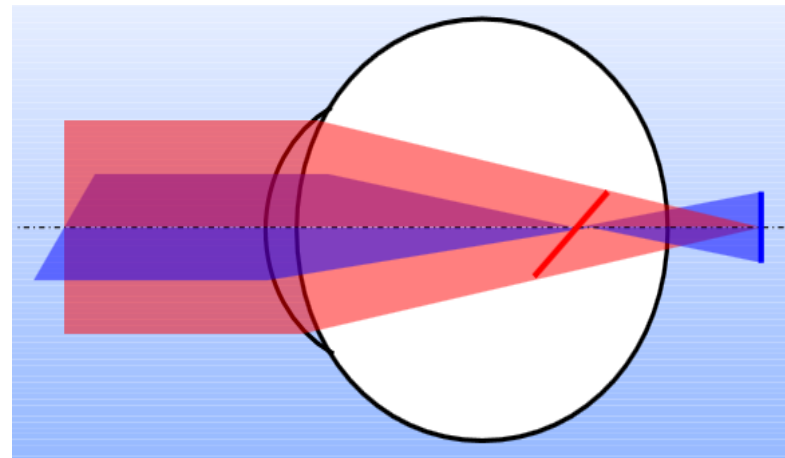


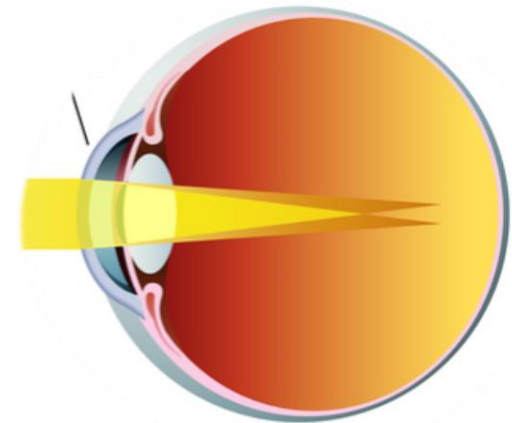
Astigmatism

- Definition
- Cause
- Classification
- Symptoms
- Signs
- Correction



Astigmatism

- Definition: Is an aspherical refractive error. An eye is astigmatic when the eye's refractive parts are not rotationally symmetric about the optical axis.
- Cause: the cornea is irregularly shaped, sometimes because of the curvature of the lens inside the eye.
- Occurs frequently with MY and HY
- It often leads to blurry, distorted vision
- Types:
 - Regular
 - Irregular

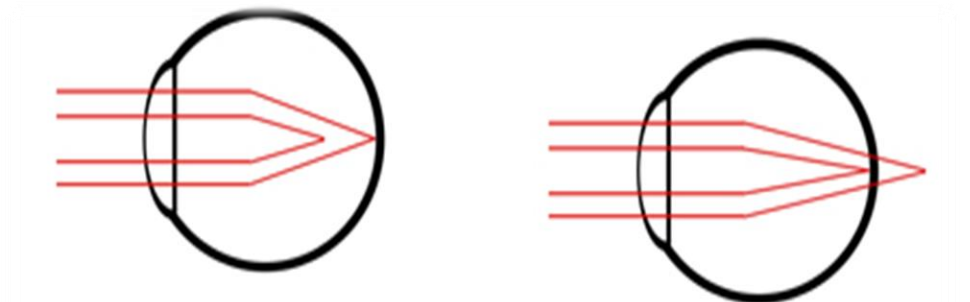
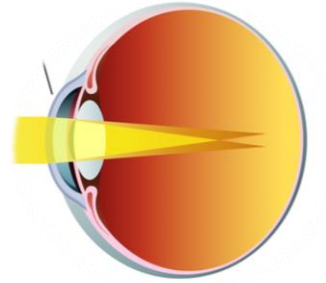


Regular Astigmatism (regularis)

- Most astigmatisms are regular and are of the cornea. The principal meridians are perpendicular to each other and form a 90° angle.
- **Classification due the focal line position:**
 - a. simple myopic (simplex)
 - a. simple hyperopic
 - a. compound myopic (compositus)
 - a. compound hyperopic
 - a. mixed (mixtus)
 - a. typically mixed

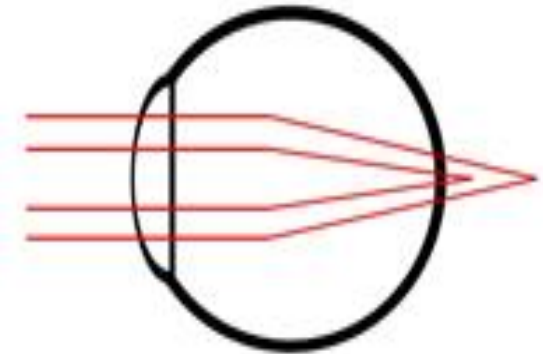
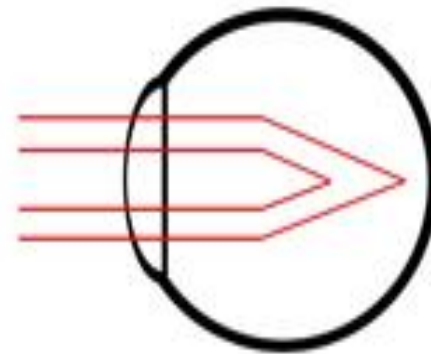
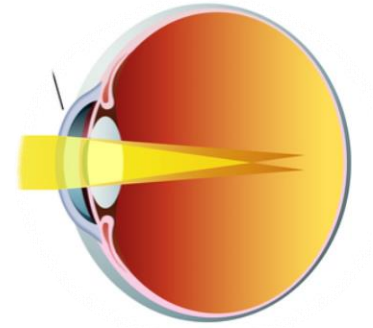
Astigmatism – regularis

- **REGULAR ASTIGMATISM (regularis) – classification due the focal line position:**
 - a. simple myopic (simplex) – one plane is located at infinity and the other is at a finite distance in front of the eye
 - a. simple hyperopic – one plane is located at infinity and the other is located behind the eye

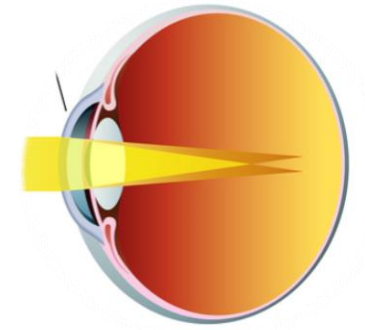


Astigmatism – regularis

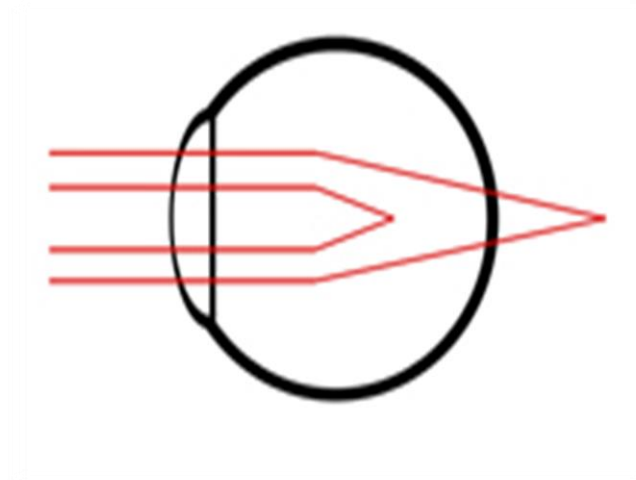
- a. compound myopic (compositus) – two focal point planes are located at different distances in front of the eye
- a. compound hyperopic – both planes are located at different distances behind the eye



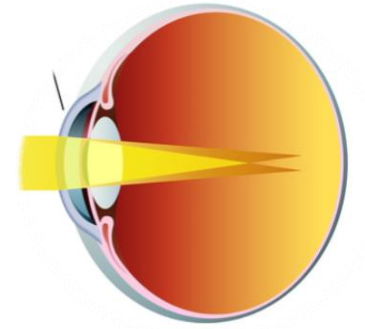
Astigmatism – regularis



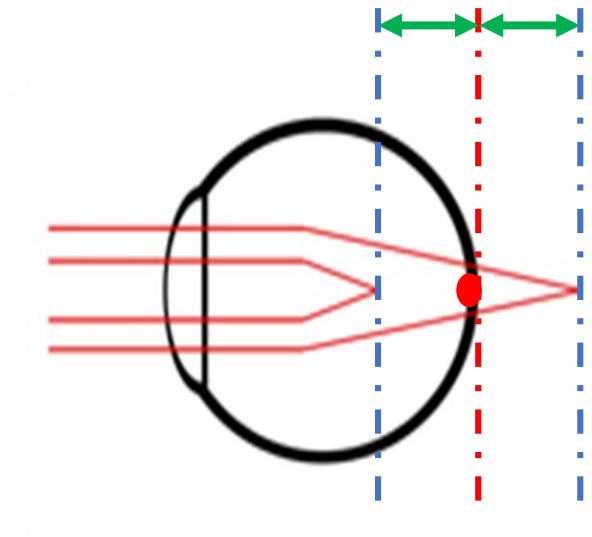
- a. mixed (mixtus) – one fair point plane is located in front of the eye and the other is located behind the eye



Astigmatism - regularis



- a. mixed (mixtus)
 - a. typically mixed



Homework

- Regular astigmatism can be further classified into three types that include with-the-rule, against-the-rule, and oblique astigmatism.

Astigmatism - irregular

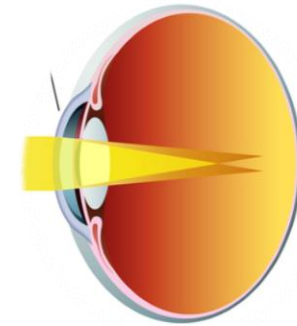
- It has in different meridians a different refraction (symmetry is impossible to find in irregular astigmatism)
- Is difficult to correct with spectacle lenses
- Best correction: RGP, hard lenses, hibrid lenses (**HOMEWORK**)

Aetiology:

- congenital
- post-traumatic
- serious infections
- postoperatively
- after some medication therapy
- keratokonus

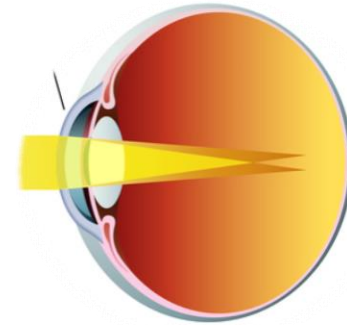
Astigmatism – symptoms

- ↓VA for far and near
- blurred vision
- headaches
- eye - strain
- irritated eye
- **half shutting of the eyes**
- blepharitis
- recurrent hordeolum
- irritability
- asthenopia

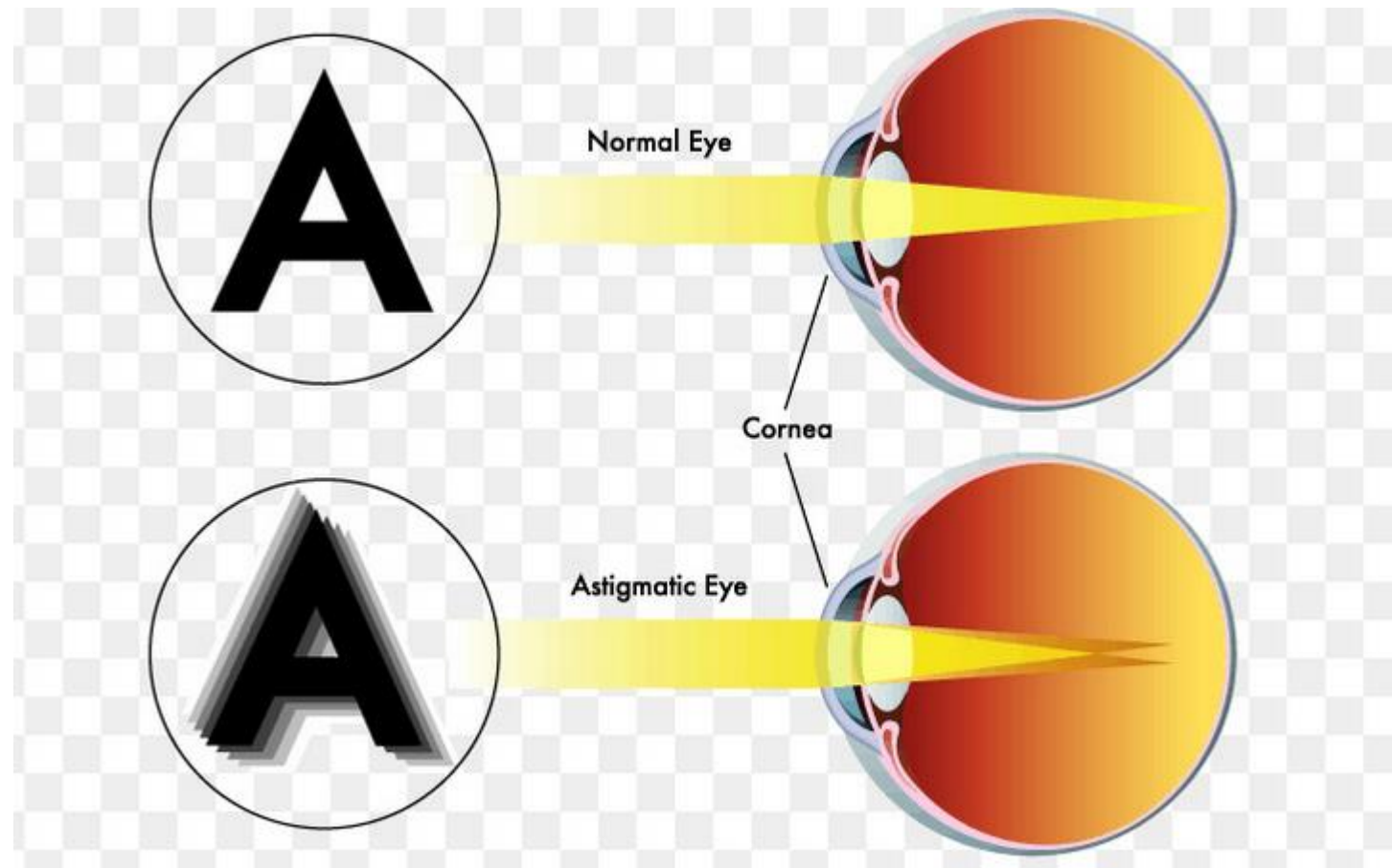


Astigmatism - signs

- Changing of the optotype signs at the chart (C, G, O, D, S,...)
- **Half shutting of the eyes**
- Compensating position of the head (ast. oblique)
- Astigmatic corneas – „squeezed ball“

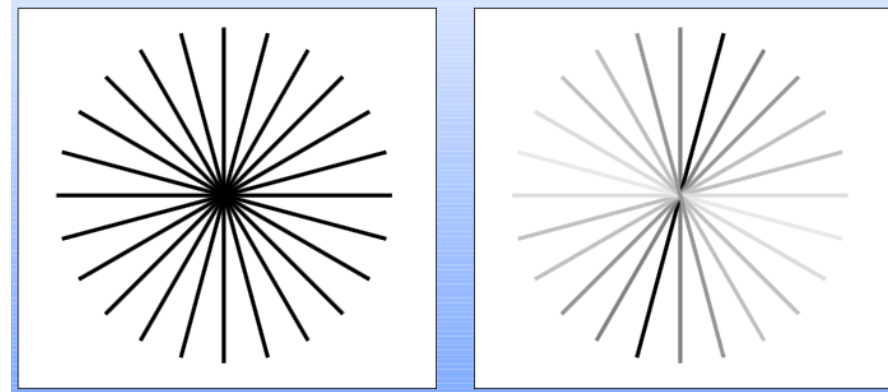
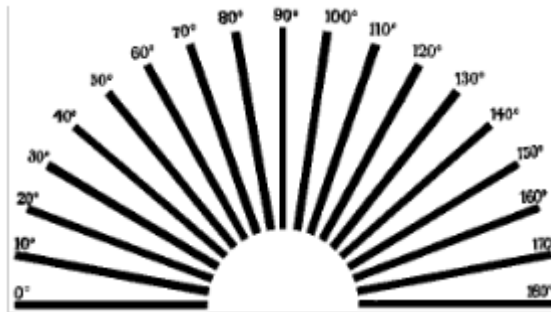


Astigmatism - signs



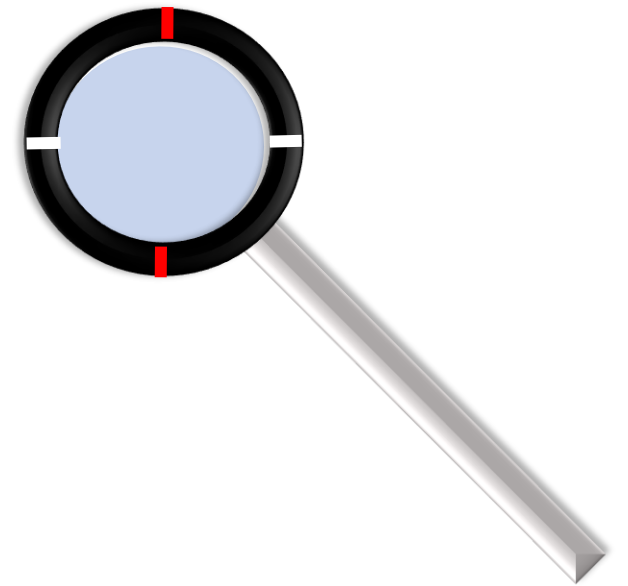
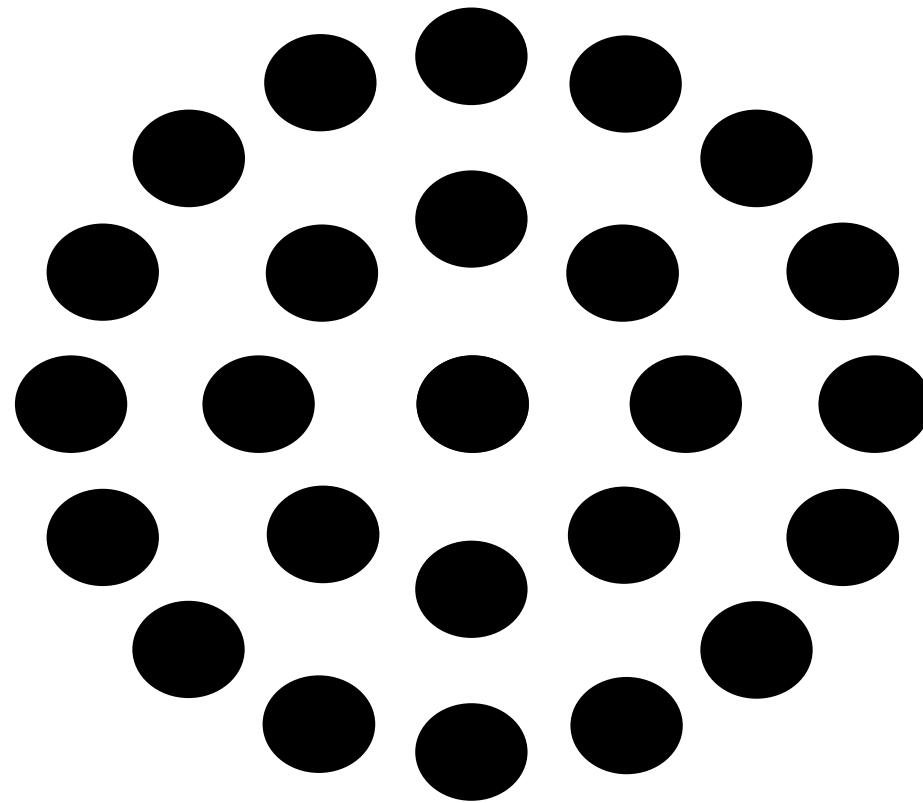
Tests for astigmatism

- Dial test, Astigmatic test (depends on the country)
- A simple test for detecting the presence of astigmatism
- One of the examination methods and screening methods



- All the lines are black. You are likely to have some degree of astigmatic error if some lines appear black while others seem gray.

Dots test



Correction of astigmatism

- cylindrical lenses (toric spectacle lenses and contact lenses)
- up to 0,5 D – individual correction
- children – full cylindrical correction
- adults – individual binocular tolerability
- refractive surgery