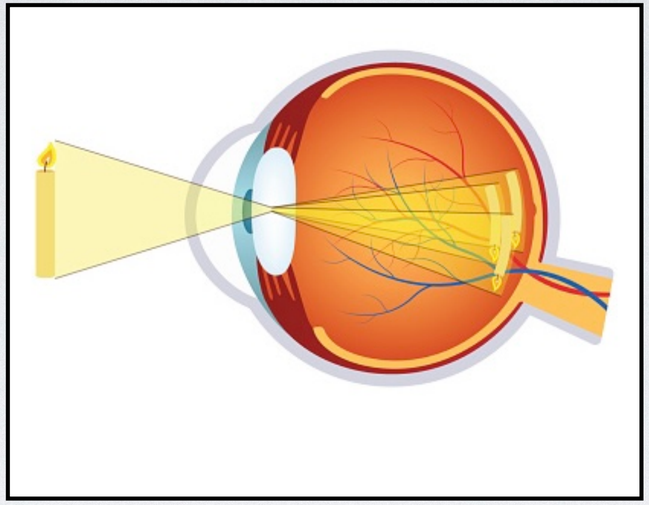
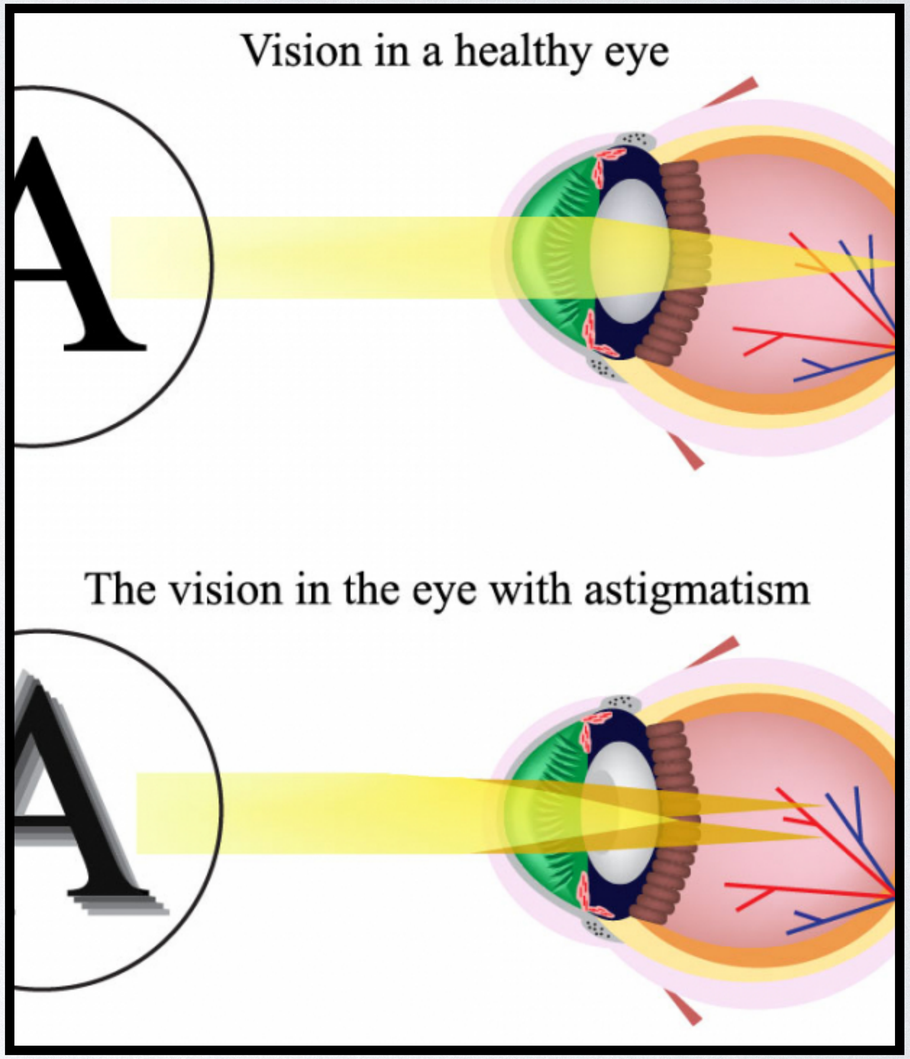


ASTIGMATISM

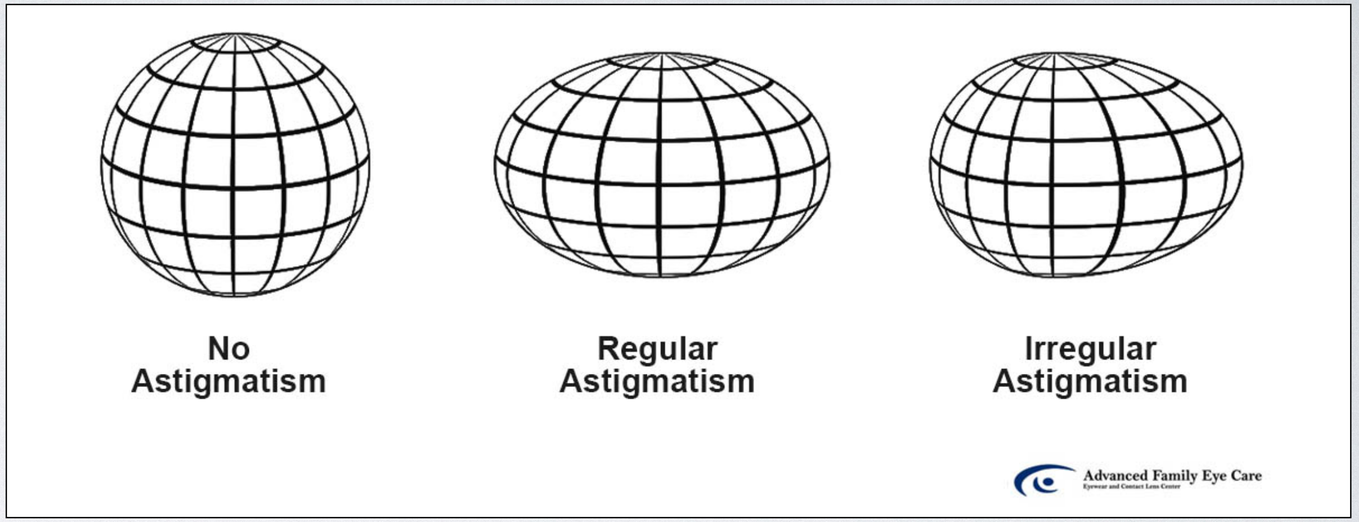
Jasara P
Roll no.115

WHAT IS ASTIGMATISM

- **A type of refractive error wherein the refraction varies in different meridia of the eye.**
- **Thus,rays of light cannot converge to a point focus.**
- **Form focal lines**



TYPES OF ASTIGMATISM



1.Regular

-Refractive power changes uniformly from one meridian to another

-There are two prinicipal meridians.

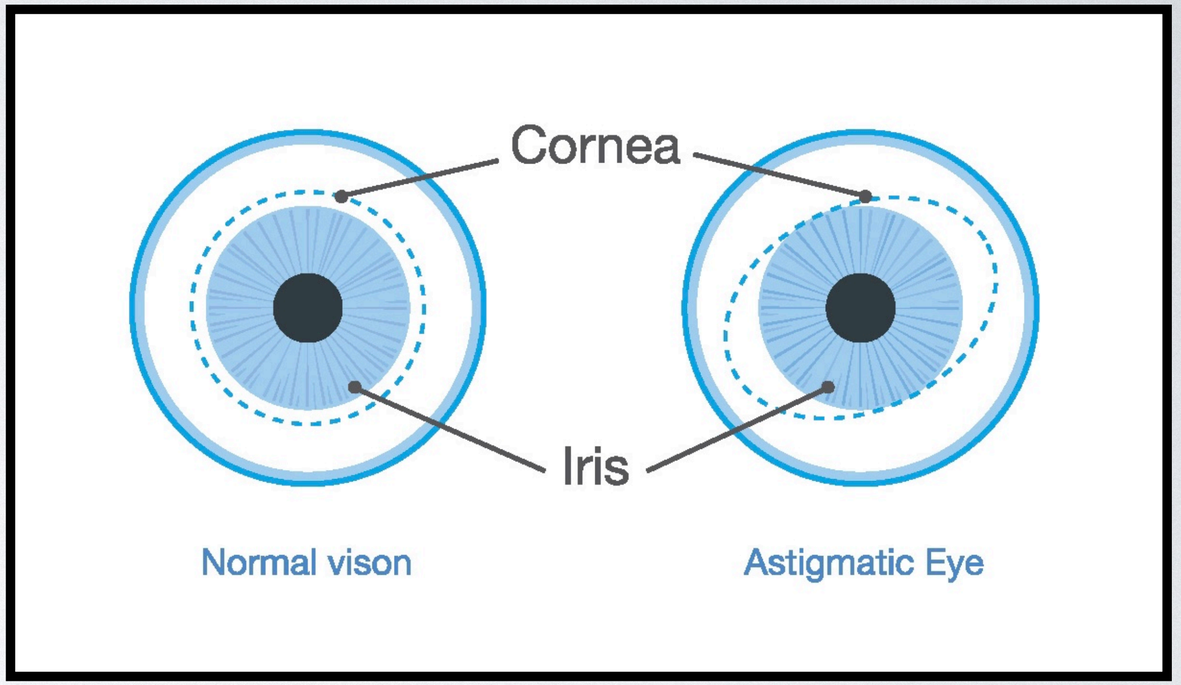
2.Irregular

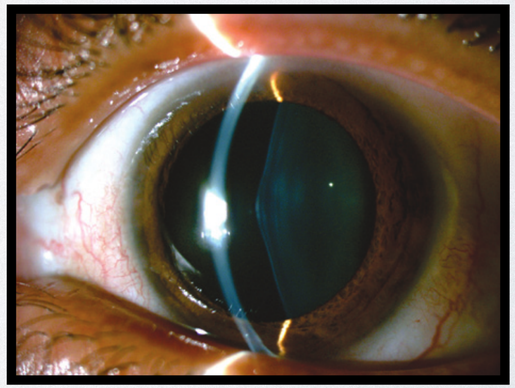
-Irregular change in refractive power in different meridians

-Multiple meridians

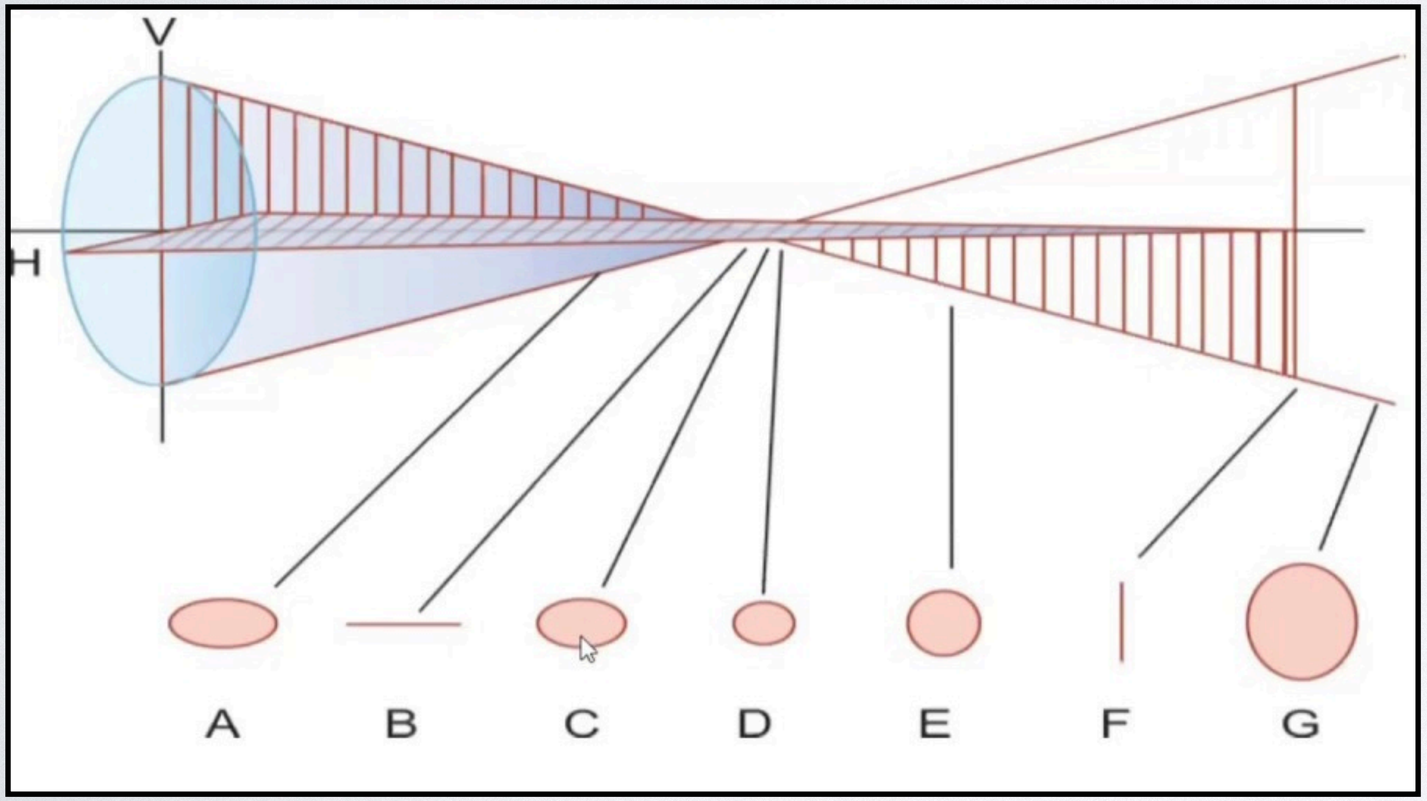
REGULAR ASTIGMATISM

- **ETIOLOGY**
- **1.Corneal**-most common cause
- **2.Lenticular**
  - Curvatural:Lenticonus
  - Positional:Subluxation
  - Index
- **3.Retinal**





OPTICS OF REGULAR ASTIGMATISM



STURM'S CONOID

-The configuration of rays refracted through a toric surface

-At point D,divergence of vertical rays=convergence of horizontal rays.

'Circle of least diffusion'

-Distance between the two foci(B and F)

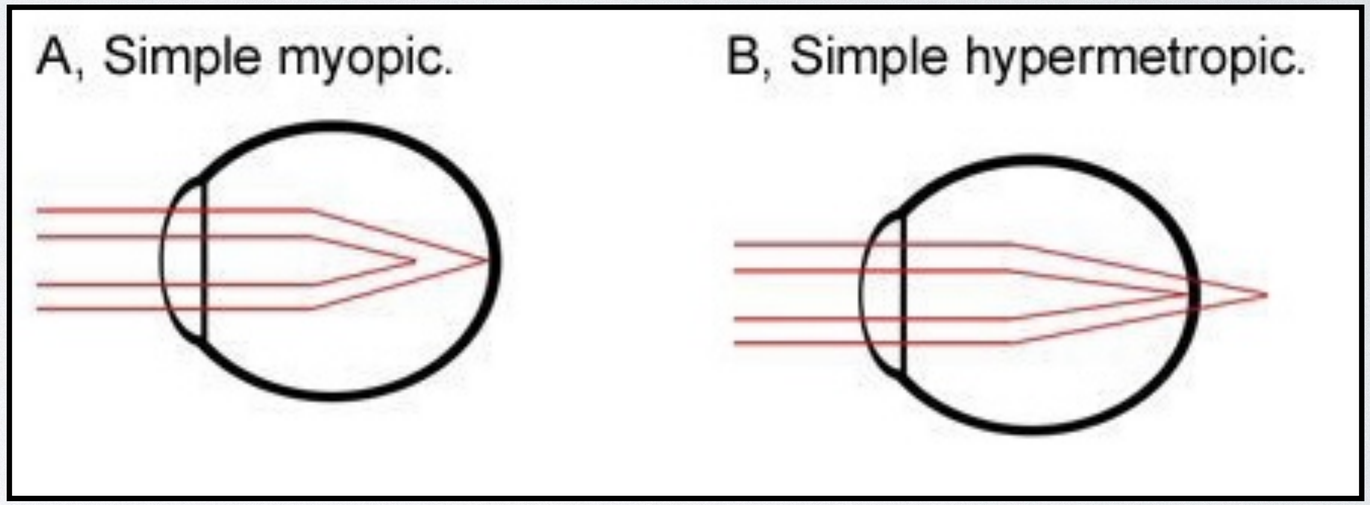
'Focal interval of Sturm'

TYPES OF REGULAR ASTIGMATISM

1.Simple astigmatism

-Rays focused on retina in one meridian

-Either in front ***(simple myopic astigmatism)*** or behind ***(simple hypermetropic astigmatism)*** in other meridian



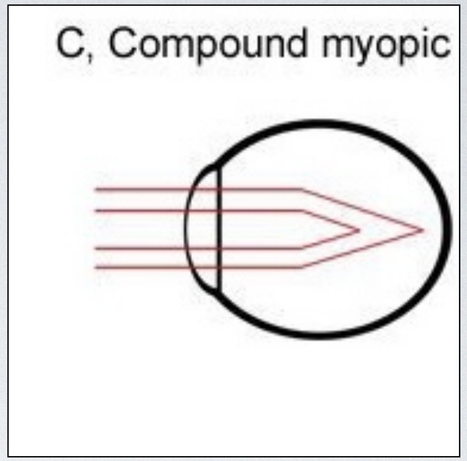
- ***2.Compound astigmatism***

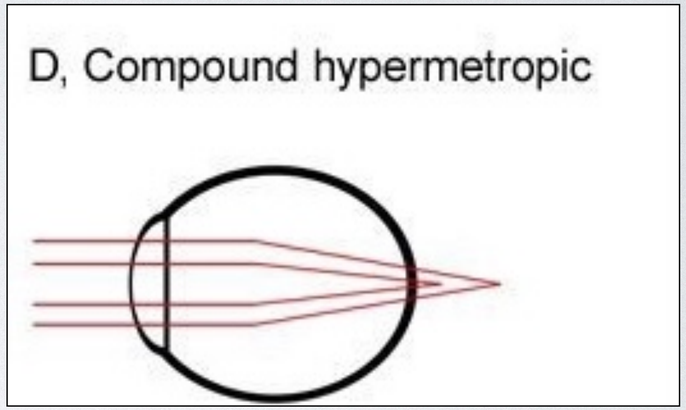
- Rays in both meridians are focused either in front ***(compound myopic)*** or behind ***(compound hypermetropic)***

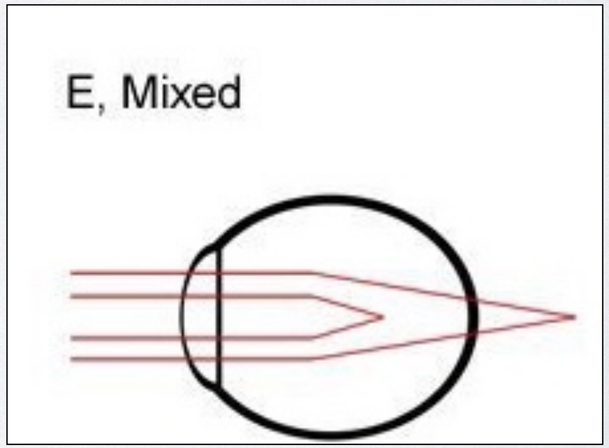
- ***3.Mixed astigmatism***

- Rays in one meridian in front ***(myopic eye)*** and behind in other ***(hypermetropic eye)***

- Circle of least diffusion is formed on the retina

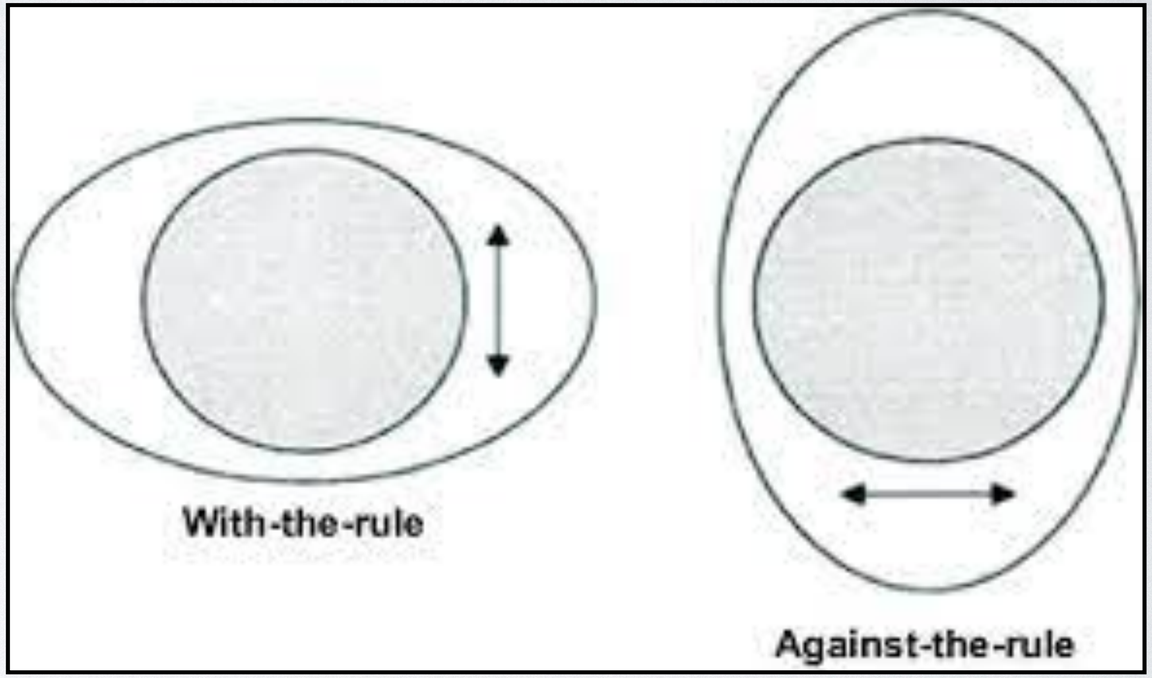






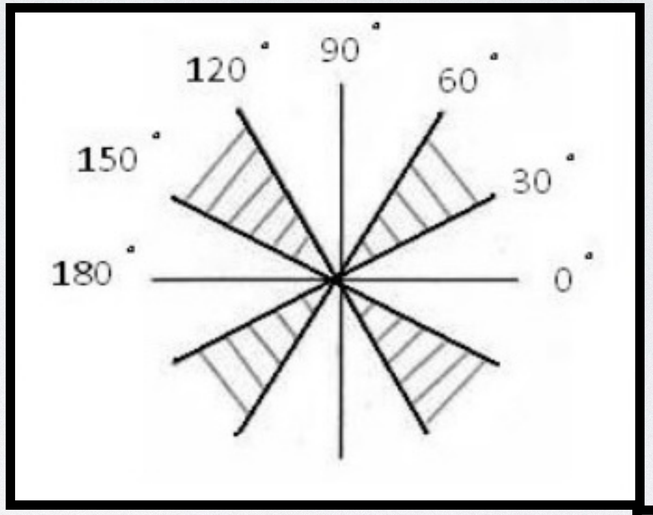
TYPES BASED ON AXIS

- ***1.With the rule astigmatism(WTR)***
- Two principal meridians at right angles.
- Vertical more curved than horizontal
- ***2.Against the rule astigmatism(ATR)***
- Horizontal meridian is more curved than the vertical meridian



- ***3.Oblique astigmatism***

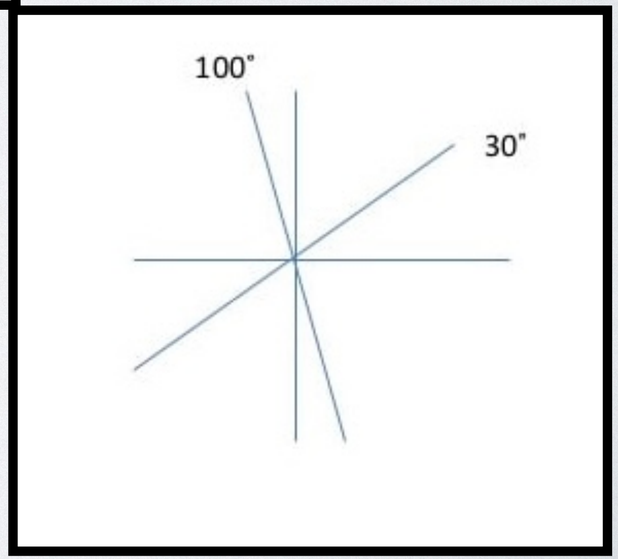
- Two meridians at right angle,but not horizontal and vertical



- E.g:45 degrees and 135 degrees

- ***4.Bioblique astigmatism***

- Two meridians not at right angles



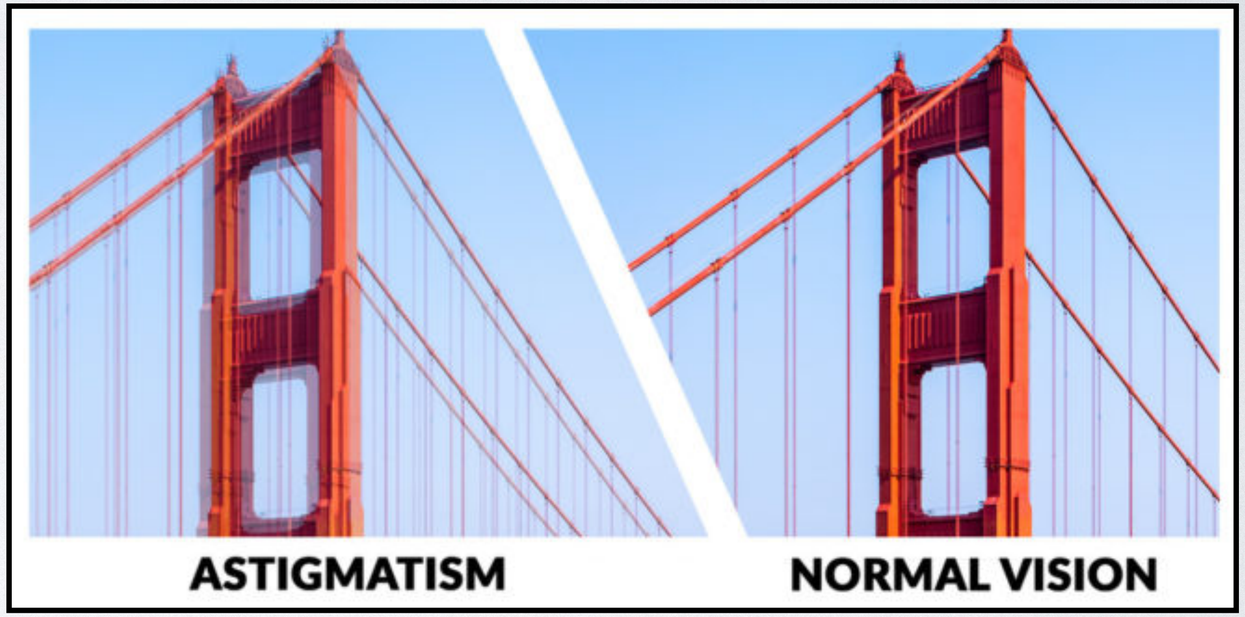
- E.g:30 degrees and 100 degrees

CLINICAL FEATURES

- Asthenopia
- Blurred vision and defective vision
- Elongation of objects
- Keeping reading material close to eyes

SIGNS

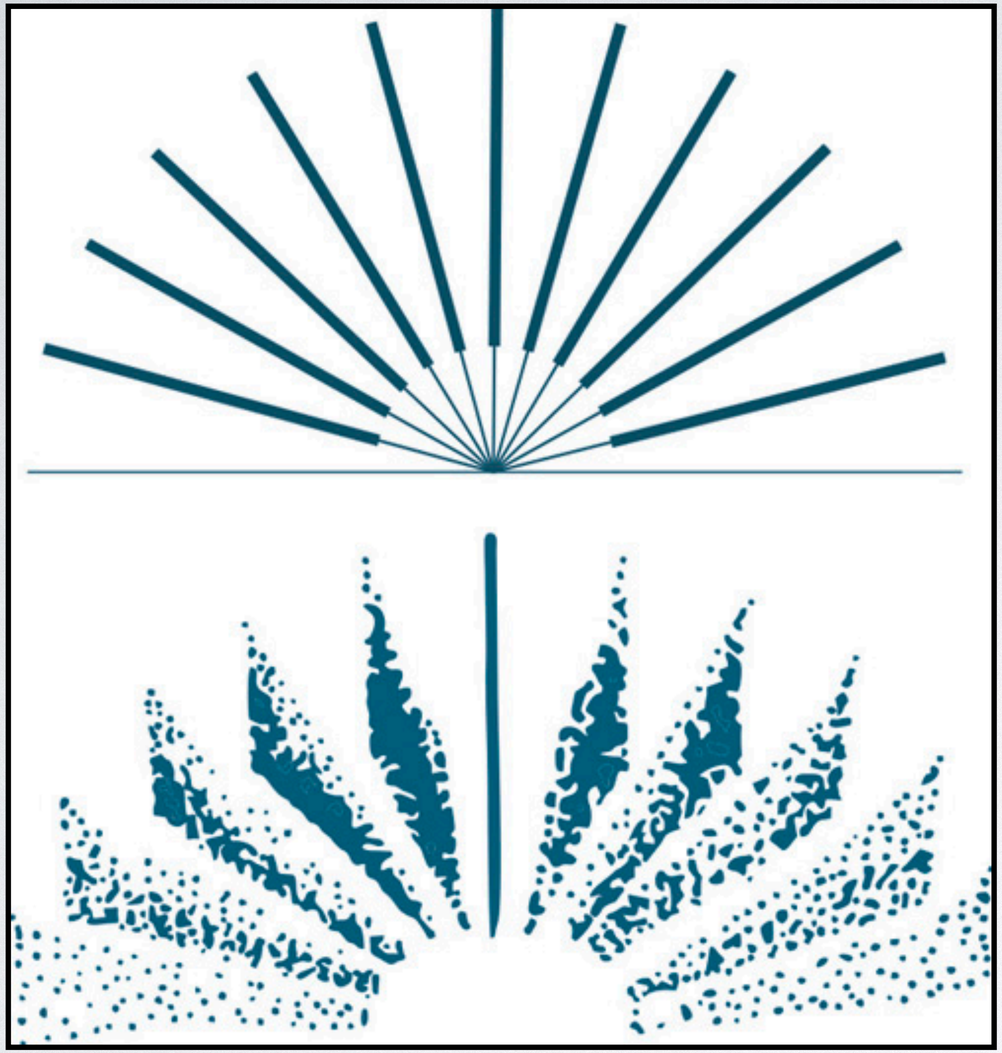
- Half closure of eyelid
- Head tilt
- Oval or tilted optic disc



- Different power in two meridians on retinoscopy

INVESTIGATIONS

- Retinoscopy-different power in two different axes
- Keratometry and computerized corneal topography
- Astigmatic fan test
- Jackson's cross cylinder test

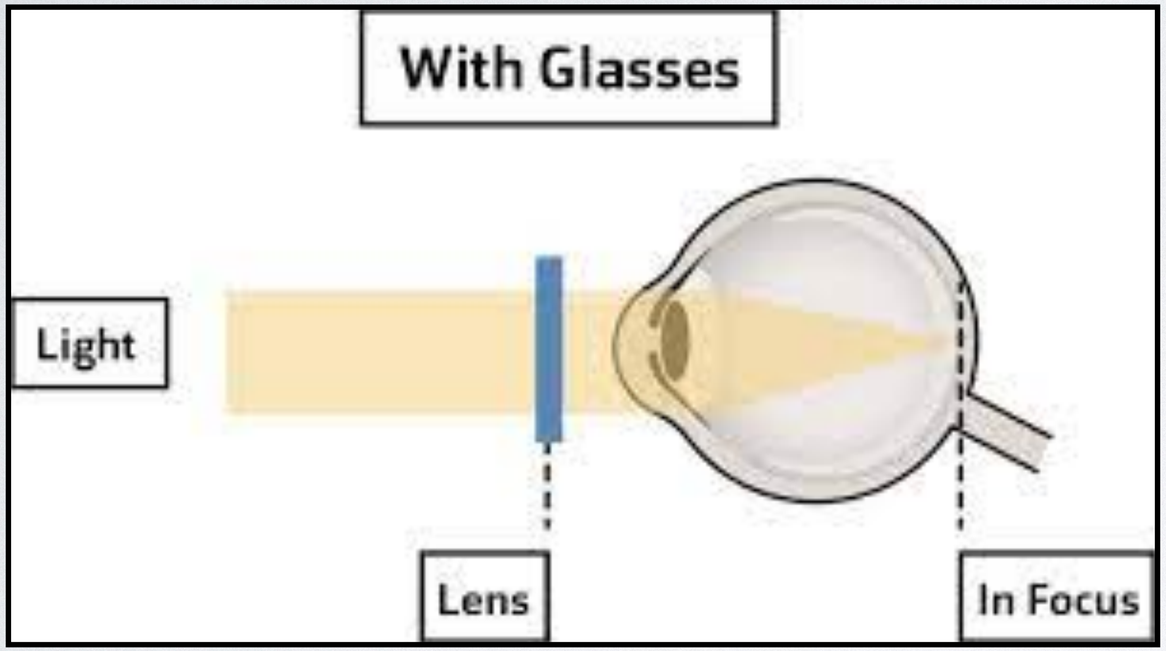


- **Astigmatic fan test**

Cross-cylinders

- Used to refine the axis and the power of the cylinder.
- Done after the cylindrical correction has been made.
- Combination of a negative and positive cylinder of equal strength (usually 0.5D) mounted at an angle of 90 degrees
- In practice combined into one piece of glass

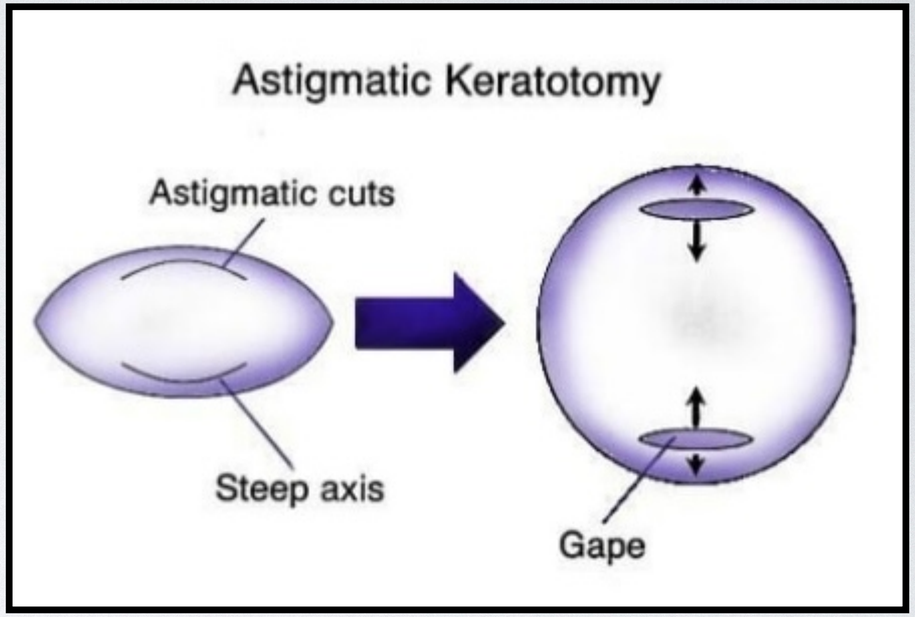
TREATMENT

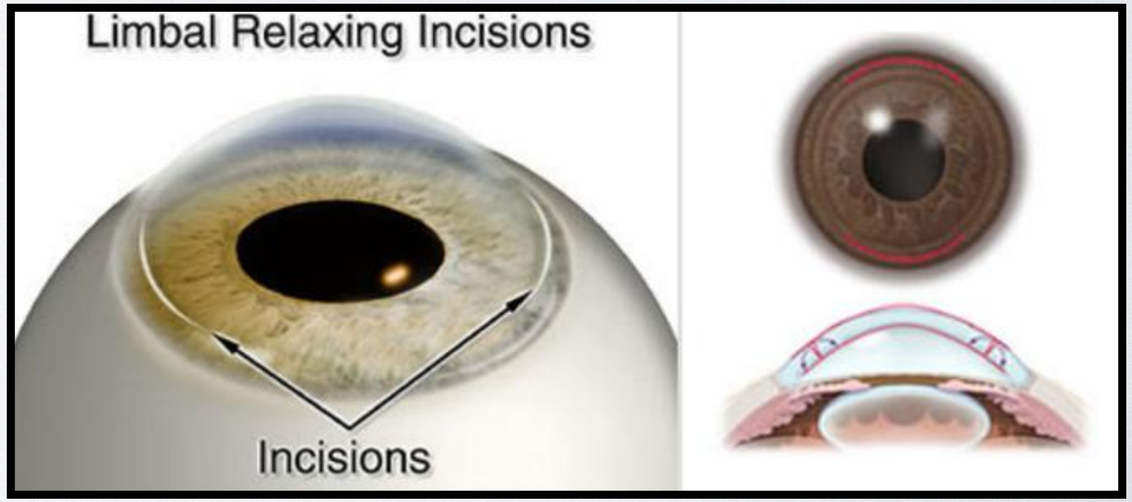


- ***1.OPTICAL TREATMENT***
- **-Spectacles**
- **-Contact lenses:**
- Rigid lens for correcting 2-3D of regular astigmatism
- Soft-for little astigmatism
- Toric-for higher astigmatism

2.SURGICAL CORRECTION

- Astigmatic keratotomy(AK)
- Limbal relaxing incisions(LRIs)
- Corneal relaxing incisions(CRIs)
- Photo-astigmatic refractive keratotomy(PARK)
- LASIK procedure
- SMILE procedure



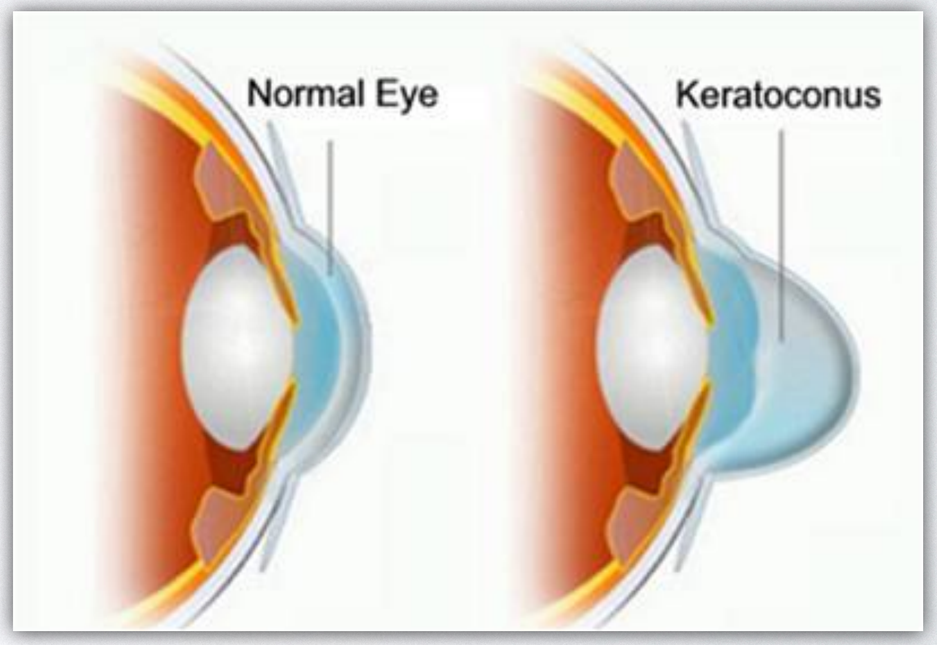


IRREGULAR ASTIGMATISM

- **ETIOLOGY**

- 1.Curvatural irregular -**corneal scar or keratoconus**

- 2.Index irregular

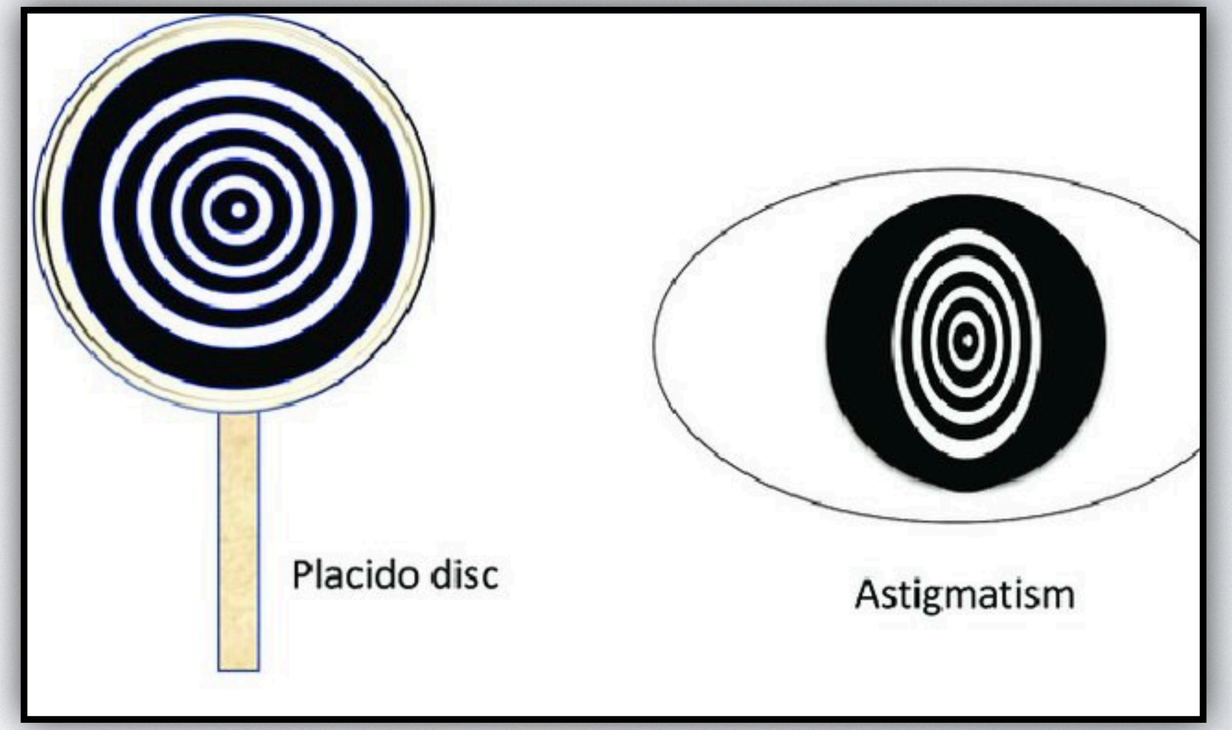


SYMPTOMS

- Defective vision
- Distortion of objects
- Polyopia

SIGNS

- **Retinoscopy**-irregular pupillary reflex
- **Slit-lamp examination**:corneal irregularity or keratoconus
- **Placido's disc test**:distorted circles
- **Photokeratoscopy and computerised corneal topography**



TREATMENT

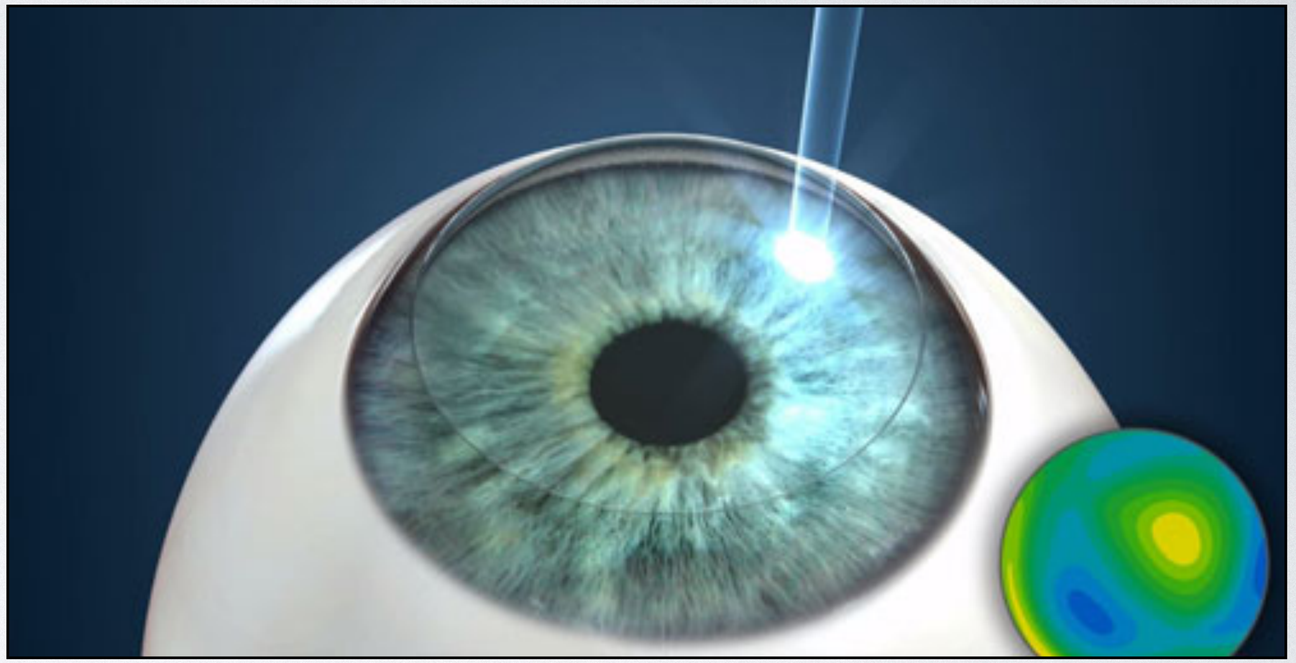
- ***1.Optical treatment***

- Contact lens

- ***2.Phototherapeutic keratectomy(PTK)***

- ***3.Surgical treatment***

- -Penetrating keratoplasty or Deep Anterior Lamellar Keratoplasty(DALK)



REFERENCES

- **Parson's disease of the eye**
- **Comprehensive Ophthalmology-A K Khurana**

THANK YOU