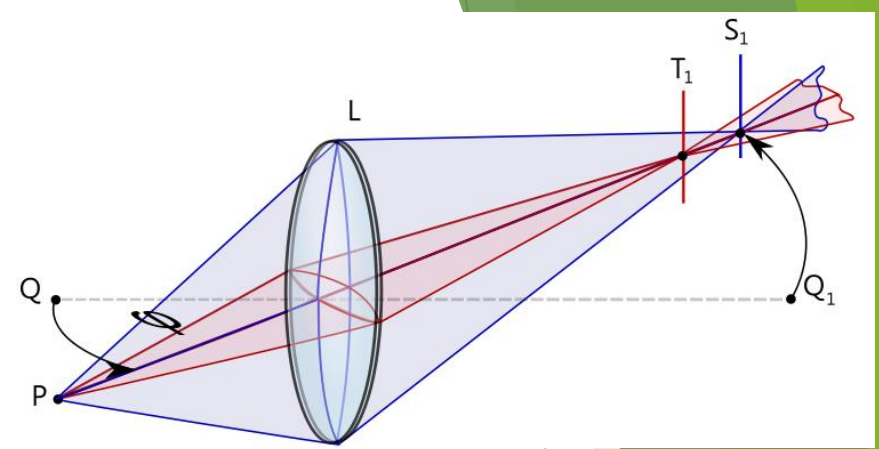


# Prescription Glasses for Astigmatism

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# Definition



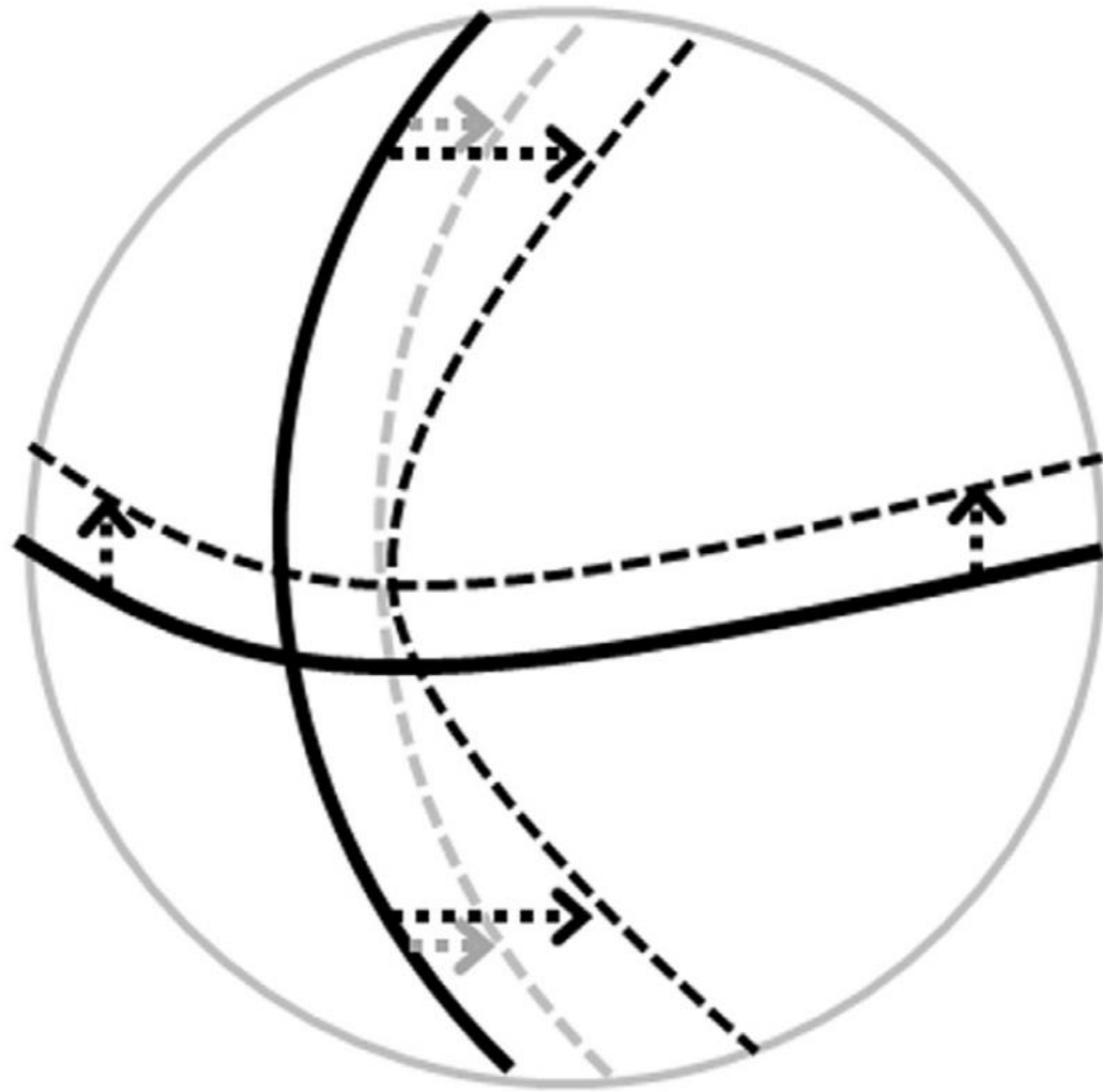
- ▶ Astigmatism is ametropia created by meridional variation in refractive power of the eye.
- ▶ It causes blurred vision, monocular diplopia, asthenopia, and meridional amblyopia ( $>2$  D).
- ▶ Uncorrected ATR cylinder to be a greater deterrent to visual acuity than does uncorrected WTR cylinder.

# Sources of astigmatism

- ▶ Anterior and posterior corneal surface
- ▶ Anterior and posterior lens surface
- ▶ Retina
- ▶ Misalignment between optical components of the eye

# Features of posterior corneal astigmatism

- ▶ It is always negative and usually less than -0.5 D (range, -0.1 to -1.0 D) in normal corneas.
- ▶ Posterior corneal astigmatism is almost always ATR.
- ▶ Its power tends to increase with increasing anterior corneal astigmatism.
- ▶ Its axis remains unchanged as age increases.



# Types of astigmatism

- ▶ Regular versus irregular astigmatism
- ▶ Orthogonal versus non-orthogonal astigmatism
- ▶ With-the-rule versus against-the-rule versus oblique astigmatism

# Changes in astigmatism power and axis

- ▶ The power of astigmatism changes with ageing.
- ▶ The orientation of astigmatism changes with ageing.
  - ATR in infants
  - WTR in children and adults
  - ATR after 40 years

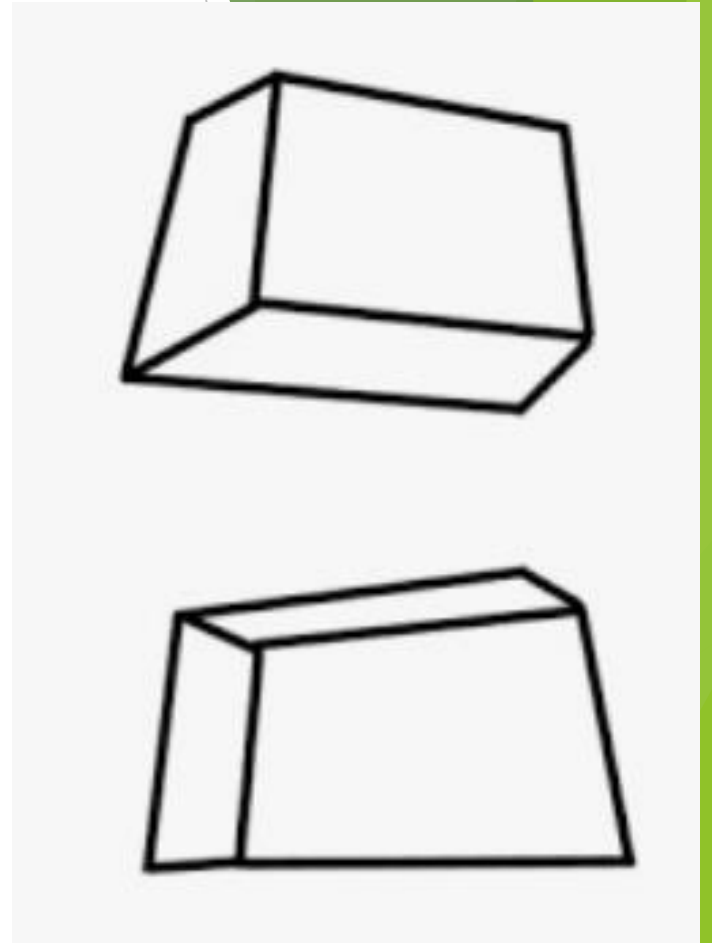
# Prescription of astigmatism for adults

- ▶ Simple myopic astigmatism  $>1$  D
- ▶ Compound myopic, compound hyperopic, and mixed astigmatism



# Prescription of high astigmatism for adults

- ▶ The tolerable amount of astigmatism is  $<4$  D.
- ▶ High astigmatism causes meridional aniseikonia.
- ▶ When the axis is not parallel in two eyes, it causes spatial distortion.
- ▶ The majority of patients can tolerate glasses after a while.



# Prescription of high astigmatism for adults

- ▶ Smaller size of glasses can be used.
- ▶ Reduce vertex distance.
- ▶ Prescribe minus cylinder in stead of plus cylinder.
- ▶ Use back toric glasses.

# Prescription of high astigmatism for adults

- ▶ The more accurately the visual axes align with optical centers of the distance lenses.
- ▶ Change the astigmatism orientation to 90 or 180.
- ▶ Eliminate cylinder for one eye.

# Prescription of high astigmatism for adults

- ▶ Reduce the power of astigmatism while keeping spherical equivalent the same.
- ▶ Care should be taken before shifting the cylinder axis from what has been habitually worn.

# Prescription of astigmatism for children

- ▶ Simple myopic astigmatism
  - <2 years: >3 D
  - 2-6 years: >2 D
  - >6 years: >1 D
- ▶ If myopia or hyperopia should be corrected, any amount of astigmatism should be prescribed.
- ▶ There is no need to reduce the power or axis of astigmatism in children.

# Astigmatism and near glasses

- ▶ If refractive astigmatism is  $>2$  D, the axis and power of astigmatism should be determined for near.
- ▶ If shift in the axis is  $>5^\circ$  or power difference in  $>0.5$  D, patients may not accept bifocals.
- ▶ Separate near glasses or a compromise by prescribing an axis midway between the two is a solution.