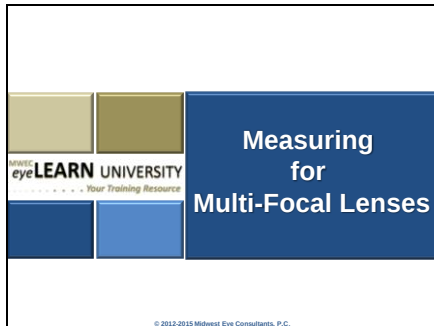


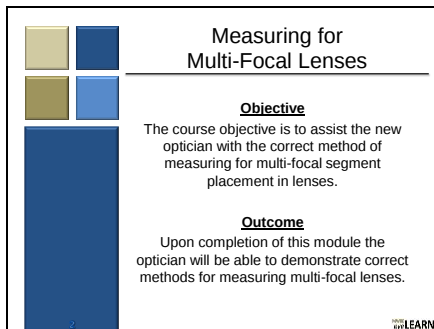
This course is available as a video and as self-paced reading material. Feel free to use these options together to get the most out of your learning experience.

Slide
1



Hello! Welcome to your eyeLEARN training resource. Today's topic is measuring the patient for multi-focal lenses.

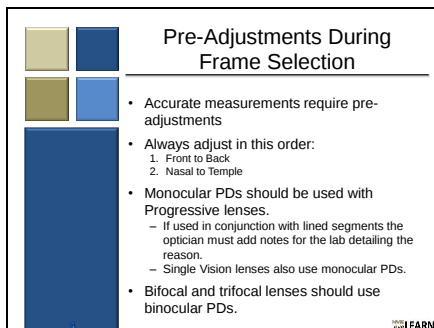
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This course is intended as an introductory learning tool for new staff members and as a refresher course for more experienced staff.

The ultimate goal of this course is to assist the staff member in in correctly measuring a patient for correct placement of their multi-focal lenses.

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Before measuring the patient for their new lenses, you should adjust the display frame to fit the patient – even if the actual frame will be drop-shipped and not sent from the board!

We do this in order to get the most accurate measurements possible! Remember that any adjustments made to a frame for a comfortable fit to the patient will have a direct impact on the placement of the multi-focal segment in relation to the wearer's line of sight. Therefore, if you adjust the "test" frame before measuring, you will have much better results for the patient's comfort and use of their lenses.

Adjusting the frame should be done in a specific order: first from the front to the back, and second, adjust from the nasal area to the temple.

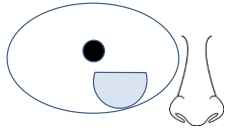
When measuring PDs, be sure to use monocular PDs with Progressive lenses, while Bifocals and Trifocals should be used with binocular PDs. There is one exception to Bifocals and Trifocals: if the patient displays a large disparity in their PDs, greater than 3mm. However, when doing this, you must put a note in the RX notes of Eyecare informing the lab to fabricate the lenses using this "mono" PD.

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Convergence

- The rule of convergence states that a patient's gaze will drop on average 10mm and decenter nasally 3mm when reading
- A multifocal measure correctly should allow the patient to look through the distance portion of the lenses without noticing the line or change in the lens



Remember the rule of convergence when measuring for multifocals.

Convergence is the natural movement of the eyes downward and inward nasally when viewing things close up. This movement is approximately 10 mm down and 3mm nasally converged. In patients displaying a PD greater than 70mm, the inward convergence is approximately 4mm. Think of the inward convergence as the difference between a “far” PD, and a “near” PD.

Keeping convergence in mind makes us aware of where the patient’s focus will be in the lens so that when the patient looks through the lens, the bifocal or trifocal line will not hinder their vision.

The importance of segment placement is vital to both patient satisfaction and safety.

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Parallax Errors

- Parallax errors are the change in the apparent position of an object when the position of the observer changes
- To demonstrate, with one eye closed hold your thumb up at arms length against an object. Now switch your gaze between eyes and notice how it appears that your thumb changes position.
- This is exactly what would happen if you were not positioned directly in front and on the same level as your patient.



What is a parallax error and how do we avoid it? Parallax is the apparent displacement of an observed object due to a change in the position of the observer.

If you should hold your thumb against an object with one eye closed and then switch eyes, you will notice that it appears that your thumb changes position. This is what happens should you not place yourself directly in front of and on the same level as your patient. You would create a parallax error.

It is imperative to be level with and directly in front of your patient when measuring segment placement. If you are in any other position the potential for placing the segment either too high or too low is increased.

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Measuring Segments

Patient Communication

- Do you experience any problems seeing with your bifocals?
- Do you have to tilt your head back to read?
- Do you have to lower your chin to see objects in the distance?
- Do you use a computer?

Exception:

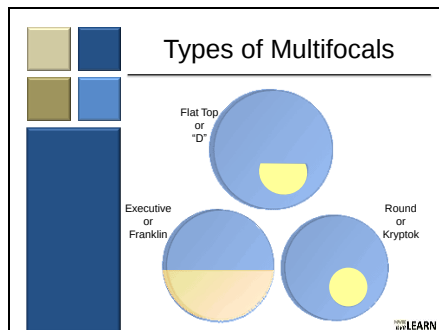
Note where previous patients wear their segment and ask if they are satisfied with their use.

Coach your patients for proper use of their multifocal lenses.

Most lined segments have their optical centers “on center” or in the middle of the segment. This is important to remember when measuring for segments that have higher add powers. For instance, if you should measure and place +3.00 Diopter add power in a lined bifocal too far below the lower lid line, your patient will never experience the full power of that lens, and could lead to dissatisfaction, remakes, and doctor Rx checks. All of these would be unnecessary if the optician asked a few simple, and direct questions prior to measuring. In this case, if the patient requested the segment placed lower, it would be appropriate to have your Doctor reevaluate the add power.

By asking various lifestyle questions as shown here, an optician can quickly discern where the most appropriate placement of the segment should be for each patient. Many patients incorrectly assume that lined segments are just going to be difficult. Proper coaching on head placement, work arrangements, seating, and lighting can go a long way to ease patients into new multifocal lenses.

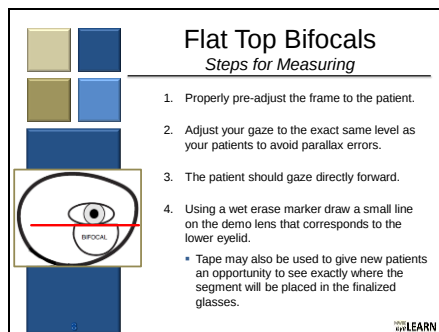
Understand that all lined segments have “image jump.” Image jump is defined as a displacement of the image when fixation moves across the top edge of the bifocal segment. Jump is defined as the prism at the top edge of the segment, the product of the power of the Add in diopters and distance from the optical center of the segment to its upper edge in centimeters. There is a way to calculate and compensate for this, but it is only necessary when the patient is experiencing diplopia (double vision) or a great vertical imbalance or prismatic effect.



You will often hear multifocals being called “Flat Top” bifocals; this is the term used to describe the shape of the bifocal area of the lens. Another term for these lenses is “D”, for instance D25, D28, D35, D45, etc. This refers to the shape of the segment when viewed on its side, and the number correlates to the widest measurement of the segment in millimeters.

Let’s take a moment to talk about executive lenses. Executive lenses, also known as Franklin lenses, are measured in the same manner as flat tops. However, it is important to note that executive lenses are both archaic and optically inferior to the more modern lenses. Executive lenses were invented by Benjamin Franklin so you can only imagine the difference in the technology in the last 200 or more years. Also remember convergence: An executive lens bifocal area goes all the way across the lens and is seldom useful because as a patient’s eyes converge, or turn inward when reading, they do not turn to the temporal edges of a lens. Few doctors recommend these lenses as the edges chip easily, they are often heavier, and dirt collects along the segment edge.

We should also mention round segments. Round segments, also known as Kryptok lenses, are similar. The difference lies in their “softer” edge design which allows for quicker adaptation and less visibility in the lens. These lenses most usually have a circumference of 22mm making their optical centers around the 11mm area. These were often the choice for children that wear bifocals as they are less cosmetically noticeable, and the child usually adapted to their use without instruction. Kryptok lenses are seldom seen any longer. Round segment measurements are done in the same manner as lined segments.

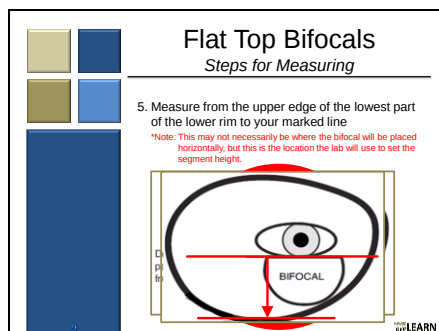


Let’s go through the seven (7) steps for measuring a patient for flat top bifocals.

- Pre adjust the frame to the patient
- Align yourself directly across and on the same level as your patient
- Ask your patient to gaze directly forward and be certain to let them know that it is O.K. to blink.
- Until you become skilled, or you have a previous bifocal wearer at your dispensing table, you may use a wet erase marker and draw a line across the lens where the segment would be placed. This allows for an easy measurement for the optician, as well as allowing the patient to see where the line will fall in relation to their distance gaze. Another tip is to place a piece of transparent tape across the lens at the lower lid line. This gives the patient a very clear idea of where the segment will be placed. This is often very useful for brand new lined segment wearers.

The lens should be marked at the lower eyelid.

Exception: Note where previous patients wear their segment and ask if they are satisfied with their use.



With either the line or the tape on the lens, you can easily measure from the mark to the lowest part of the eyewire. **This is crucial.**

A common mistake that new opticians make is that instead of using the PD stick to measure into the deepest part of the eyewire, they will measure directly under the eye itself. We need to remember that we are not measuring where to place the segment horizontally because that is what the PD measurements will do; instead, we are measuring where the segment will be placed vertically so the lab will be able to align the segment with the patient’s lower lid.

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Flat Top Bifocals

Steps for Measuring

6. Add .5 mm to this measurement to account for the lens to sit within the eyewire of the frame.
 - Zyl and full Metal Rimmed Frames
 - Not necessary for semi-rimless or Drill/pressure mount
7. Record this measurement as a whole number into the appropriate space in EyeCare.

Exception: Note where previous patients wear their segment and ask if they are satisfied with their use.

After determining the distance from the lower lid to the deepest part of the eyewire, you will need to add .5 mm (one-half of a mm) to account for the lens to sit within the bevel on either a zyl or full metal rimmed frame. This would not be necessary on semi rimless, or drill and pressure mounted lenses, as there is no bevel.

Record your measurement in the appropriate fields as a whole number in EyeCare.

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Flat Top Trifocals

- The upper line of the trifocal segment should be measured to the patient's lower pupil margin.
 - The patient will still have a direct straight ahead view through the distance portion of the lens.
 - The intermediate portion will be available to the patient with only a slight downward gaze.
 - Most intermediate tasks are done with the patient only slightly looking downward such as viewing speedometers, working with computers, etc.
 - The reading portion of the lens will not be set too low to be usable.

Exception: Note where previous patients wear their segment and ask if they are satisfied with their use.

Let's move on to lined trifocals.

Lined trifocals are measured to the patient's lower pupil margin, or where the pupil meets the iris. When properly measured and fabricated, the patient will have a direct straight ahead view through the distance portion of the lens, and with a minor downward shift of their gaze will have a comfortable intermediate field of vision. Most intermediate tasks are done with the patient looking slightly downward such as using a computer or reading a speedometer.

With the trifocal line placed in this position it will ensure that the reading portion of the lens is not too low for effective use.

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Flat Top Trifocals

Steps for Measuring

1. Properly pre-adjust the frame to the patient
2. Adjust your gaze to the exact same level as your patients to avoid parallax errors
3. The patient should gaze directly forward
4. Using a wet erase marker draw a small line on the demo lens that corresponds to the lower eyelid.
 - Remember, tape is a very useful tool and will give new patients an opportunity to see exactly where the segment will be placed in the finalized glasses.

You will find that these instructions are almost the same as measuring for bifocals. When measuring for lined trifocal segments you should take the following steps:

- Pre adjust the frame to the patient
- Align yourself directly across and on the same level as your patient
- Ask your patient to gaze directly forward and be certain to let them know that it is O.K. to blink.
- Until you become skilled, or you have a previous bifocal wearer at your dispensing table you may use a wet erase marker and draw a line across the lens where the segment would be placed. This allows for both an easy measurement for the optician, as well as allowing the patient to see where the line will fall in relation to their distance gaze. Another tip is to place a piece of transparent tape across the lens at the lower lid line. This gives the patient a very clear idea of where the segment will be placed. This is often very useful for brand new lined segment wearers.

Lined trifocals are measured to the lower pupil margin, or where the pupil meets the iris (the colored portion of the eye).

Exception: Note where previous patients wear their segment and ask if they are satisfied with their use.

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Flat Top Trifocals

Steps for Measuring

- Measure from the upper edge of the lowest part of the lower rim to your marked line

NOTE: This may not necessarily be where the bifocal will be placed horizontally in the lens, but this is the location the lab will use to set the segment height.

- Add .5 mm to this measurement to account for the lens to sit within the eyewire of the frame.
 - Zyl and full Metal Rimmed Frames
 - Not necessary for semi-rimless or Drill/Pressure mount
- Record this measurement as a whole number into the appropriate space in EyeCare.





With either the line on the lens or the tape, you can easily measure from the mark to the lowest part of the eyewire. **Just like with bifocals, this is a crucial step and it bears repeating:**

A common mistake that opticians make is that instead of using the PD stick to measure into the deepest part of the eyewire, they will measure directly under the eye itself. We need to remember that we are not measuring where to place the segment horizontally because that is what the PD measurements will do; instead, we are measuring where the segment will be placed vertically so the lab will be able to align the segment with the patient's lower pupil margin.

After determining the distance from the lower pupil margin to the deepest part of the eyewire, you will need to add .5 mm to account for the lens to sit within the bevel on either a zyl or full metal rimmed frame. This would not be necessary on semi rimless, or drill and pressure mounted lenses as there is no bevel.

Next carefully enter this calculation as a whole number in the appropriate space in Eyecare.

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Notes about Splitting Segments

- Do not split segments unless there is a 2.5 mm difference between eyes or greater.
 - Splitting segments often causes "ghost" issues because of the perceived "mistake" in lens fabrication by our patients.
 - Use the lowest of the measurements to avoid any conflict with the distance gaze of the patient.
- Do not be a "hero" to a patient that has been wearing their segment in an incorrect position and move it to a more appropriate height.
 - Instead, ask if they have been satisfied with the optical performance of their lenses.
 - Unless the patient is having issues with their lens performance it is the best practice to leave it in the same position.



A few important notes about splitting segments. Often an optician will want to place lined segments at different heights due to a patient's asymmetrical facial shape. This is generally not a good idea unless the difference between the two measurements is 2.5mm or greater.

Splitting the segment heights often will cause issues for the patient due to the perceived "mistake" in lens fabrication. This is another reason that we do not use the monocular PDs unless the discrepancy is greater than 3mm. Instead of splitting the segments, use the lower measurement of the two to avoid any conflict with the patients distance vision.

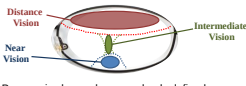
Often you will have a patient that is clearly wearing their segments in an improper place. Rather than being a "hero" to these patients it is wiser to ask questions to determine if they are pleased with the optical performance of their lenses. Often an optician will notice that a patient has been wearing their segment low and will automatically measure for the new lens with the segment placed correctly. The patient may have adapted or requested that the segment have been placed this way.

The best practice would be to ask the patient and make the appropriate documentations in the spectacle Rx screen in Eyecare as well as the notes.

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Progressive Lenses



- Progressive lenses have no clearly defined segment line.
- These lenses are called progressive lenses because they allow the patient to gain plus power with a downward gaze.
- In simpler terms, they "progressively" transition from a distance lens to an intermediate and near vision lens with just subtle eye movements by the wearer.



Now let's talk about measuring for Progressives.

Progressive addition lenses or "PALS" are so called because they allow a seamless, progressive transition from a distance to intermediate to near vision with just subtle eye movements by the patient.

These lenses gain "plus" power as the gaze is directed downward through an intermediate corridor to a near vision zone. The technology is now to the point where there are both "short corridor" progressives, those that may be placed with a segment height around 14mm, and the more traditional progressive lenses ranging from 18mm to 24mm.

The technology of these lenses has advanced in recent years to include digitally surfaced lenses that all but eliminate the "blurred" peripheral areas of their predecessors. At one time the more negative term of "unwanted astigmatic correction" was used to define these areas of blur and the non-adapt rate was considerably higher.

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Progressive Lenses

1. Properly pre-adjust the frame to the patient.
2. Adjust your gaze to the exact same level as your patients to avoid parallax errors.
3. Ask the patient to gaze directly forward.
4. Using a wet erase marker, place a dot at this point for reference on the demonstration lens.



When measuring for progressive lens segments you should take the following steps:

- Pre adjust the frame to the patient
- Align yourself directly across and on the same level as your patient
- Ask your patient to gaze directly forward and be certain to let them know that it is O.K. to blink.
- Until you become skilled, or you have a previous progressive wearer at your dispensing table you may use a wet erase marker and place a small dot on the lens where you see the pupil.

Progressive lenses are measured to the center of the pupil. A small pen light may be used to create a reflection from the center of the pupil to make this an easy measurement to take.

Exception: Note where previous patients wear their segment and ask if they are satisfied with their use.

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Progressive Lenses

5. Using your PD stick, measure to the center of the patient's pupil.
6. Add .5 mm to this measurement to account for the lens to sit within the eyewire of the frame.
 - Zyl and full Metal Rimmed Frames
 - Not necessary for semi-rimless or Drill/pressure mount
7. Enter in the appropriate field in EyeCare.



With the dot on the lens you can easily measure from the mark to the lowest part of the eyewire.

A common mistake that opticians make is that instead of using the PD stick to measure into the deepest part of the eyewire, they will measure directly under the eye itself. We need to remember that we are not measuring where to place the segment horizontally because that is what the PD measurements will do; instead, we are measuring where the segment will be placed vertically so the lab will be able to align the segment with the patient's pupil.

After determining the distance from the pupil to the deepest part of the eyewire, you will need to add .5 mm to account for the lens to sit within the bevel on either a zyl or full metal rimmed frame. This would not be necessary on semi rimless, or drill and pressure mounted lenses as there is no bevel.

Next carefully enter the measurement as a whole number in the appropriate space in EyeCare.

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Your participation and feedback is always appreciated! Remember that questions should be directed to your Regional Manager.

See you next time!