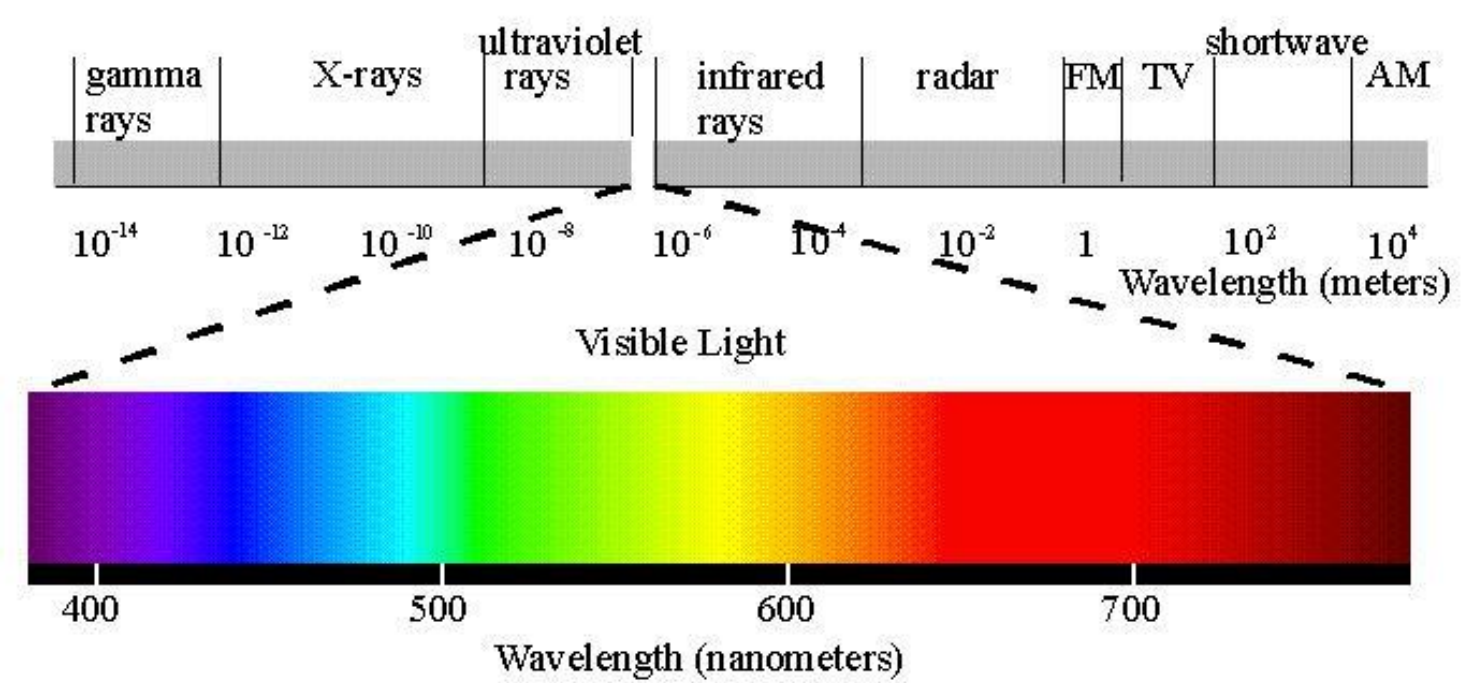


Color of an Object

Kualitas sebuah benda atau zat terkait dengan cahaya yang dipantulkan oleh obyek, biasanya ditentukan secara visual dengan pengukuran hue, chroma and value

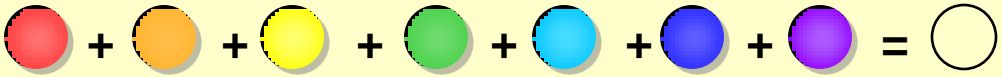
Light

- Part of the electromagnetic spectrum
- The eye is only sensitive to the **visible** portion of the spectrum (380 – 750nm)
- Different wavelengths constitute the different colors we perceive

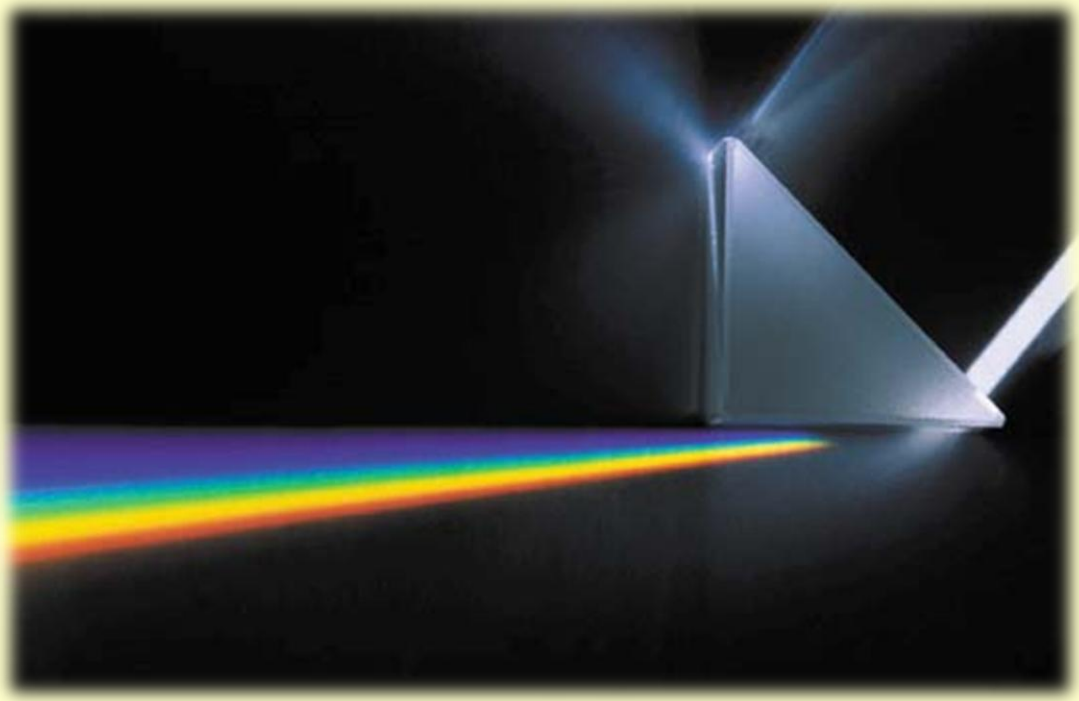


Pure White Light

- Jumlah yang relatif sama dari energi elektromagnetik selama VLS



- Ketika melewati sebuah prisma kita melihat warna komponen cahaya putih
- Shorter wavelengths bend more than longer wavelengths



Quality of Light Sources

1. Incandescent Light / cahaya pijar
2. Fluorescent Light / cahaya neon
3. Natural Daylight / cahaya matahari

1. Incandescent Light

- Emits high concentration of yellow waves
- Tidak cocok untuk mencocokan warna
- Low Color Rendering Index (CRI)

2. Fluorescent Light

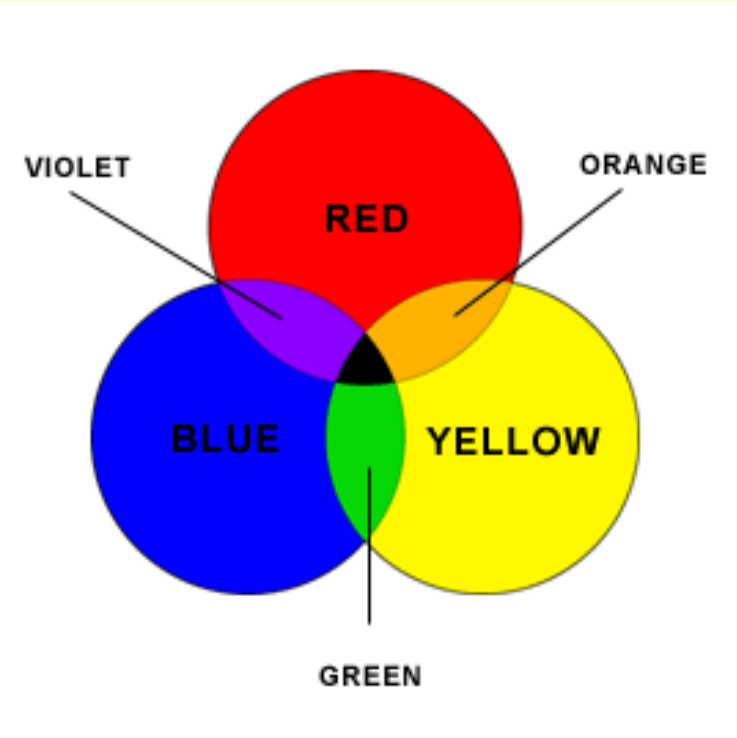
- Emits high concentration of blue waves
- Tidak cocok untuk mencocokan warna
- CRI =(50-80)

3. Natural Daylight

- Cahaya matahari dianggap terbaik
- Paling dekat untuk memancarkan spektrum penuh of white light
- Digunakan sebagai standar yang digunakan untuk menilai sumber cahaya lain
  CRI mendekati 100

Subtractive Color

- Warna yang berhubungan dengan pengurangan cahaya.
- Digunakan dalam pigmen untuk membuat cat, tinta, kain dll.
- The primary subtractive colors are Red, Yellow, and Blue
- The secondary subtractive colors are Green, Purple and Orange
- When subtractive primary colors are combined they produce black

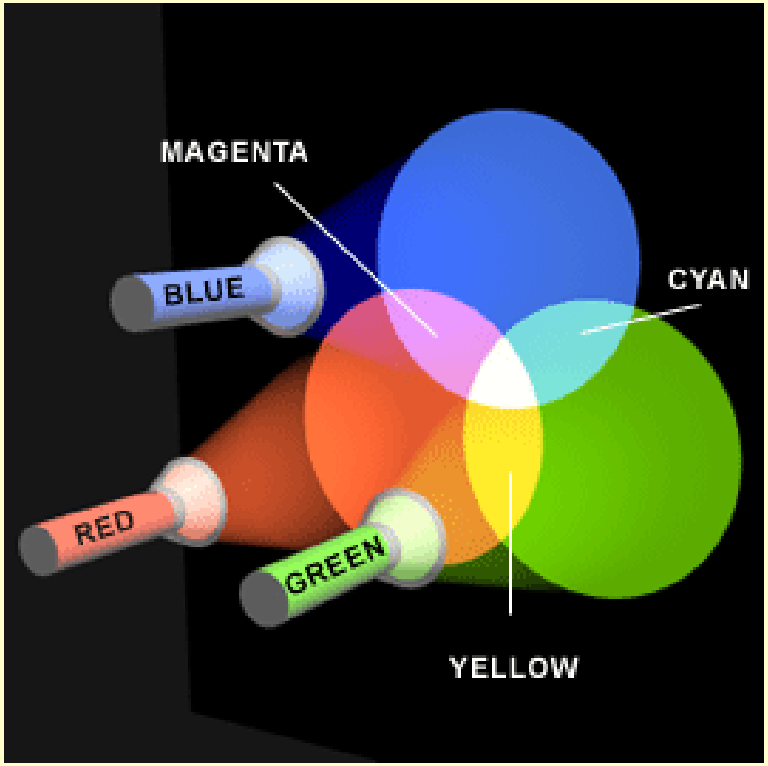


Additive Color

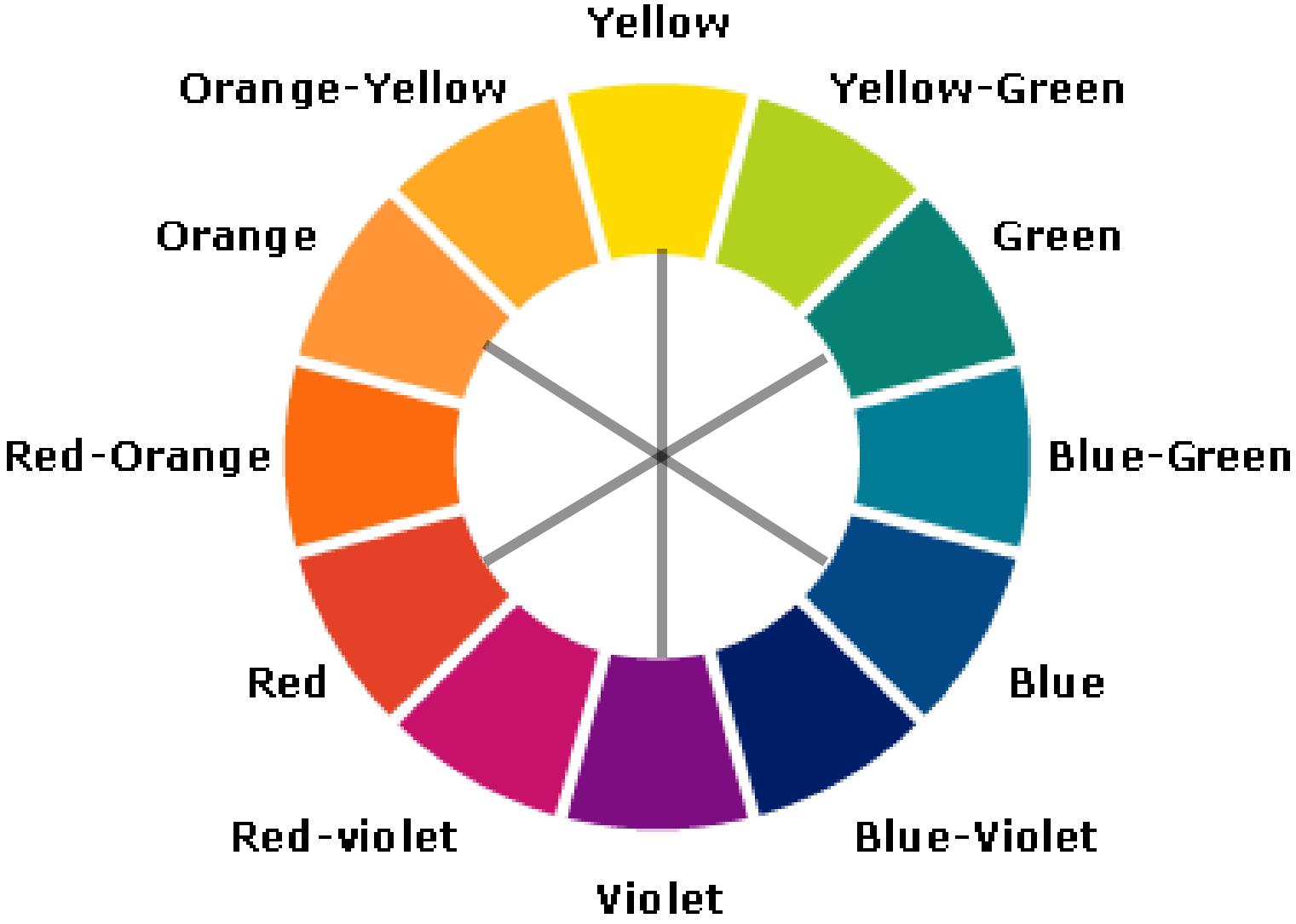
- warna yang diperoleh cahaya yang dipancarkan
- Associated with television and computer displays
- The primary additive colors are Red, Blue and Green

- The secondary colors are Cyan, Yellow and Magenta

- When additive primary colors are combined they produce white

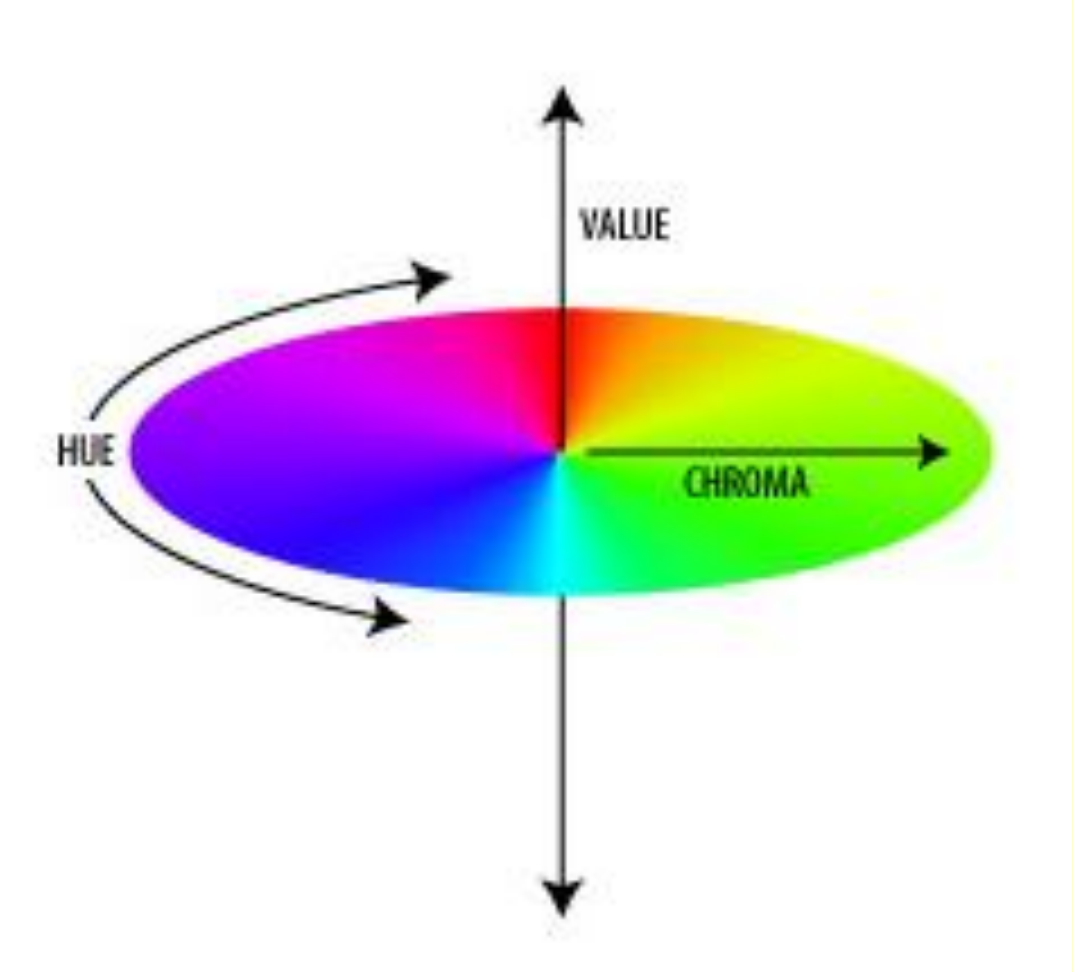


Complimentary Colors

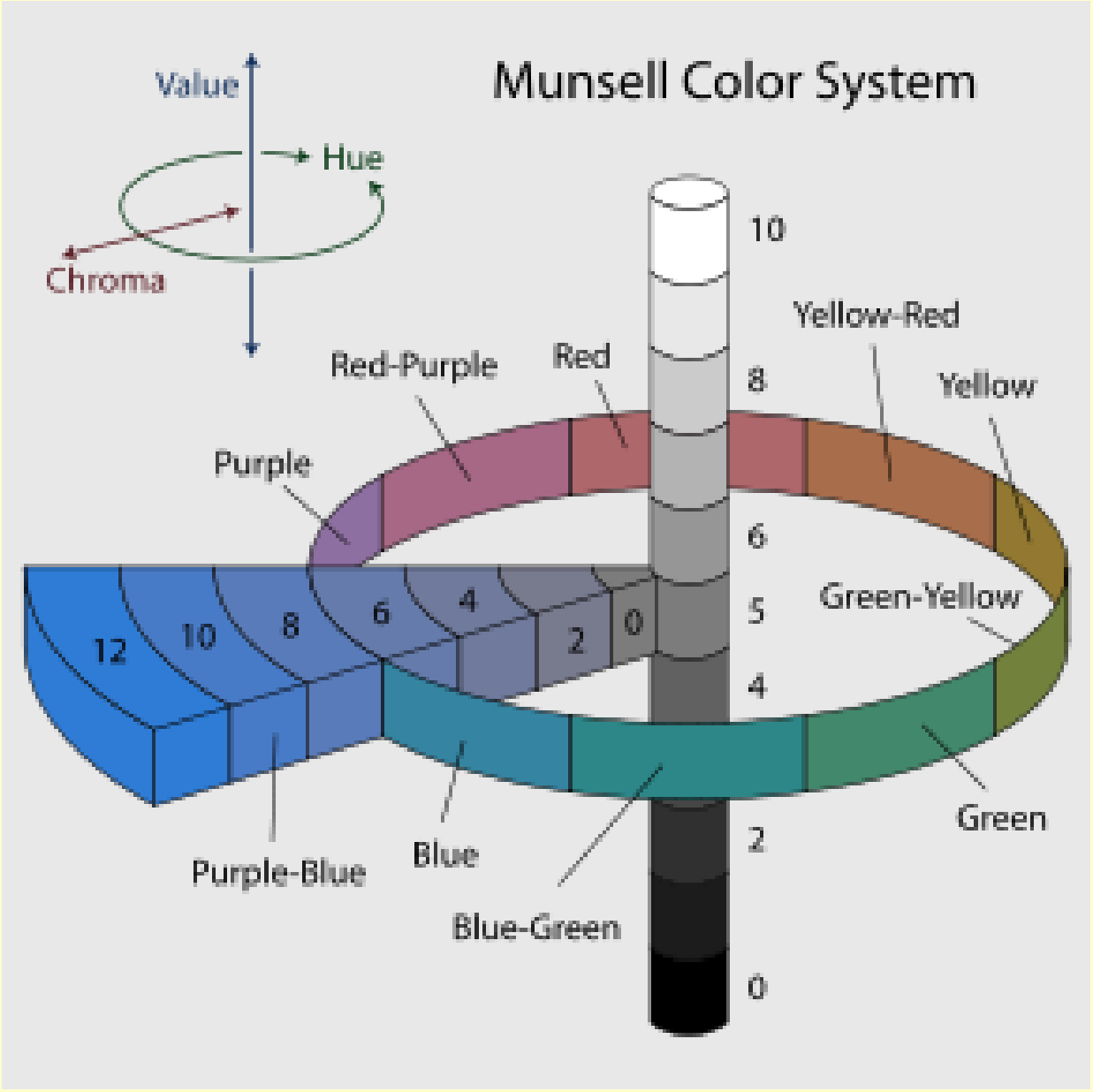


Three Attributes of Color

1. Hue
2. Chroma
3. Value

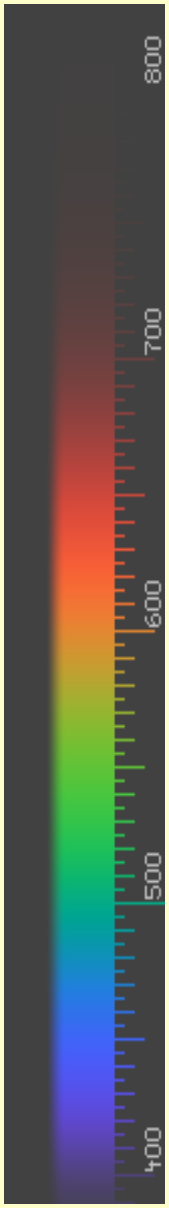


The Munsell color system, showing: a circle of hues at value 5 chroma 6



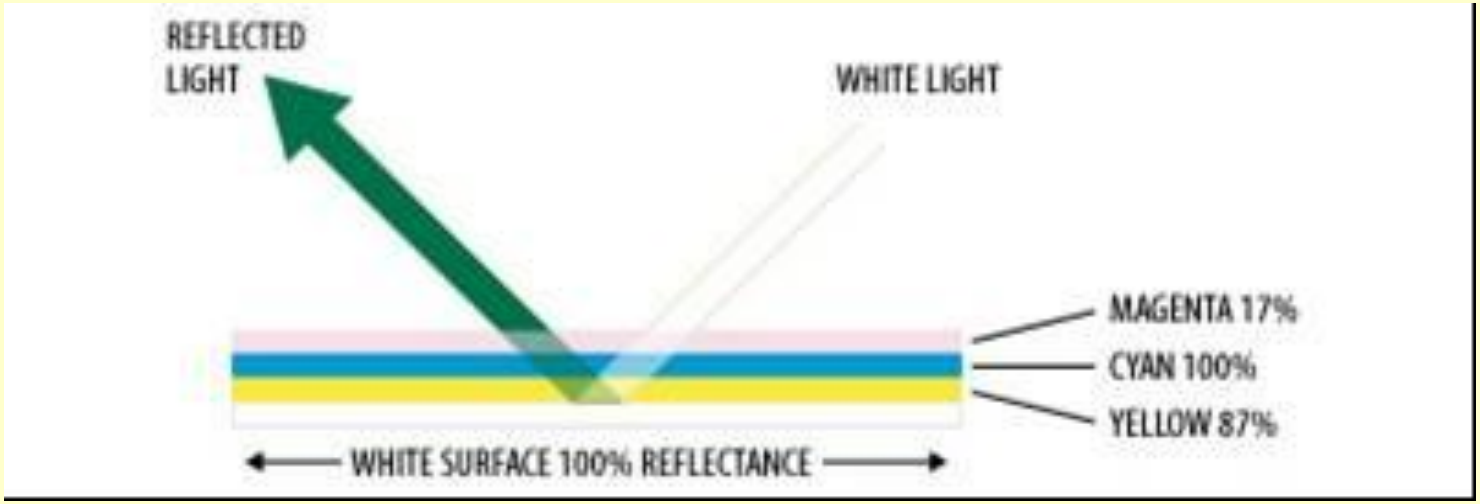
Color, wavelength, frequency and energy of light

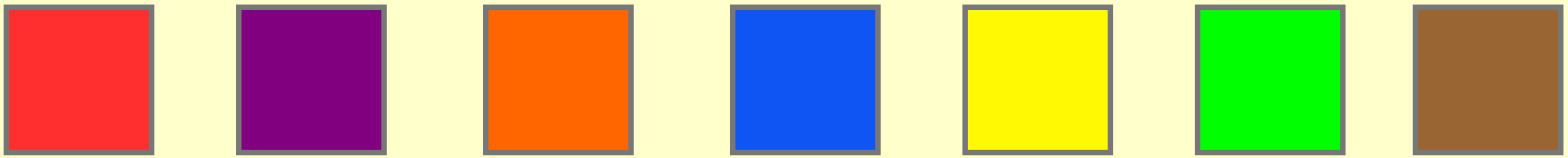
Color	λ /nm	ν/10^{14} Hz	E/kJ mol^{-1}
Infrared	>1000	<3.00	<120
	740		
Red	700	4.28	171
Orange	620	4.84	193
Yellow	580	5.17	206
Green	530	5.66	226
Blue	470	6.38	254
Violet	420	7.14	285
	380		
Near ultraviolet	300	10.0	400
Far ultraviolet	<200	>15.0	>598



Hue

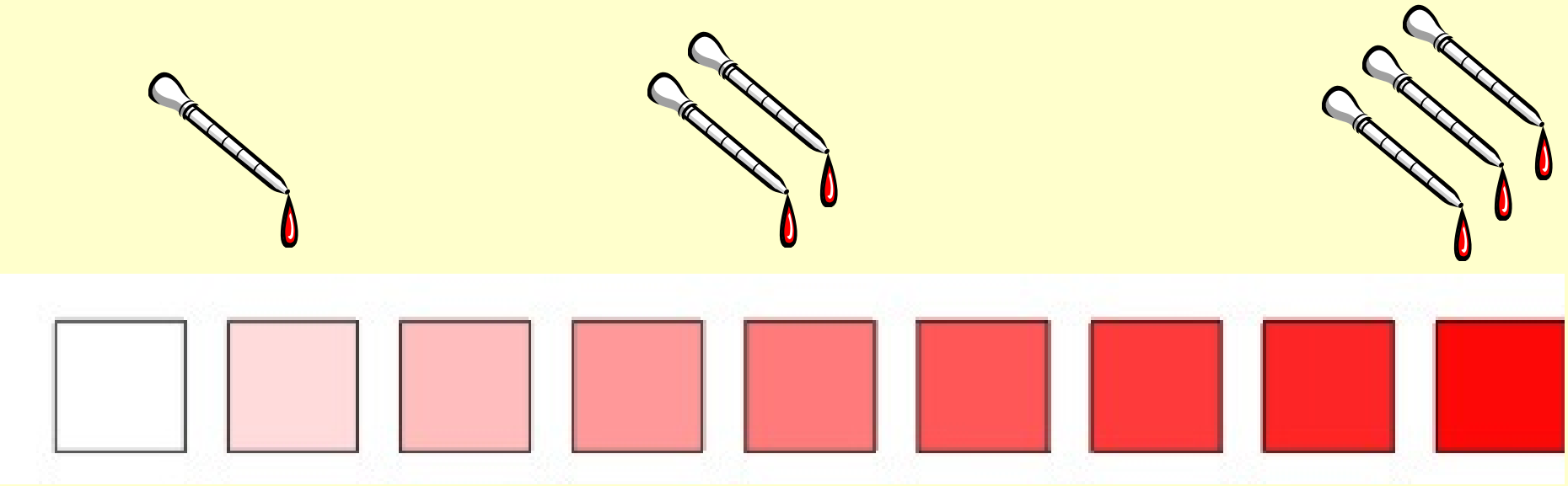
- **Variety** of color (red, green, yellow, etc.)
- Determined by **wavelength** of observed light within the VLS (visible light source)
- **Reflected wavelength** determines hue





Chroma

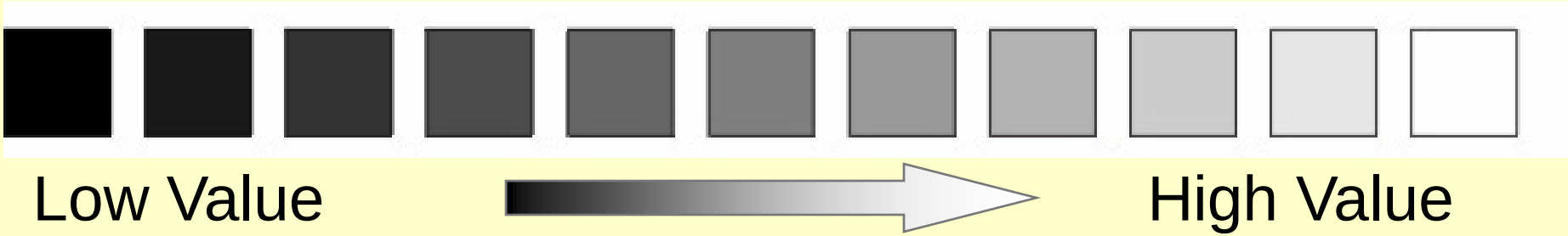
The **intensity** or **saturation** of a hue



Low Chroma → High Chroma

Value

- The relative **darkness** or **lightness** of a color, or brightness of an object
  - Range = 0-10 (0=black, 10 = white)
- **Amount of light energy** an object reflects or transmits
- Objects of different hues / chroma can be identical value



Evaluation objective Lab

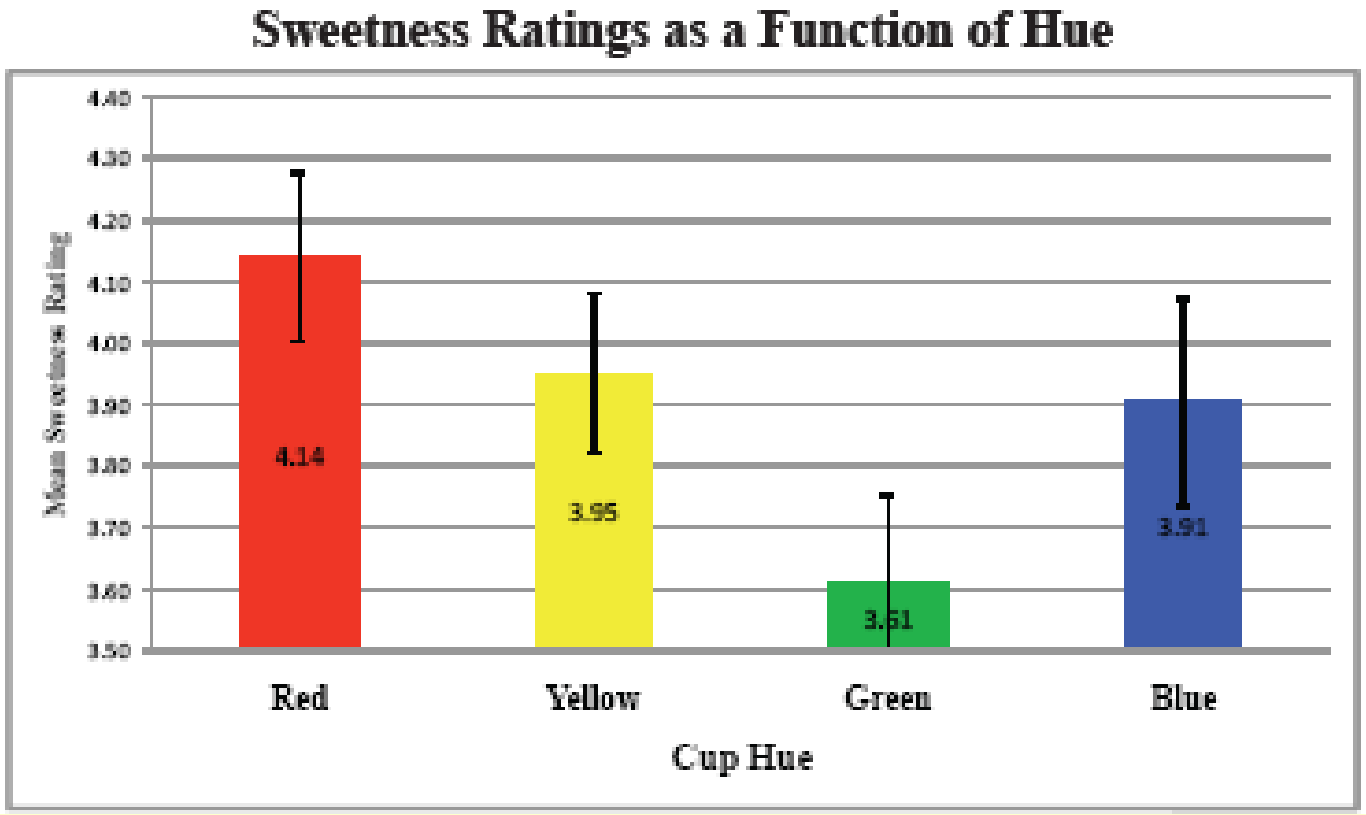
- Use of Color meter
- Determination of L,a,b value
- Can use of specific difference such as L value for browning, a value for tomato color, etc

Color	China	Japan	Egypt	France	U.S.A.
	Happiness, Luck	Anger, Danger	Death	Aristocracy	Danger, Stop
	Heavens, clouds	Villainy	Virtue, Faith, Truth	Freedom, Peace	Masculine, Corporate
	Heavens	Future, Youth, Energy	Fertility, Strength	Criminality	Safety, Go
	Birth, Wealth, Power	Grace, Nobility	Happiness, Prosperity	Temporary	Cowardice, Temporary
	Death, Purity	Death	Joy	Neutrality	Purity

Fig. 4. *Meanings of Colors in Various Countries.* Color Guidelines: Its Not Black its White. Digital Image. *Yahoo.* N.p., 28 Jun. 2010. Web.

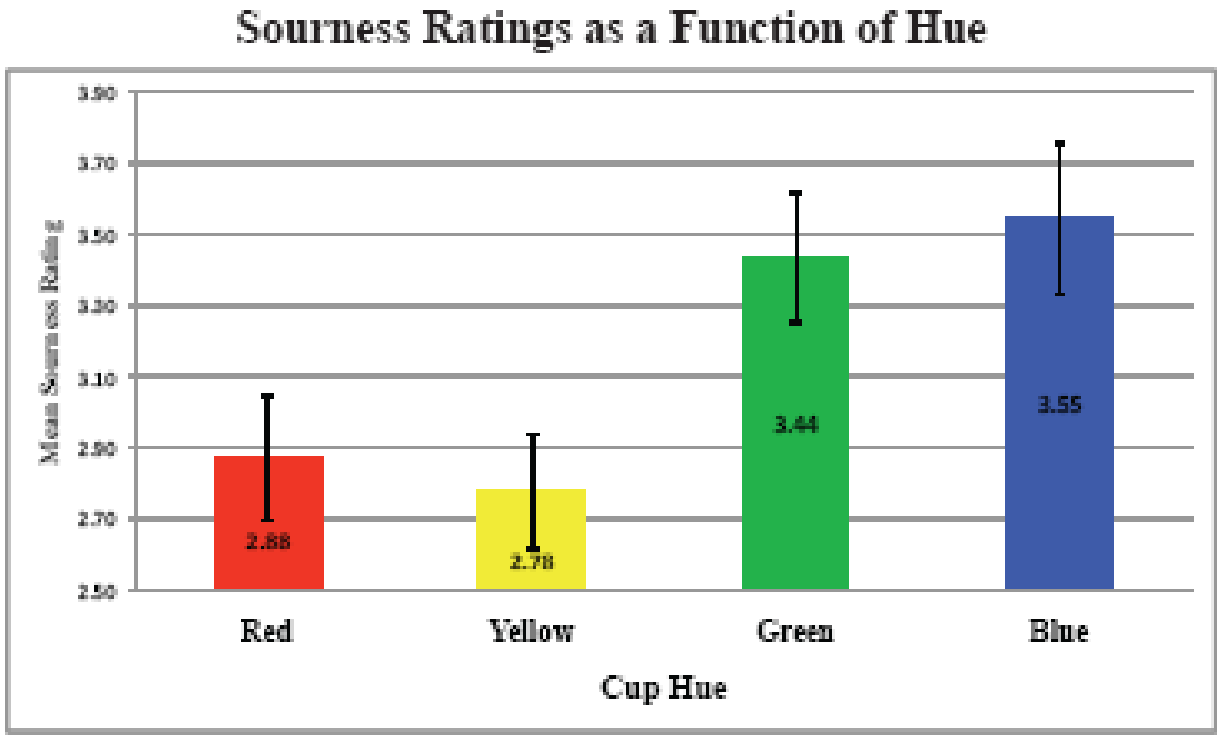
Ratings of Sweetness

- There was a main effect of hue on ratings of sweetness, $F_{(3, 189)} = 2.84$, $p = .039$.
- In post-hoc comparisons, red produced higher sweetness ratings than green, *Mean Difference* = .531, $p = .013$.



Ratings of Sourness

- There was a main effect of hue on ratings of sourness, $F_{(3, 189)} = 9.63$, $p = .001$.
- Sourness ratings were higher in the blue condition than yellow, *Mean Difference* = .766, $p = .008$ and marginally higher than red, *Mean Difference* = .672, $p = .089$. Green produced higher sourness ratings than yellow, *Mean Difference* = .656, $p = .017$.



Terimakasih