Optical Talk for Techs and Team Members

Presented by
Joy L. Gibb, ABOC

1

Introduction

- Why are professional product recommendations so valuable?
- How do I know what to recommend?
- What is a benefit and how can I explain a benefit?

2

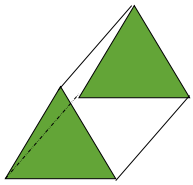
How is a Lens Made?

- Lenses are constructed and designed to meet the needs of the Rx.
- Meet the visual needs of the patient.
- All lenses no matter how complicated have some basic design features that are the same.

3

How is a Lens Made?

Wedged shaped piece of optical glass or plastic…

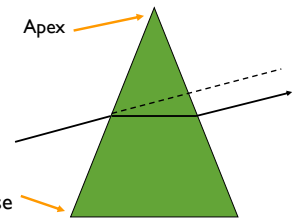


4

How is a Lens Made?

A Prism

…that deviates a ray of light towards the **base** and an image towards the **apex**…



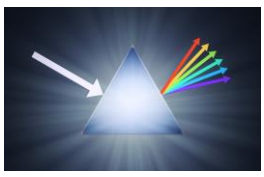
5

How is a Lens Made?

A Prism

…and splits up white light into its component colors.

ROY G BIV



6

How is a Lens Made?

Optics of Plus Lenses

Converges light rays
Magnifies images
Thicker in the middle, thinner at the edge

7

How is a Lens Made?

Optics of Minus Lenses

Diverges light
Minifies images
Thinner in the middle, thicker at the edge

8

Things to Consider

- Index of Refraction
  - How much does it bend light?

Material	Index of Refraction
Air	1.00
Water	1.33
CR39	1.5
Diamond	2.41

9

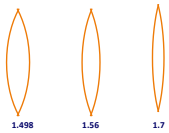
Things to Consider

- Index of Refraction
  - A high index of refraction can have a dramatic difference on the final thickness, weight and profile of a lens
  - Reduce thickness translates into lighter and more comfortable eyewear

10

Things to Consider

- Index of Refraction
  - As the index of refraction becomes higher, a lens of a given prescription and diameter needs less curvature and thickness to produce that power.
  - For plus lenses, this translates into thinner centers; for minus, it means thinner edges.



11

Things to Consider

- Abbe Value
  - A number value given to lens materials to rate the amount of chromatic aberration
  - The higher the abbe value the less the chromatic aberration
  - If the aberration is significant enough, the lens wearer will likely see some reduction in vision quality and possibly colored ghost images

12

Things to Consider

- Specific Gravity
  - The higher the specific gravity the heavier the lens will be
  - Thinner doesn't necessarily mean lighter weight

13

Things to Consider

- Impact Resistance
  - High Impact Lens Test

14

Lens Materials

- CR-39
  - 1.5 Index of Refraction
  - Lighter than glass
  - Thickest lens material
  - Specific Gravity 1.32
  - Abbe Value 58

15

Lens Materials

- CR-39
  - Developed as a replacement for glass lenses during World War II
  - Available in all lens styles
  - Tints well
  - Thickest of the lenses
  - Light weight

16

Lens Materials

- Polycarbonate
  - 1.59 Index of Refraction
  - Light Weight
  - Impact resistant
  - Specific Gravity 1.22
  - Abbe Value 29

17

Lens Materials

- Polycarbonate
  - Represents 35% of all lenses sold
  - Thin profile
  - Available in numerous lens designs
  - Can be more difficult to tint

18

Lens Materials

- Trivex
  - 1.53 Index of Refraction
  - Impact Resistant
  - Optical Clarity
  - Specific Gravity 1.11
  - Abbe Value 43 to 45

19

Lens Materials

- Trivex
  - Combines excellent optics, strength, and ultra-lightweight
  - Available in multiple designs
  - Frame friendly

20

Lens Materials

- High Index Plastic
  - 1.60 1.67
  - Thinner lenses
  - Aspheric designs
  - Specific Gravity 1.34
  - Abbe Value 32-43

21

Lens Materials

- High Index Plastic
  - 50% thinner and 50% lighter than a regular resin or CR39 lens
  - Have flatter front curves for improved cosmetics and ease of insertion in frames

22

Lens Materials

- Super High Index Plastic
  - 1.70+ Index
  - Thinner lenses
  - Aspheric designs
  - Specific Gravities
    - 1.26 to 1.30
  - Abbe Values 32 to 41

23

Lens Designs

- Single Vision
  - Designed for one focal length
  - Distance, Intermediate, Near
  - Wide variety of lens materials

24

Lens Designs

- Digital Single Vision
  - More accuracy
  - One focal length
  - Wide variety of lens materials

25

Lens Designs

- Multifocals
  - Bifocals
    - Top is distance, lower is near
    - 25, 28, or 35mm wide
  - Trifocals
    - Middle is intermediate
    - Intermediate is typically 7 or 8mm deep

26

Lens Designs

- Progressive Lenses
  - No Lines
    - Distance to Near seamlessly
    - Shaped like an hourglass
    - Traditional or short seg heights
    - Point your nose lens
    - Wide variety of lens materials

27

Lens Designs

- Digital Progressives
  - Improved accuracy
  - Personalized designs
  - Available traditional and short seg
  - Wide variety of lens materials

28

Lens Designs

- Computer Lenses
  - Single Vision or Multi Focus
  - Reduces eye fatigue and strain
  - Can be helpful for those with neck and shoulder issues

29

Lens Designs

- Single Vision Readers/Intermediate Lense
  - Half eye or full field
  - Can help with certain medical conditions
  - Can improve quality of life
  - Wide variety of materials and treatments

30

Lens Designs

- Specialty Lenses
  - Occupational lenses
    - Double D seg
    - Wider/Deeper segs

31

Lens Treatments

- Scratch Coating
  - “resistant” NOT “proof”
  - Applied to all resin lenses
  - Base for AR
  - Instructions for cleaning

32

Lens Treatments

- UV Protection
  - Blocks harmful UV rays
  - What damage can occur from UV radiation?
  - Applied to CR39
  - Mid and High Index materials - included

33

Lens Treatment

- Anti Reflective
  - Basic Lens Material
  - Scratch Resistant Coating
  - Anti-Reflective Layers
  - Hydrophobic Topcoat
  - Oleophobic Topcoat
  - Anti-Static Properties

34

Lens Treatments

- Anti Reflective
  - Layers of thin film – 1/5000th the width of a human hair
  - Vacuum deposited
  - Reduces reflections over a broad band of wavelengths
  - Increases light transmission

35

Lens Treatments

- Anti Reflective
  - Reduces eyestrain when under artificial light
  - Cuts reflections from back of sun lenses
  - Improves cosmetics
  - Improves low light vision
  - Significantly improves high index lens transmission

36

Lens Treatments

- Blue LIght

37

Lens Treatments

- Tints
  - Wide variety of colors and density
  - Cuts down brightness NOT glare
  - Fashion tints
  - Functional tints
  - Specialty Tints

38

Lens Treatments

- Photochromatics
  - Variable tint
  - Clear to dark or dark to darker
  - Variety of colors
  - Convenient
  - Wide variety of materials and lens designs

39

Lens Treatments

- Photochromatics
  - Needs UV exposure
  - Variables
    - Temperature
    - Altitude
    - Orientation of lens to sunlight

40

Lens Treatments

- Polarization
  - Venetian blind
  - Filter is suspended in lens
  - Reduces blinding glare
  - Improves contracts
  - Wide variety of colors, materials, designs

41

Lens Treatments

- Polarized
  - Photochromatic
  - How do I know if a lens is polarized?
  - To polarize or not to polarize
  - Expectations
  - Wide variety of colors

42

Lens Treatments

- Mirrors
  - Solids or Gradients
  - Vacuum/Flash
  - Can be placed over any colored or clear lens
  - Wide range of colors
  - Who benefits

43

Frames

- Semi-Rimless
  - Frame on the top not on the bottom
  - Lenses are grooved
  - Plus lenses

44

Frames

- Rimless
  - Minimal frame
  - Drill through lenses
  - Compression mount systems
  - Are they durable?
  - Prescription ranges

45

Frames

- Oversize
  - How could an oversize lens size affect the cosmetic appeal of the final product?
  - Can lead to more problems peripherally

46

Frames

- Wraps
  - Too much wrap can change the wearer's vision
  - Some lenses may not be available

47

Frames

- Short B Measurement
  - May require short corridor progressive lenses
  - What if they really LOVE the frame?

48

Recommendations

- Sunwear
  - Who should have sunwear?
  - How can you encourage sunwear?

49

Recommendations

- Eye Health History?
  - How could the answers influence your recommendations?
    - Ie: Macular Degeneration

50

Recommendations

- Contact Lens Wearers
  - What recommendations should be made?
- Post Surgical Patients
  - What recommendations should be made?

51

Recommendations

- Children
  - What recommendations should be made?
- Non-prescription
  - What recommendations should be made?

52

Conclusion

If you believe in taking care of your patient's vision and eye health, everyone should be making recommendations at various touch points during their visit.

53

Thank You

for attending

eyesofjoy@yahoo.com

54