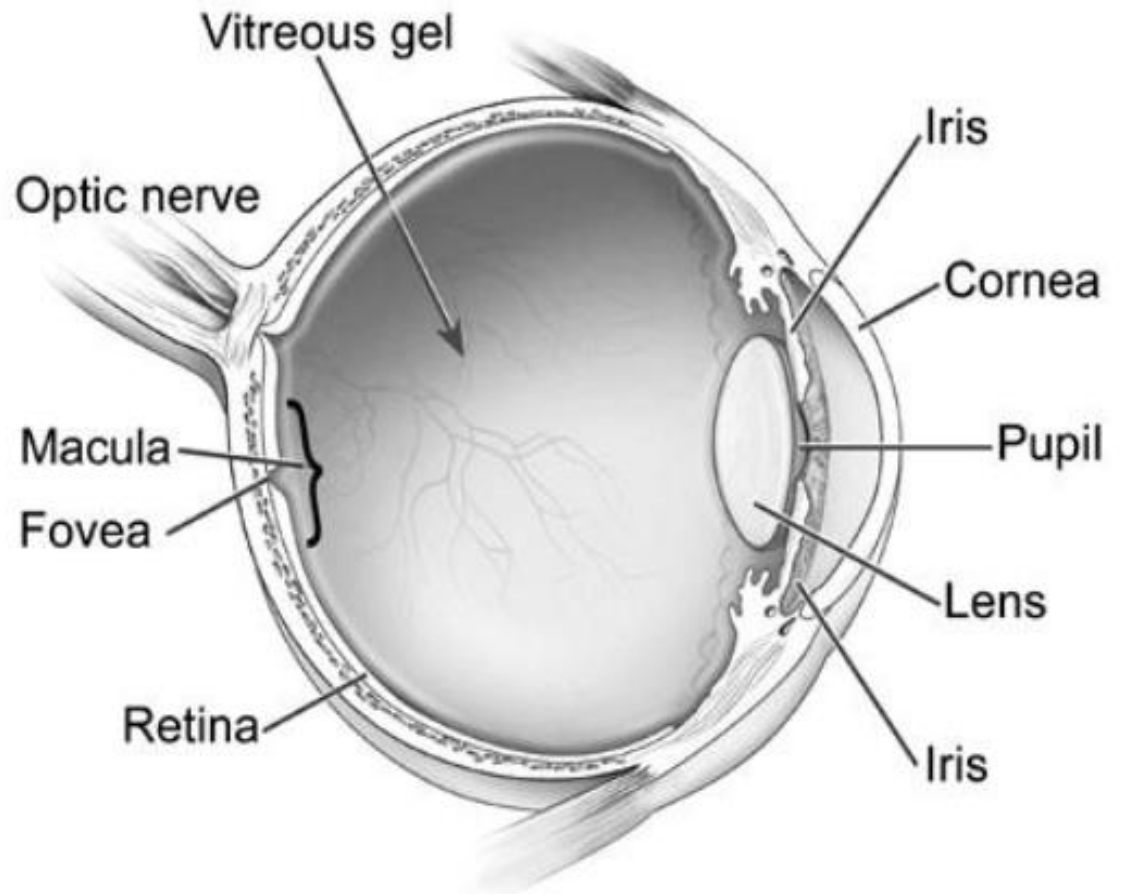


Visual Acuity

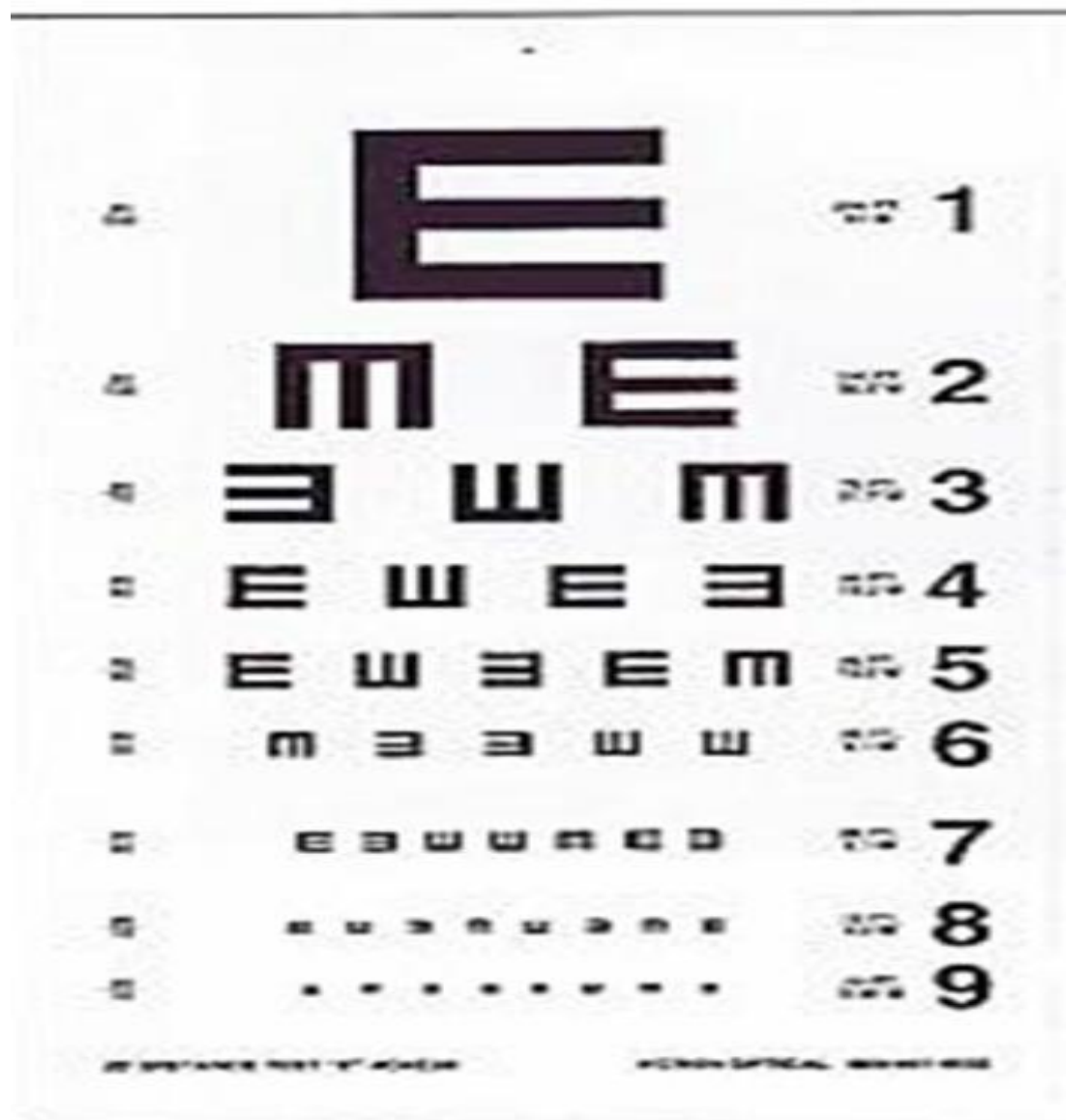
ANATOMY OF THE EYE

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

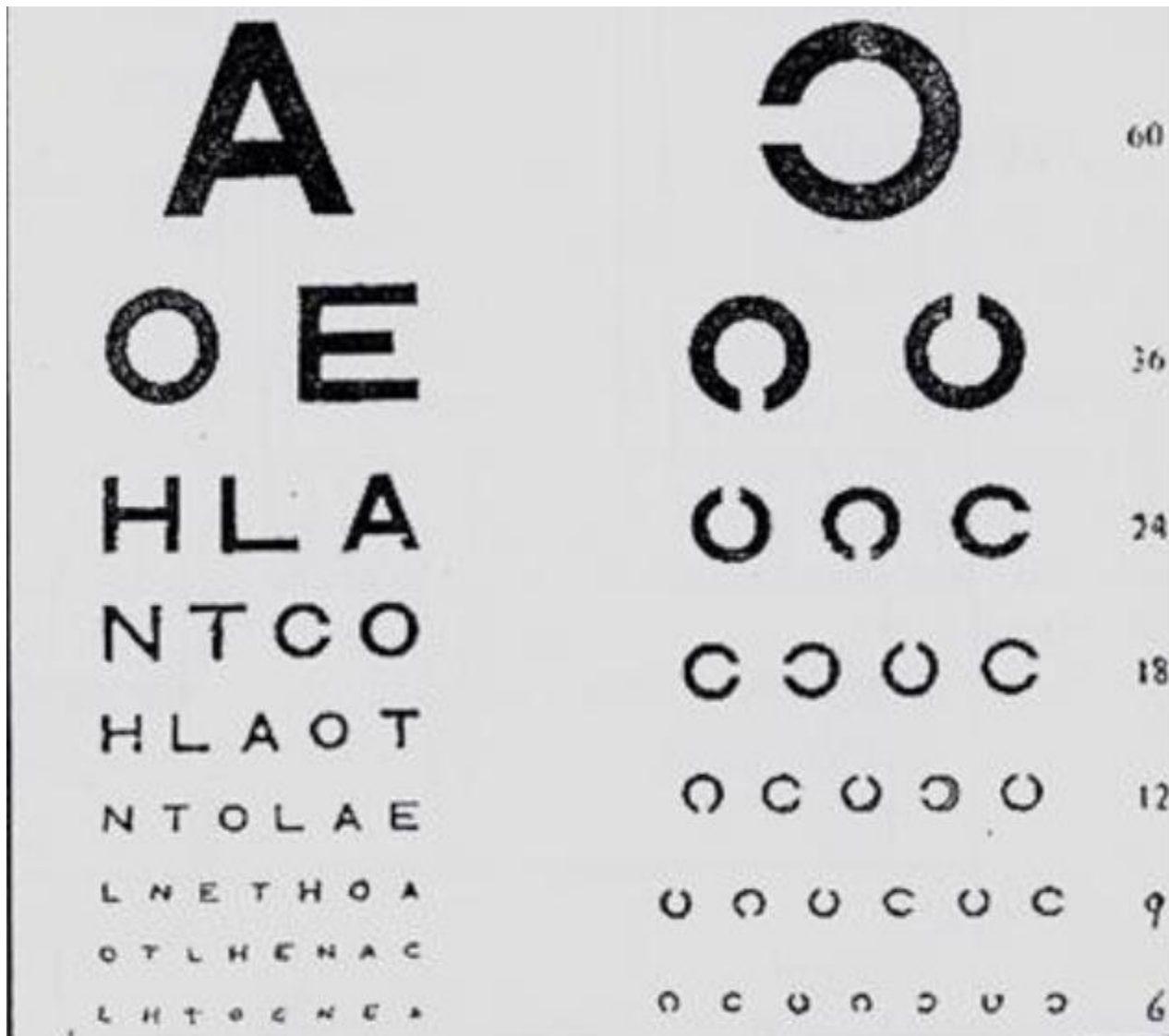


DEFINITION OF VISUAL ACUITY

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



Snellen chart




Snellen chart

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 feet)).**
- **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).





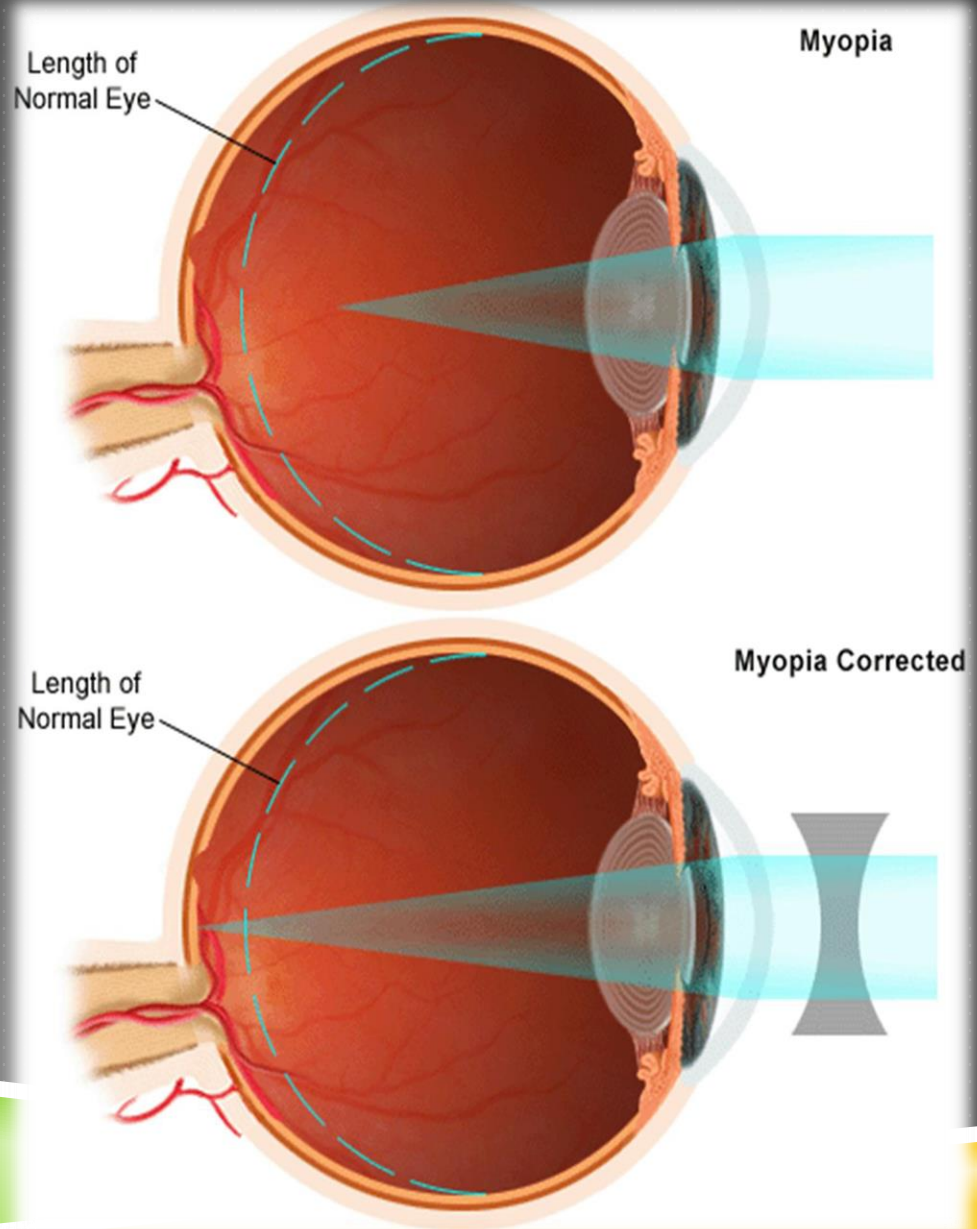
Abnormalities

of

visual acuity

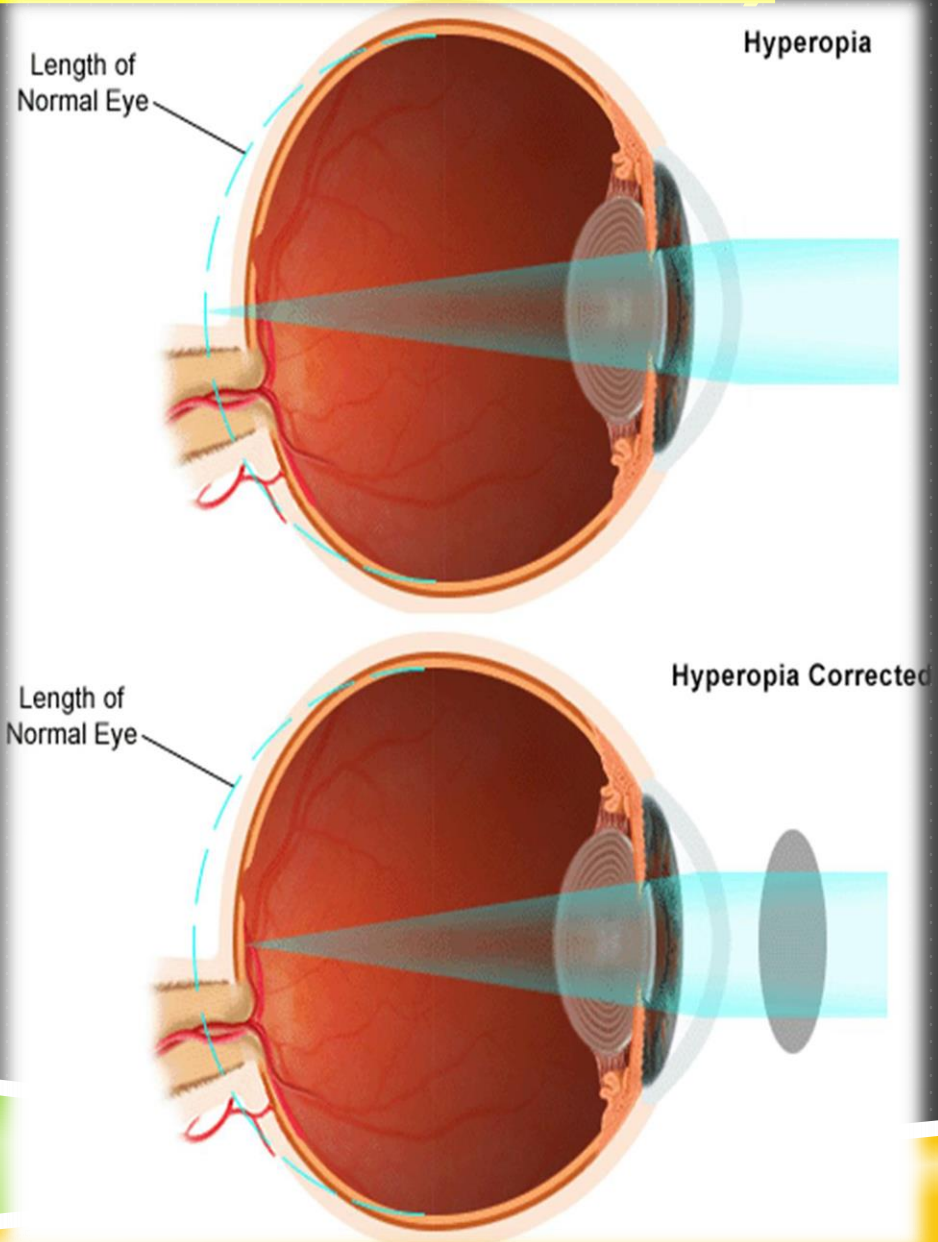
MYOPIA (NEARSIGHTEDNESS)

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



HYPEROPIA (FARSIGHTEDNESS)

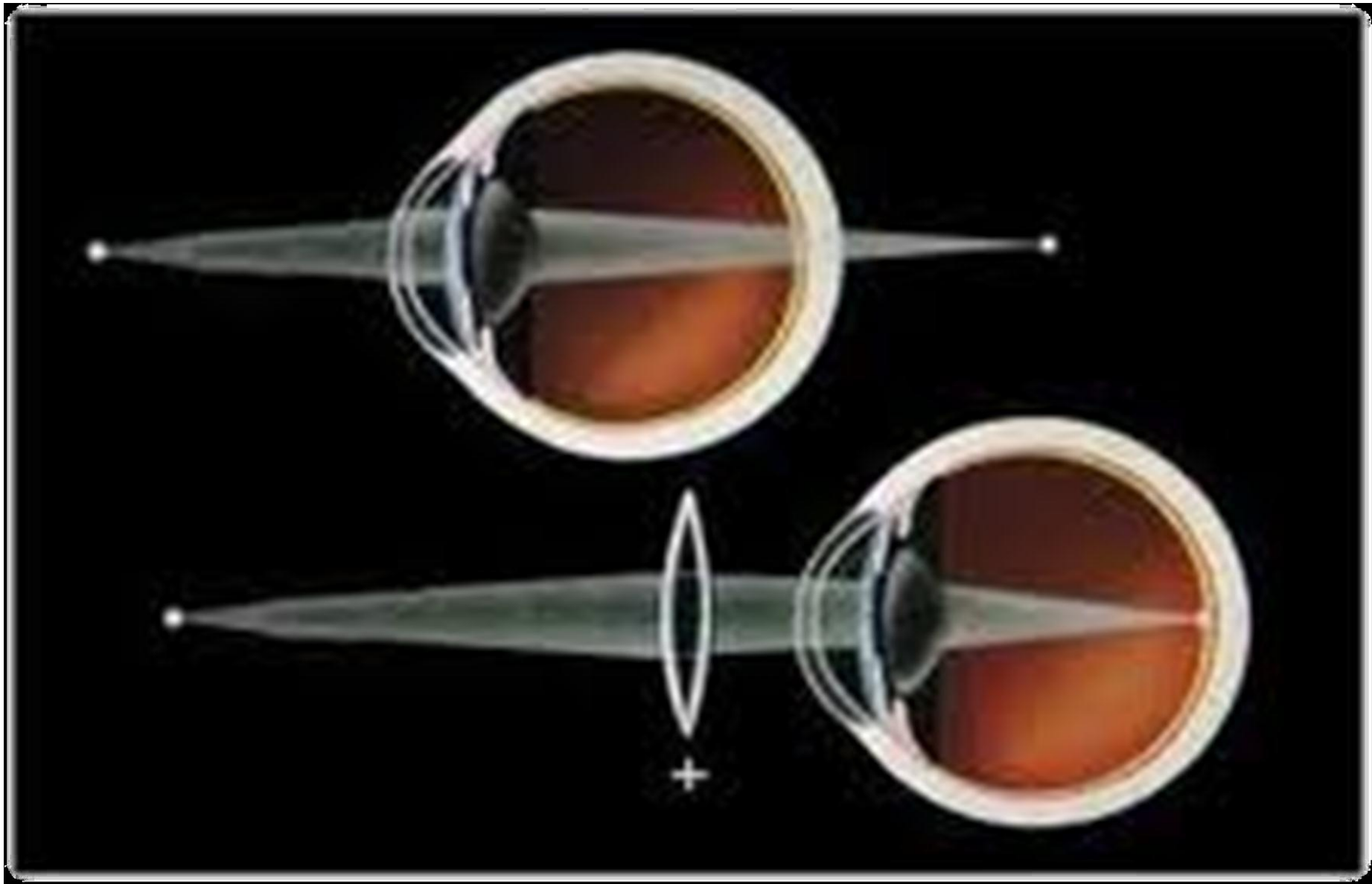
- ❑ **The AP diameter of eyeball is too short.**
- ❑ **The focus of the image would have been behind the retina**
- ❑ **Is corrected by glasses with convex lenses that increase the convergence of light.**



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.**

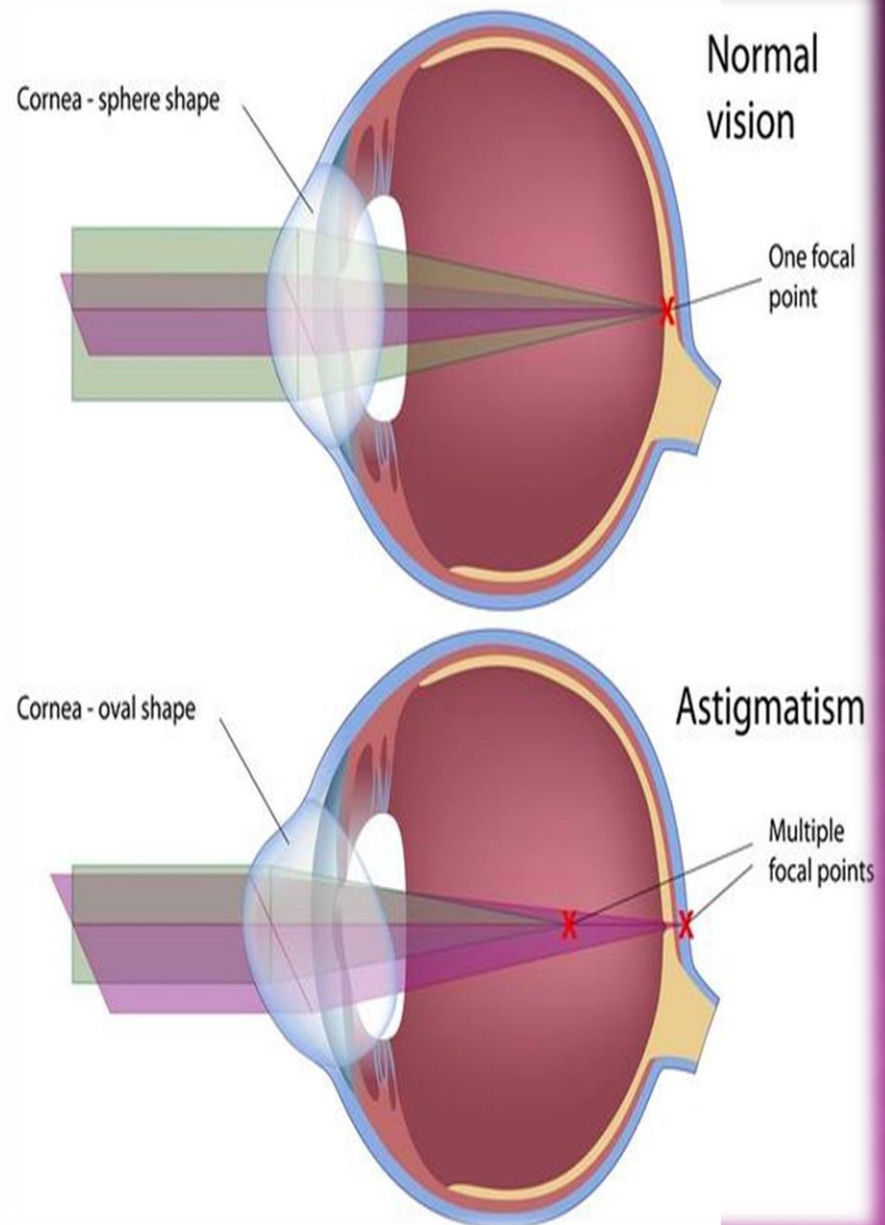




Presbyopia

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.**



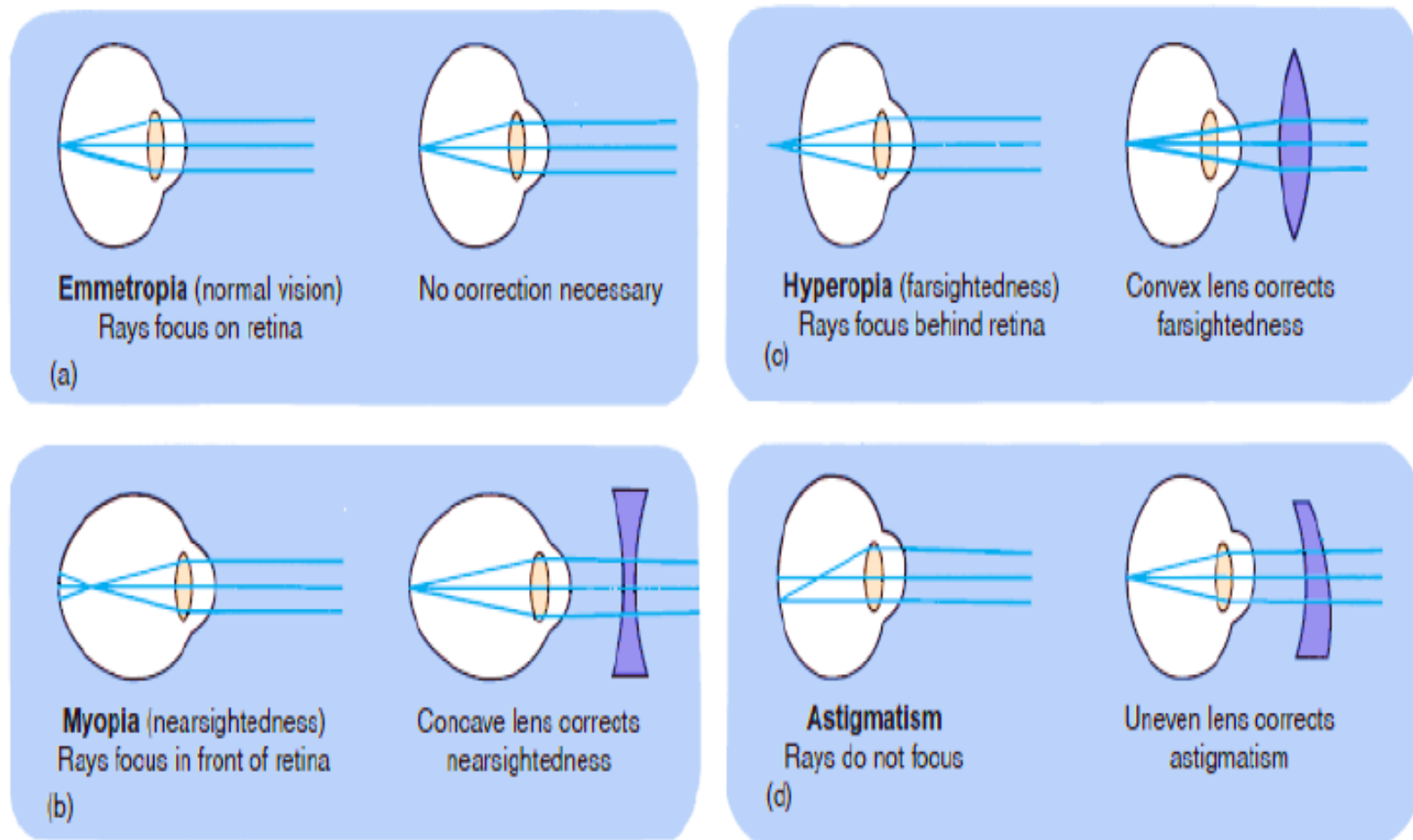


Figure 10.35 Problems of refraction and how they are corrected. In a normal eye (a), parallel rays of light are brought to a focus on the retina by refraction in the cornea and lens. If the eye is too long, as in myopia (b), the focus is in front of the retina. This can be corrected by a concave lens. 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.

A fundus photograph of a human eye, showing the retina with its characteristic orange-red color and a network of blood vessels. The optic disc is visible on the left side of the image.

Ophthalmoscopy

Definition of ophthalmoscopy or fundoscopy

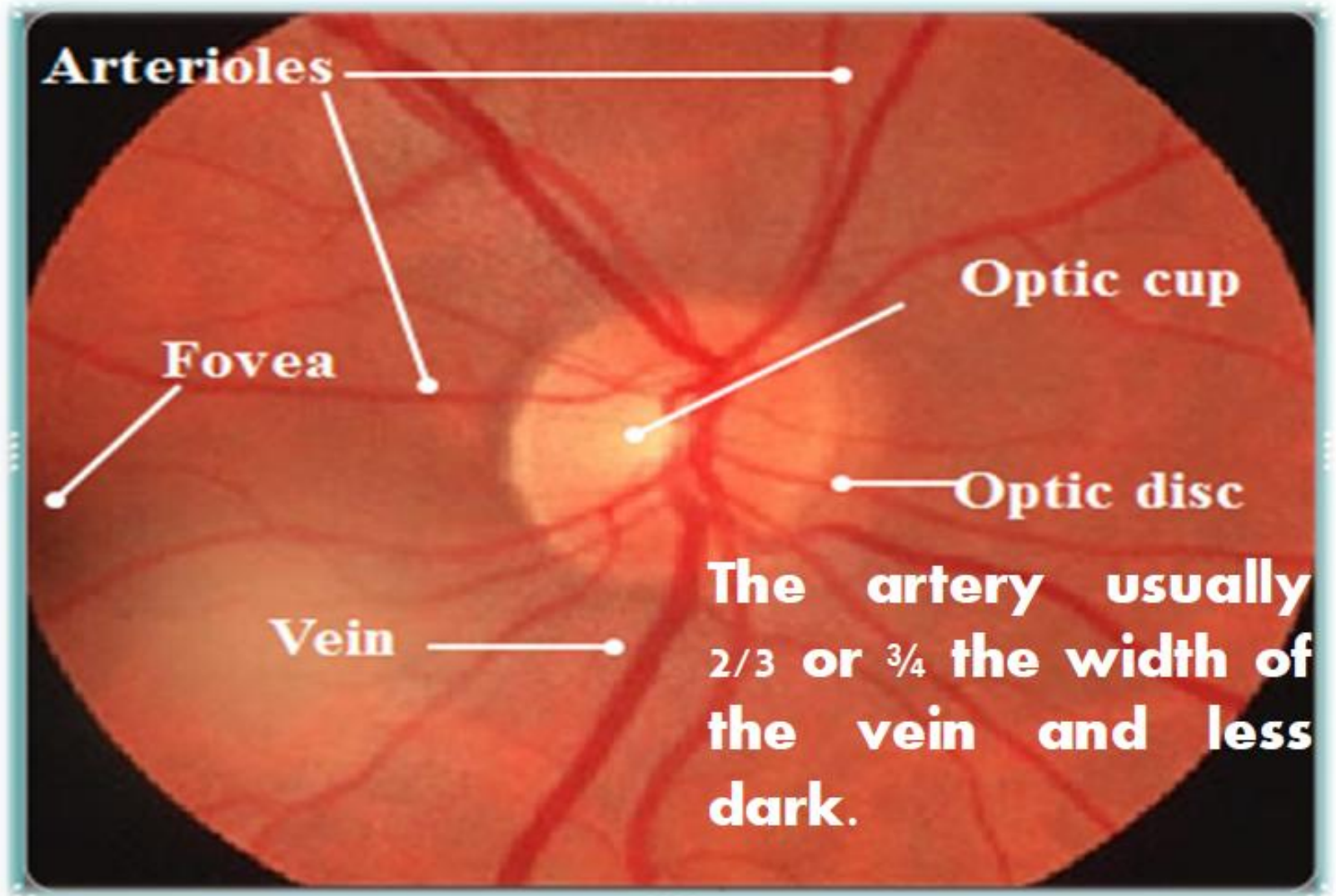
- **Its a procedure of study the interior of the eye (optic disc, blood vessels of retina).**
- **Its important test in diagnosis of certain diseases of the vascular and nervous system.**

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

Normal Fundus

Optic Disc

Physiological Cup

Macula

Vein

Artery

- 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

The image displays two views of the Welch Allyn 1175A ophthalmoscope: a front view on the left and a back view on the right. The device features a black head with a silver-colored, textured handle.

Front View Labels:

- Front surface mirror
- Crossed linear polarizing filter/red-free filter switch
- Aperture selection dial

Back View Labels:

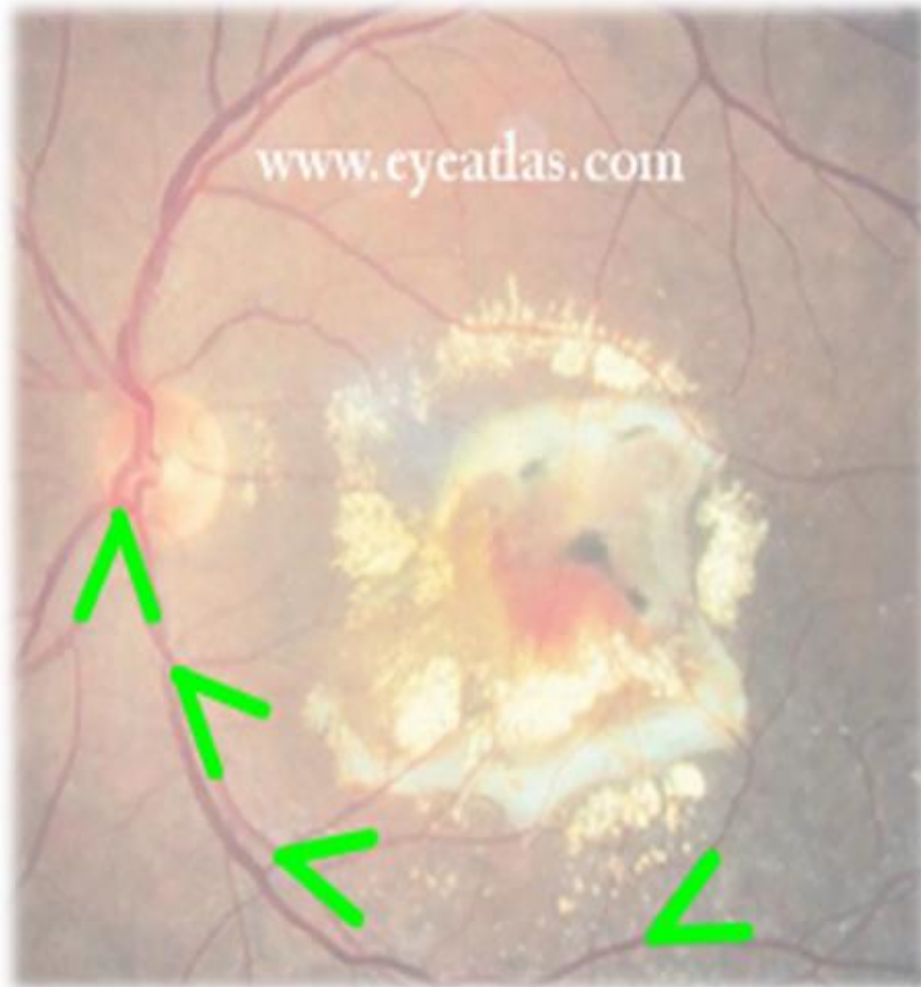
- Rubber brow rest
- Lens selection disc
- Illuminated lens indicator
- On/Off switch and rheostat control



Indirect ophthalmoscope



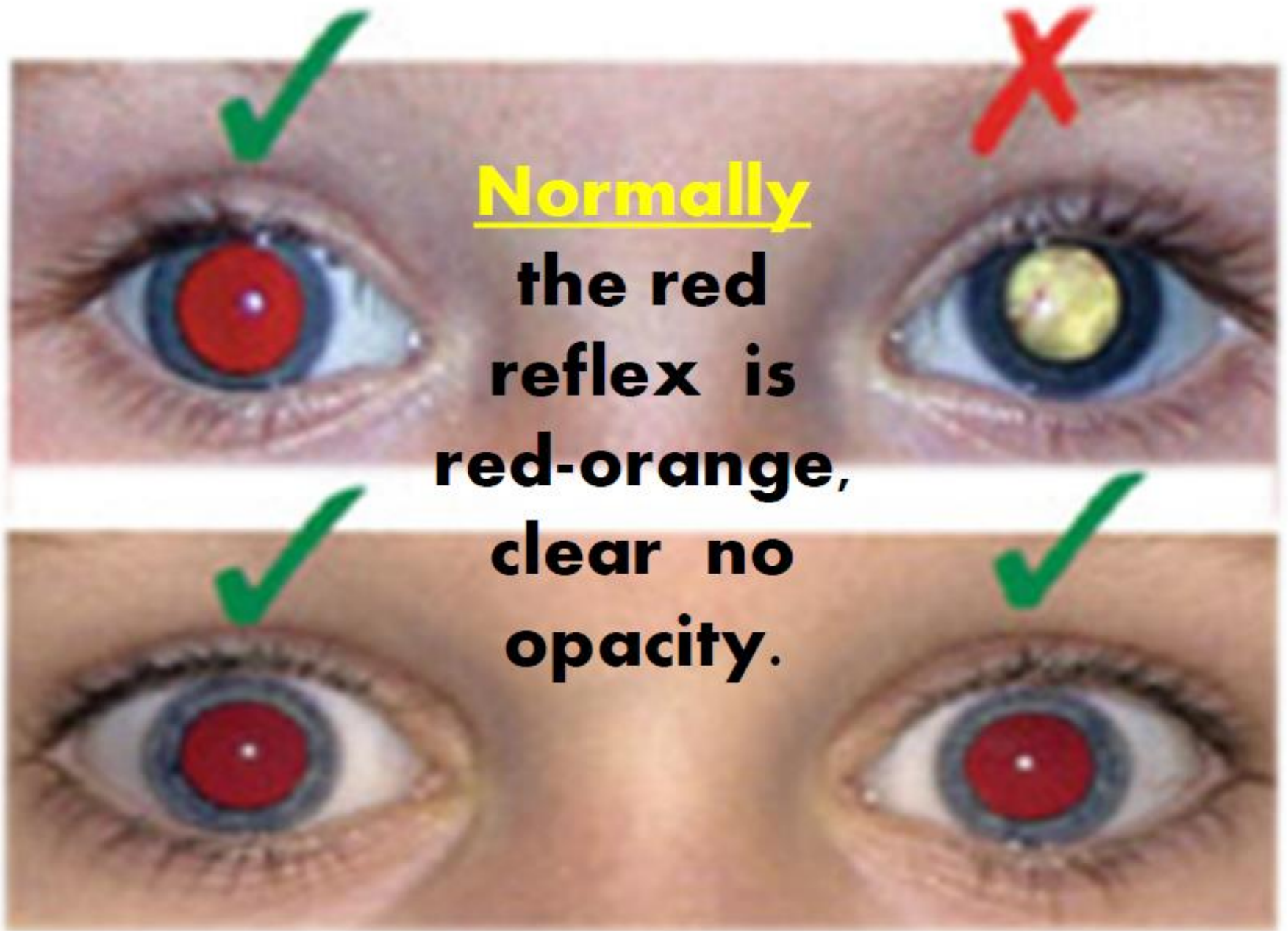
How to find the optic disc



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.

A close-up photograph of a bouquet of red roses. The roses are in various stages of bloom, showing deep red petals. Interspersed among the roses are small, white, star-shaped flowers, likely baby's breath. The background is a soft, out-of-focus brown. Overlaid on the center of the bouquet is the text 'Thank you' in a large, bold, black, italicized font. Below this text, there is a faint, semi-transparent watermark that reads 'THANK YOU' in all caps.

Thank you
THANK YOU