On behalf of Vision Expo, we sincerely thank you for being with us this year.

Vision Expo Has Gone Green!

We have eliminated all paper session evaluation forms. Please be sure to complete your electronic session evaluations online when you login to request your CE Letter for each course you attended! Your feedback is important to us as our Education Planning Committee considers content and speakers for future meetings to provide you with the best education possible.

vision expo

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Financial Disclosure

Michael Gatti is an employee of HOYA Vision Care.

All relevant relationship have been mitigated.

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Binocular Brilliance

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Objectives

1. Demonstrate the importance of binocular vision
2. Review the effects of unwanted prism and how to counter them
3. Understand binocular technologies in progressive lenses

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Binocular Vision

Do we see with our eyes or our brain?

A. Eyes
B. Brain

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Binocular Vision

How much information does our brain process per day?

A. 12 GB
B. 56 GB
C. 74 GB
D. 128 GB

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Binocular Vision

Two eyes are better than one.

- Improved coordination
- Wider field of vision
- Eliminate blind spots
- Single image
- Stereopsis

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Binocular Vision

Provides a more immersive viewing experience

- Widescreen viewing
- Wider peripheral
- No blind-spots

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Binocular Vision

One 3-dimensional image

- Recognize objects
- Improved coordination
- Two different views
- Retinal disparity

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Binocular Vision

Turning 2D into 3D

- Feed your brain two different views
- Relax your eyes
- Focus on two dots at the top
  - Double the dots
  - Merge the middle dots into one

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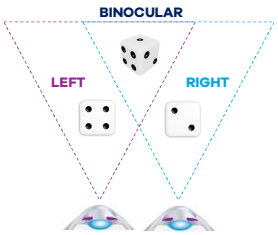
Binocular Vision

Binocular vision is crucial

- Proper eye alignment creates binocularity
- Lenses must produce binocularity equivalent images



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Binocular Vision

Refracting light can be a problem

- Lenses refract light
- Higher Rx = higher refraction
- Difference = disparity

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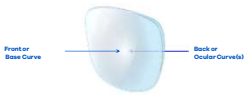
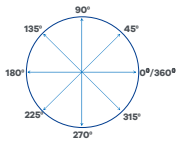
The Eyeglass Lens

Anatomy of a lens

- Front or base curve
- Back or ocular curve
- Lens meridians





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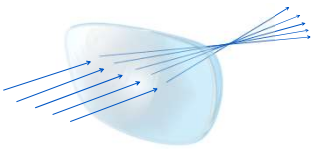
The Eyeglass Lens

Lenses manipulate light

- Light rays are altered by lenses
- Minus lenes lengthen
- Plus lenses shorten



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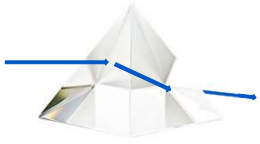
The Eyeglass Lens

Refraction



Light bends
toward base

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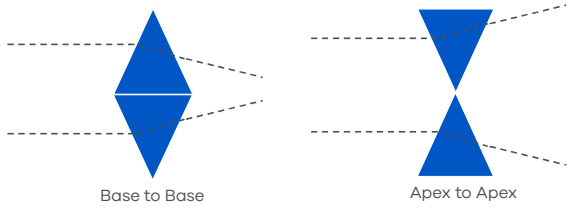
The Eyeglass Lens



Base to Base

Apex to Apex

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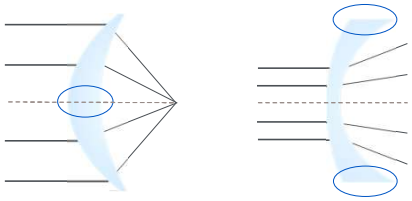
The Eyeglass Lens



Convex
Curves Outward

Concave
Curves Inward

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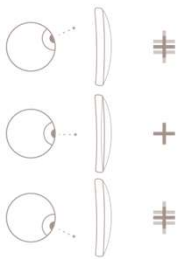
Prismatic Imbalances

Anisometropia creates an imbalance between lenses

- Different prescriptions create prismatic imbalance
- Effects are stronger the further you move from the optical center
- Occurs in all eyeglass lenses
  - Not typically an issue for SV users
  - Can't be corrected by the wearer in PALs



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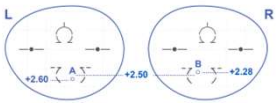
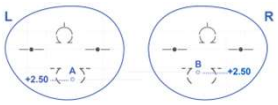
Prismatic Imbalances

Harmonize right and left corrections by adjusting power distribution

- Independent corridor calculations
- Adjust the power progression and corridor lengths
  - Both eyes experience the same add and equal amounts of prism
- Reduces sway and improves binocularity



Without binocular compensation



With binocular compensation

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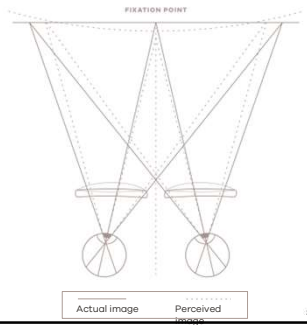
Prismatic Imbalances

Unwanted Prismatic Effects

- Creates uneasy feeling for wearers
- Deformation of the image
- Swaying effect when moving



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Prismatic Imbalances

Peripheral prismatic imbalances create swim and sway

- Vertical and horizontal prism imbalance around the near and intermediate areas
- Increases distortion outside of corridor
- Creates discomfort in the near and intermediate areas
- Makes it harder to adapt to the lenses

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Refractive Lenses

Lenses in a phoropter
- Small in diameter
- Flat in profile
  - 0 Base curve
  - 0° Panto Angle
  - 0° Wrap
- OC height in front of pupil

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Eyeglass Lenses

Lenses in a frame
- Large in diameter
- Curved
  - 5–10° Panto angle
  - 4–10° Wrap
  - 9–20 mm Vertex
- OC height is almost always wrong

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Binocular Brilliance

Two eyes are better than one
- Don't want to lose binocular vision
- Anisometropia creates imbalances
- Brain works overtime to correct errors
- Binocular technologies produce comfortable vision

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