Introduction to Lensometry

Welcome

This course is presented in partnership with the United Opticians Association and its member schools. We are proud to bring this hands-on introduction to lensometry workshop to you.

This course is designed for professionals who are building or strengthening their foundational lensometry skills. Today, we focus on developing accuracy and consistency in measuring single vision lenses and understanding the core principles that support verification.

Throughout this session, you will work directly with manual lensometers to:

- *Identify and understand reticle components*
- *Properly position and neutralize lenses*
- *Determine sphere power*
- *Identify cylinder power and axis*
- *Recognize prism presence and basic displacement*
- *Record measurements accurately and consistently*

This is an active workshop. You will measure, adjust, compare findings, and build confidence through guided exercises designed to establish precision and strong foundational technique.

Several formal educators are serving as co-instructors during this session. If you need clarification or assistance at any point, please ask.

At the conclusion of this course, you will be invited to provide feedback. Your input helps us continue improving and refining future workshops.

We hope you find this session both practical and confidence-building.

This workbook is our gift to you. Please keep it as a reference as you continue developing your lensometry skills.

Introduction to Lensometry

Section 1 – Define the Parts of the Lensometer

1. _____ *is the part of the lensometer we rotate to focus the reticle before calibration.*
2. _____ *is the component we turn to determine the sphere and cylinder power of a lens.*
3. _____ *is the control used to locate and refine the cylinder axis.*
4. _____ *is the platform that supports and stabilizes the frame during neutralization.*
5. _____ *is the mechanism that holds the lens firmly in position while measuring.*
6. _____ *is the feature used to measure the amount and direction of prism.*
7. _____ *are the pins used to mark the optical center and reference points on the lens.*

Terms

- *Eyepiece*
- *Lens Table*
- *Marking Pins*
- *Power Wheel*
- *Lens Holder (Lens Stop)*
- *Axis Wheel*
- *Prism Ring*

Introduction to Lensometry

UNITED OPTICIANS ASSOCIATION

Section 2 – Calibration of the Lensometer

Complete each step by filling in both blanks.

1. *Turn the _____ fully _____ until it stops.*
2. *Set the _____ to _____.*
3. *Set the _____ to _____.*
4. *Look through the lensometer and slowly rotate the _____ _____ until the reticle becomes clear and sharp.*
5. *While looking through the eyepiece, rotate the _____ in the _____ direction until the sphere and cylinder lines come into focus.*
6. *The _____ should read _____ after calibration. If not, repeat the process.*

Terms

- *Eyepiece*
- *Power Wheel*
- *Axis Wheel*
- *Counterclockwise*
- *Clockwise*
- *Minus*
- *+10.00*
- *180*
- *0.00 (Plano)*

Section 3 – Spotting a Single Vision Spherical Lens

(Complete each step by filling in the blanks.)

1. *Make sure the lensometer is properly _____ before beginning.*
2. *Turn the _____ to _____.*
3. *Approximately _____ the lens blank in the lens holder.*
4. *Rotate the _____ in the _____ direction.*
5. *Stop when the _____ becomes sharp and focused.*
6. *Gently lift the _____ and center the _____ in the reticle.*
7. *Move the _____ back to _____ to verify the measurement.*
8. *Mark the _____ using the _____.*

Terms

- *Calibrated*
- *Power Wheel*
- *Minus*
- *+10.00*
- *Mires (sphere lines)*
- *Lens Holder (Lens Stop)*
- *Center*
  Optical Center
- *Marking Pins*

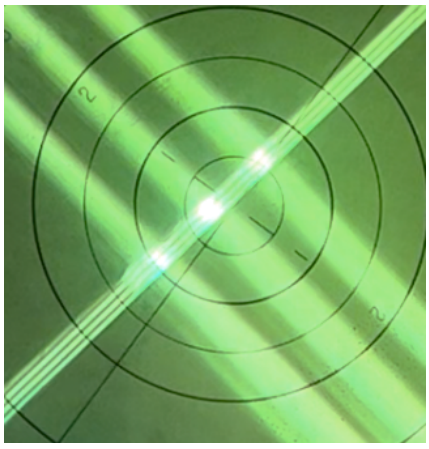
Introduction to Lensometry

Section 4 – Neutralizing to Determine the Cylinder Power

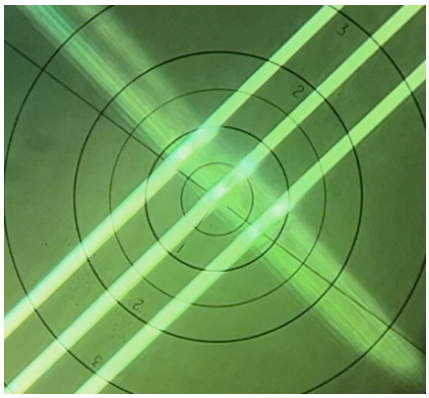
Example #1

+ 3.00	
+ 2.75	
+ 2.50	
+ 2.25	
+ 2.00	
+ 1.75	
+ 1.50	
+ 1.25	
+ 1.00	
+ 0.75	
+ 0.50	
+ 0.25	
0.00	
-0.25	
-0.50	
-0.75	
-1.00	
-1.25	
-1.50	
-1.75	
-2.00	
-2.25	
-2.50	
-2.75	
-3.00	

When the sphere lines are focused, the power wheel reads +3.00.



When the cylinder lines are focused, the power wheel reads +2.00.



Both lines are sharp when the axis wheel reads 93°

.

What is the prescription? _____

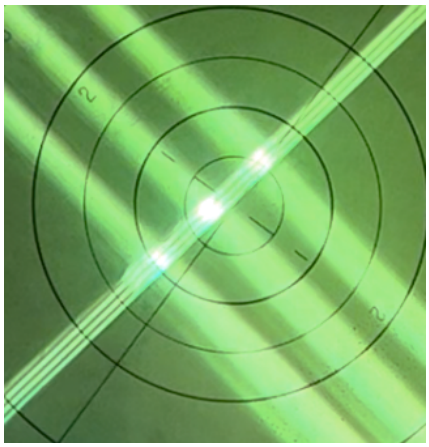
UNITED OPTICIANS ASSOCIATION

Section 4 – Neutralizing to Determine the Cylinder Power

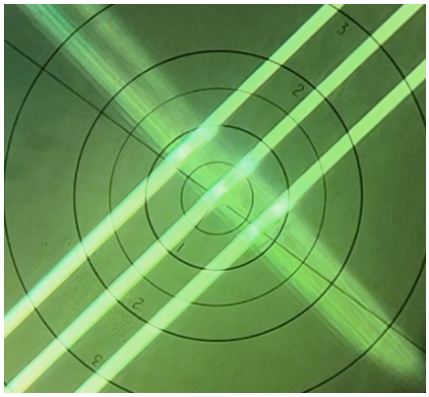
Example #2

+ 3.00	
+ 2.75	
+ 2.50	
+ 2.25	
+ 2.00	
+ 1.75	
+ 1.50	
+ 1.25	
+ 1.00	
+ 0.75	
+ 0.50	
+ 0.25	
0.00	
-0.25	
-0.50	
-0.75	
-1.00	
-1.25	
-1.50	
-1.75	
-2.00	
-2.25	
-2.50	
-2.75	
-3.00	

If the sphere lines are clear when the power wheel reads +1.00.



The cylinder lines are clear when the Power Wheel reads -1.00.



The axis wheel reads 105°.

What is the prescription? _____

Introduction to Lensometry

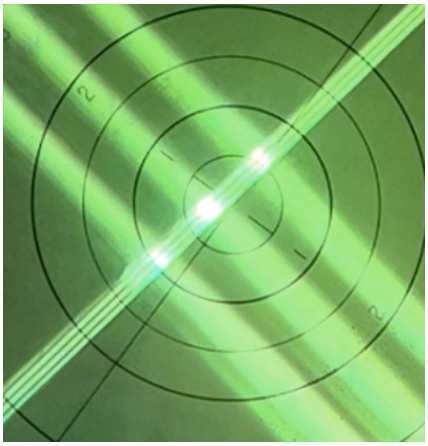
UNITED OPTICIANS ASSOCIATION

Section 4 – Neutralizing to Determine the Cylinder Power

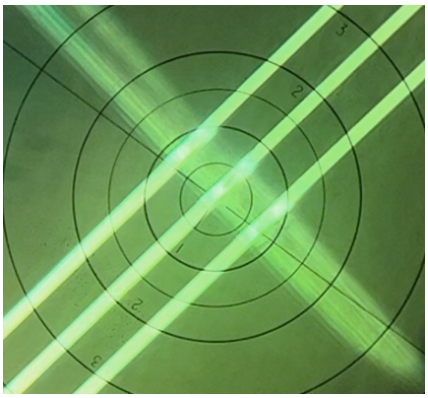
Example #3

+ 3.00	
+ 2.75	
+ 2.50	
+ 2.25	
+ 2.00	
+ 1.75	
+ 1.50	
+ 1.25	
+ 1.00	
+ 0.75	
+ 0.50	
+ 0.25	
0.00	
-0.25	
-0.50	
-0.75	
-1.00	
-1.25	
-1.50	
-1.75	
-2.00	
-2.25	
-2.50	
-2.75	
-3.00	

The sphere lines are clear when the Power Wheel reads -3.00.



The cylinder lines are clear when the Power Wheel reads -2.00.



The Axis Wheel reads 90°.

What is the prescription? _____

Introduction to Lensometry

Section 5 – Neutralizing Single Vision Spectacles

(Complete each step by filling in the blanks.)

1. *Make sure the lensometer is properly _____ before beginning.*
2. *Start with the _____ eye unless otherwise directed.*
3. *Turn the _____ to _____.*
4. *Set the _____ to _____.*
5. *Center the _____ in the lens holder and stabilize the frame on the _____.*
6. *Rotate the _____ in the _____ direction.*
7. *If both sets of lines become clear at the same time, record the _____ power.*
8. *If one set of lines becomes clear first, rotate the _____ to bring the sphere lines into focus.*
9. *Record the _____ power.*
10. *Continue moving in the _____ direction to locate the cylinder lines.*
11. *Determine the difference between the sphere and cylinder readings to calculate the _____ power.*
12. *Measure the distance between the optical centers to determine the _____.*

Terms

- *Calibrated right (OD)*
- *Power Wheel*
- *+10.00*
- *Axis Wheel*
- *180*
- *Right Lens*
- *Lens Table*
- *Power Wheel*
- *Minus sphere*
- *Axis Wheel*
- *Sphere*
- *Minus*
- *Cylinder*
- *Optical Center Distance*
- *PD*

Introduction to Lensometry

Section 6 – Neutralizing Bifocal Lenses (Add Determination)

(Complete each step by filling in the blanks.)

1. *Neutralize the _____ and _____ lenses as you would for single vision to determine the _____ prescription.*
2. *Flip the glasses so the _____ are facing toward you.*
3. *Move the spectacles to the _____ portion and determine the _____ power.*
4. *Notice that this reading may be different from the _____ power, and that is _____and that is acceptable.*
5. *Move to the _____ (near portion).*
6. *Determine the difference between the _____ power and the _____ power.*
7. *This difference represents the _____.*

Terms

- *Right (OD)*
- *Left (OS)*
- *Distance*
- *Distance Portion*
- *Segment*
- *Sphere*
- *Distance Sphere*
- *Segment Sphere*
- *Front Vertex*
- *Normal (Acceptable)*
- *Temples*
- *Add Power*

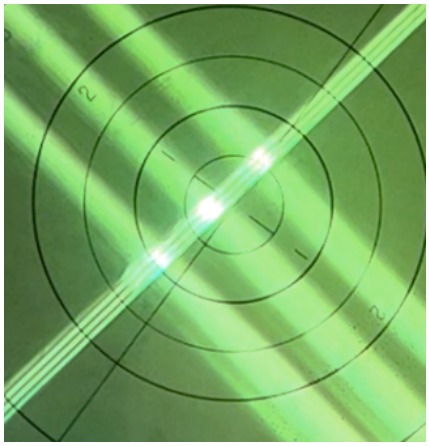
Introduction to Lensometry

Section 6 – Bifocal Add Determination

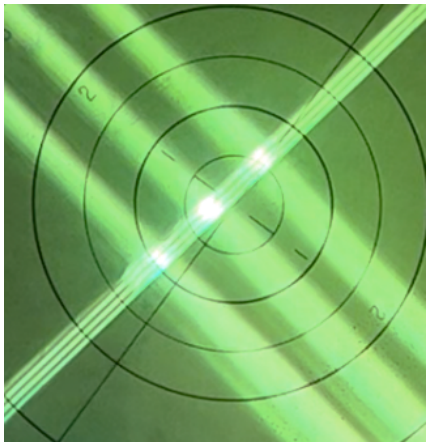
+ 3.00	
+ 2.75	
+ 2.50	
+ 2.25	
+ 2.00	
+ 1.75	
+ 1.50	
+ 1.25	
+ 1.00	
+ 0.75	
+ 0.50	
+ 0.25	
0.00	
-0.25	
-0.50	
-0.75	
-1.00	
-1.25	
-1.50	
-1.75	
-2.00	
-2.25	
-2.50	
-2.75	
-3.00	

We have determined the Rx as +2.00 -2.00 × 100.

After flipping the spectacles, the sphere reads +2.25 in the distance portion.



Move into the segment and locate the sphere lines; the reading is +3.00.



What is the prescription including the add power ? _____

Introduction to Lensometry

Section 7 – Progressive Lens Evaluation

(Complete each step by filling in the blanks.)

1. *Neutralize the _____ and _____ lenses as you would for single vision to determine the _____ prescription in the distance portion.*
2. *Locate the _____ portion of the lens and center it in the lens holder.*
3. *Be aware that the lines may not be perfectly _____ and may not sit directly in the _____.*
4. *Record the _____ power for the distance portion.*
5. *Move the lens to the _____ (Prism Reference Point).*
6. *Neutralize at this point using single vision procedures and determine the amount of _____ present.*
7. *Repeat the process for the _____ eye.*
8. *Compare the prism values between right and left lenses to determine if there is any vertical _____.*
9. *To determine the add power, move from the distance portion down the _____ and locate the near portion.*
10. *Determine the difference between the _____ sphere power and the _____ sphere power.*
11. *This difference represents the _____.*

Terms

- *Right (OD)*
- *Left (OS)*
- *Distance Portion*
- *Near*
- *Clear*
- *Center of the Reticle*
- *PRP (Prism Reference Point)*
- *Vertical Prism*
- *Vertical Imbalance*
- *Corridor*
- *Distance Sphere*
- *Near Sphere*
- *Add Power*

Introduction to Lensometry

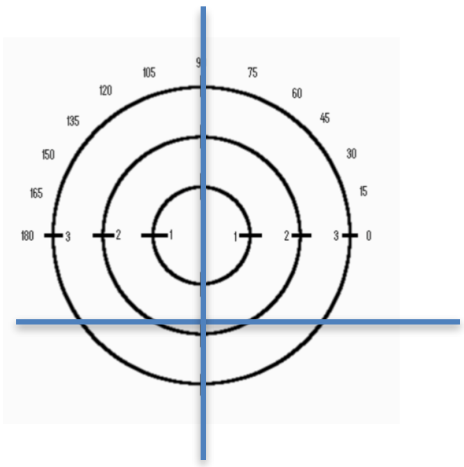
Section 7 – Progressive Lens Evaluation

The sphere lines in the distance portion are clear at +2.00, the cylinder lines are clear at +1.50, and the Axis Wheel reads 97.

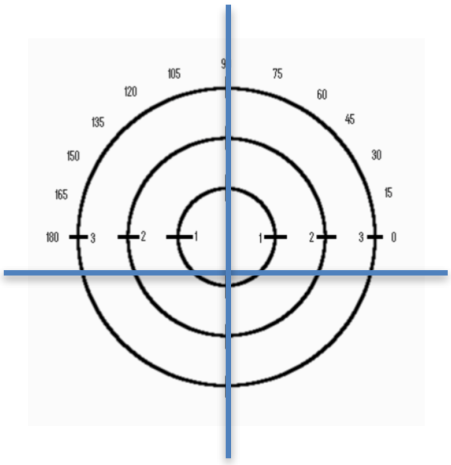
What is the distance prescription for this PAL? _____

Now we look at the PRP and observe the following:

OD



OS



1. *How much prism and in what direction do we have present in the OD?*
   _____

2. *How much prism and in what direction do we have present in the OS?*
   _____

3. *What is the total amount of vertical imbalance present in the spectacles?*
   _____

Introduction to Lensometry

INTRO TO LENSOMETRY
Foundation. Accuracy. Confidence.

Thank you for your active participation in today's hands-on workshop, presented by the United Opticians Association and its Formal Education Members.

Introductory lensometry builds the essential skills required for accurate power identification, cylinder recognition, and basic multifocal interpretation. A strong foundation in these techniques supports confident verification and prepares you for more advanced analysis.

You are encouraged to keep this workbook as a structured reference to continue practicing and reinforcing today's material. The remaining pages include the answer key and step-by-step instructions for each task covered during the session.

Please take a moment to complete the course evaluation so we can continue refining and improving future workshops.

If you have any questions after today's session, I am always happy to assist.

George J. Bourque, ABOM, NCLE, LDO
george@franklincummings.edu

UNITED OPTICIANS
ASSOCIATION