HUMAN PERCEPTION OF LIGHT

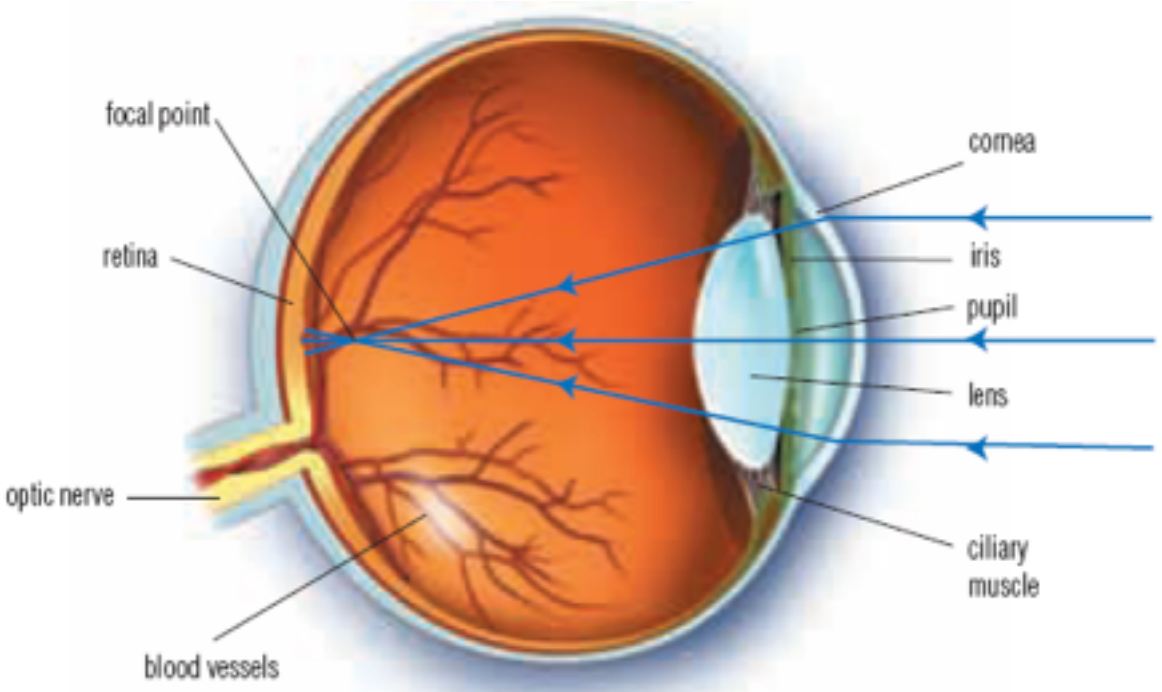
Lesson 11

November 26th, 2010

Human Vision

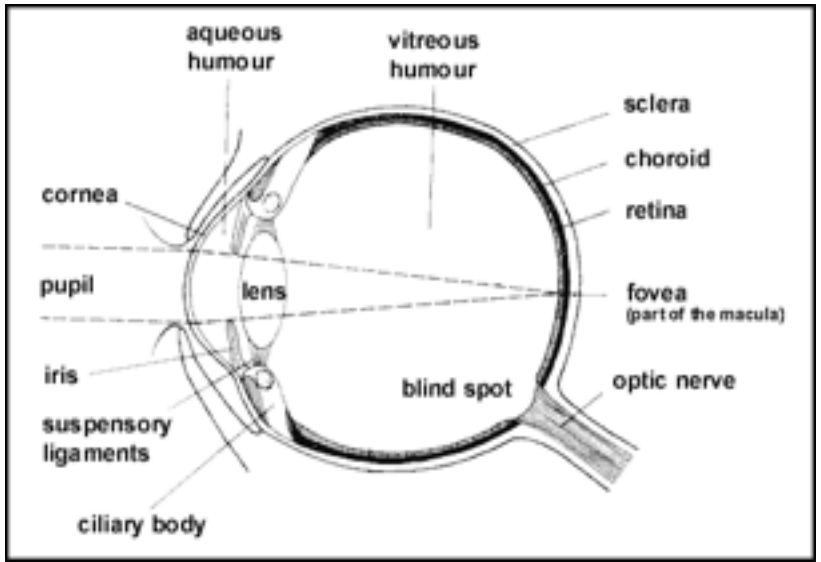
- The outer surface of your eye where light enters is made of a transparent layer of tissue called the **cornea**.

- **Light can pass right through the cornea.**



Human Vision

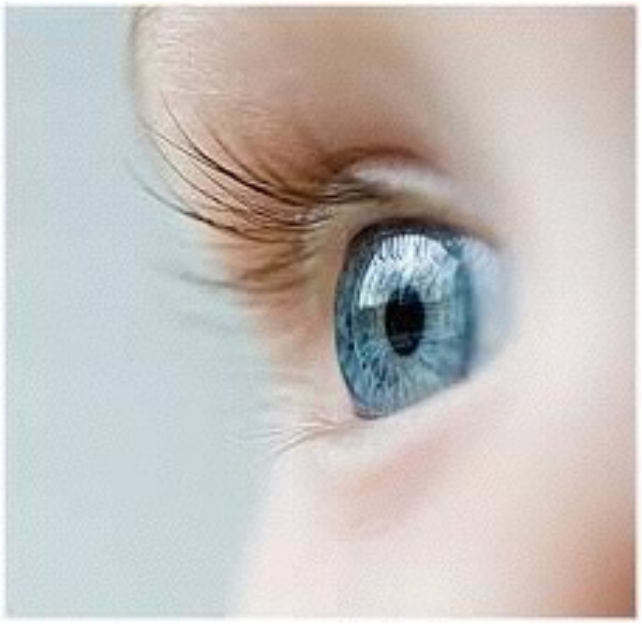
- The light rays that arrive at your eye are refracted by the cornea.
- This helps direct the light correctly into your eye.



Human Vision

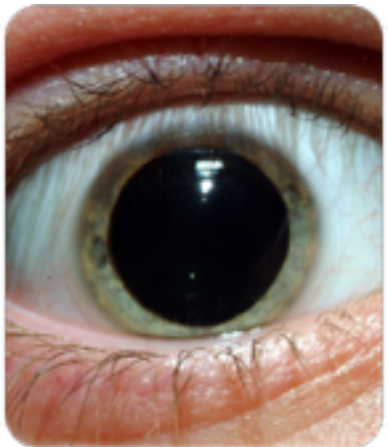
- After passing through the cornea, the light rays reach the pupil.

- The pupil is created by a circular band of muscle called the **iris.**



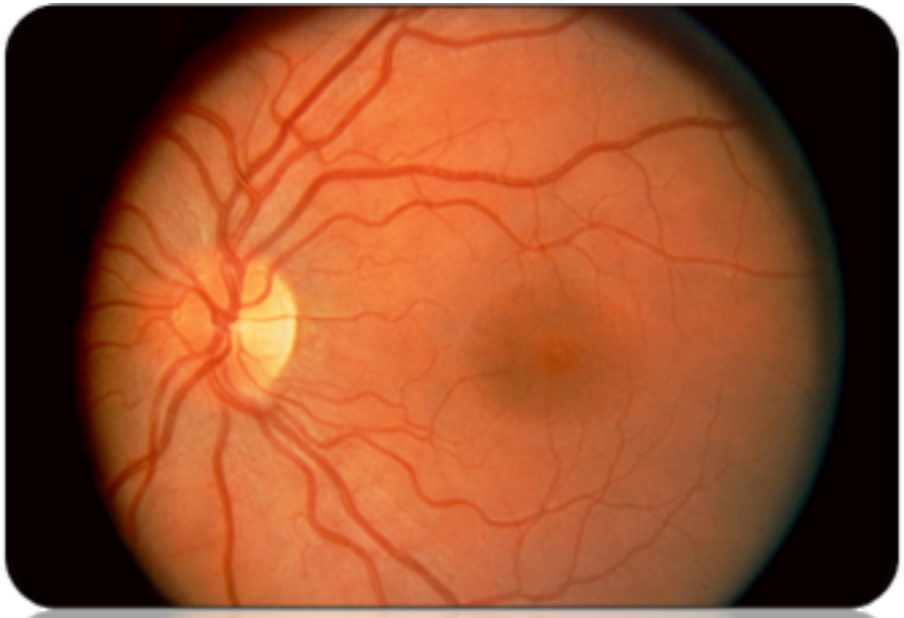
Human Vision

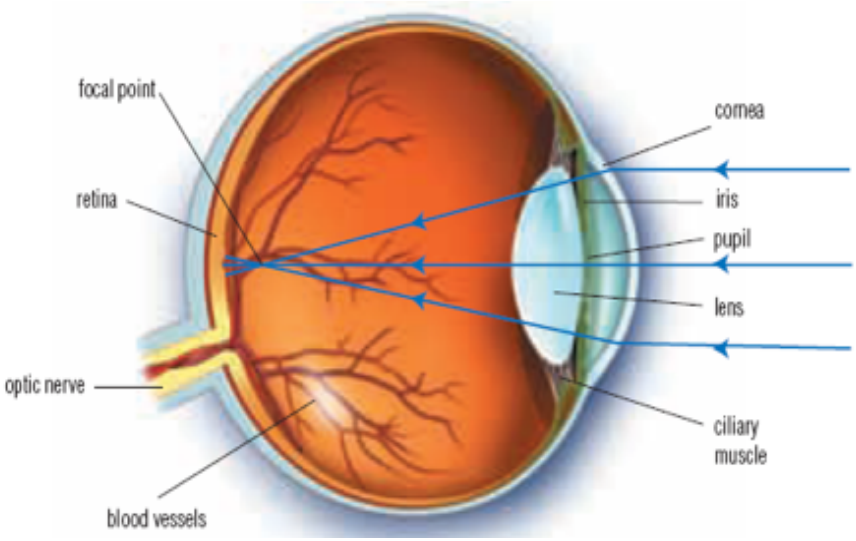
- **The iris controls the size of the pupil (amount of light).**
- In dim light, the iris opens
- In bright light, the iris closes



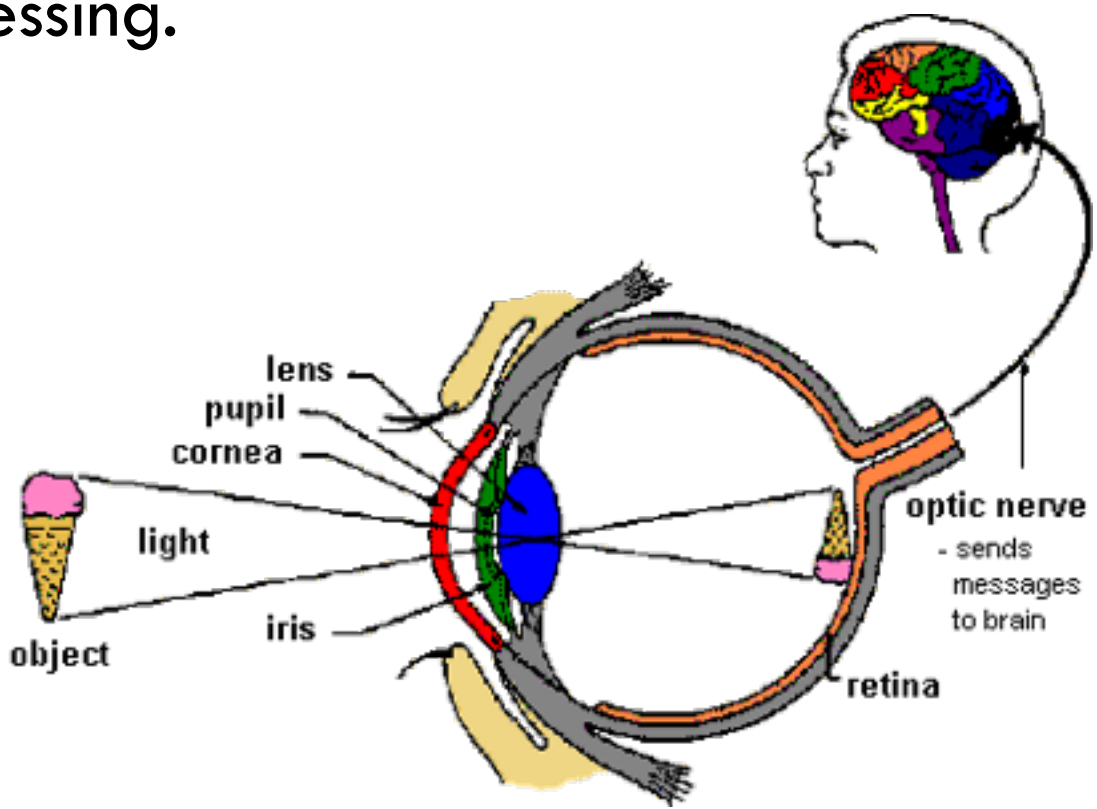
Focussing the Light

- The **retina** is the inner lining at the back of the eye that acts as a projection screen for the light rays entering your eye.



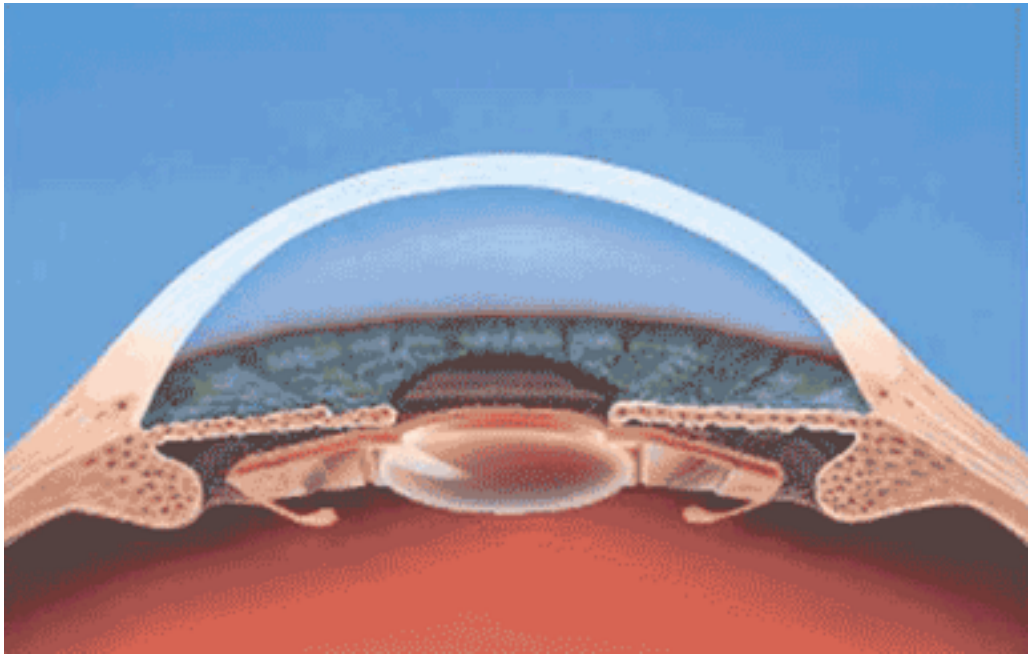


- The image that reaches the retina is actually upside down
- The brain automatically flips it around when processing.



Changing the Shape of the Lens

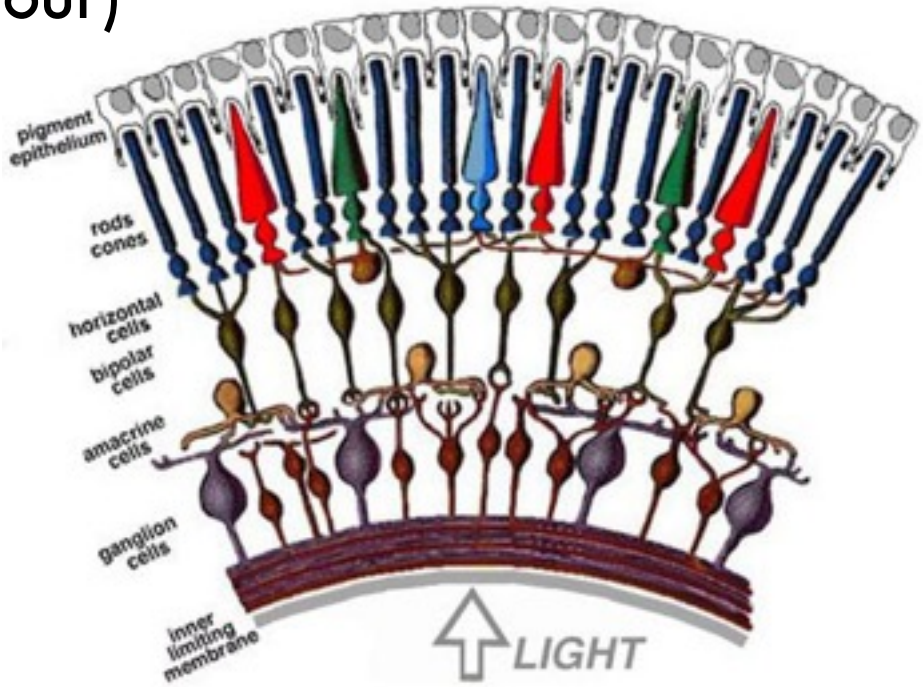
- Your lens attached to a tiny circle of muscles that can change its shape.



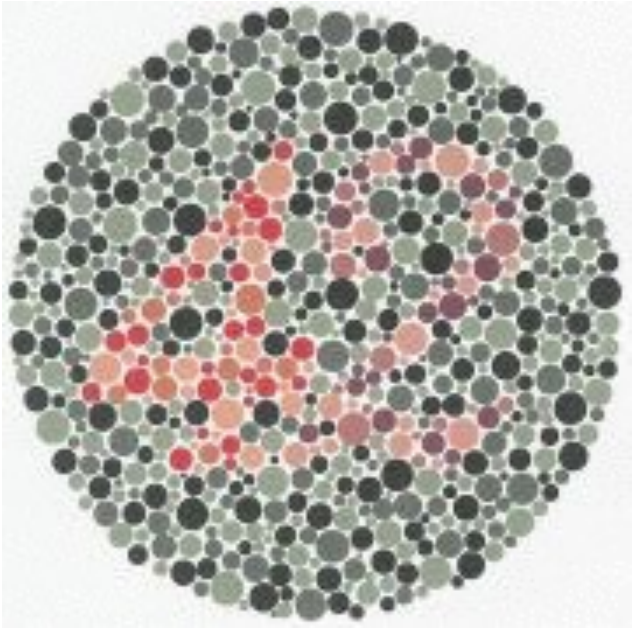
Detecting Light

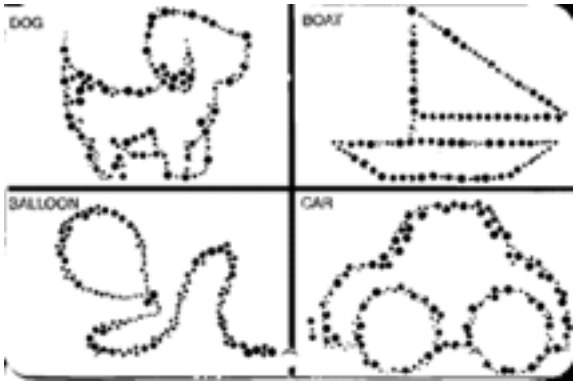
- In order to see, light rays must be absorbed by **Cells in the retina that are sensitive to light.**

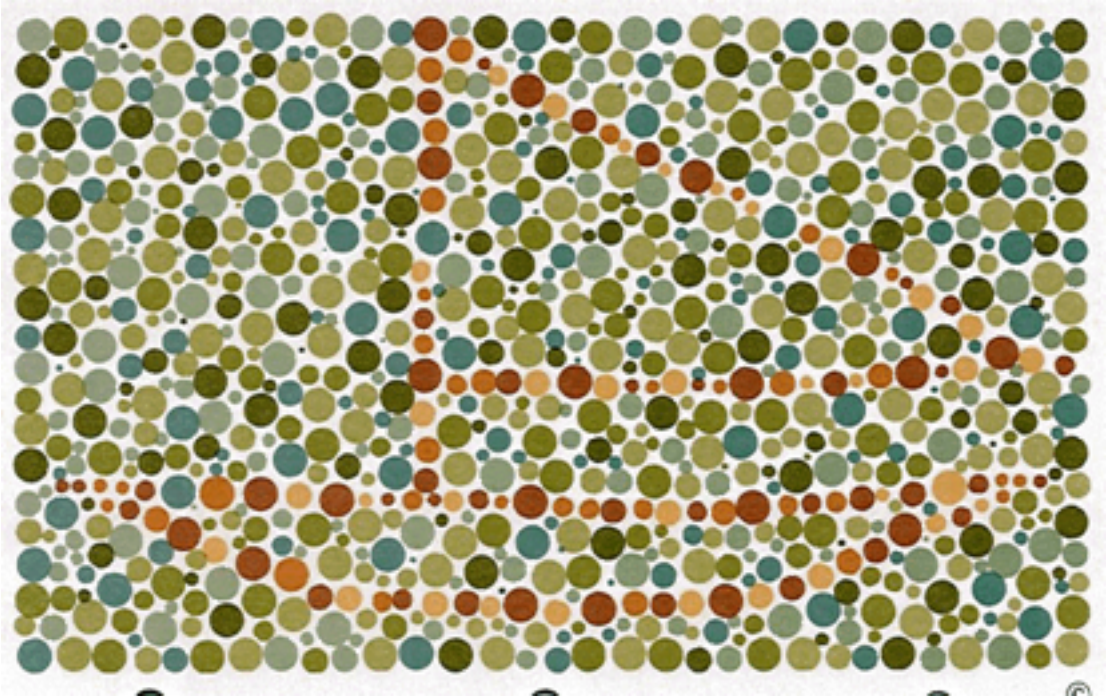
- light sensitive include rod cells (brightness) and cone cells (colour)



- Can you see a number?



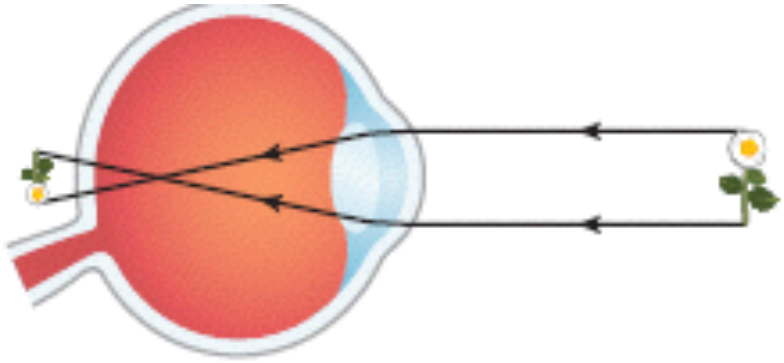


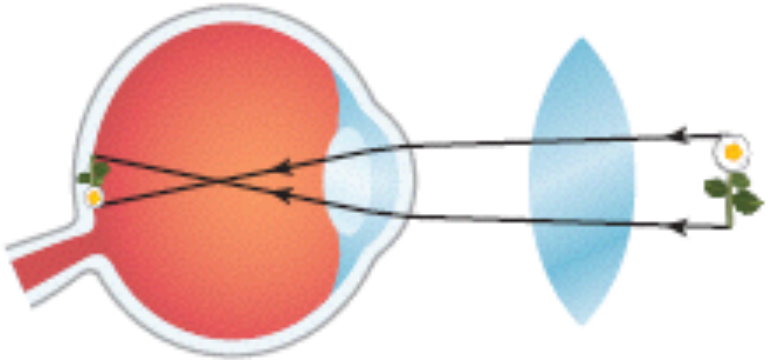


Colour deficient individuals should see nothing.
Colour normal individuals should see a "faint" brown boat.

Far-Sightedness

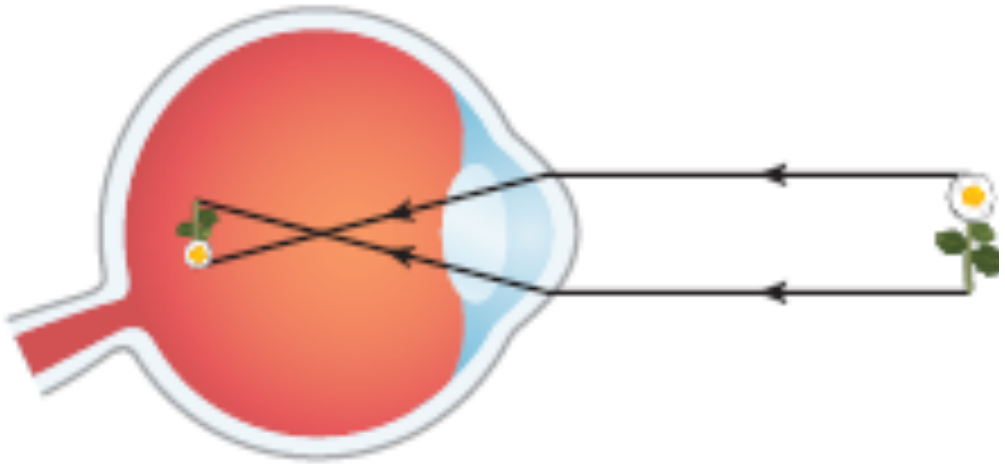
- The image falls into focus behind the eye, resulting in a blurry image on the retina.
- A converging lens in front of the eye helps the light rays form the image correctly on the retina





Near-Sightedness

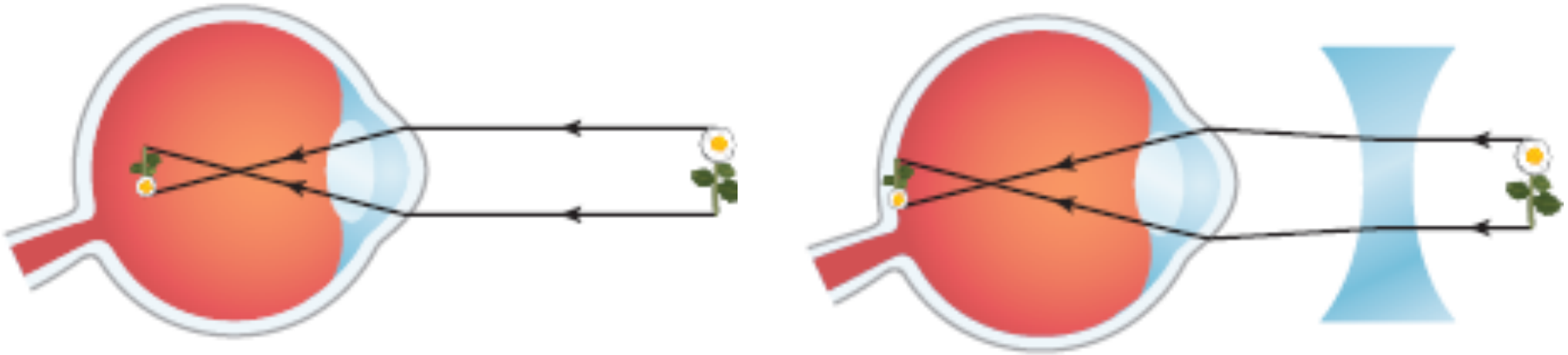
- People who are **near-sighted** can see nearby objects clearly but cannot see distant objects clearly.



(a) near-sightedness

Near-Sightedness

- Distant objects are refracted so much that the image forms in front of the retina instead of on it.
- A **diverging lens placed in front of the eye helps the lights rays form the image correctly on the retina.**



(a) near-sightedness