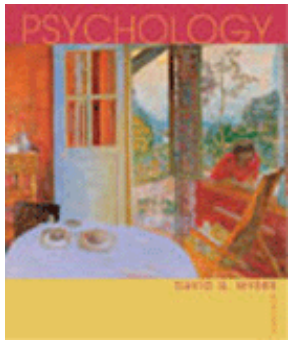
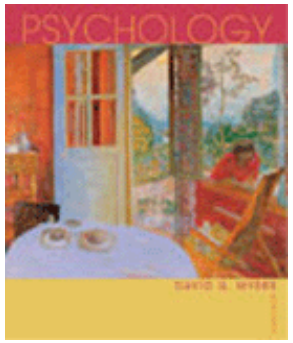
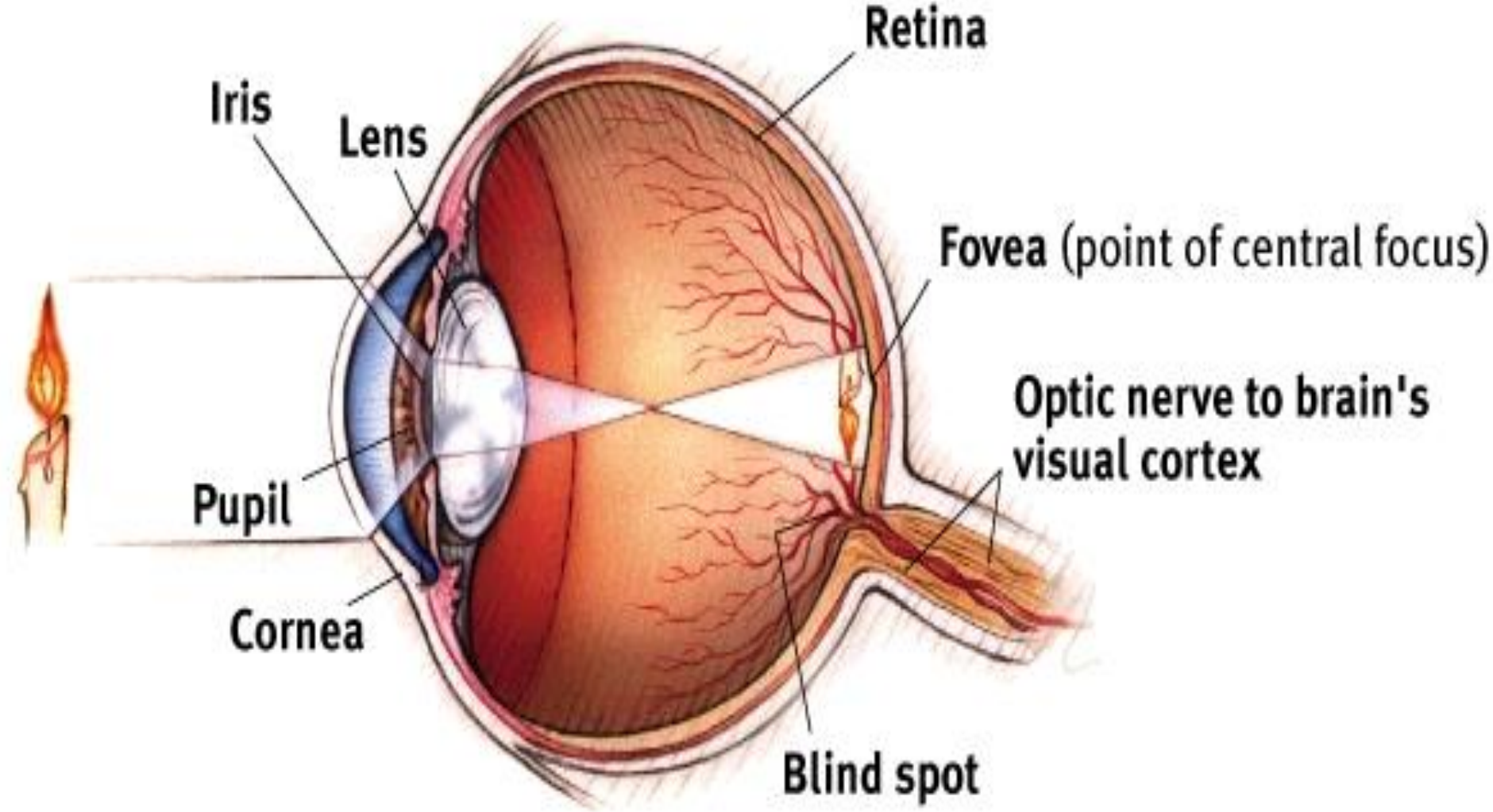
Vision



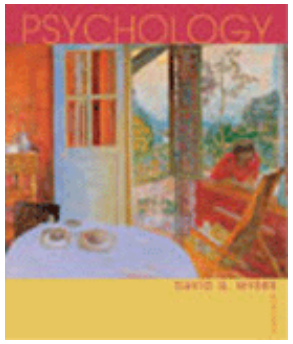
- Pupil- adjustable opening in the center of the eye
- Iris- a ring of muscle that forms the colored portion of the eye around the pupil and controls the size of the pupil opening
- Lens- transparent structure behind pupil that changes shape to focus images on the retina

Vision

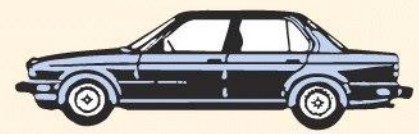

PSYCHOLOGY


Retina
Iris
Lens
Fovea (point of central focus)
Optic nerve to brain's visual cortex
Pupil
Cornea
Blind spot

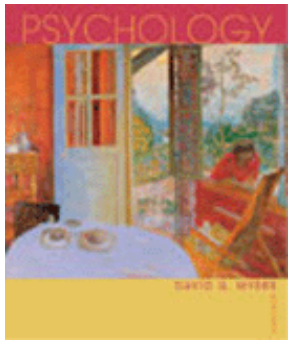
Retina's Reaction to Light

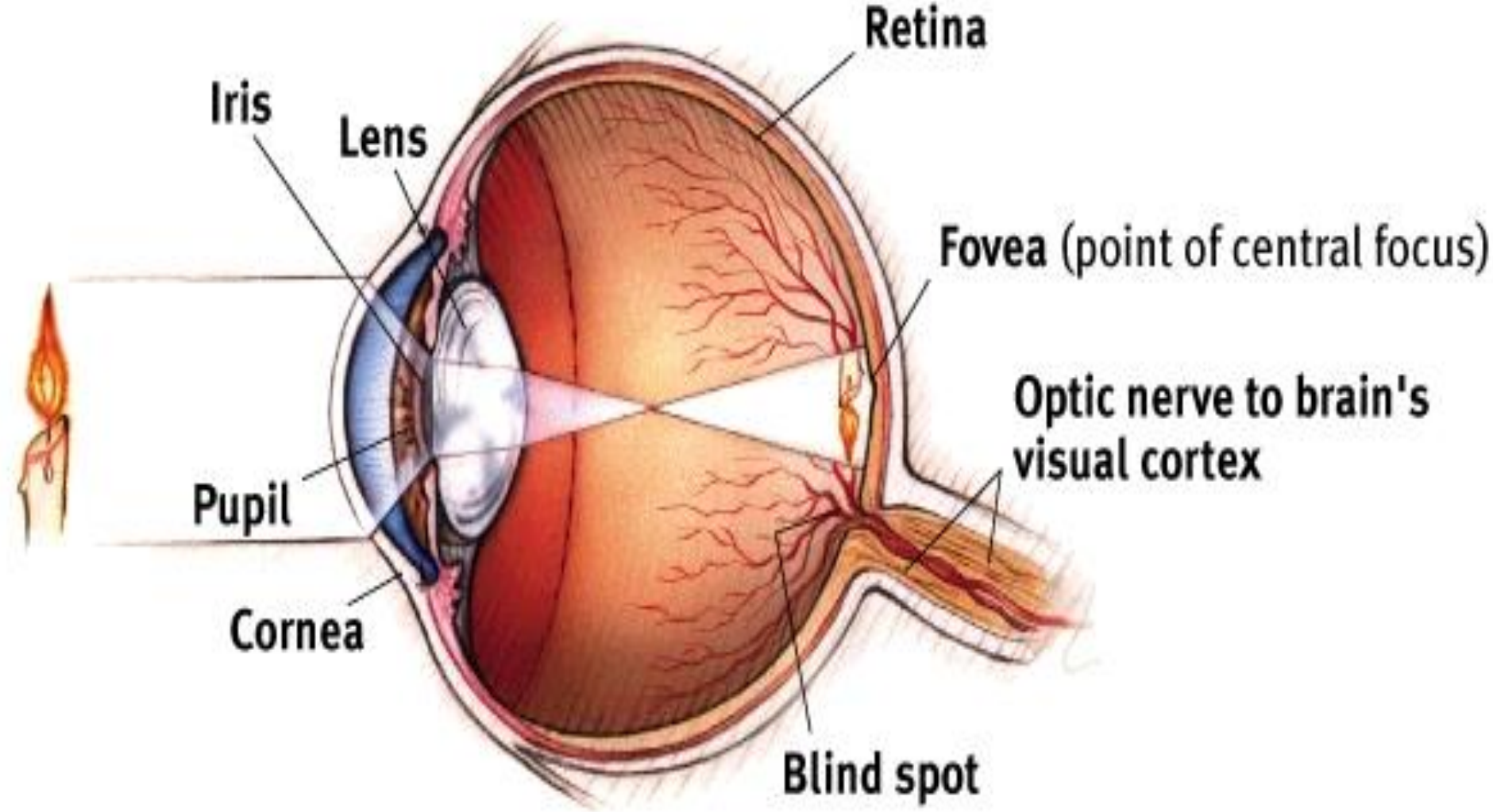


- Optic nerve- nerve that carries neural impulses from the eye to the brain
- Blind Spot- point at which the optic nerve leaves the eye, creating a "blind spot" because there are no receptor cells located there
- Fovea- central point in the retina, around which the eye's cones cluster



Vision


PSYCHOLOGY


Retina
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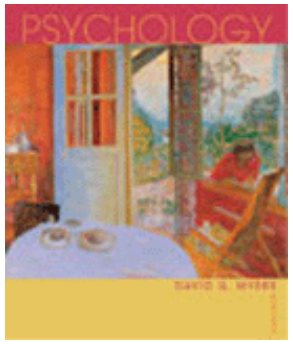
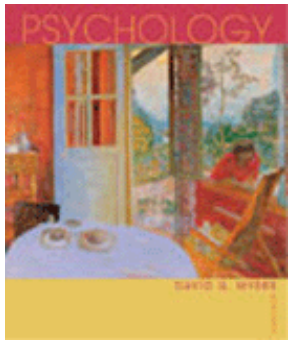
Blind spot

Retina's Reaction to Light- Receptors



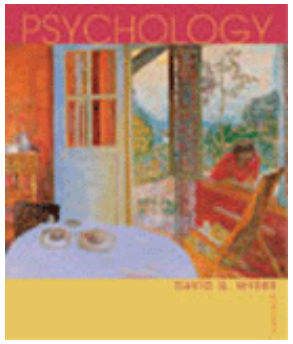
- Rods
  - peripheral retina
  - detect black, white and gray
  - twilight or low light
- Cones
  - near center of retina
  - fine detail and color vision
  - daylight or well-lit conditions

Vision



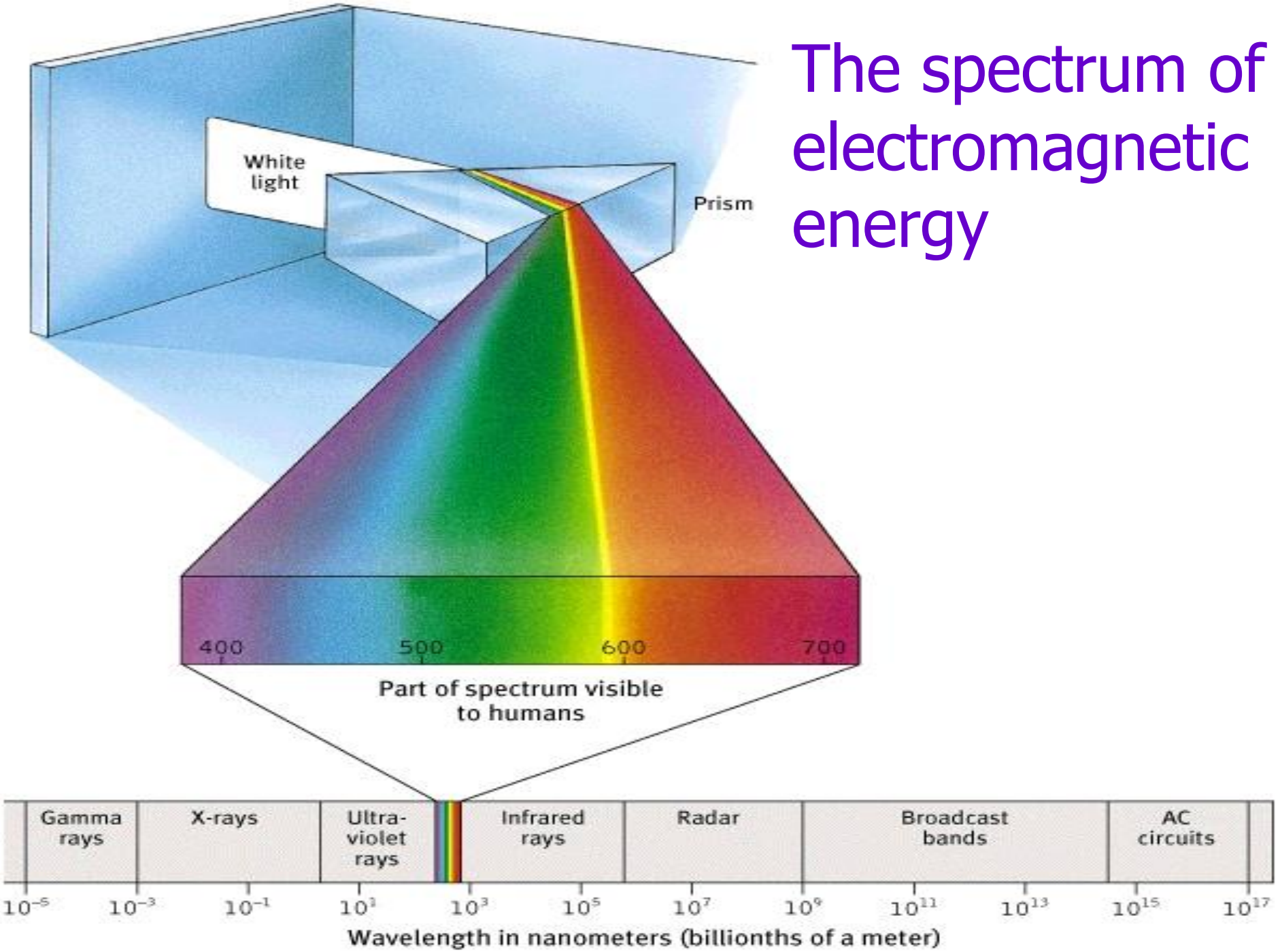
- Transduction
  - conversion of one form of energy to another
  - in sensation, transforming of stimulus energies into neural impulses
- Wavelength
  - the distance from the peak of one wave to the peak of the next

Vision

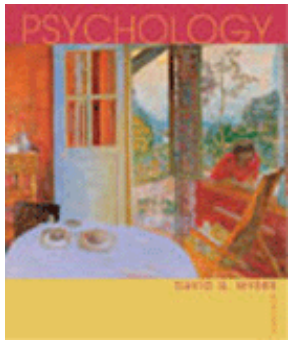


- Hue
  - dimension of color determined by wavelength of light
- Intensity
  - amount of energy in a wave determined by amplitude
    - brightness
    - loudness

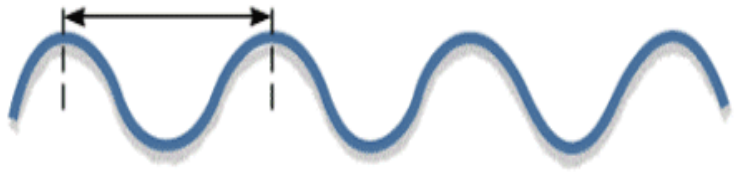
The spectrum of electromagnetic energy



Vision- Physical Properties of Waves



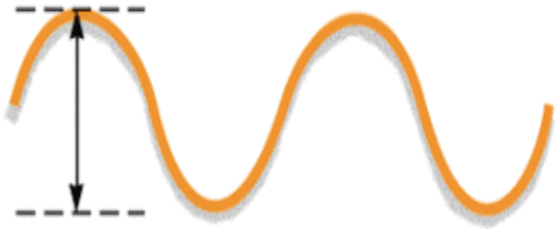
Short wavelength=high frequency
(bluish colors, high-pitched sounds)



Long wavelength=low frequency
(reddish colors, low-pitched sounds)

(a)

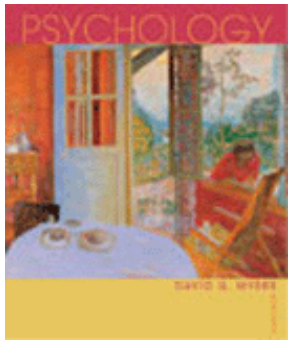
Great amplitude
(bright colors, loud sounds)



Small amplitude
(dull colors, soft sounds)

(b)

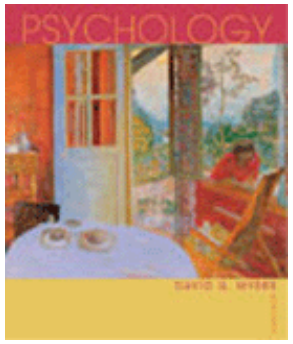
Vision



- Accommodation- the process by which the eye's lens changes shape to help focus near or far objects on the retina

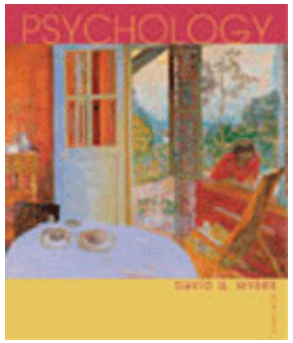
- Retina- the light-sensitive inner surface of the eye, containing receptor rods and cones plus layers of neurons that begin the processing of visual information

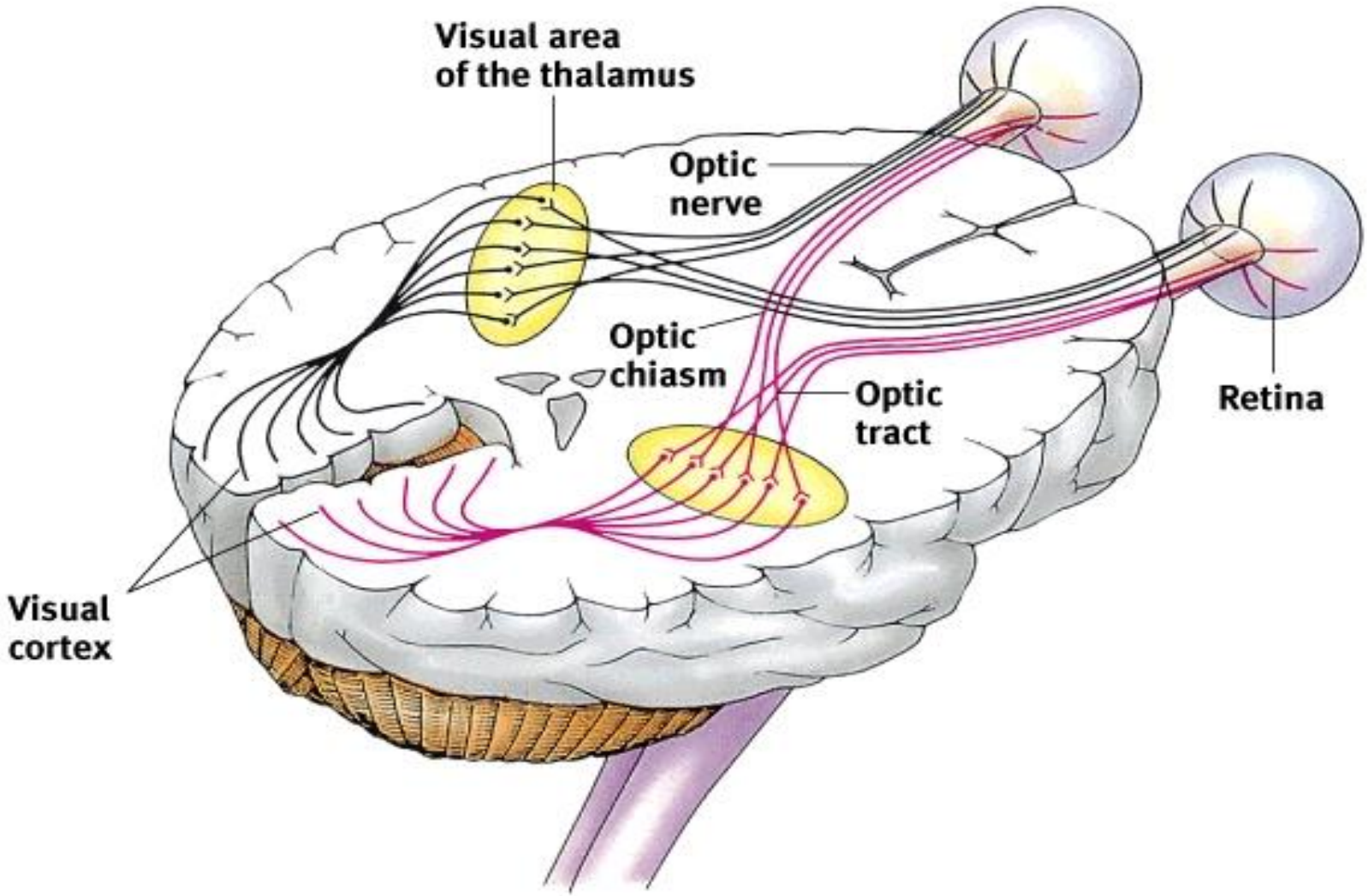
Vision



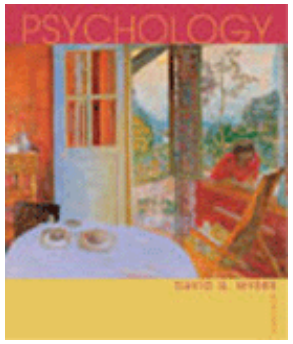
- Acuity- the sharpness of vision
- Nearsightedness- condition in which nearby objects are seen more clearly than distant objects.
- Farsightedness- condition in which faraway objects are seen more clearly than near objects.

Pathways from the Eyes to the Visual Cortex

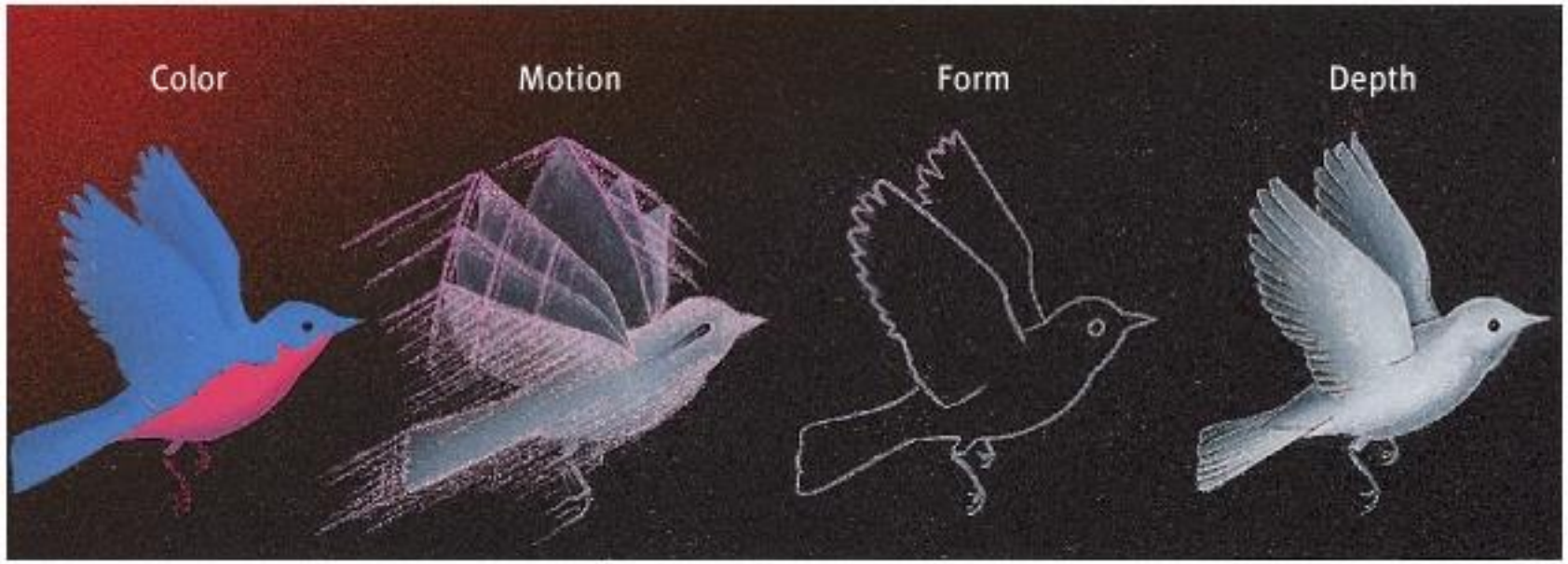




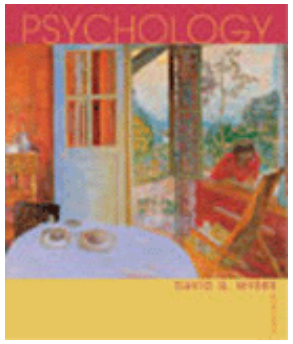
Visual Information Processing



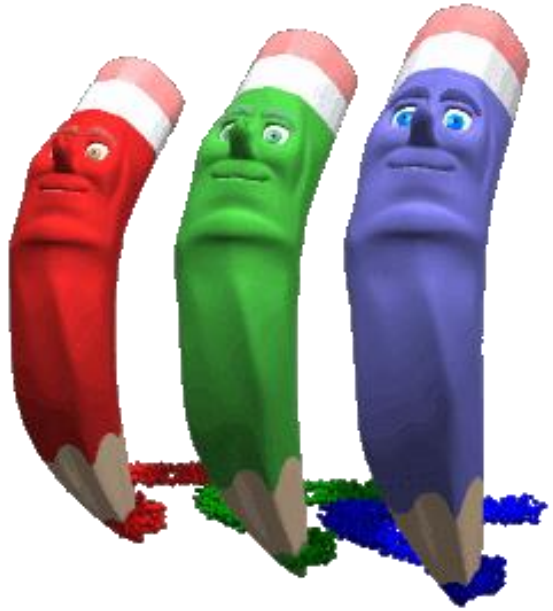
- Parallel Processing
  - simultaneous processing of several aspects of a problem simultaneously



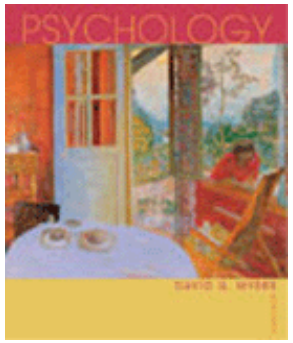
Visual Information Processing

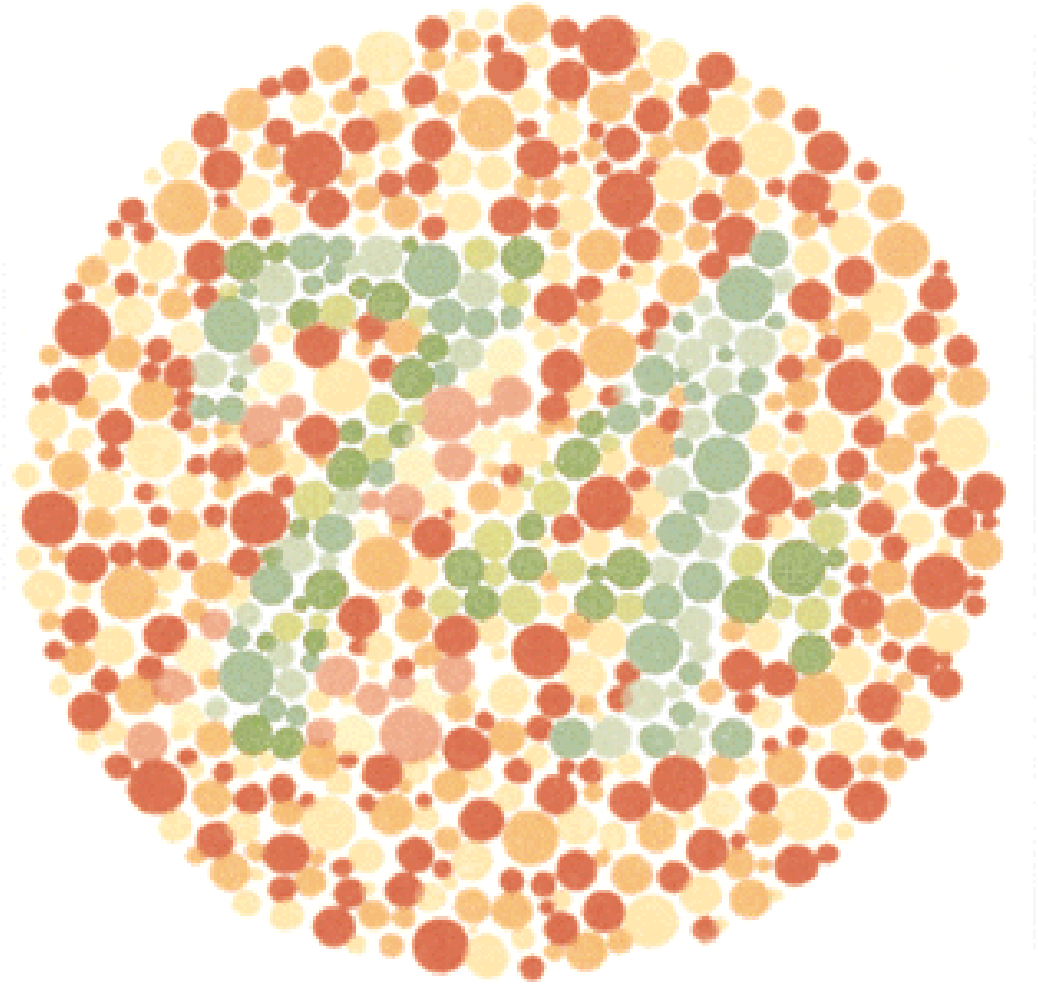


- Trichromatic (three color) Theory
  - Young and Helmholtz
  - three different retinal color receptors
    - red
    - green
    - Blue
  - These three types of cones can make millions of combinations of colors.



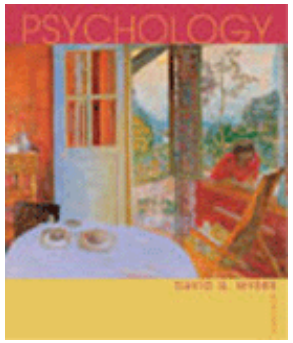
Color-Deficient Vision





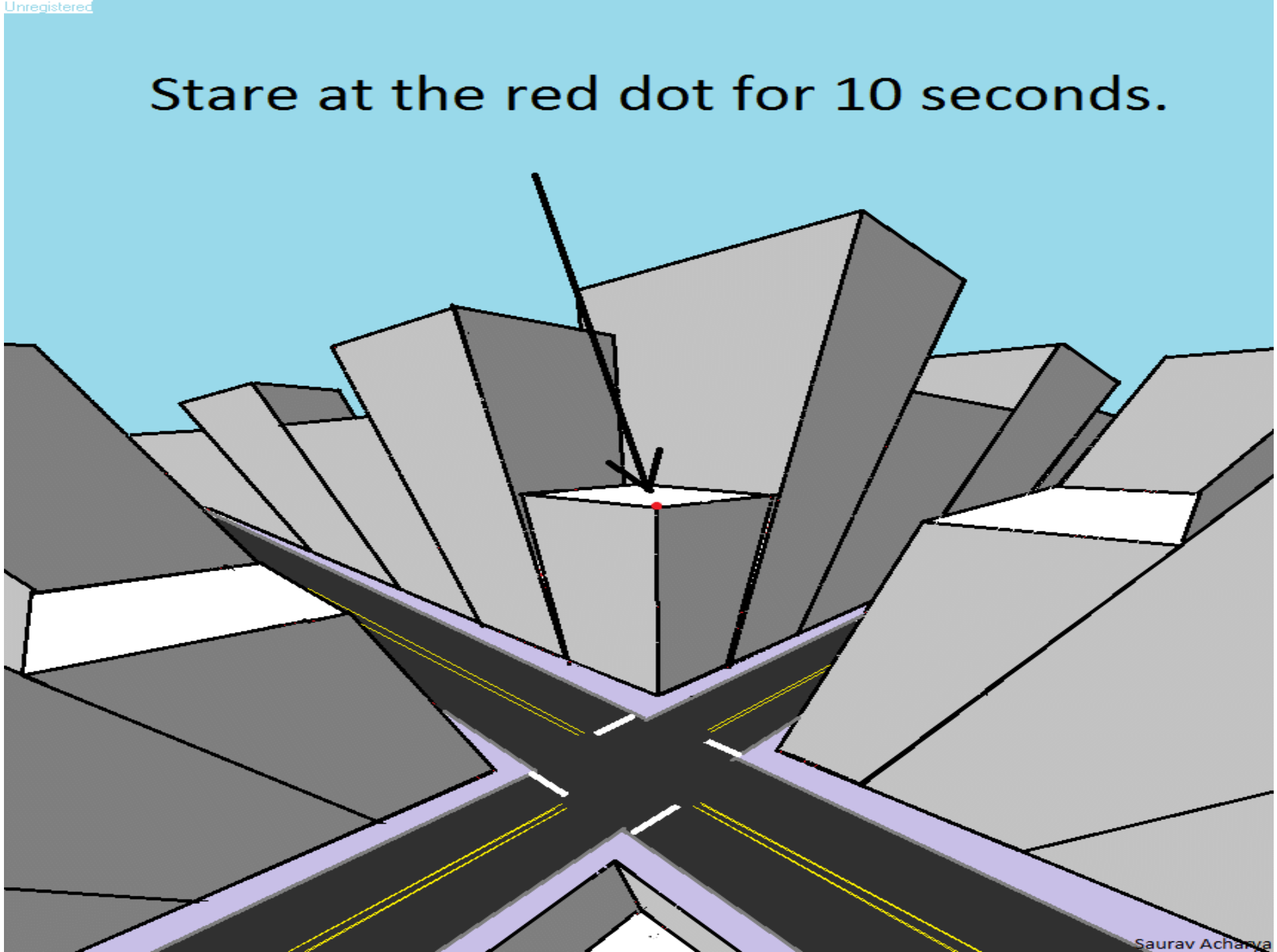
- People who suffer red-green blindness have trouble perceiving the number within the design

Visual Information Processing

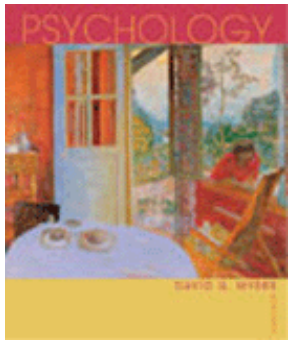


Opponent-Process Theory- opposing retinal processes enable color vision

"ON"	"OFF"
red	green
blue	yellow
black	white



Visual Information Processing



- Color Constancy
  - Perceiving familiar objects as having consistent color, even if changing illumination alters the wavelengths reflected by the object

Feature Detectors

- is a process by which specialized nerve cells in the brain respond to specific features of a visual stimulus, such as lines, edges, angle, or movement