Optical
CARL ZEISS VISION

Optical
• 2 hour ABO Credit
• 110 minutes straight through
• Play 2 rounds
• Secretary keeps score
• Team Captain is the ONLY person that can answer

Learning Outcomes
• Review of Optical knowledge
  – Fitting
  – PAL’s
  – Terminology
  – Materials
  – Self-tinting
  – Selling

Optical Jeopardy – Category ‘Fitting’
• Fitting for 10 points
  
  Q  Name 2 reasons you mark center pupil when fitting a progressive lens?

  A  1) Ensure room for minimum fitting height.
     2) In order to remark the lens...

1) Proper Fitting Height
• Same eye level with Patient
• Consider Patient’s posture
• Dot pupil center and do not drop measurement!!!

2) Ensure Proper Minimum Fitting Height
• Place frame face down on the Centration Chart
• Place green dot on fitting cross for right lens

Optical Jeopardy – Category ‘Fitting’
• Fitting for 20 points
  
  Q  Name 2 things a centration chart can be used for?

  A  1) Remarking the lens
     2) Ensuring room for minimum fitting height
• Trace on the back of the lens
  - the fitting cross
  - the 180 line
  - the distance circle
  - the reading circle

• Place frame face down on the Centration Chart
• Place green dot on fitting cross for right lens

**Optical Jeopardy - Category ‘Fitting’**
• Fitting for 30 points
  • Q Name 3 techniques for finding the markings on a progressive lens?
  
  A 1) Look through the lens using natural light
      2) Steam the front of the lens? Or..PAL light box?
      3) View the lens with a black background, use a penlight through the back of the lens

**Optical Jeopardy - Category ‘Fitting’**
• Fitting for 40 points
  • Q Describe how to measure the near power on a progressive lens?

**Measuring the add power in a progressive**
• Verify distance power through the distance circle and record
• Turn the glasses around and look through the back of the lens – the front of lens will be against the lensometer aperture.
• Take a reading through the near circle
• The difference between the two readings is the add power

**Optical Jeopardy - Category ‘Fitting’**
• Fitting for 50 points
  • Q Name 3 engravings on a progressive lens and SPECIFICALLY where they are located

  A 1) Nasal logo - 17mm from fitting cross
      2) Temporal logo - 17mm from fitting cross
      3) Add power - below temporal logo

**Optical Jeopardy - Category ‘PALs’**
• Progressives for 10 points
  •
Q Name 4 lens options available that correct presbyopia?

A 1) Progressives
   2) Bifocals
   3) Trifocals
   4) Single Vision Readers

16 Optical Jeopardy - Category 'PALs'
   • Progressives for 20 points
     • Are first time presbyopes good candidates for a progressive lens?

   A Yes

17 Optical Jeopardy - Category 'PALs'
   • Progressives for 30 points
     • When checking a progressive lens for unwanted prism, where on the lens should you be checking?

   A On the dot directly below the cross

18 Optical Jeopardy - Category 'PALs'
   • Progressives for 40 points
     • What is the biggest advantage of PALs for presbyopes?

   A Progressive lenses are the closest things to natural vision. Distance, intermediate and near

19 Optical Jeopardy - Category 'PALs'
   • Progressives for 50 points

     Q Define optical “POW” and give the 3 components of this acronym

     A “Position of Wear” 1) Back Vertex Distance 2) Pantoscopic Angle 3) Wrap

Position of Wear Measurements

22 Optical Jeopardy - Category ‘Terminology’
   • Terminology for 10 points
     • What does the acronym R.O.Y.G.B.I.V. stand for?

     A The colors of Visible Light:
Red, Orange, Yellow, Green, Blue, Indigo & Violet

23 Optical Jeopardy - Category 'Terminology'
   • Terminology for 20 points
   •
   Q Describe Presbyopia.

   A Literally means ‘old eyes’. When the lens of the eye looses it’s ability to accommodate for near vision

24 Optical Jeopardy - Category 'Terminology'
   • Terminology for 30 points
   •
   Q What does MRP stand for?

   A Major Reference Point

   Major Reference Point
   • This small dot is located 4mm below the fitting cross (usually)
   • Used to check for vertical imbalance or prescribed prism by placing the small dot (optical center) on the aperture of the lensometer

25 Optical Jeopardy - Category 'Terminology'
   • Terminology for 40 points
   •
   Q What does the Retina do?

   A Nerve center that senses light

26 Optical Jeopardy - Category 'Terminology'
   • Terminology for 50 points
   •
   Q What do we call maps for progressive lenses and why is it important to understand them?

   A Contour Plots - show us both the usable and unusable areas of the lens

27 Optical Jeopardy - Category 'Terminology'
   • Terminology for 50 points
   •
   Q What do we call maps for progressive lenses and why is it important to understand them?

   A Contour Plots - show us both the usable and unusable areas of the lens

28 Astigmatic Contour Plot
   • Shows distribution & amount of cylinder
   • Each color usually represents 0.50D increments
   • Outlines functional areas of the lens

29 Distance Zone
   • Located above the fitting cross
   • Relate optical performance to the distance vision needs of the patient
• Allowing some astigmatism in the distance helps reduce overall astigmatism

30 Intermediate Zone
• Major benefit of progressives
• Located below fitting cross and above 95% of add power
• Visual corridor bounded by walls of astigmatism
• Wide-spaced contours broaden the feeling of the corridor
• Longer corridors can increase the spacing of the contours

31 Optical Jeopardy - Category ‘Materials’
• Materials for 10 points
•
Q What was the first ophthalmic lens material?

A Glass

32 1st Lens Material
• Glass
  - Good optics
  - Very scratch resistant
  - Heavy
  - Not very safe

33 Optical Jeopardy - Category ‘Materials’
• Materials for 20 points
•
Q What lens materials are ideal for drill-mount frames?

A Trivex and Hi-index

34 Frames and Materials
• Mid-index and hi-index are excellent choices for semi-rimless frames
•
• Materials such as Trivex and Hi-index have a lower expansion rate and a higher tensile strength

35 Optical Jeopardy - Category ‘Materials’
• Materials for 30 points
•
Q What is the most impact resistant ophthalmic lens material?

A Polycarbonate

36 Safety
• Polycarbonate
  - Most impact resistant material available
  - Thinner & lighter than CR39
- Built in UV protection
- Requires Scratch Resistant Coating
- Not very tintable

**Optical Jeopardy - Category ‘Materials’**

• Materials for 40 points

Q What is the highest index lens available?

A 1.8 Thindex Glass

**Optical Jeopardy - Category ‘Materials’**

• Materials for 50 points

Q What was the full name of the scientist who created the Abbe value and who was his business partner?

A Ernest Abbe and Carl Zeiss

**Carl Zeiss - Over 160 years in precision optics**

**Optical Jeopardy - Category ‘Self-Tinting’**

• Self-Tinting for 10 points

Q What is the photochromic product that gets the darkest?

A Photogrey Xtractive (PGX)

**Optical Jeopardy - Category ‘Self-Tinting’**

• Self-Tinting for 20 points

Q What is the lifestyle need that photochromics will best fill?

A Customers who are in and out of sunlight throughout the day

**Optical Jeopardy - Category ‘Self-Tinting’**

• Self-Tinting for 30 points

Q What is the most common photochromic color chosen?

A United States - Grey

**Optical Jeopardy - Category ‘Self-Tinting’**

• Self-Tinting for 40 points

Q What is the most common photochromic color chosen in Europe?

A Europe - Brown
44 **Optical Jeopardy - Category ‘Self-Tinting’**
- Self-Tinting for 50 points
  - Q What is the affect of heat on a photochromic molecule?
    
    A High temperatures and humidity causes the molecule to want to close and the lenses to clear

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45 **The Photochromic Molecule**

46 **Optical Jeopardy - Category ‘Selling’**
- Selling for 10 points
  - Q What is one of the first questions you should ask when determining patients’ lens needs?
    
    A “May I see your prescription”?

47 **Optical Jeopardy - Category ‘Selling’**
- Selling for 20 points
  - Q Name 3 Lifestyle questions you could ask.
    
    A 1) What type of visual tasks do you do?
      2) Do you spend time outdoors?
      3) Are you bothered by glare?
      4) Do you lead an active lifestyle?

48 **Optical Jeopardy - Category ‘Selling’**
- Selling for 30 points
  - Q How would you introduce a progressive to a 55 year old bifocal wearer?
    
    A Ask questions regarding tasks in the intermediate zone, such as dashboards and computers

49 **Optical Jeopardy - Category ‘Selling’**
- Selling for 40 points
  - Q How would you overcome the objection ‘it cost too much’ when offering a progressive lens?
    
    A Explain the value received for the vision that closest resembles youthful vision

50 **Optical Jeopardy - Category ‘Selling’**
• Selling for 50 points

Q  What is the best way to justify the cost of 2 pairs of glasses?

A  Repeat lifestyle information, ex. ‘You mentioned that you spend time outdoors on the weekends...may I recommend polarized lenses? You will love them. They eliminate glare from the sun while driving and all outdoor activities

Optical Jeopardy – End of Round 1!

How did you score?
• Team 1
• Team 2
• Team 3
• Team 4
• Team 5
• Team 6

Optical

Let's Play

FINAL JEOPARDY

Topics are:
• PAL Designs
• Bifocal Conversion
• Lifestyle Dispensing
• PALs for Customer needs
• Terminology
• Reducing Redo's

Optical Jeopardy - Category 'PAL Design'

• PAL Design for 10 points

Q  What is the original Progressive lens from a U.S. company

A  A/O Ultraview

Early Progressives
• Difficult to adapt to
• Difficult to fit (dispensers not used to them)
• Only for people who were willing to sacrifice some vision comfort for cosmetics
  – A vanity sale, in other words

The Progressive Market Today
• Approximately 160 million people in the US wear eyeglasses
• About half of multifocals are now progressives
• Of these, about 35 million wear progressive lenses

50 **Why Have Progressives Caught On?**
• They’re still cosmetically superior
• Now they’re visually superior
  – Constant improvement over the last two decades
  – Greater refinement to suit individual wearer needs
  – Results: more natural vision, easy adaptation

55 **Optical Jeopardy – Category ‘PAL Design’**
• PAL Design for 20 points

Q How do progressives work?
A Well... By continually changing curves form the optical center to the reading power.

60 **Multifocal Design**
• Add power achieved by steeper curve
• Sphere curves
  – plus power results in blur unless viewing at near
• Add power can be measured with a lens clock!

62 **Progressive Lenses**
• Instead of a hard ledge of a Flat Top, the curve gradually slopes off from top to bottom

64 **Progressive Lenses**
• Add power achieved by steeper curve
• Aspheric curves change gradually from distance to near
  – gradual change results in unwanted astigmatism
• Add power can be measured with a lens clock!

63 **Optical Jeopardy – Category ‘PAL Design’**
• PAL Design for 30 points

Q How do Lens Designers evaluate progressive lenses?
A Measure the hundreds of powers across the lens, and...by seeing the invisible

65 **Free Form**

**To “See” the Invisible**
• Progressive lens is:
  – ground with plano distance on proper base
  – 1.50, 2.00, 2.50 adds
  – 60mm round
• 1600 readings with Humphry lensometer
• Data is graphed in a variety of ways

**Designing Progressives**
• Optical designers use computers
• Set design parameters
  – Base/add power
  – Corridor length
  – Near zone width
  – Distance zone characteristics
• Designer distributes cylinder to meet the design goals

**Optical Jeopardy - Category ‘PAL Design’**
• PAL Design for 40 points

Q What is an intermediate zone on a progressive lens?

A The intermediate zone is the transition of power between the Distance and Near viewing zones.

**Intermediate Zone**
• Located below fitting cross and above 95% of add power
• Visual corridor bounded by walls of astigmatism
• Wide-spaced contours broaden the feeling of the corridor
• Longer corridors can increase the spacing of the contours

**Optical Jeopardy - Category ‘PAL Design’**
• Progressive Design for 50 points

Q When was the first progressive conceived AND when was it first successfully introduced and by what company?

A Owen Aves in 1907
  Univis Omnifocal in 1965

**Optical Jeopardy - Category ‘Bifocal Conversion’**
Bifocal Conversion for 10 points

Q Why is a bifocal NOT the best choice to treat presbyopia?

A Bifocals have two focal points, distance and near – no intermediate vision.

**Limitations of Conventional Multifocals**
• Multifocal segments are visible and considered to be revealing, telltale signs of age
• Multifocal segments produce an annoying *image jump* and a blind region (or *scotoma*) when the wearer's lines of sight pass into them
• Bifocal lenses limit the range of clear vision, and do not provide intermediate vision
• Trifocal lenses provide a limited range of intermediate vision at the price of additional scotoma
Range of Clear Vision: Bifocals

- As the add power increases and accommodation decreases, the range of clear vision forms a gap in intermediate vision.

Optical Jeopardy - Category ‘Bifocal Conversion’

- Bifocal Conversion for 20 points
  - Q Why is intermediate vision important to a presbyope?
    
    A Many visual tasks today are at arm’s length.

Intermediate Vision

- As the eyes continue to lose their amplitude of accommodation and as their required add power increases, *intermediate vision* becomes blurred with conventional bifocals.
  - Once the add power approaches +2.00 D, objects at arm’s length may not be clear through either the distance portion (too close) or the bifocal segment (too far) indicating the need for trifocals.

Optical Jeopardy - Category ‘Bifocal Conversion’

- Bifocal Conversion for 30 points
  - Q Why aren’t trifocals the best option for presbyopia?
    
    A Image jump and scotoma...let me explain

Range of Clear Vision: Trifocals

- The addition of a segment of power between far and near provides limited intermediate vision
  - Also an additional line and image jump.

Image Jump and Scotoma, Times Two

In a trifocal, the effect of image jump and scotoma are doubled.

Optical Jeopardy - Category ‘Bifocal Conversion’

- Bifocal Conversion for 40 points
  - Q What is the adaption rate for progressive wearers and the adaption rate for bifocal wearers?
    
    A Progressive lenses- 95% and up
      Bifocal lenses- 89%

Optical Jeopardy - Category ‘Bifocal Conversion’

- Bifocal Conversion for 50 points
  - Q What year did progressive sales overtake bifocal and trifocal sales?
    
    A 2003
Progressives Gain Against Bi/Trifocals

Newer progressives perform better...

Optical Jeopardy - Category ‘Lifestyle’

• Lifestyle for 10 points

  Q What is the best lens material for those Customers who ‘just need the basics’ and have a simple Rx?

  A Depends on the frame selection and activity level

Optical Jeopardy - Category ‘Lifestyle’

• Lifestyle for 20 points

  Q What lens material is best for patients who lead an active Lifestyle?

  A Polycarbonate or Trivex

Optical Jeopardy - Category ‘Lifestyle’

• Lifestyle for 30 points

  Q You ask the question ‘What do you do in your spare time’ and find out they spend the entire weekend outdoors. What would you recommend?

  A A pair of Polarized lenses as a second pair

Optical Jeopardy - Category ‘Lifestyle’

• Lifestyle for 40 points

  Q You find out that your patient is on the computer for more than three hours a day. What do you recommend?

  A A pair of occupational lenses

Optical Jeopardy - Category ‘Lifestyle’

• Lifestyle for 50 points

  Q What is the acronym we often see that helps an optician determine lifestyle needs?

  A P.R.O.B.E

Optical Jeopardy - Category ‘PALS for Customer Needs’

• PALS for Customer needs for 10 points

  Q What lens design do you recommend if your Customer complains about having ‘no intermediate vision’?

  A Progressive
Range of Clear Vision: Bifocals
• As the add power increases and accommodation decreases, the range of clear vision forms a gap in intermediate vision

Range of Clear Vision: Progressives
• The corridor of a progressive lens provides a continuously increasing add power, which eliminates the gap formed within the range of clear vision

Optical Jeopardy - Category ‘PALs for Customer Needs’
• PALs for Customer needs for 20 points
•
  Q With today’s small frame what design would you recommend ________________?
  A A short corridor design

Optical Jeopardy - Category ‘PALs for Customer Needs’
• PALs for Customer needs for 30 points
•
  Q What progressive design is best for patients who want optimal vision?
  A A Free-Form design that is optimized and variable corridor

Optical Jeopardy - Category ‘PALs for Customer Needs’
• PALs for Customer needs for 40 points
•
  Q What is the best type of progressive design for distance performance?
  A One with no distortion above the 180 line

Optical Jeopardy - Category ‘PALs for Customer Needs’
• PALs for Customer needs for 50 points
•
  Q What is the best lens option for progressive wearers that read at odd angles?
  A SV readers

Optical Jeopardy - Category ‘Terminology’
• Terminology for 10 points

  Q Where does the patient experience the most peripheral distortion in a progressive lens?
  A The area below the fitting cross and to the sides of the corridor and near zone or the Intermediate zone

Peripheral Zone
Below the fitting cross and to the sides of the corridor and near zone
- Optics are sacrificed for better distance and near
- Blur dependent upon magnitude and rate of change of astigmatism
- Asymmetry concentrates blur in nasal zone where it’s less noticeable
- Broad distribution of astigmatism seems to reduce swim

**Optical Jeopardy - Category ‘Terminology’**
- Terminology for 20 points
  - Q  What is a mean power plot?
  - A  Shows distribution of plus power as curve becomes steeper

**Mean Power Plot**
- Mean power equals sphere + 1/2 cylinder
- Shows distribution of plus power as curve becomes steeper
- Each color usually represents 0.50D increments of mean power (increase plus)

**Optical Jeopardy - Category ‘Terminology’**
- Terminology for 30 points
  - Q  What is another term for Self-Tinting lenses?
  - A  Photochromic lenses

**Optical Jeopardy - Category ‘Terminology’**
- Terminology for 40 points
  - Q  What part of the eye determines color vision?
  - A  CONES

**Optical Jeopardy - Category ‘Terminology’**
- Terminology for 50 points
  - Q  Bicentric Grinding of a lens is also known as?
  - A  Slaboff

**Optical Jeopardy - Category ‘Reducing Redo’s’**
- Reducing remakes and non-adapts for 10 points
  - Q  What are 3 steps that can be taken to reduce non-adapts and remakes?
  - A  1) Pre-adjust frame
    2) Fitting Height – Dot pupil center
    3) Monocular PD
‘Fit it right’
- Pre-Adjust, Pre-Adjust, Pre-Adjust!!!
  - Start at the front and work back
  - Adjust nose pads
  - Correct Pantoscopic Tilt
  - Correct Vertex Distance
  - Correct Face form
- Hand it to the Customer to put on face
- Measure accurately

‘Fit it right’
Pantoscopic Tilt

‘Fit it right’
Vertex Distance

‘Fit it right’
Face Form

‘Fit it right’
- Take Fitting Height
- Same eye level with Customer
- Consider Customer’s posture
- Dot pupil center and do not drop measurement!!!
- Take P.D. using Pupilometer

‘Fit it right’
Optical Center

‘Fit it right’
Take P.D. using Pupilometer

**Optical Jeopardy - Category ‘Reducing Redo’s’**
- Reducing remakes and non-adapts for 20 points
- 
Q What are 4 ways to ensure customer satisfaction?

A 1) Understand the consumer
  2) Ask Lifestyle questions
  3) Set real product expectations
  4) Is one pair really enough?

**Optical Jeopardy - Category ‘Reducing Redo’s’**
- Reducing Remakes and non-adapts for 30 points
- 
Q Name 5 steps to a good dispensing?
A Answer to follow…

‘Dispense it right’
- Leave or remark the lenses
- Re-adjust frame
- Educate Customer on how to use lens
  - Realistic expectations
  - Positive verbiage
  - Review lens benefits
- Educate Customer on lens care
- Invite them back
  - Routine adjustments
  - Multiple pair options

Reducing Remakes and non-adapts for 40 points

Q What do you do if a customer comes back saying ‘I can’t see clearly with my progressive?’

A If you said, remake the lenses - you are wrong!

Troubleshooting
- Before making any adjustments
  - Listen to customer
  - Verify concerns with customer
  - Verify prescription
  - Verify fit
  - Use the troubleshooting guide

Optical Jeopardy – Category ‘Reducing Redo’s’
- Reducing Remakes and Non-adapts for 50 points

Q Name 3 reasons it is worth your time to use troubleshooting skills for each customer?

A 1) Happier Customers
   2) Few remakes and non-adapts
   3) Less stress
   4) More profits

Optical Jeopardy – End of Double Jeopardy

How did you score?
- Team 1
- Team 2
- Team 3
• Team 4
• Team 5
• Team 6

116 Optical Jeopardy
FINAL JEOPARDY!
Category Materials

117 Optical Jeopardy
PLACE YOUR WAGER!
• You may bet as many of your points as you like
• If you get the answer right you get all those points
• If you miss the question, you lose those points

118 Optical Jeopardy
FINAL QUESTION!
WHAT IS THE ABBE VALUE OF A TRIVEX LENS??????

119 Optical Jeopardy
FINAL ANSWER!
43-45

120 Optical Jeopardy- Thank you for Playing!
How did you score?
• Team 1
• Team 2
• Team 3
• Team 4
• Team 5
• Team 6

121 Optical
THE WINNERS!!!!!!!

122 Optical
QUESTIONS???????

123 Optical
Thank You