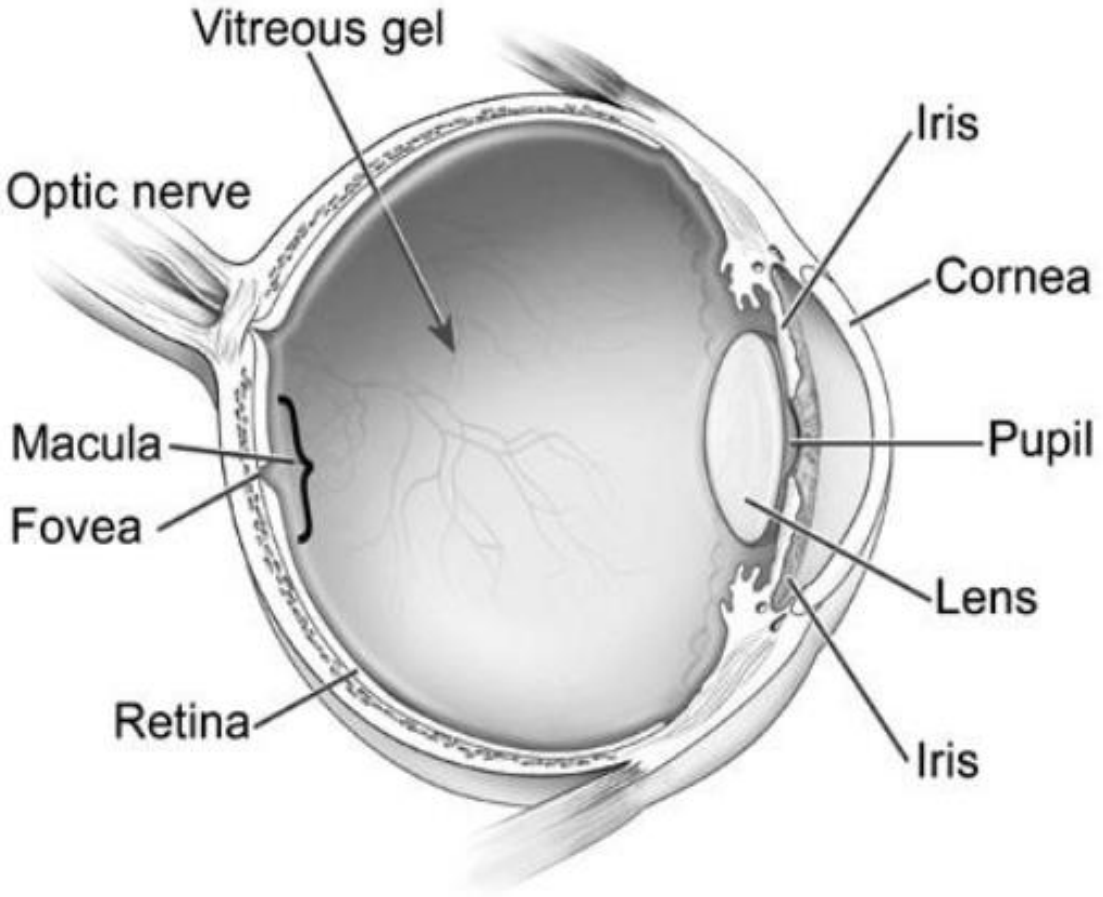

Visual
Acuity
ADAM

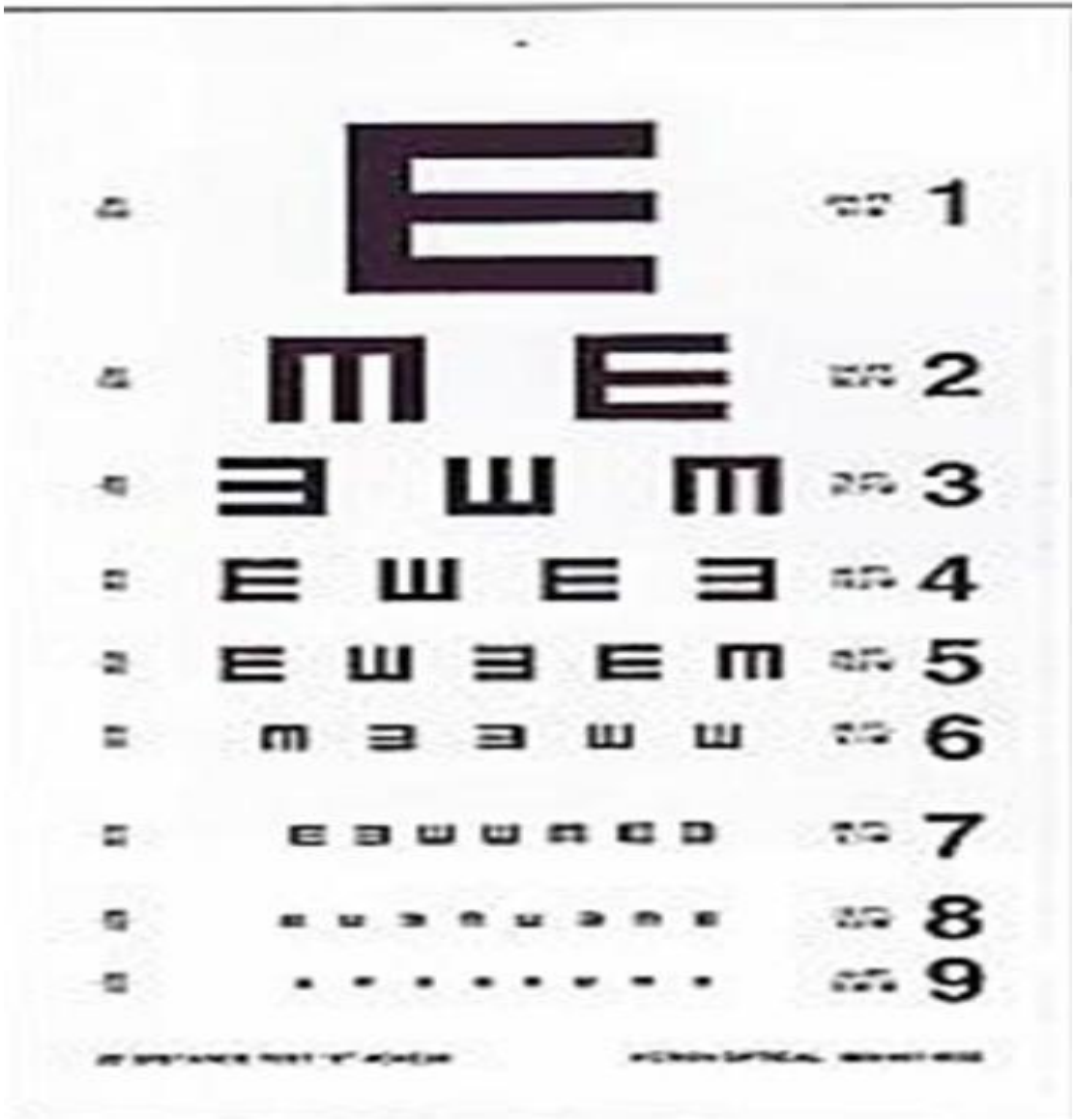
# ANATOMY OF THE EYE

- Cornea
- Aqueous
- Crystalline lens
- Vitreous
- Retina
  - Macula
  - Fovea
- Optic Nerve
- Brain

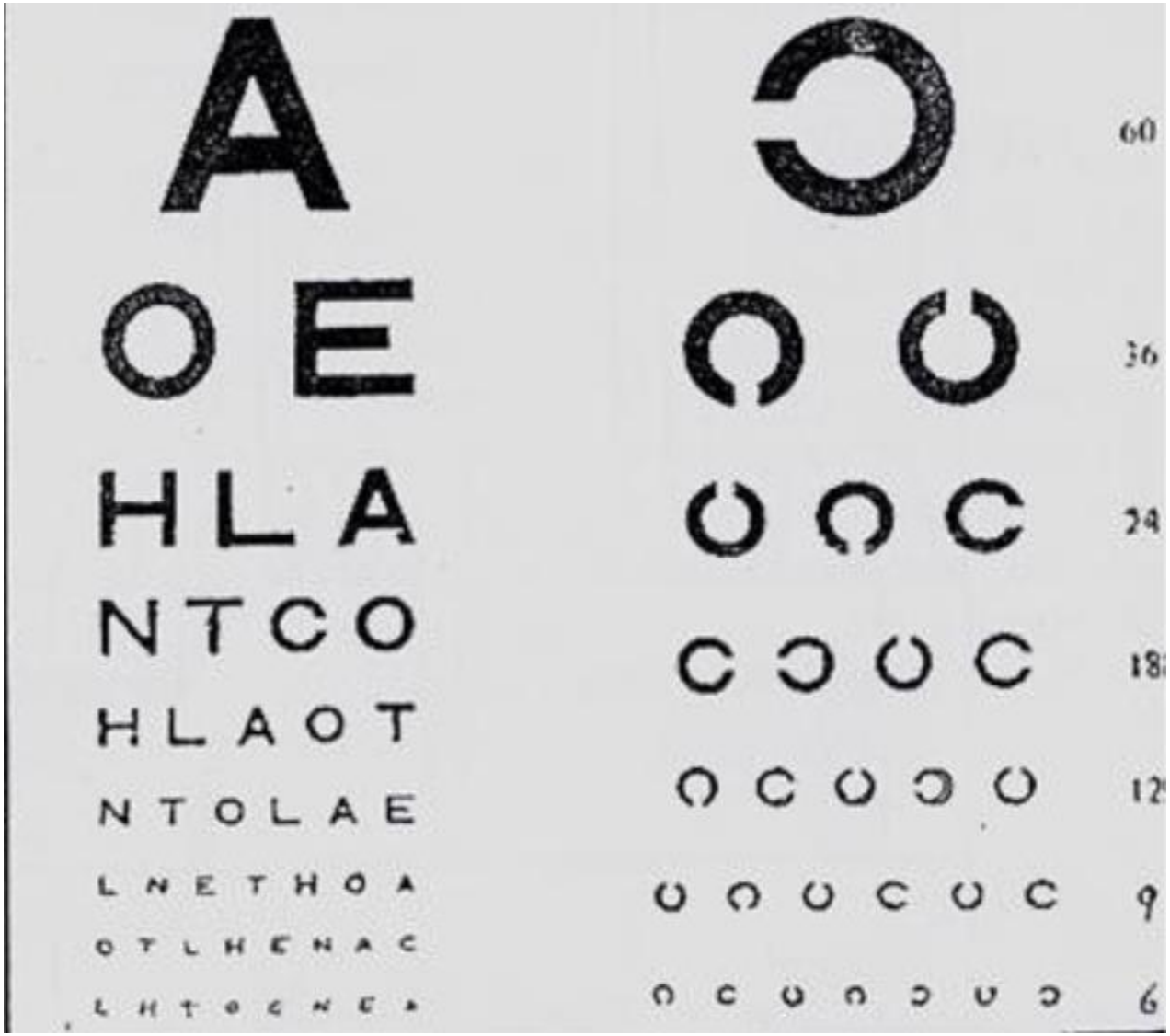


# DIFINITION OF VISUAL ACUITY

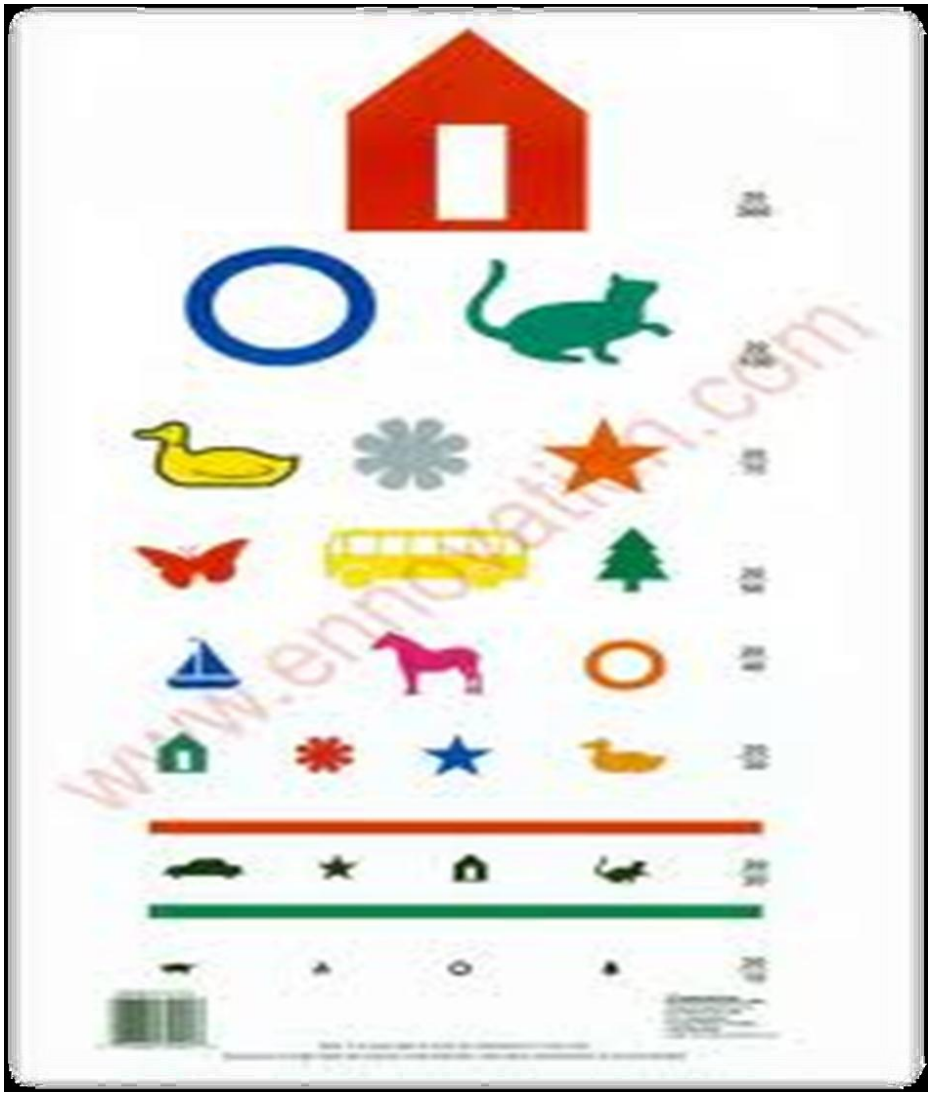
- is acuteness or clearness of vision, it measured according to the size of letters viewed on a Snellen chart .

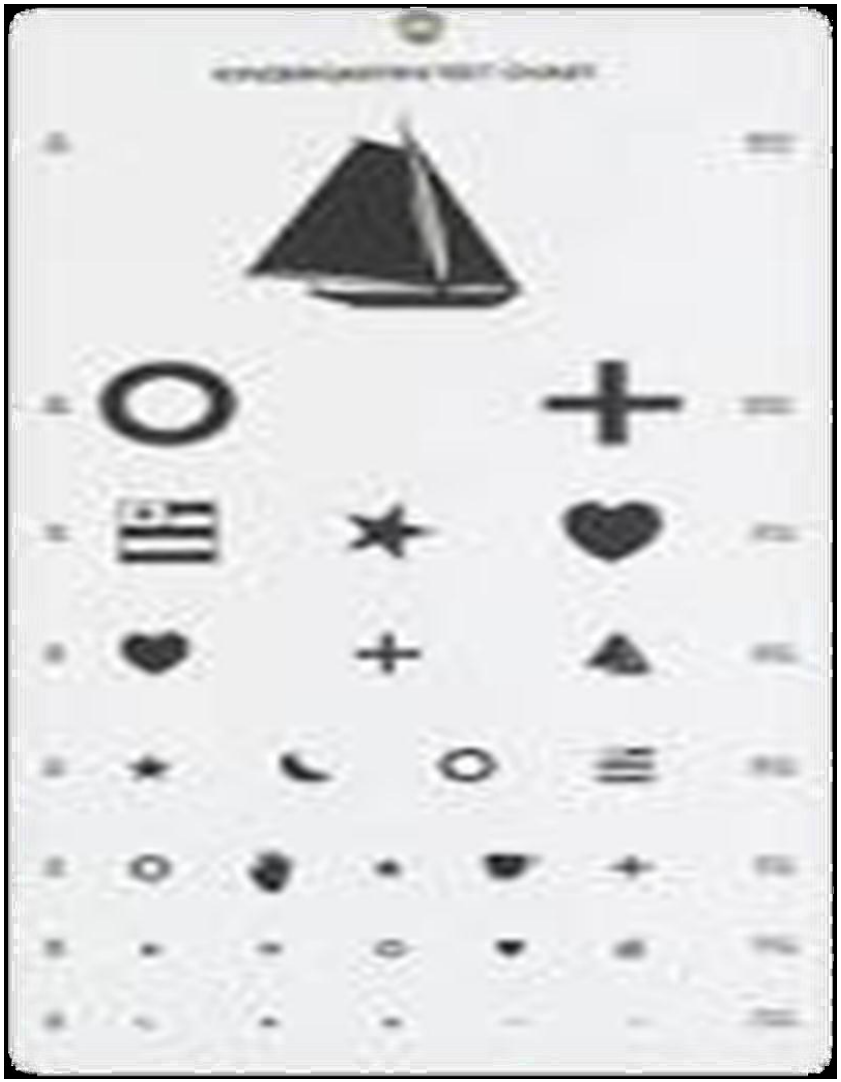



# Snellen chart




# Snellen chart





# Paediatric snellen chart

# VISUAL ACUITY TEST

- **The visual acuity test is used to determine the smallest letters a person can read on a standardized chart (Snellen chart)**

$$V = d / D$$

- **V = Visual acuity.**
- **d = distance of from the chart (Distance at which test is made (6 meters=20 feets).**
- **D = distance at which the eye should be capable to read it clearly.**

- Using the foot as a unit of measurement, (fractional) visual acuity is expressed relative to 20/20. Otherwise, using the meter, visual acuity is expressed relative to 6/6.
- So 6/6 vision is equivalent to 20/20.

# Objective:

To examine the visual acuity of eyes.

## Subjects and instruments:

1- Subjects.

2- Snellen chart.

# The Method:

1. The subject is placed at a distance of six meters from the test chart.
2. Each eye is tested separately.
3. If the subject wears glasses, test eyes with and without them.
4. Normal person should be able to read lines (6/6).
5. If visual acuity of person is less than 6/60, it is recorded as:

a- Counting finger (CF).

b- Hand movement (HM).

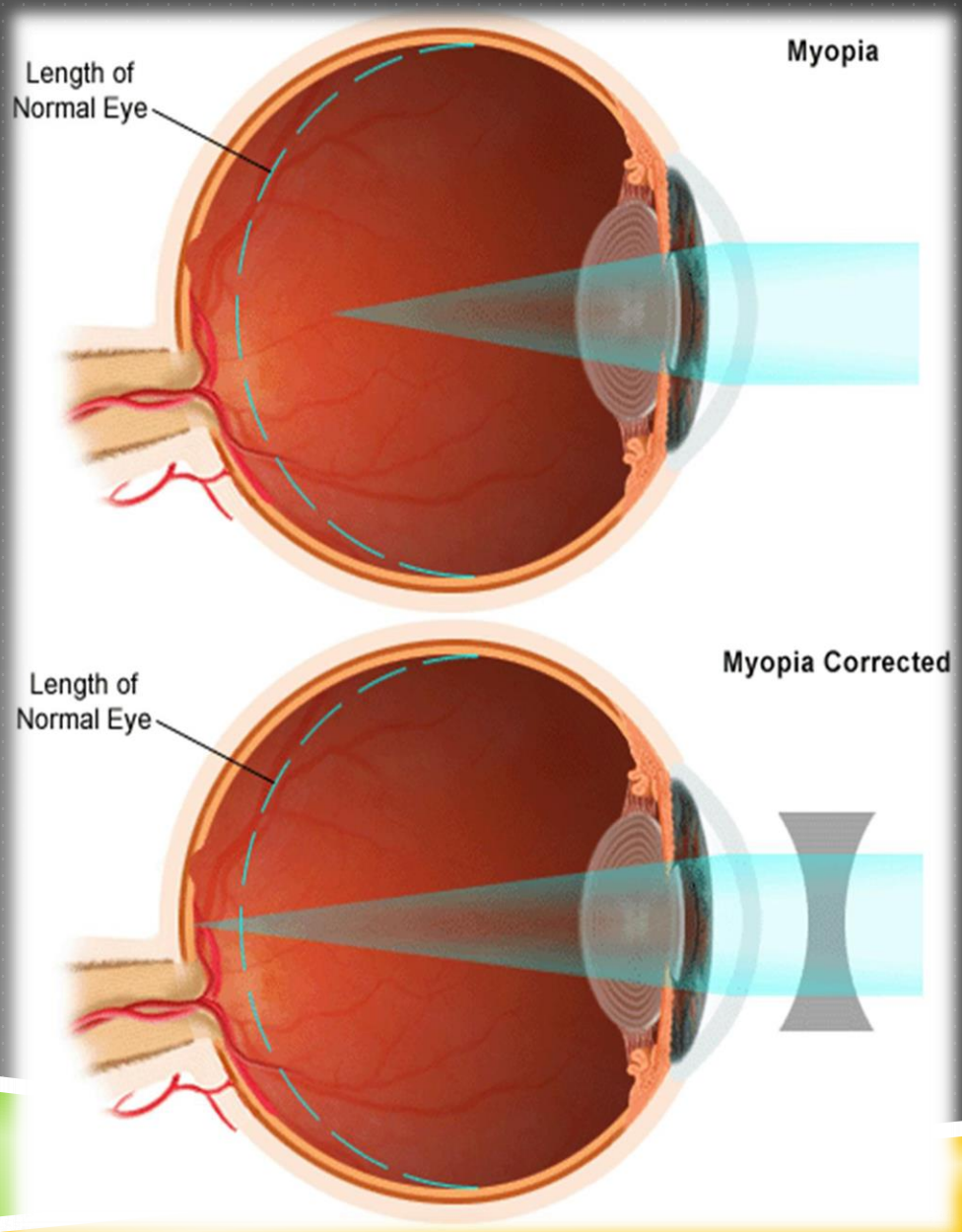
c- Perception of light (PL).

d- No perception of light (no PL).

# Abnormalalities of visual acuity

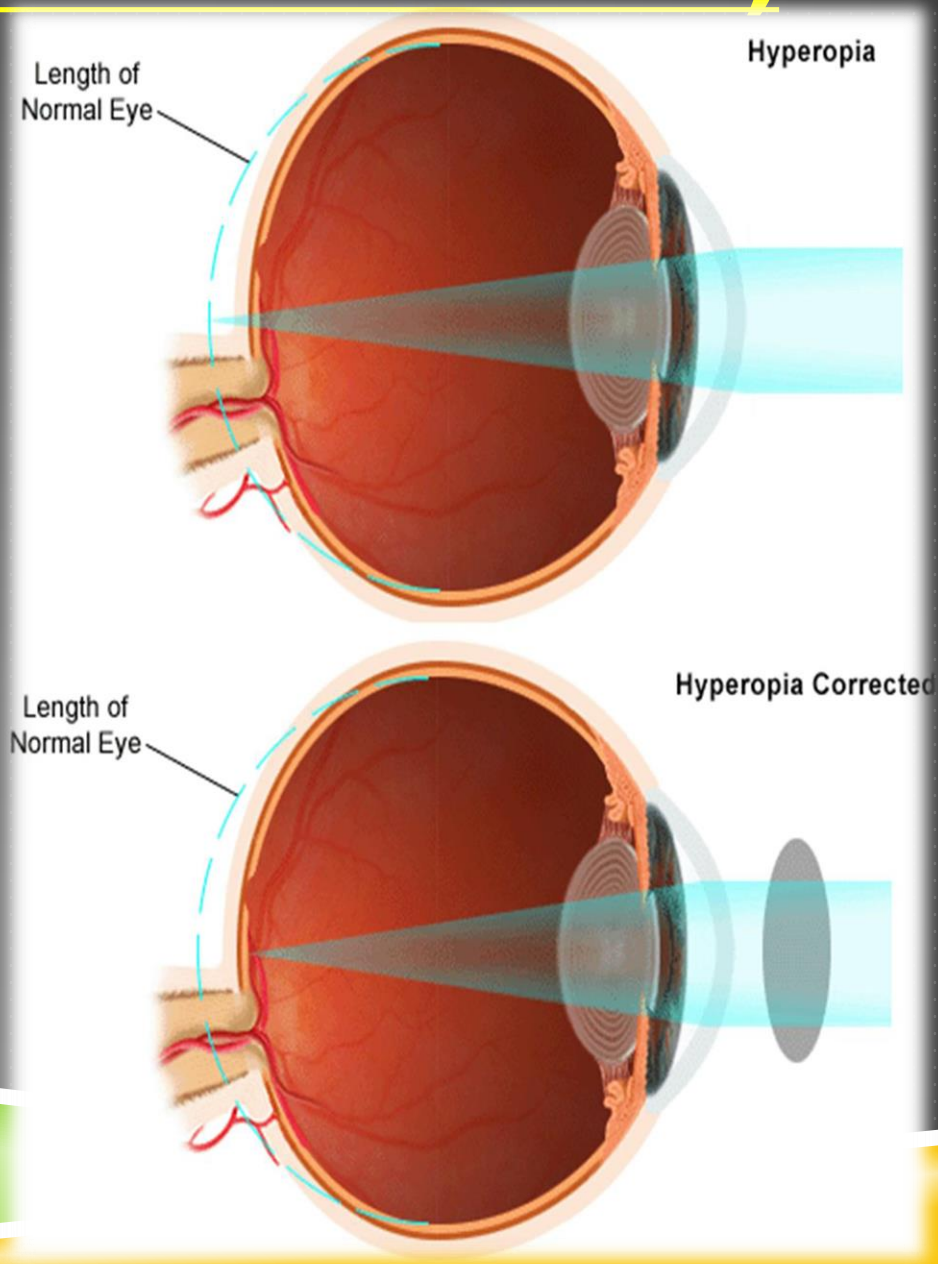
# MYOPIA (NEARSIGHTEDNESS)

- The AP diameter of eyeball is too long.
- The focus of the image would have been in front the retina.
- Myopia is corrected by glasses with concave lenses that cause the light rays to diverge.



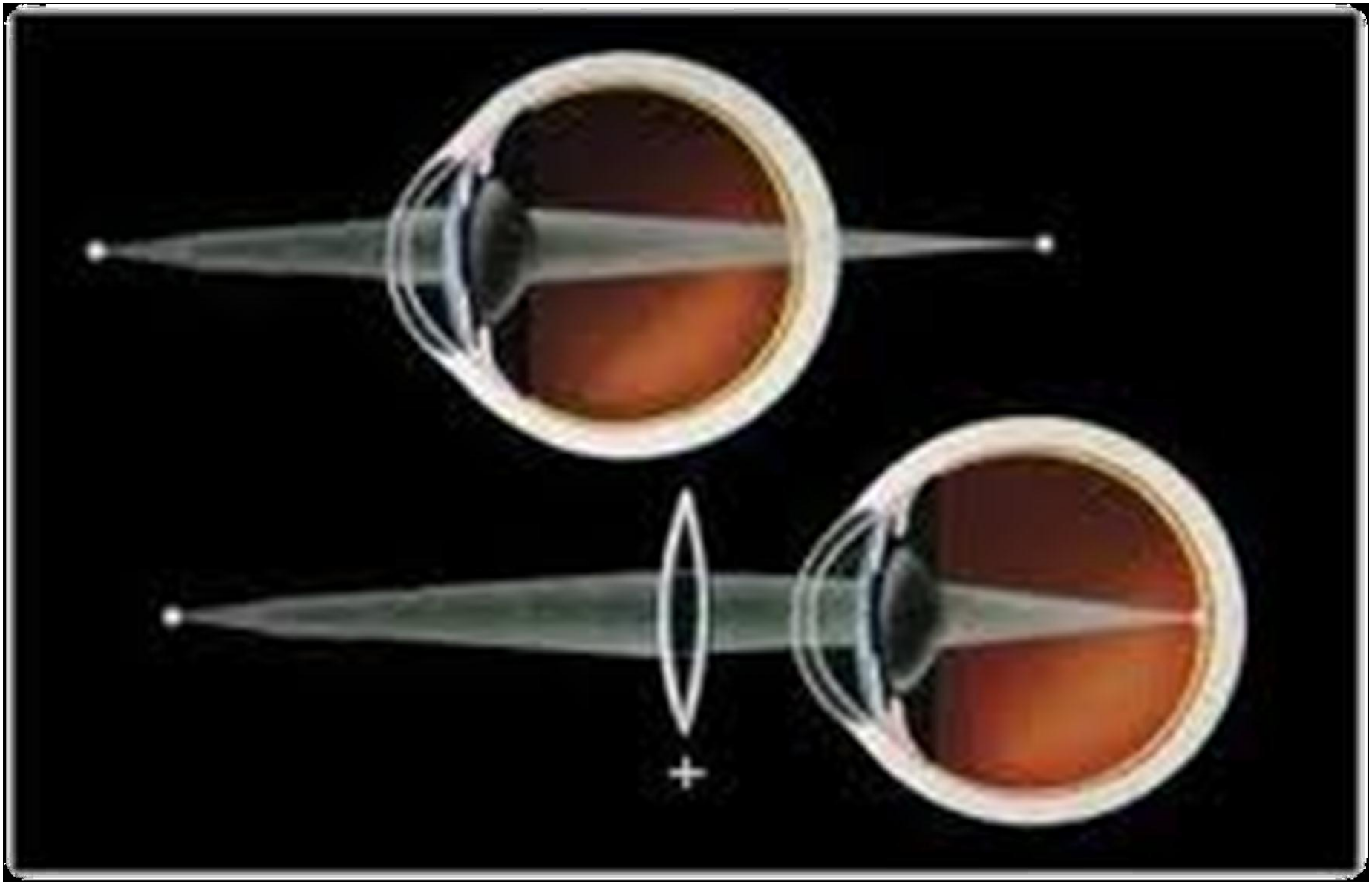
# HYPEROPIA (FARSIGHTEDNESS)

- The AP diameter of eyeball is too short.
- The focus of the image would have been behind the retina
- Is corrected by glasses with convex lenses that increase the convergence of light.



# PRESBYOPIA

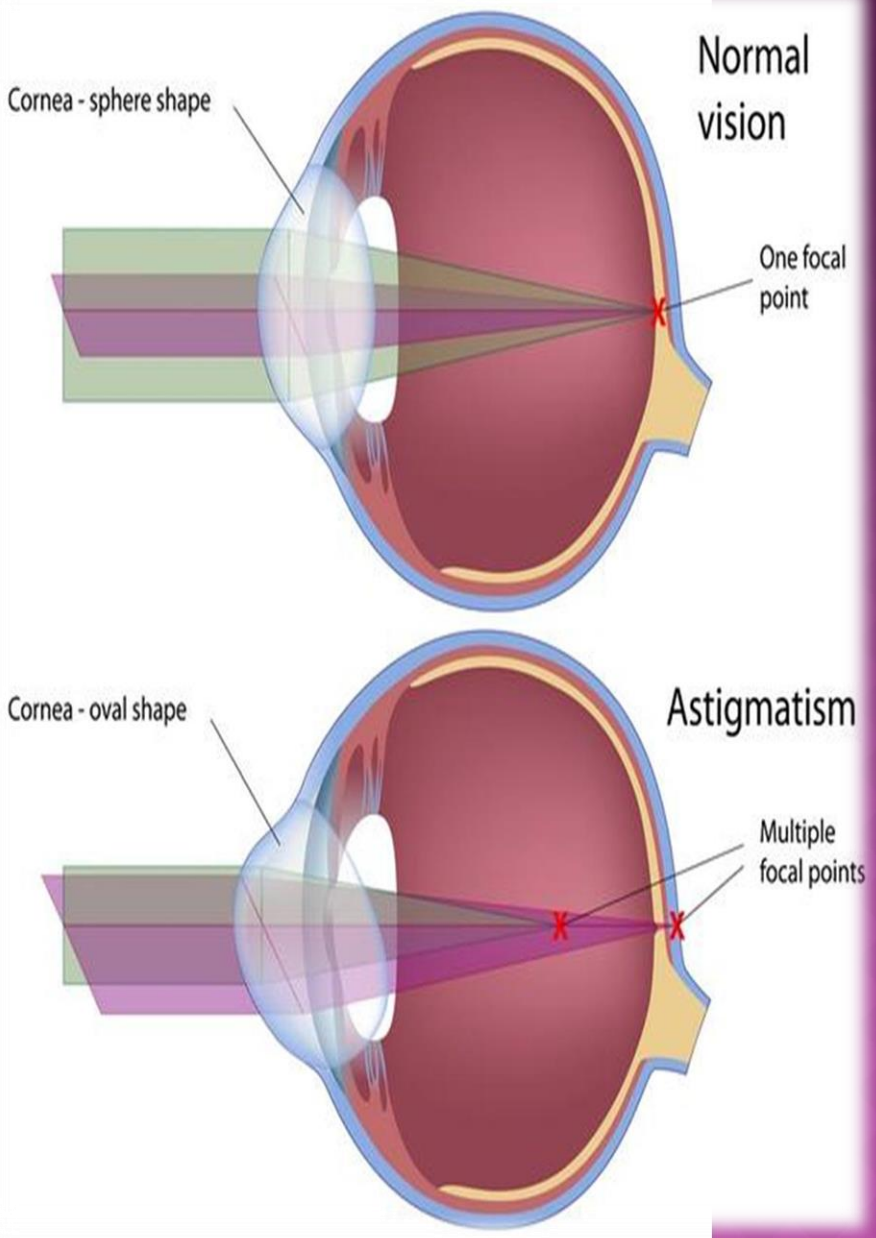
- **Presbyopia is a condition in which the lens of the eye loses its ability to focus)decrease the accommodation) due to a loss of elasticity of the crystalline lens and denaturation of its proteins, making it difficult to see objects up close.**
- **Occuring with age around 40-45**
- **The focus of the image would have been behind the retina.**
- **It coreccted by convex lenses.**



# Presbyopia

# ASTIGMATISM

- Due to curvature of the cornea is not perfectly symmetrical.
- The rays coming from different planes focus on different focal areas.
- This condition is corrected by cylindrical lenses.



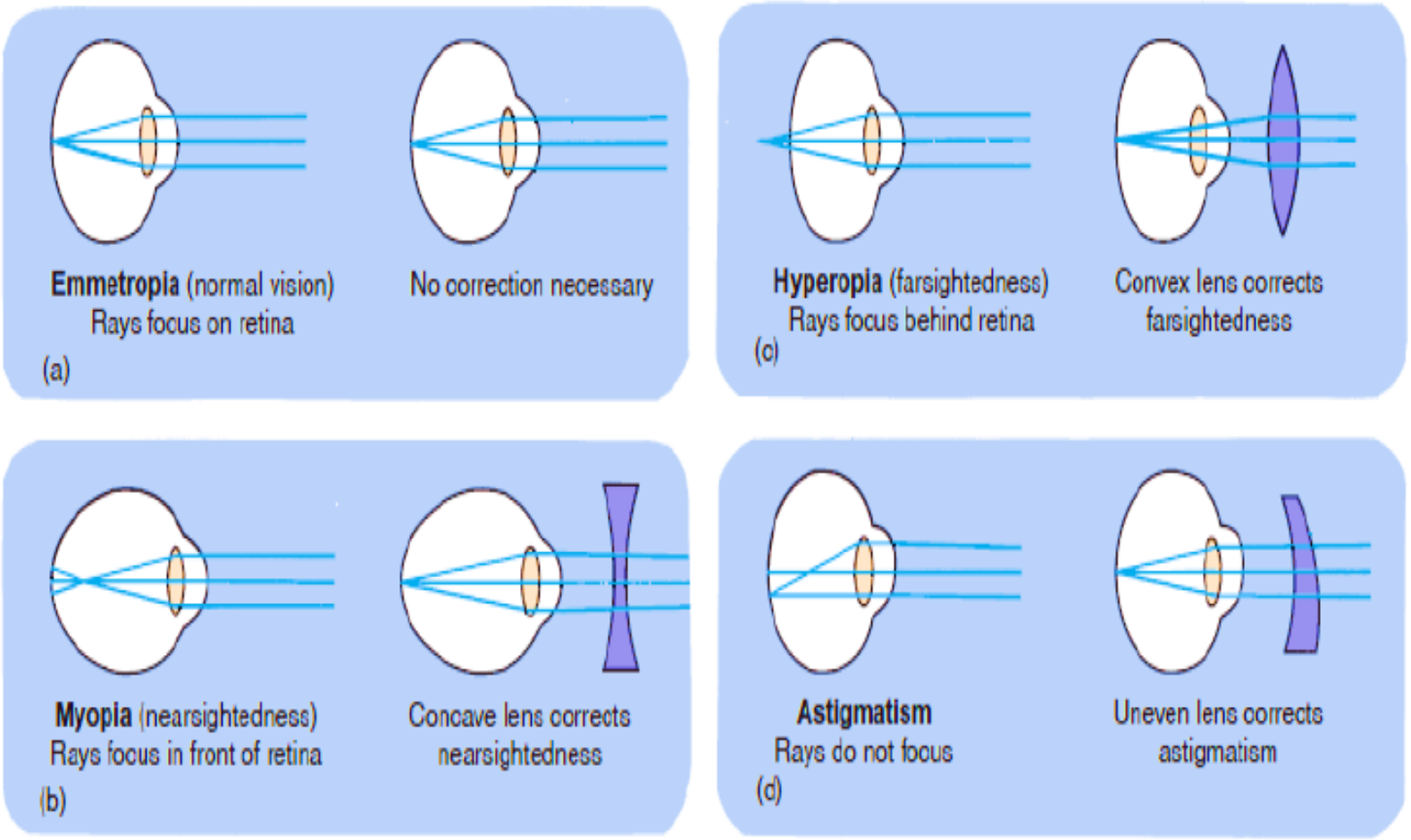



**Figure 10.35** **Problems of refraction and how they are corrected.** In a normal eye (*a*), parallel rays of light are brought to a focus on the retina by refraction in the cornea and lens. If the eye is too long, as in myopia (*b*), the focus is in front of the retina. This can be corrected by a concave lens. If the eye is too short, as in hyperopia (*c*), the focus is behind the retina. This is corrected by a convex lens. In astigmatism (*d*), light refraction is uneven because of irregularities in the shape of the cornea or lens.


Ophthalmoscopy

# Definition of ophthalmoscopy or fundoscopy

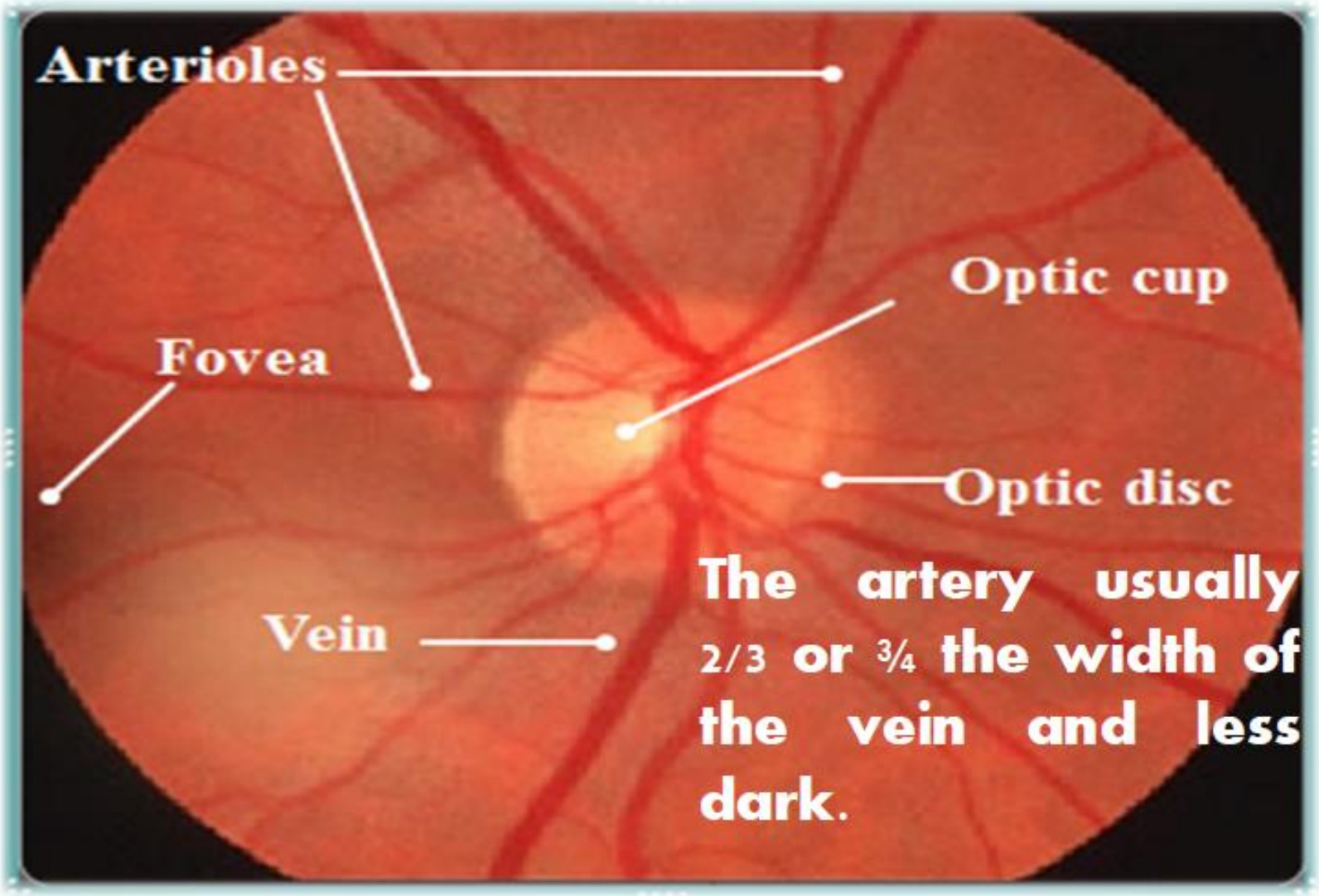
- Its a procedure of study the interior of the eye (optic disc, blood vessels of retina).
- Its important test in diagnosis of certain diseases of the vascular and nervous system.

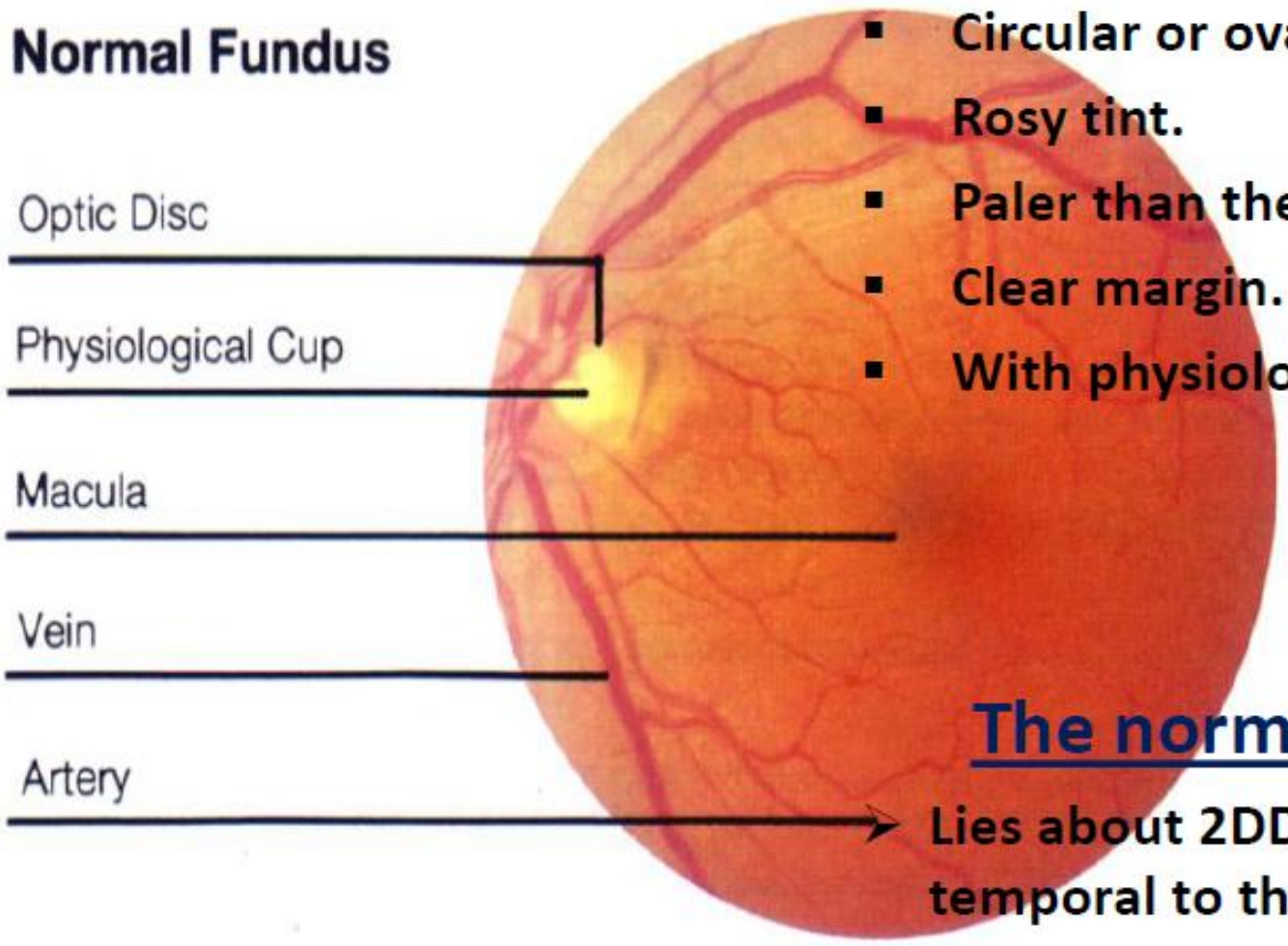
# The fundus of the eye

- The fundus of the eye is the interior surface of the eye, and includes:

Retina, optic disc, Macula and fovea.

# Normal Fundus






## The Normal Optic Disc

- Circular or oval.
- Rosy tint.
- Paler than the rest of fundus.
- Clear margin.
- With physiological cup.

## The normal Macula

- Lies about 2DD (disc diameters) temporal to the optic disc.
- May appear darker red than surrounding retina.

# The objectives of ophthalmoscopy

- Examine the optic disc(shape, size, color, edge and physiological cup).
- The retinal blood vessels.
- The macula area with fovea.
- The peripheral of retina.

# Materials and instruments

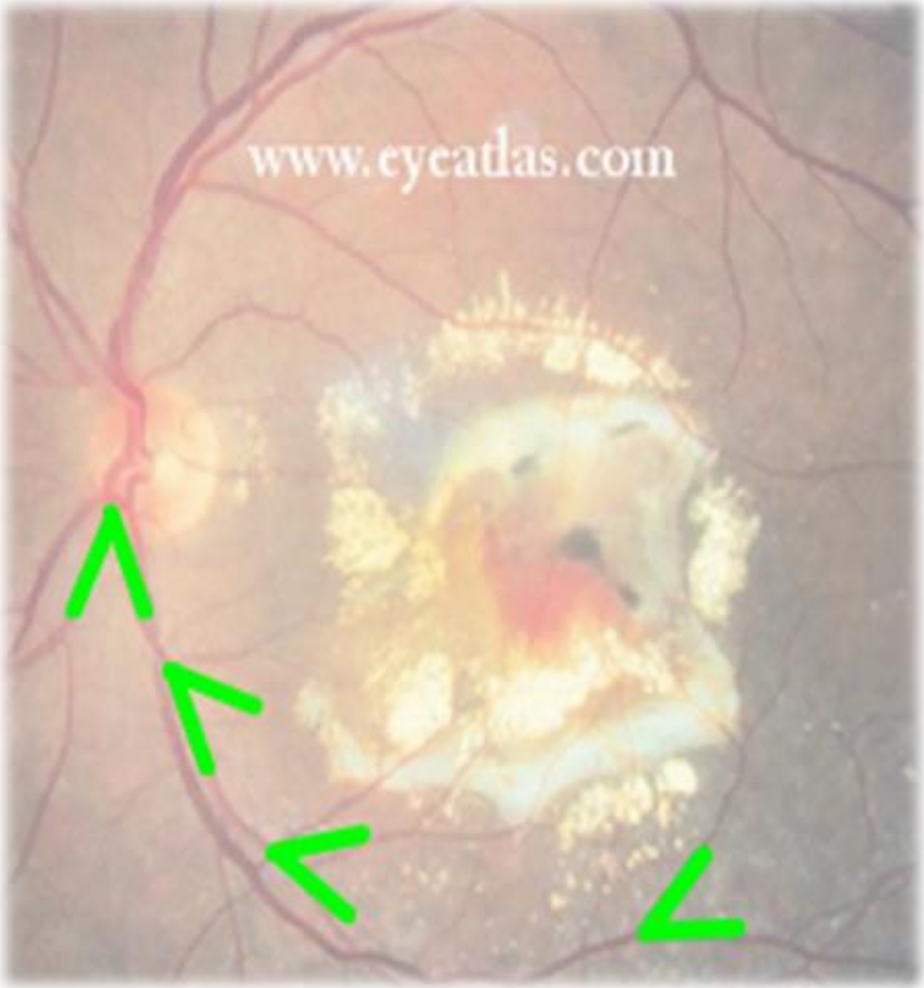
- The subjects.
- The ophthalmoscope.

# Types of Ophthalmoscope

# Direct ophthalmoscope

# Indirect ophthalmoscope

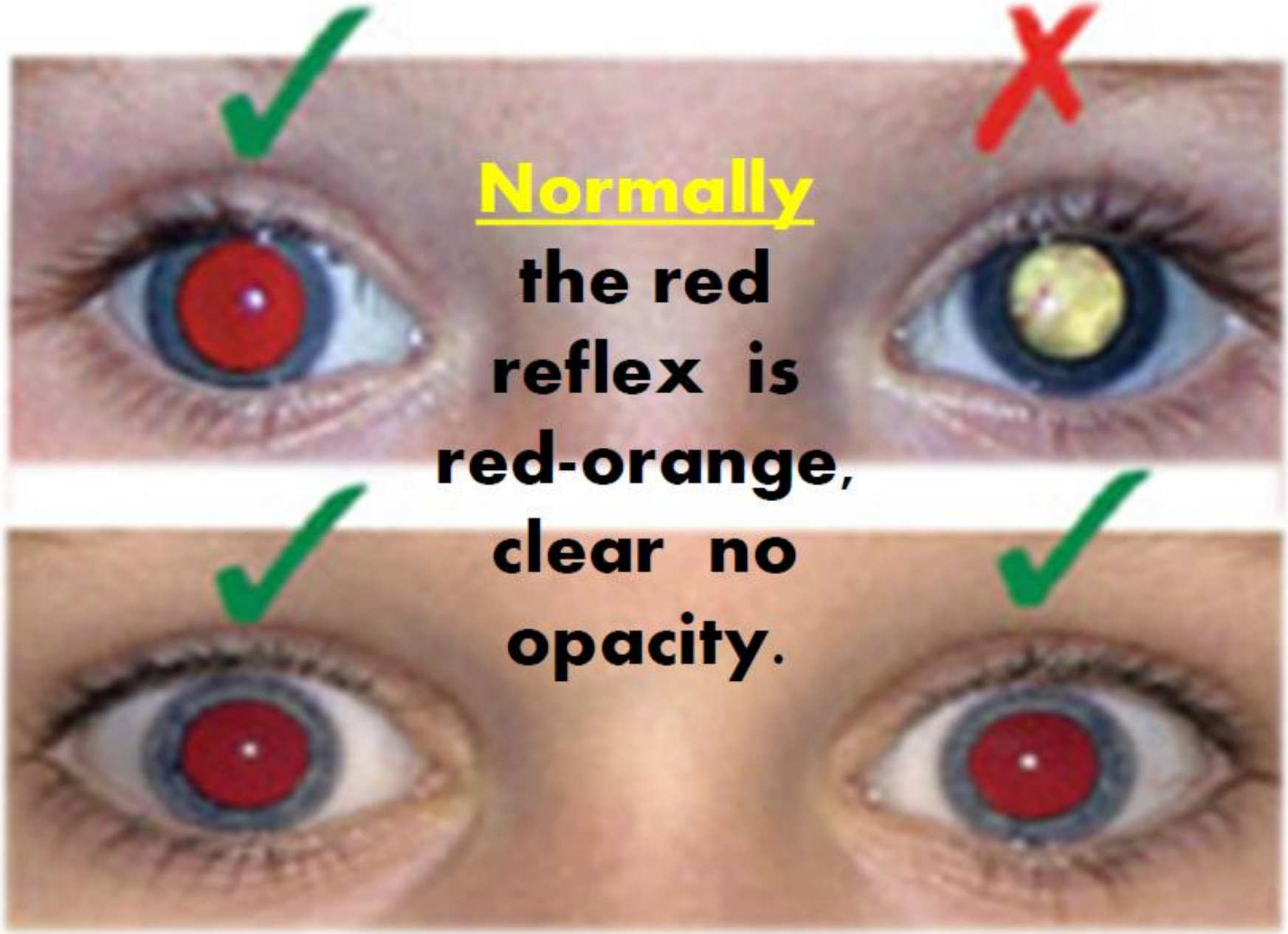
# How to find the optic disc




**Vessels point to the optic nerve, so find a vessel fork and move towards optic disc**

# RED REFLEX

- The red reflex refers to the reddish-orange reflection of light from the eye's retina that is observed when using an ophthalmoscope.
- This examination is usually performed dark room.
- Many eye problems may be detected by this test, such as: Cataracts and Retinoblastoma.


Normally
the red reflex is red-orange, clear no opacity.


Thank you