

EyeSystems



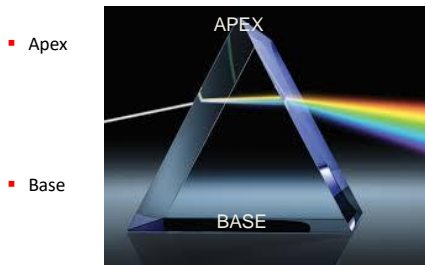
It has Prism...You do it
Introduction to Prism and Patients

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Prism

EyeSystems



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Light through a prism

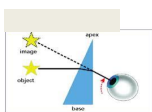
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Refracted



Dispersed

Displaced



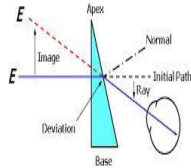
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Refraction

- Light always bends
 - Base
- Image displaced toward
 - Apex



Ray of Light Deviated Towards Prism Base

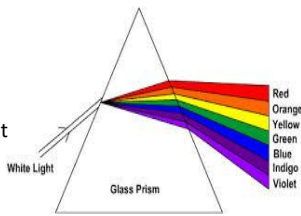
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Dispersion

- White light separates into natural component colors.
- Each color has a different velocity (speed) through lens materials.
- Same velocity in air.
 - Body in air – car accident



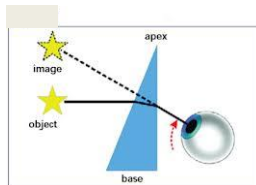
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Displaced

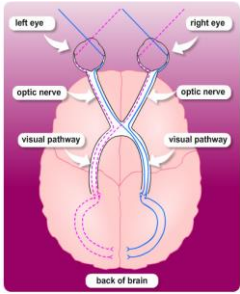
- Prism displaces light changing the apparent location of an object.



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Visual Pathway



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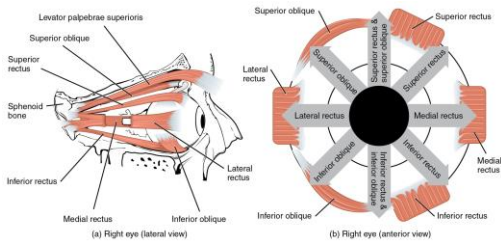
Why Prism is prescribed

- Strabismus
 - Eyes not properly aligned, crossed eyes or eye turn
 - Treatment– glasses, prism, vision therapy, surgery
- Amblyopia
 - “Lazy Eye”– does not see as well, “weaker”
 - Treatment - patching, glasses, prism, vision therapy – NOT surgery
- Diplopia
 - Double Vision
 - Treatment – Depends on cause

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Muscles of the Eye



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Eye Position

- Eso
- Exo
- Hyper
- Hypo

- Phoria
- Tropia



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Why is Prism Prescribed

- A lens with prism correction displaces the image, which is used to treat muscular imbalance or other conditions that cause errors in eye orientation.
 - Prism correction is measured in prism dioptres.
 - Prism dioptre is represented by the Greek symbol delta (Δ).
 - A prism of power 1Δ would produce 1 unit of displacement for an object held 100 units from the prism. Thus a prism of 1Δ would produce 1 cm visible displacement at 100 cm and so on.
 - $P = 100 \tan d$ where P is the amount of prism correction in prism dioptres, and d is the angle of deviation of the light.
 - For a prism with apex angle a and refractive index n, $d = (n-1) a$.

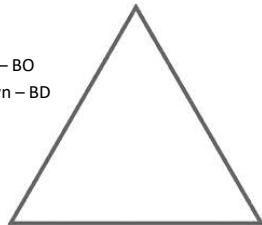
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Why is Prism Prescribed

- A prescription that specifies prism correction will also specify the "base", which is the direction of displacement.

- Base in – BI Base out – BO
- Base up – BU Base down – BD
- BI & UP BI & DN
- BO & UP BO & DN

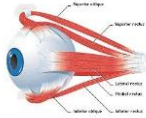


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Adverse Prism

- “Adverse prism” is prescribed to strengthen a weak rectus muscle.
- The “apex” is placed over the weak rectus muscle, causing the eye to turn toward the image.

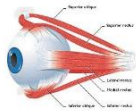


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Therapeutic Prism

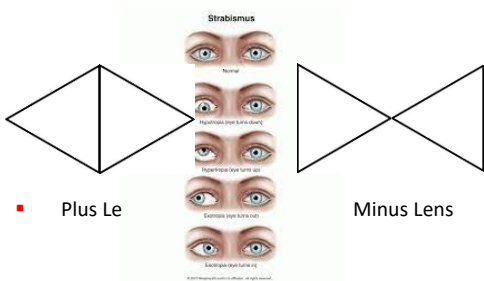
- “Therapeutic prism” is prescribed to relieve visual disturbances such as: double vision, low vision, strabismus, head injury .
- The “base” of the prism is prescribed over the weak rectus muscle , which displaces the image in the same direction of the eye.



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Prism Movement



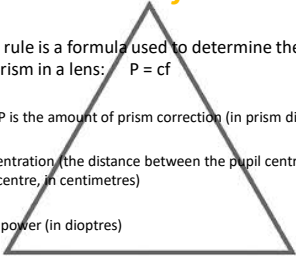
- Plus Le
- Minus Lens

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Prentice's Rule $P=cf$

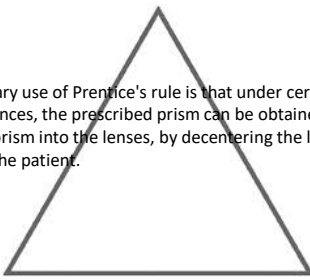
- Prentice's rule is a formula used to determine the amount of induced prism in a lens: $P = cf$
 - where: P is the amount of prism correction (in prism dioptres)
 - c is decentration (the distance between the pupil centre and the lens's optical centre, in centimetres)
 - f is lens power (in dioptres)



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Prentice's Rule $P=cf$

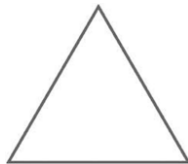
- The primary use of Prentice's rule is that under certain circumstances, the prescribed prism can be obtained without grinding prism into the lenses, by decentering the lenses as worn by the patient.



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Impact of Prescribed Prism

- How can prism have a positive impact on a patient?
 - Strengthen vision
 - Align eyes
 - Eliminate:
 - Double Vision
 - Eyestrain
 - Headaches

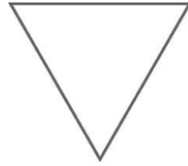


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Too much Prism

- Too much BASE UP:
 - Vertical objects appear shorter
 - Horizontal items appear convex
 - Floor slants downward



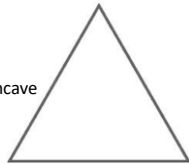
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Too much Prism

- Too much BASE DOWN
 - Vertical objects appear taller
 - Horizontal objects appear concave
 - Floors slant upward

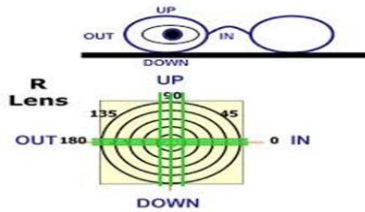


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Lensometry – No Prism

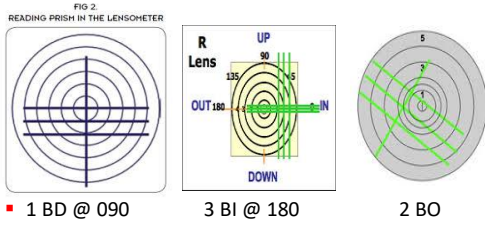


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Lensometer - Prism



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Questions?

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