



# Color and Light Waves

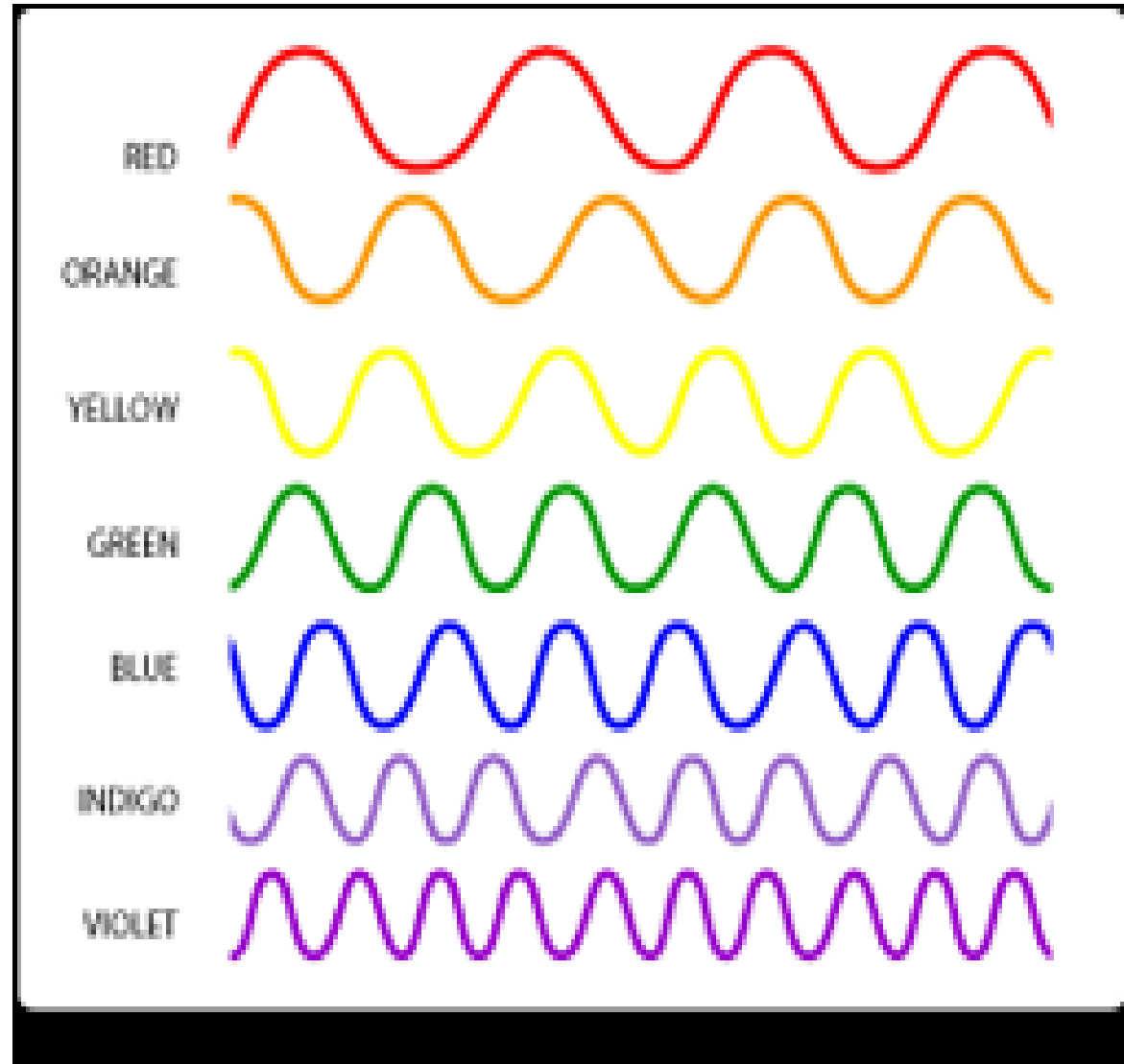
How is it that I am able to *see* that?

the **visible spectrum** is often times remembered as **ROY G. BIV**: red, orange, yellow, green, blue, indigo, and violet.



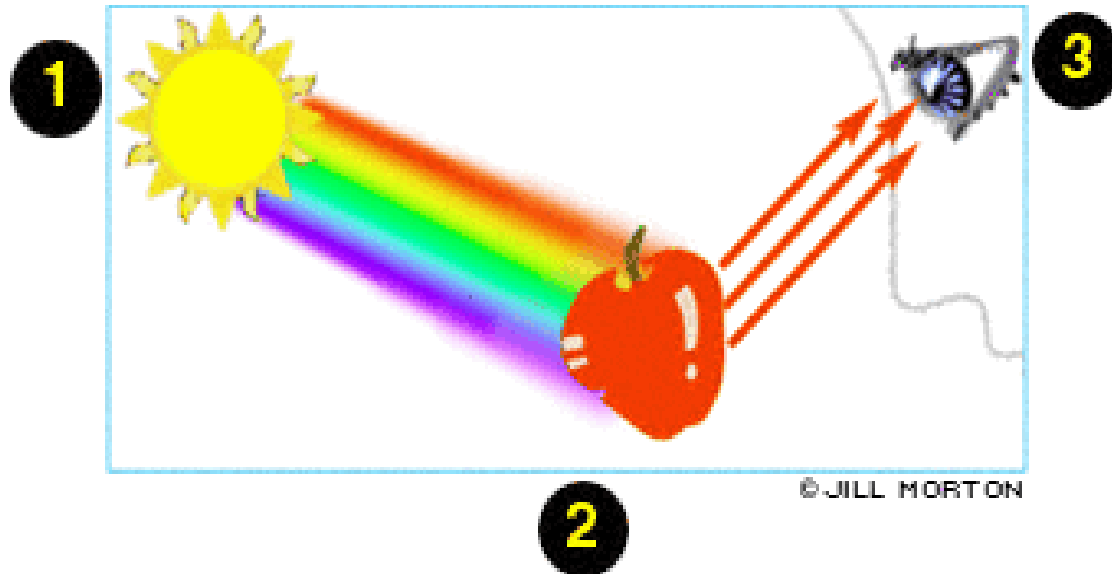
# Light travels in the form of a wave.

- **White light**, or the light from the sun, is made of **colors**, and colors are different types of light recognized by their own wavelengths



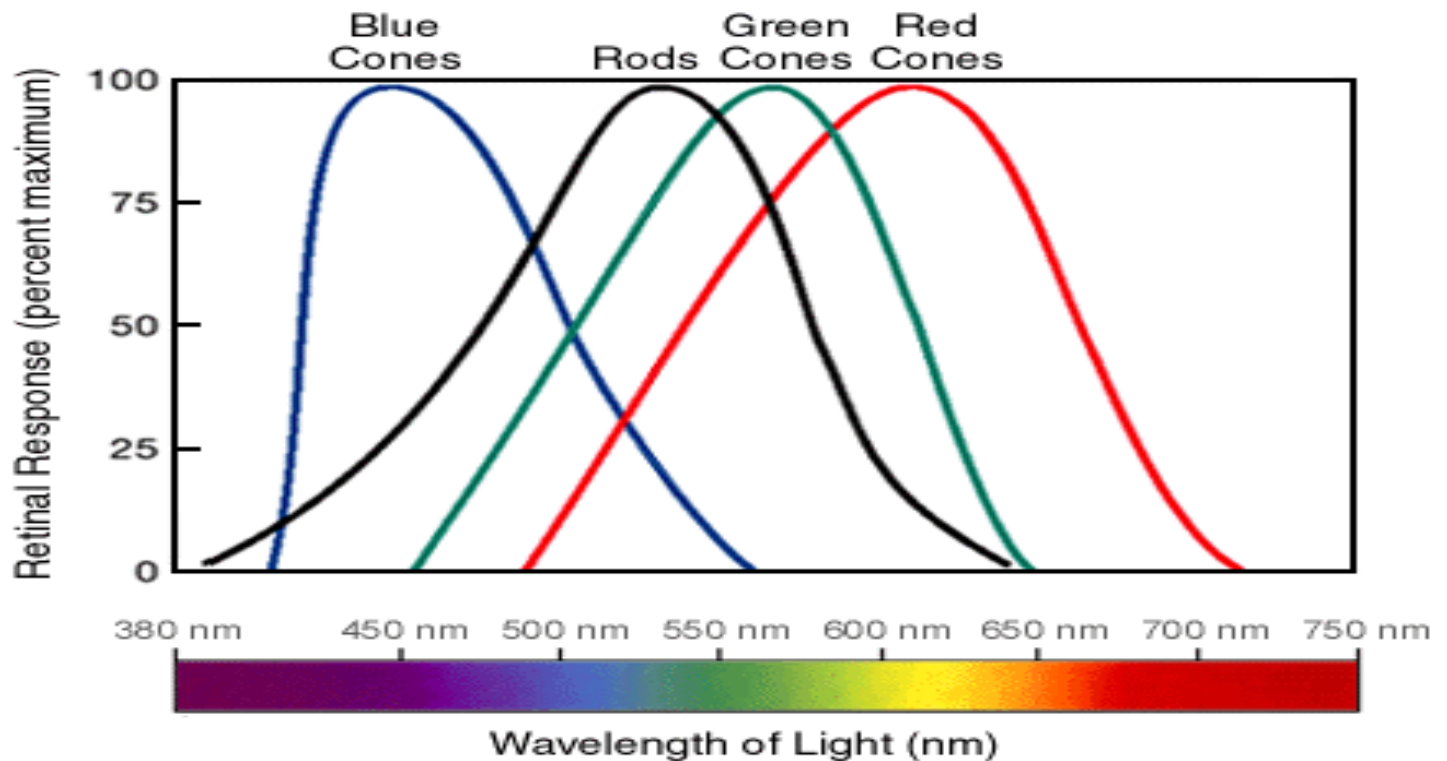
Light waves can be **reflected**, **absorbed**, or **transmitted**, depending on the object that the wave hits

light is necessary if we are to have any perception of color at all. An object is "colored," because of the light it reflects—all other colors are absorbed into that specific object



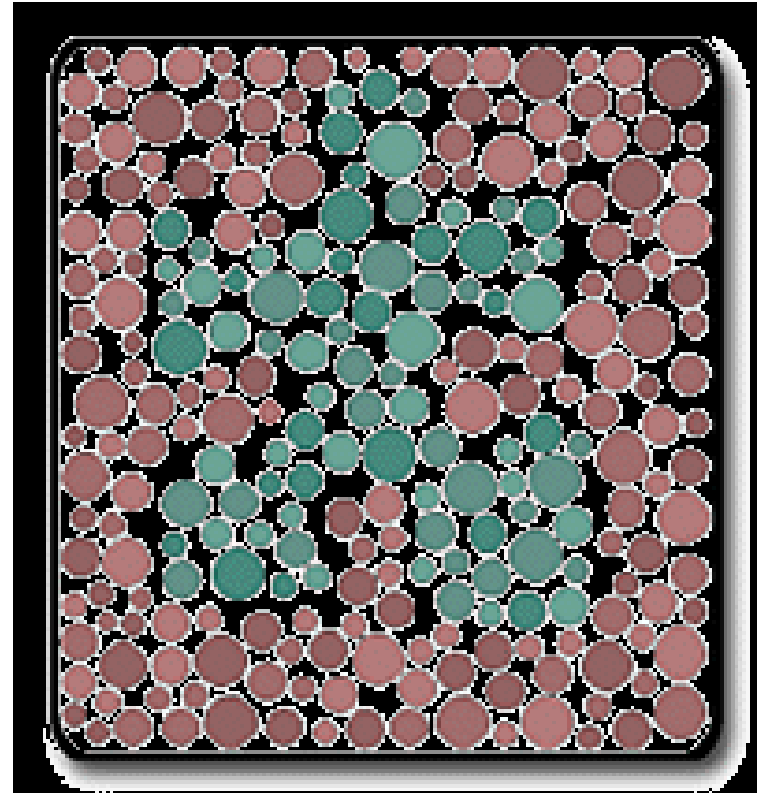
We are capable of seeing color because our eyes have light and color-sensitive receptors.

- These receptors are called **rods** (receptive to amounts of light) and **cones** (sensitive to colors)



# Color Blindness and

- 9% of the population has some type of colorblindness, with Men being more than twice as likely.



# Can Animals See Color?

## **ANIMAL**

SPIDERS (jumping spiders)

INSECTS (bees)

CRUSTACEANS (crayfish)

CEPHALOPODS (octopi and squids)

FISH

AMPHIBIANS (frogs)

REPTILES (snakes)

BIRDS

MAMMALS (cats)

MAMMALS (dogs)

MAMMALS (rabbit)

MAMMALS (squirrel)

MAMMALS (primates-apes and chimps)

MAMMALS (African monkeys)

MAMMALS (South American monkeys)

## **THE COLORS THEY SEE**

ULTRAVIOLET AND GREEN

ULTRAVIOLET, BLUE, YELLOW

BLUE AND RED

BLUE ONLY

MOST SEE JUST TWO COLORS

MOST SEE SOME COLOR

SOME COLOR AND INFRARED

FIVE TO SEVEN COLORS

TWO COLORS BUT WEAKLY

TWO COLORS BUT WEAKLY

BLUE AND GREEN

BLUES AND YELLOWS

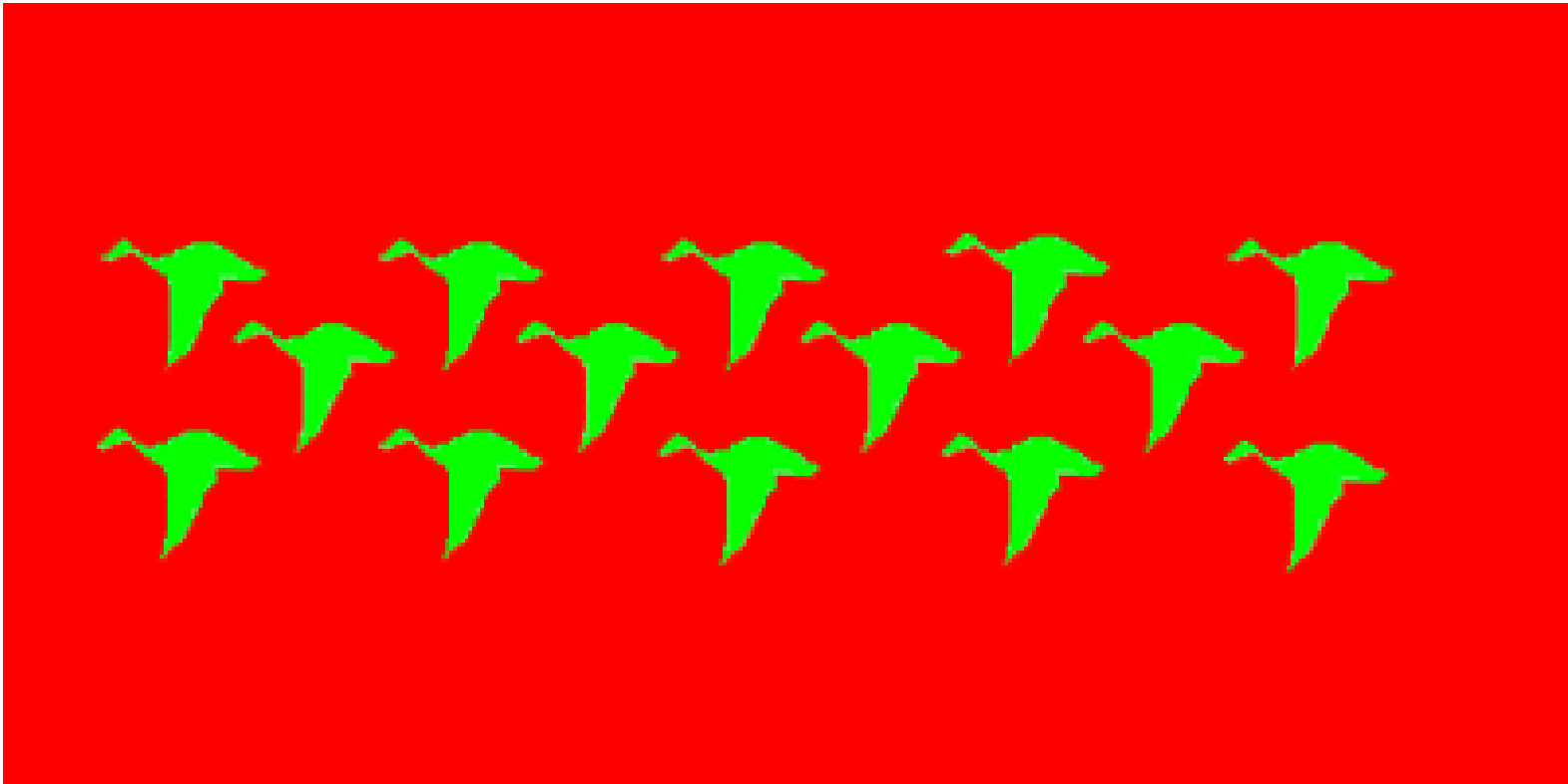
SAME AS HUMANS

SAME AS HUMANS

CAN'T SEE RED WELL

# What causes an afterimage?

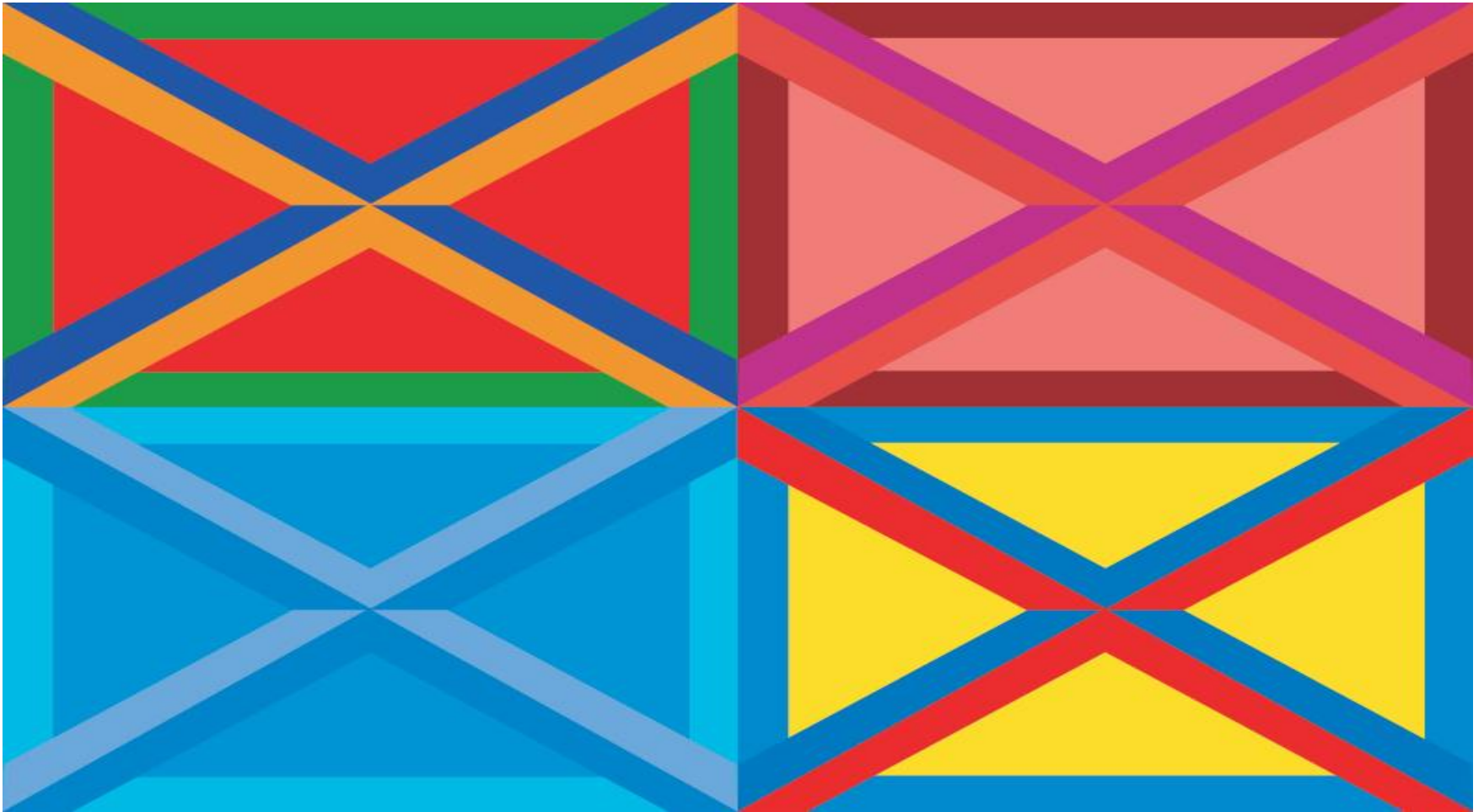
- Stare at this image for 30 seconds





# Color Schemes

Complimentary, Analogous,  
Monochromatic and Triadic



# Pop Art and Color

- Andy Warhol

In the 1960's Andrew Warhol graduated in pictorial design from a technical college. He was fascinated with fame and the media.

[This website](#) explores Warhol's motivations as a Pop Artist.

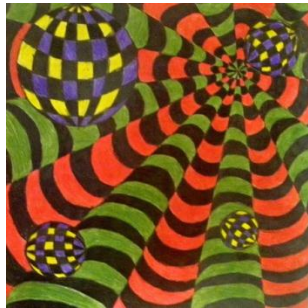


# Equiluminance

- When two colors placed next to each other are equally bright, their boundaries are hard for the eye to distinguish, making the image vibrate or twinkle. This is called [“equiluminance”](#)
- [“Why isn’t the sky blue?”](#) Radio lab did an interesting feature on color. This one about the color blue is a nice integration with language.

# Op Art Lesson Plans

- 5<sup>th</sup> Grade Bridget Riley
- 6-8<sup>th</sup> Grade Victor Vasserely



## Op Art with Black and White

4<sup>th</sup> grade hands

Younger grades Op art hand



